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QUÉBEC ESL HIGH SCHOOL TEACHERS'
CONCEPTUALIZATION AND IMPLEMENTATION OF
INTERDISCIPLINARY TEACHING PRACTICES: A
SOCIOCULTURAL PERSPECTIVE

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SUMMARY

The goal of this qualitative study was to examine Québec secondary school ESL teachers' conceptualization and implementation of interdisciplinary teaching. Engeström's (2001) theory of activity systems framed this study within a sociocultural perspective. Data collected over the second half of a school-year were mainly gathered through in-class observations and interviews with six ESL teachers who were implementing interdisciplinary teaching, their school administrators, a curriculum consultant of the school board, and selected students. The findings identified three problems with the way the interdisciplinary projects were structured: (a) sequential versus simultaneous implementation of the different subject components of the interdisciplinary projects, (b) the amount of English language usage in the class, and (c) the task design of the English component of the interdisciplinary projects. The findings identified the most important constraints to the implementation of interdisciplinary teaching included a lack of scheduled common planning times with interdisciplinary partners and a dearth of professional development opportunities, material, or documents relating to interdisciplinary teaching.

ABSTRACT

The goal of this qualitative study was to examine Québec secondary school ESL teachers' conceptualization and implementation of interdisciplinary teaching. Most of the literature on interdisciplinary teaching is based on middle schools in the United States, where interdisciplinary teaching is administratively imposed and institutionalized. In contrast, this study offers a perspective of Québec ESL teachers' grass roots efforts to implement this innovative pedagogical practice at the secondary school level.

As a sociocultural perspective framed this study, it was necessary to examine the activity systems within which the teachers acted in order to understand how these affected their efforts to implement interdisciplinary teaching practices in a situation of educational change. This allowed the perspectives of the teachers to emerge while situating them within the activity systems of which they are members and, at the same time, addressing important contextual differences and issues. Therefore this study investigated a) Québec secondary school ESL teachers' conceptualization of interdisciplinary teaching, (b) why and to what degree these teachers value interdisciplinary teaching, (c) what factors constrain or facilitate their efforts to implement interdisciplinary teaching, (d) school administrators' view of the implementation of interdisciplinary teaching in their school, (e) a curriculum consultant's view of interdisciplinary teaching in his school commission, and (f) students' view of interdisciplinary teaching in their classes.

The study is based primarily on information gathered from six ESL teachers who were implementing interdisciplinary teaching. Data collected over the second half of a school-year were gathered through two formal, semi-structured interviews, informal interviews, and classroom observations. Formal, semi-structured interviews were also conducted with a school administrator of each of these teachers and the curriculum consultant for the school commission within which three of the teachers taught. A student questionnaire and formal, semi-structured interviews with selected students in each of these teachers' classes, the collection of artifacts, and recordings in a field journal were also used in the data collection process.

The findings showed the teachers' conceptualization of interdisciplinary teaching as a pedagogical tool that enabled them to integrate knowledge and information from the different subjects to promote student learning was at odds with what was actually done within the projects. Three specific issues were identified that shed light on the problems with the way the projects were structured. These were (a) sequential versus simultaneous implementation of the different subject components of the interdisciplinary projects, (b) the amount of English language usage in the class, and (c) the task design of the English component of the interdisciplinary projects. The findings also showed the task design had an effect on the students' orientation to the work within the project. Some of the more important constraints to the implementation of interdisciplinary teaching identified by the teachers included a lack of scheduled common planning times with interdisciplinary partners and a dearth of professional development opportunities, material, or documents relating to interdisciplinary teaching. Factors that most facilitated interdisciplinary teaching were common planning periods to elaborate interdisciplinary projects, positive relations with members of the school community, and the new MELS education programme. Engeström's (2001) theory of activity systems as it relates to innovation in educational institutions was used as the conceptual framework because of its ability to foreground the individual in the social systems within which they act, thus permitting an understanding of

their efforts to integrate and resolve the contradictions they experience within the various activity settings of the school, school commission and the MELS.

Specific recommendations offered in order to correct these problems may assist teachers in designing interdisciplinary projects that are better able to fulfill their potential for English language learning. Areas for future research include long-term studies on the effect of changes in the school culture on interdisciplinarity in schools, and on the evolution over time of the interdisciplinary projects examined in this study.

RÉSUMÉ COURT

Cette étude qualitative avait pour but d'examiner la conceptualisation et l'implantation de l'enseignement interdisciplinaire chez des enseignants québécois d'anglais, langue seconde, au niveau de l'école secondaire. L'investigation des institutions d'éducation a été menée dans une perspective socioculturelle, plus particulièrement à la lumière de la théorie des systèmes d'activité d'Engeström (2001). Des données ont été recueillies au moyen de notes d'observations et d'entrevues réalisées auprès de six enseignants québécois d'anglais, langue seconde, qui implantaient l'enseignement interdisciplinaire, d'un administrateur scolaire de chacun des enseignants, d'un conseiller pédagogique, et d'un certain nombre d'élèves appartenant à un groupe de chaque enseignant. Trois problématiques spécifiques liées à la manière dont les projets avaient été structurés ont émergées : (a) l'exécution séquentielle par opposition à l'exécution simultanée des composantes des différentes matières des projets interdisciplinaires, (b) le degré d'utilisation de l'anglais dans la classe, et (c) la pauvreté de la conception des tâches de la composante « anglais » des projets interdisciplinaires. Les enseignants ont identifié le manque de plages de travail pour la planification interdisciplinaire entre collègues, intégrées à l'horaire scolaire, la pénurie d'information, de matériel, et de formation professionnelle concernant l'enseignement interdisciplinaire comme étant les principales contraintes de l'enseignement interdisciplinaire.

RÉSUMÉ

Cette étude qualitative avait pour but d'examiner la conceptualisation et l'implantation de l'enseignement interdisciplinaire chez des enseignants québécois d'anglais, langue seconde, au niveau de l'école secondaire. Puisque la majeure partie de la littérature sur l'enseignement interdisciplinaire est basée sur des écoles américaines, où l'enseignement interdisciplinaire est administrativement imposé et institutionnalisé, cette étude offre une perspective des efforts de la base, c'est-à-dire, des enseignants d'anglais, langue seconde, du niveau des écoles secondaires de Québec, de mettre en application cette pratique pédagogique novatrice.

Étant donné que le cadre conceptuel de cette étude s'inscrivait dans une perspective socioculturelle, il était nécessaire d'examiner des systèmes d'activité dans lesquels les enseignants agissaient pour comprendre comment ces systèmes avaient un effet sur leurs efforts d'implanter cet enseignement novateur dans un contexte de renouveau pédagogique. Cet examen a permis de faire ressortir les perspectives des enseignants tout en situant celles-ci dans les systèmes d'activité dont ils sont membres et, en même temps, d'aborder des différences et des problématiques contextuelles importantes. Par conséquent, cette étude a investigué: a) la conceptualisation de l'enseignement interdisciplinaire chez des enseignants d'anglais langue seconde œuvrant dans des écoles secondaires de Québec, (b) pourquoi et dans quelle mesure l'enseignement interdisciplinaire a de la valeur pour ces enseignants, (c) quels facteurs contraignent ou facilitent leurs efforts pour mettre en application l'enseignement interdisciplinaire, (d) la vision d'administrateurs d'école de l'implantation de l'enseignement interdisciplinaire dans leur école, (e) la vision d'un conseiller pédagogique de l'enseignement interdisciplinaire dans sa commission scolaire, et (f) la vision des élèves de l'enseignement interdisciplinaire dans leurs classes.

L'étude est basée principalement sur l'information fournie par six enseignants d'anglais, langue seconde, qui implantaient l'enseignement interdisciplinaire. Des données ont été recueillies au moyen de deux entrevues semi-formelles, d'entrevues informelles, et d'observations en classe. Des entrevues semi-formelles avec un administrateur d'école de chacun des enseignants et d'un conseiller pédagogique de la commission scolaire de trois des enseignants ont également été conduites. Un questionnaire destiné aux élèves et des entrevues semi-formelles d'un certain nombre d'entre eux dans une classe de chaque enseignant, la collection d'artefacts ainsi que la prise de notes d'observations ont aussi fait partie du processus de collecte de données.

Les résultats ont montré que les enseignants avaient conceptualisé l'enseignement interdisciplinaire comme un outil pédagogique qui leur avait permis d'intégrer la connaissance et l'information des différentes matières concernées par le projet interdisciplinaire afin de promouvoir l'apprentissage des étudiants. Cependant, il y avait une certaine incohérence chez certains enseignants d'anglais langue seconde entre leur conceptualisation de l'enseignement interdisciplinaire et leur pratique en classe. Nous avons identifié trois problématiques spécifiques liées à la manière dont les projets avaient été structurés : (a) l'exécution séquentielle par opposition à l'exécution simultanée des composantes des différentes matières des projets interdisciplinaires, (b) le degré d'utilisation de l'anglais dans la classe, et (c) la pauvre conception des tâches de la composante « anglais » des projets interdisciplinaires. Les résultats ont aussi révélé que la façon dont les tâches avaient été structurées a eu un effet sur l'orientation des élèves face à leur démarche de travail. Les enseignants ont identifié le manque de plages de travail visant la planification interdisciplinaire entre collègues intégrées à l'horaire scolaire, comme étant la principale contrainte de l'enseignement interdisciplinaire.

Ensuite, ils ont identifié la pénurie d'information, de matériel, ou de formation professionnelle concernant l'enseignement interdisciplinaire comme facteurs contraignants. Les facteurs qui ont facilité l'enseignement interdisciplinaire étaient le jumelage des plages de travail pour la planification des projets interdisciplinaires, des relations positives avec des membres de la communauté scolaire, et le nouveau programme d'enseignement du MELS. L'étude a également permis de faire ressortir la pertinence du recours à la théorie des systèmes d'activité d'Engeström (1987) pour l'investigation des institutions d'enseignement à cause de sa capacité à situer l'individu dans le système social dans lequel il agit et, ce faisant, à permettre une compréhension des efforts d'intégration et de résolution des contradictions que ce dernier éprouve dans les divers systèmes d'activité de l'école, de la commission scolaire et du MELS.

L'information contenue dans cette étude peut aider des enseignants d'anglais, langue seconde, à concevoir des projets interdisciplinaires qui vont mieux permettre d'atteindre leurs potentiels pédagogiques pour l'apprentissage de la langue seconde. Les avenues de la recherche incluent des études à long terme de l'effet des changements de culture dans les écoles sur l'interdisciplinarité, et des études examinant les contradictions entre les croyances pédagogiques et l'interdisciplinarité chez des enseignants à qui l'enseignement interdisciplinaire est imposé.

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CHAPTER 1

INTRODUCTION

1.0 Introduction

This study examined secondary school English second language (ESL) teachers' conceptualization and implementation of interdisciplinary teaching practices. A sociocultural framework was used to guide the study as it was important to examine the activity systems of which the participating teachers were members. This conceptual framework was chosen in order to determine how these different activity systems interacted, and how these interactions affect the teachers' conceptualization and implementation of interdisciplinary teaching.

This chapter presents an introduction to the research problem. Interdisciplinary teaching is defined and described, and the current educational reform and interdisciplinary teaching in Québec are then briefly explained. The research questions guiding this study are followed by an overview of the chapters in this thesis.

1.1 Research problem

Introducing and implementing innovative educational practices is a complex process. Certain researchers believe effective educational change "begins with a transformation of people's perceptions and projects and flows outwards into the social and institutional domain" (Goodson, 2001, p. 57). They posit it is the innovations that begin as grass roots efforts which promote a sense of ownership and teacher empowerment, and offer educational innovations greater chances of success (Fink & Stoll, 1996; Fullan, 1993; Hargreaves, Earl, & Ryan, 1993; Newmann & Wehlage, 1995; Sarason, 1993). These teachers who initiate educational innovations have been described as "risk takers" (Blumenfeld, Fishman, Krajcik, Marx, & Soloway, 2000) who are open to learning new practices and want to improve their pedagogical practices. As a result of formal or informal reflection, they implement innovative teaching practices because they believe these can bring improvement or change in student learning (Guskey, 1988). One of these innovative pedagogical practices is interdisciplinary teaching.

Interdisciplinary teaching has been recommended as a means to lessen teacher isolation and to promote collegiality and collaboration (McCracken & Sekicky, 1998;

Murata, 2002; Oldfather & Thomas, 1998; Trent, 1998) through opportunities for teachers to work together to integrate subject matter. However, there is little consensus on a clear definition of the topic. Literature on interdisciplinarity contains many attempts to provide categorizations that distinguish between “multidisciplinary,” “interdisciplinary” and “transdisciplinary” teaching (Drake, 1993; Fogarty, 1991; Klein & Doty, 1994; Kysilka, 1998; Lattuca, 2001; Lenoir, Larose, & Geoffroy, 2000; Newell, 1998; Smith & Karr-Kidwell, 2000; St. Claire & Hough, 1992). Therefore, although only interdisciplinary teaching is dealt with in this study, it is important to identify the differences between these three types of teaching practices.

Multidisciplinary teaching “connects two or more disciplines but without making any conscious connections between the subjects” (Smith & Karr-Kidwell, 2000, p. 9). In this approach, there is no collaboration between teachers in the development of projects (Kockelmans, 1979). Subject-specific content is taught and, through the use of prior knowledge and scaffolding, a teacher helps students to relate or use ideas from another discipline and apply these to the content they are covering in their discipline.

Transdisciplinary teaching is where “content and theme are the same, and there is no division between the disciplines” (Smith & Karr-Kidwell, 2000, p. 10). In this approach, subject-specific content becomes blended as interdisciplinary teams of teachers build and implement study units. The teachers share teaching time and responsibilities while the students work in open or block scheduling. Drake (1993), Fogarty (1991), and Jacobs (1989) categorize transdisciplinarity as the complete integration of subjects. Drake (1993, p. 41) further specifies that it is a “life centered approach” where students identify their needs and interests and then examine topics and ideas as they would in the real world, not as is usually done in schools.

Interdisciplinary teaching falls between these two practices. An interdisciplinary approach “starts with the disciplines and connects them with each other, the overall theme, or the issues” (Smith & Karr-Kidwell, 2000, p. 10). It connects the different disciplines by showing students the relationships between the disciplines and encourages the transfer of knowledge from one discipline to another by connecting the students’ learning with real-world issues. In their descriptions of institutionalised interdisciplinary practices in middle schools, some researchers (Corriero, 1996; Fogarty, 1991; Jacobs, 1989; Kysilka, 1998)

require that all the subject areas, or at least all the core subject areas, be involved. However, as will be shown in this study, interdisciplinary teaching can result from the collaboration between two or more subject teachers, regardless of the subject areas. Therefore, for purposes of this study, interdisciplinary teaching involves teachers from two or more disciplines working collaboratively to elaborate a theme, topic, or project which is then implemented by the teachers in order to enable the students to integrate knowledge from the respective subjects, and develop a broader perspective and deeper understanding of the content.

Interdisciplinary teaching has been the object of widespread studies in the United States, focusing mostly on the implementation of educational reform in middle schools where interdisciplinary teaching is administratively imposed and institutionalized (Bacharach, Bauer, & Conley, 1986; Clark & Clark, 1994; Corriero, 1996; Cronin, 2007; Crow & Pounder, 2000; Hackman et al., 2002; Howe, 2007; National Middle School Association, 2005; Pounder, 1999; Thompson, 1997). There have been very few studies which examine interdisciplinary teaching at the high school level (Golley, 1997; Gunn & King, 2003; Meister, 1997; Murata, 2002; Norton, 1998), and fewer still that describe interdisciplinary teaching which arises through the actions of individual high school teachers, at the grass roots level (Miller, 2006). This may be because interdisciplinary teaching at this level is seen as innovative and potentially challenging to established school cultures and the status quo (Murata, 2002).

There have been very few studies done in Canada on interdisciplinary teaching and these have been at the primary level (Larose & Lenoir, 1995; Lenoir, 1992; Lenoir et al., 2000). Lenoir (1992) and Larose and Lenoir (1995) investigated the representations of Québec primary school teachers regarding interdisciplinarity and interdisciplinary teaching practices. Lenoir, Larose and Geoffroy (2000) subsequently created a typology of interdisciplinary teaching practices in primary schools based on their studies conducted between 1990 and 1998.

Therefore, as there have been no studies regarding interdisciplinary teaching at the secondary level in Canada, it was necessary to turn to documentation from the United States. In the province of Québec, the division of school levels is slightly different from that of the United States. The years Secondary 1 and 2 in Québec correspond with the

middle school levels 7 and 8 in the United States, and Secondary 3, 4 and 5 in Québec are the equivalent of the high school levels 9, 10, and 11. Another difference between the United States and Québec is that, unlike the mandated and institutionalized interdisciplinary practices of middle schools and certain high schools in the United States, in Québec, interdisciplinary teaching at the secondary level, as per the MELS, is recommended practice. And while there are certain schools which may require secondary school teachers to collaborate in interdisciplinary teaching, other teachers have been doing so of their own volition. These grass roots efforts to implement this innovative pedagogical practice in Québec are, as yet, undocumented in research literature.

The division of school levels into cycles is one element of the educational reform initiative the *Ministère de l'éducation, du loisir et du sport* (MELS, formerly the *Ministère de l'éducation du Québec* or MEQ) has been putting into place. At the secondary level, there is one 3-year and one 2-year cycle. The purpose of the division of grades into cycles is to allow students to develop the competencies over a longer term than just one year. The realization of this educational reform is being effected through a long-term, year-by-year, progressive implementation of a new education programme. The year the data collection took place, the educational reform had begun to be implemented by the teachers of the second year of the first cycle at the secondary level, in other words, in Secondary 2. Prior to the implementation of the educational reform at the secondary level, some teachers had begun experimenting with interdisciplinary teaching. Therefore, at the time of the study, while some teachers were implementing interdisciplinary teaching within the current educational reform, others were experimenting with interdisciplinary teaching in advance of the reform curriculum for their grade level. This therefore offered a window of opportunity to investigate interdisciplinary teaching at this juxtaposition. Nonetheless, this is an area of research that has not yet been developed. In Québec, from 1990 through to 1998, an ongoing series of studies (Larose & Lenoir, 1995; Lenoir, 1992; Lenoir et al., 2000) investigated interdisciplinary representations and practices of primary school teachers and developed a profile of interdisciplinary practices at that level. However, as the educational reform moves from the primary to the secondary level, there has not been, as yet, any research done regarding secondary school teachers' conceptualization and implementation of this innovative teaching practice.

The new education programme is built around three core components: the broad areas of learning, cross-curricular competencies, and subject areas with their own specific competencies (MELS, 2007a; MEQ, 2004b). The broad areas of learning, as set out in the Québec Education Programme, are considered the “foundations of [the] school’s educational project” (MEQ, 2004c, p. 15) and serve to encourage students to make connections between their personal, social, and cultural circumstances and what they learn in the subject-specific programmes. The MELS claims interdisciplinary teaching is “a key way to approach many of the issues in the broad areas of learning” (MELS, 2007b, Chpt. 2, p. 3) because they relate to aspects of daily life.

Cross-curricular competencies are independent of the contexts in which they can be used and are therefore found throughout and between all the different subjects. As a result, the entire school is responsible for their development. The MELS believes interdisciplinary practices “provide ideal opportunities” (MEQ, 2004c, p. 50) for the students to see how some of these competencies are implemented as they see their teachers collaborating through interdisciplinary teaching.

Within the subject area of languages, there are both core and enriched ESL programmes. The difference between the two programmes is that of exposure and background. Enriched students may have completed an intensive ESL programme in primary school and receive six ESL classes per nine-day cycle at the secondary level. Core ESL students have had less second language experience at the primary level and receive fewer ESL classes, four per nine-day cycle at the secondary level. The subject-specific competencies for both the enriched and core programmes are: interacts orally in English, reinvests understanding of texts, and writes and produces texts. These three competencies are to be “developed in synergy in an interactive learning environment. When students are developing one competency, they constantly draw upon the other two” (MEQ, 2004b, p. 173) so that listening, speaking, reading and writing are integrated in the lessons and activities and no longer taught as separate skills. In their description of the role of ESL teachers for both the core and enriched programmes, the MELS claim these teachers are “crucial... in helping students develop the cross-curricular competencies” (MELS, 2007b, Chpt. 5, p. 7), and so recommend interdisciplinary collaboration for this purpose.

Both the first and second cycle programmes at the secondary level offer a certain degree of prominence to interdisciplinary teaching, and the MELS qualifies it as the “*coeur d’une approche curriculaire conçu selon une logique de compétences*” (heart of a competency-based teaching approach) (MELS, 2005, p. 17). They encourage teachers of different subjects to collaborate in the development of interdisciplinary projects to assist their students in “construct[ing] knowledge and develop[ing] strategies that can be reinvested in other fields of study and areas of interest, both inside and outside the classroom” (MEQ, 2004b, p. 174). In the ESL programme for the first cycle, there is specific mention of an interdisciplinary learning and evaluation situation which presents information about how ESL teachers and teachers of other subjects can collaborate for Earth Day activities or discussions with their students (MEQ, 2004b, p. 177 & 201). It would therefore appear the current educational reform supports the possibility of interdisciplinary collaboration between teachers in secondary schools. However, as the reform is in the process of being implemented at the secondary level, there has, as yet, been no research which examines what elements facilitate secondary school ESL teachers' efforts to put interdisciplinary teaching into practice.

One well documented pedagogical practice involving ESL and another subject is content-based teaching. Most of the research on content-based teaching in North America relates to situations in which the language of the two classes involved is generally the same as the broader school and social system (Beckett, Gonzalez, & Schwartz, 2004; Burger, Chrétien, Gingras, Hauptman, & Migneron, 1984; Gaffield-Vile, 1996; Newell, 1992; Pally, 2001; Sherris, 2008; Snow, Met, & Genessee, 1989; Watanabe, 2008; Wesche, 2000). However, because of the French language context in Québec, unlike content-based teaching where the subjects involved are taught in the same language, when Québec secondary ESL teachers collaborate with teachers of other subjects in interdisciplinary teaching, the other teachers implement their components of the interdisciplinary projects in French. Therefore, this collaboration means there are two languages involved: English and French. There has been, to my knowledge, no research investigating the implementation of interdisciplinary teaching practices where different languages are used in the classes of the participating teachers.

Regarding the conceptual framework, the use of sociocultural theory, specifically Engeström's theory of activity systems (1987) and the cycle of expansive learning (2001b), has been applied to innovation in institutional settings (Bedny & Karwowski, 2004; Engeström, 2000, 2001a). Within this study, it is applied to innovation in an educational context, and is used to examine how the different activity systems of which teachers are members have an effect on their conceptualization and implementation of interdisciplinary teaching. In order to understand these influences, it was important the study include not only teachers, but also other actors from the activity systems within the school and the school commission.

1.2 Research questions

This exploratory study was designed to provide thick descriptive accounts of the secondary school ESL teachers' conceptualization of interdisciplinary teaching and implementation of interdisciplinary teaching practices in their classes. As a result, the following research questions were elaborated:

1. How do teachers conceptualize interdisciplinary teaching?

- A. How do teachers define interdisciplinary teaching?
- B. How does teachers' conceptualization of interdisciplinary teaching change over time?

2. Why and to what degree do teachers value interdisciplinary teaching?

- A. What are the factors that prompt teachers to become involved in interdisciplinary teaching?
- B. What impact does interdisciplinary teaching have on teachers' classroom practices and relations with colleagues?
- C. To what degree do teachers use interdisciplinary teaching?

3. What factors constrain or facilitate teachers' efforts to implement interdisciplinary teaching in their classes?

4. How do school administrators view the implementation of interdisciplinary teaching within their respective schools?

- A. How do school administrators conceptualize interdisciplinary teaching?

B. How do school administrators view interdisciplinarity in the context of the current MELS' educational reform?

C. In their particular context, what factors constrain or facilitate the implementation of interdisciplinary teaching?

5. How does the ESL curriculum consultant of the participating schools view interdisciplinary teaching within his school commission?

A. How does the curriculum consultant conceptualize interdisciplinary teaching?

B. How does the curriculum consultant view interdisciplinarity in the context of the current MELS' educational reform?

C. In their particular context, what factors constrain or facilitate the implementation of interdisciplinary teaching?

6. How do students view interdisciplinary teaching within their classes?

1.3 Summary and overview of subsequent chapters

This chapter presented an introduction to the research problem of this study. In order to do so, interdisciplinary teaching was defined and its use presented, and a brief explanation of the Québec educational reform and the place of interdisciplinary teaching in the context of this reform were offered. Finally, the research questions guiding this study were enumerated.

Chapter 2 presents an explanation of sociocultural theory and how sociocultural theory relates to innovations in the context of institutional settings. It then explains how the usage of this theory is an appropriate framework to explore the topic of interdisciplinary teaching in Québec secondary schools.

Chapter 3 provides a review of current literature concerning educational reform. The review examines writings and research on the topic of educational reform, innovative teaching practices, and the implementation of interdisciplinary teaching in schools. It then examines these topics through the lens of educational change in the province of Québec, within the context of the current educational reform.

Chapter 4 presents and explains the methodology for the study. It includes an explanation of the study design, detailed descriptions of the participants, the data collection process, and data analysis procedures.

Chapters 5 and 6 focus on the findings of the study. In Chapter 5, case studies are presented for the five schools where the six participating teachers worked; each case study is presented in function of the research questions. Chapter 6 continues with a composite overview of the findings for the five case studies.

Chapter 7 is the discussion section of the thesis. This chapter focuses on two issues of relevance to the study. The first discusses the findings in light of Engeström's (1987) theory of activity systems and expansive learning (2001b). The second provides a discussion on the pedagogical implications of the use of interdisciplinary teaching, based on the findings of this study.

Chapter 8 presents the conclusions and explains the originality of the study and its contributions to current literature on interdisciplinary teaching. Finally, limitations are discussed and suggestions are offered for possible areas of further research regarding the implementation of interdisciplinary teaching by ESL teachers in secondary schools in Québec.

CHAPTER 2

CONCEPTUAL FRAMEWORK

2.0 Introduction

The conceptual framework for this study is based on sociocultural theory. As this is an exploratory study, this conceptual framework is used to organize the data collection, respond to the research questions, and scaffold the analysis of the findings (Van der Maren, 1996, in Mucchielli, 2004). Sociocultural theory is an appropriate perspective as it allows the examination of the complexities and dynamics of teachers' work lives and how they operate and act as members within the activity systems of their classes and schools. A sociocultural framework is used to guide the study as the purpose is to explore and understand teachers' perspectives of their practices, how they build their conception of self in relation to others, and how they learn to process and understand their worlds while taking into account the physical, psychological, and social environment of the communities of which they are members. This chapter therefore sets out the framework for the study. It begins with a presentation of sociocultural theory and then the background of activity theory. It continues with an explanation of the third generation of activity theory and a discussion of how activity theory can be used to explain innovation in educational institutions.

2.1 Sociocultural theory

Vygotsky (1978) proposed that all human mental functioning is socioculturally, historically, and institutionally situated (Wertsch, 1991). From his work arose sociocultural theory which offers a framework for investigating knowledge and learning within the social context because it is "a theory of mind ... that recognizes the central role that social relationships and culturally constructed artefacts play in organizing uniquely human forms of thinking" (Lantolf, 2004, pp. 30-31) as these latter provide both the context and the source of mental development.

An individual's activities are profoundly influenced by their participation in the encompassing cultural practices. Therefore, sociocultural theory takes the individual situated within their social context as the unit of analysis where "the goal of research is to understand the relationship between human mental functioning, on the one hand, and

cultural, historical, and institutional setting, on the other” (Wertsch, 1995, p. 56). Sociocultural theory posits that cooperative human activity is only possible because individuals grow up and live within larger-scale social organizations. The family, school, peer groups, community, and workplace are the most important cultural frameworks (Romaine, 1984) that provide meanings, resources, tools and strategies to understand and be understood by those around the individuals. Trice and Beyer (1993) describe six characteristics that form these cultural frameworks.

1. Collective: cultures cannot be produced by an individual acting alone. They operate as individuals interact with each other. To belong to a culture, individuals must believe what others believe and do what they do. Persons who do not endorse and practice the prevailing beliefs, values, and norms often become marginalized or pushed out of the group.
2. Emotional: because cultures help to manage anxieties, they are infused with emotion as well as rational thought. People’s allegiance to their beliefs, values, and cultural practices develops primarily from their emotional needs. As a consequence, members of a culture seldom question the core beliefs and values inherent in that culture.
3. Historically based: cultures cannot be divorced from their histories and they do not arise overnight. To develop a culture, people need to spend time together to interact and share with one another common uncertainties and some ways of coping with them. Therefore, a particular culture is based on the unique history of a particular group of people coping with a unique set of physical, social, political, and economic circumstances.
4. Inherently symbolic: cultures emphasize the expressive rather than the practical or technical side of human behaviour. Cultural symbols facilitate communication and expression among cultural members.
5. Dynamic: although cultures are historical and persist across generations, they do not remain static. They continuously change because members may bring their own understanding and interpretation of cultural norms and expectations. These variations of interpretation, over time, become embedded in the culture as acceptable behaviour.

6. Fuzzy: cultures are not monolithic, single sets of ideas, but are instead pluralistic and incorporate contradictions, ambiguities, paradoxes, and just plain confusion. Part of the fuzziness and confusion results from the interaction of multiple subcultures within an institution or organization. (Trice & Beyer, 1993, pp. 5-8, as cited in Alfred, 2002, p. 6)

Each of these six characteristics are relevant to an individual's passage from one culture to another as the person's cognitive and emotional development both affect and are affected by these cultures and the social context within which they move. Therefore, because an individual cannot be meaningfully separated from the context of their historical and cultural background (O'Loughlin, 1992), development and understanding can only be understood as "a process of [the individual's] changing participation in the sociocultural activities of their communities" (Rogoff, 2003, p. 52). Besides the cultural practices, sociocultural theory also takes into account the tools an individual uses, the location where the individual acts, and the reasons, motives or goals of the individual for their actions. This means an individual's actions and behaviour are either facilitated or constrained by the tools that are available (van Lier, 2000, 2004) as the individual acts within their community. The concept that an individual's activities are situated within cultural contexts and are mediated by affordances can best be understood when examined within the cultural-historical activity theory.

2.2 Activity theory

Cultural-historical activity theory, often called the second generation of sociocultural theory, arose out of the belief that each activity contains a subject, an object, actions, and operations. Leont'ev was the first to expand sociocultural theory by "formally operationalizing the roles of communities [and] the rules that structure them" (Thorne, 2005, p. 395). The "negotiated distribution of tasks, powers, and responsibilities among the participants of an activity system" (Cole & Engeström, 1993, p. 7) were further elaborated by several researchers (Chaiklin, Hedegaard, & Jensen, 1999; Donato, 1994; Engeström, 1987, 1999, 2001b; Kuutti, 1996; Lewis, 1997; Nardi, 1996; Roth & Tobin, 2002; Wells, 2002; Zinchenko, 1996) with the result that activity theory is currently a "philosophical and cross-disciplinary framework for studying different forms of human practices as

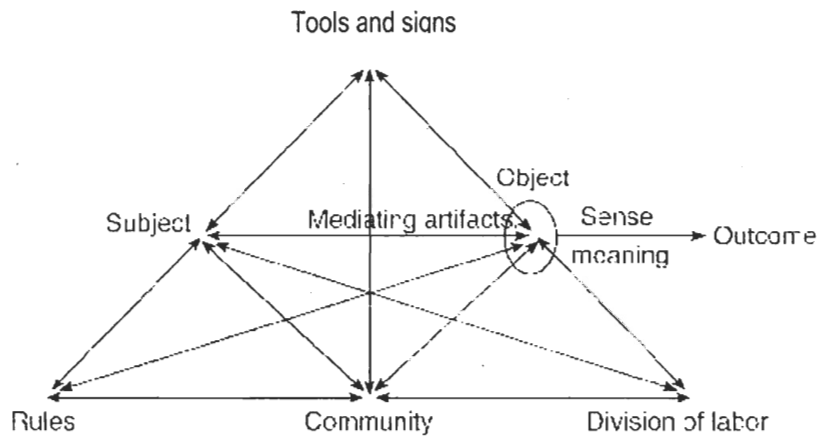
developmental processes, both individual and social levels interlinked at the same time” (Kuutti, 1996, p. 25). This then makes activity theory particularly apt for the understanding of an individual within the social levels or social environments within which they act.

A social environment cannot be characterized as something that stands alone, distinct and apart from the activities and the individuals who are part of it. This concept is important in activity theory as “society forms the individuals who created society; society ... produces people, who produce society, in a continuous dialectic” (Bhaskar, 1989, p. 75). Therefore, activity theory is (a) a theory of sociocultural analysis in that an individual’s activities are embedded in their social context (Nardi, 1996), (b) a theory of sociohistorical analysis in that all activities, carried out by individuals within their social context, change over time, and (c) a theory of mediated action in that human activity can be characterized by interaction between a subject and an object, mediated by artifacts or tools (Wertsch, 1998). It is this complex set of activities situated within the sociocultural and sociohistorical context which make up an activity system.

Activity systems contain interacting components (subject, tools, object, division of labour, community, and rules) (Engeström, 1987) which “cover the explicit and implicit norms, conventions, and social relations within a community” (Kuutti, 1996, p. 28). Each of the different components of activity systems can mediate change, not only for the object, but also for each other (Boer, van Baalen, & Kumar, 2002; Engeström, 1987; Lewis, 1997; Roth & Tobin, 2002). Each aspect is inextricably related to and mediated by the others; “removing or changing any of the entities (i.e., tools, rules, etc.) fundamentally changes the activity system” (Roth & Tobin, 2002, p. 254). It is this embedding of the individual in the surrounding social context that facilitates the analysis of behaviour.

Central to activity theory is the concept that human activity can be characterized by interaction between a subject and an object, mediated by tools used within their community and governed by the sociocultural rules and division of labour either implicitly or explicitly promulgated by the community. These interacting components are presented in the Figure 2.1, on the following page, which provides Engeström’s (2001b) model of an activity system.

Figure 2.1: Engeström's (2001b, p. 135) model of an activity system



The subject of any activity is the individual or group of individuals engaged in the activity. The activity system is examined from their perspective or point of view.

Tools and signs can be anything used in the change process and can be physical or mental and include instruments, signs, language, theories, procedures, and machines (Lantolf, 2006; Nardi, 1996; Scollon, 1999). These tools mediate the activity because the way the subject acts or thinks is shaped by the culture-specific tools the subject uses and, depending on the sociocultural context, these artifacts may be used differently as the subject transforms the object of the activity into an outcome (Thorne, 2003). In this component, Lewis (1997) also labels people as tools; people who are not part of the community but who may mediate the activity.

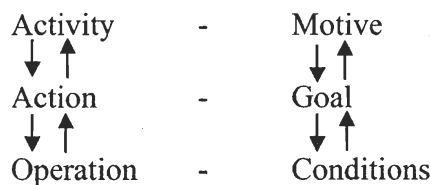
The sociocultural rules are the explicit as well as implicit social norms, regulations, standards, conventions, interactions, accepted behaviour, and policies that mediate the relationships between the subject and the other actors or members of the community. These rules govern the role of the subject within the community and their expectations of themselves and the other actors, the division of labour within the community, and how the subject or community may use the tools and signs in the activity system.

Activities are socially and contextually bound; therefore, an “activity system can be described only in the context of the community in which it operates” (Jonassen & Rohrer-Murphy, 1999, p. 66). The community is made up of the social group, of which the subject is a member, who participate in different activities to act upon the transformation of the object. In order to do this, the community distributes cognitive knowledge and responsibility between and among the subject and different actors of the group.

In the activity system, the individuals in the community may be assigned to different roles. The division of labour refers to how the tasks are shared among the community through the horizontal and vertical division of tasks between the members of the community (Engeström, 1999). These divisions are related to the various degrees of status or power attributed to the members in the community and are mutable. Because the members of the community have different histories and positions in the division of labour, changes are ongoing in the assignment and division of tasks, resulting in the evolution of roles of the different members in the community.

All activity is object-oriented where the object may be a symbolic, mental, or physical product that the subject acts upon. This object represents the goal or intention that motivates the activity. “Activities consist of actions or chains of actions, which in turn consist of operations” (Kuutti, 1996, p. 30). All actions are operations when they are first performed because they require conscious effort; however, with practice and internalization, the actions become activities. The purpose of an activity then is the transformation of the object into an outcome. The reverse can also happen if an operation is disrupted or frustrated. This transformative characteristic of activities is illustrated in Figure 2.2.

Figure 2.2: Hierarchical levels of an activity (Kuutti, 1996)



In an activity system, because the activity is object-oriented, the motive is an important element. The actors make choices based on the conditions around the operation and the goals of the action. The choices available, which ones are chosen and why, are integral to understanding the dynamic relationships between the different levels of the activity, as “consciousness gained and expressed through activity brings about change” (Jenlink, 2001, p. 349). This change is driven by motive. The motive provides the reasons why the actor makes the choices they do.

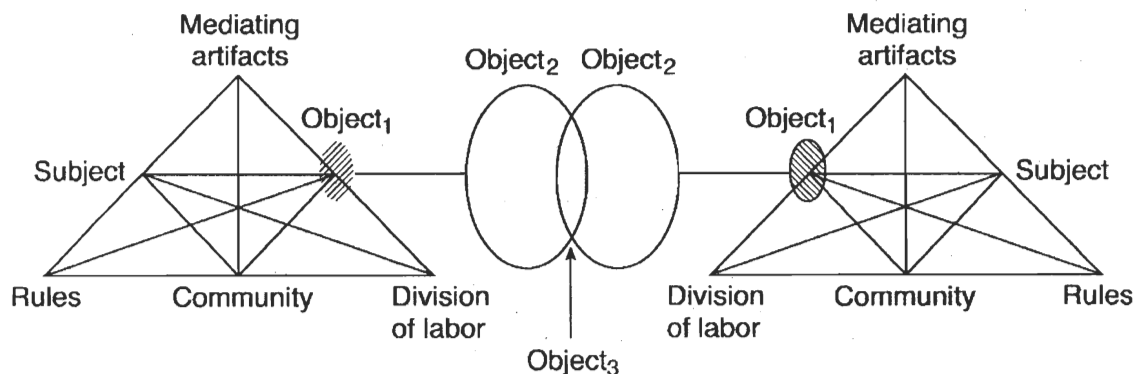
Because each of these components interacts with the others, it is the activity system itself which is the unit of analysis and not simply the subject or community. An activity

system is defined and mediated by the relationships between the subject, the object, the community, the tools and signs used, the sociocultural rules, and the division of labour. Additionally, as the activity system interacts with other systems, dilemmas, disturbances, and discoordinations (Engeström, 1999) emerge, necessitating a certain restructuring as the activity system attempts to integrate and resolve these contradictions. The result is the activity system changes over time, moving from one stage to another in historical phases. These ongoing successions of contradictions and changes result in cycles of expansive learning (Engeström, 2001b).

2.3 The third generation of activity theory

A third generation of activity theory was developed because of a recognized “insensitivity of the second generation of activity theory toward cultural diversity” resulting in a need to develop “conceptual tools to understand dialogue, multiple perspectives, and networks of interacting activity systems” (Engeström, 2001b, p. 135). The components of an activity system interact with each other, but activity systems also interact with other activity systems. Therefore, the criteria for analyses are no longer the individual elements within the activity system, but rather, the focus is on the expansive learning that takes place as a result of the contradictions experienced through these interactions between activity systems. The most recent version of activity theory requires at least two interacting activity systems to be the “minimal unit of analysis” (Engeström, 2001b, p. 133) as illustrated in Figure 2.3.

Figure 2.3: Two interacting activity systems as minimal model for the third generation of activity theory (Engeström, 2001b)



2.3.1 Contradictions

According to Engeström there are four different types or levels of contradictions. The primary inner contradictions take place within each of the elements of the activity system and have been described as mutually exclusive but mutually dependent characteristics (1987, Chapter 2). These contradictions, or double binds, arise through confrontations between these two opposing forces; however, they are not forced upon the actor by someone else; they arise from within.

On the secondary level, certain elements of the activity system may develop differently in relation to the other elements and so secondary contradictions occur between the different components of the activity system. External pressures cause these differences and so it is necessary to examine the contradictions that arise between the elements of the activity system.

The tertiary contradictions arise from “conflicts and problems... between the designed new ways of working and customary old ways of working” (Engeström, 2001a, p. 8) and arise when there are contradictions between the object of an activity system and that of “a culturally more advanced activity” system (Engeström, 1987, Chapter 2). These contradictions are created as the new ways of working conflict with the older methods of working.

In the fourth level, quaternary contradictions occur between the activity system and the activity systems with which it interacts. These interactions can take place at all the different elements of an activity system. For example, a subject-producing activity is where the neighbouring activity system has as its object, the education or development of the subject of the activity system in question. Another example is a tool-producing activity system that creates or produces the tools used in the activity system in question.

These contradictions drive the cycle of expansive learning. Attempts to resolve each of these levels of contradictions lead the subject through the different steps of this cycle.

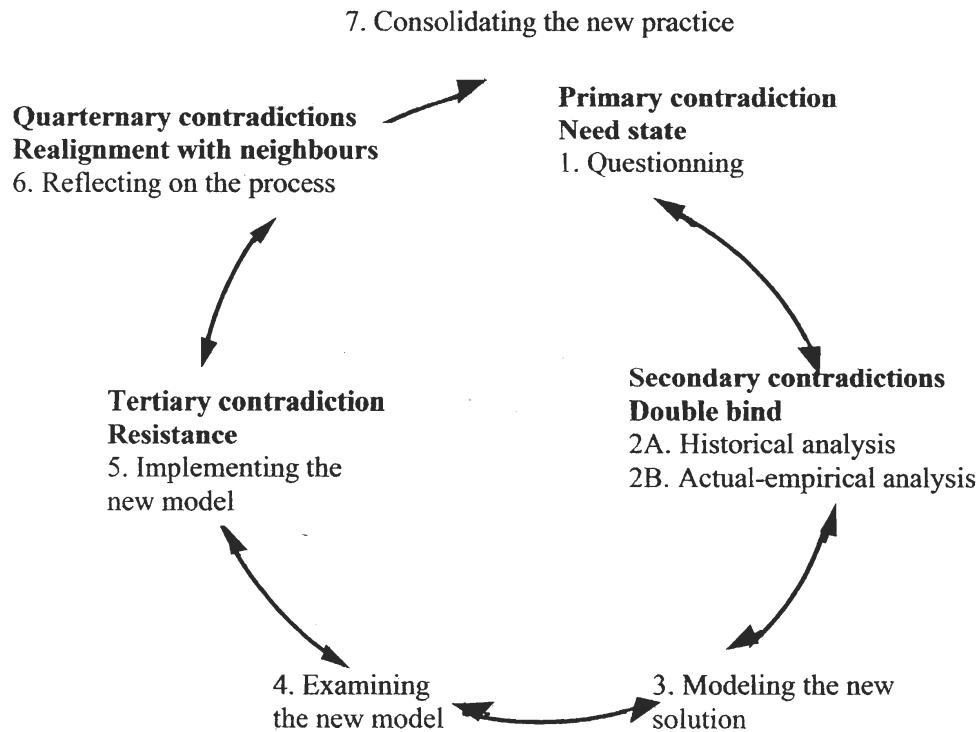
2.3.2 The phases of the cycle of expansive learning

Engeström posits that the cycle of expansive learning begins with “the conflictual questioning of the existing standard practice” (Engeström, 2000, p. 968) in an attempt to define and resolve contradictions. The second step of the process involves analysis in order

to explain a situation. The analysis may be historical, whereby the problem or situation is traced back through its evolution to its source or, actual-empirical, where the systemic relations within the situation are examined. The third step in the cycle of expansive learning is modeling. This involves “constructing an explicit, simplified model of the new idea or activity that explains and offers a solution to the problematic situation” (Engeström, 2001a, p. 11). The fourth step is an examination of the model or activity and the fifth step is the implementation of the new activity. The sixth step involves reflection and evaluation of the new model or activity. The seventh and final step in Engeström’s model is that of consolidating. This is where the new practice becomes stabilized, diversified, and disseminated.

According to Engeström, some actors may use “regressive and evasive attempts to deal with the problems” (Engeström, 2001a, p. 8) rather than solve the contradictions. This does not necessarily mean the cycle of expansive learning is abandoned rather, the subject may revert to a previous condition in an effort to avoid or resolve a contradiction. The resolution of one step does not automatically lead to the next. For this reason, the arrows have double heads in Figure 2.4 on the following page. These present the actions and corresponding contradictions in the cycle of expansive learning.

Figure 2.4: Strategic learning actions and corresponding contradictions in the cycle of expansive learning (Engeström, 2001a)



With the development of the third generation of activity theory, Engeström proposed that any examination of an activity system answer four fundamental questions in order to examine the expansive cycle of learning. These questions are:

- 1) Who are the subjects of learning, how are they defined and located?
- 2) Why do they learn, what makes them make the effort?
- 3) What do they learn, what are the contents and outcomes of learning?
- 4) How do they learn, what are the key actions or processes of learning? (Engeström, 2001b, p. 133)

These questions may be answered through the use of five principles, the first of which is that the main unit of analysis must be “a collective, artefact-mediated and object-oriented activity system, seen in its network relations to other activity systems” (Engeström, 2001b, p. 136). This means that individual or group actions only become clear when examined and explained in light of the entire activity settings in which they take place. The second principle is that an activity system is made up of as many perspectives, traditions and interests as participants or members of the community. This “multi-

voicedness” is multiplied in interacting activity systems, hence the necessity of exploring not simply a single activity system, but also those with which it is in contact. The third principle is that activity systems can only be understood when they are examined against the history of the activity, objects, and tools because these change over time. Fourth, contradictions cause disturbances that are present as part of the history within the activity system. Because of interactions with other activity systems, this may lead to conflict or innovation. Change or development results as “contradictions ... drive changes in an activity system and its participants, individually and collectively” (Russell, 1997, p. 531). The final principle relates to the possibility of transformation within the activity system as participants examine and begin to change within it. “In some cases, this escalates into collaborative envisioning and a deliberate collective change effort” (Engeström, 2001b, p. 137) to accomplish an extensive transformation of the activity. An example illustrates these points. In a given situation, the discourse of the community members of different activity systems may be similar, but they may also be divergent. This latter situation creates contradictions for the members of the communities. These contradictions need to be resolved in order for expansive learning to take place.

Through the use of this framework, it is therefore possible to focus on the dynamic relationship between consciousness and activity (Nardi, 1996) because “consciousness gained and expressed through activity brings about change” (Jenlink, 2001, p. 349). Additionally, a portrayal of (a) the dynamic structure of activity systems, (b) the historical development of the activity over time, and (c) the multivoiced nature of the activity system (Engeström, 1999) therefore becomes possible. This framework then encourages an investigation of an activity system through the hierarchy of interrelated subsystems and the nested sets of communities of practice within which the activity system is found (Kennedy, 1982). This is necessary in this current study as different teachers, working in different communities, experience the implementation of interdisciplinary teaching in different ways. How the various communities of practice affect the divergences between these teachers’ conceptualization and implementation of interdisciplinary teaching is an important aspect of this study.

2.4 Activity theory as relates to innovation in educational institutions

Roth et al. explained how, through everyday activities, people “can actively create and consciously control their social lives. On the other hand, human beings are constrained in their activity and their consciousness by objectively experienced material and social conditions” (2004, p. 51) which may be influenced by larger social organizations (such as educational institutions), whose objectives and motives may differ from the individual’s. “Activity systems do not operate independently but interact – just as institutions interact in the lives of their participants... Thus, there may be dialectical contradictions that arise in an activity system, as other activity systems pull participants in different directions” (Russell, 1997, p. 512). In other words, the activity system of a teacher in a class may not align with the activity systems of their colleagues nor with the greater philosophy of the school.

Educational institutions undergoing innovation face changes in vision, curriculum, instruction, and assessment practices which can cause difficulties as these changes tend to occur at different rates for different groups and individuals (Anderson, Varnhagen, & Campbell, 1998; Rogers, 1999). Some teachers will implement a given innovation relatively quickly, others need more time to adjust, or need to adjust the innovation to align with their pedagogical beliefs, and others covertly reject it while claiming adherence (Cuban, 1998; Evans, 2000; Hurley, 2004; Sikes, 1992). Welmond (2002) posited the relations between teacher identity and changing policy were a source of conflict. He argued that educators bring their own preferences and ambitions to the process of change and the conflict between different visions of who educators are and what roles they are expected to play has serious implications for the effective implementation of change in the educational institution.

O’Sullivan (2002) also linked effective change management and policy implementation with understanding teacher identity. She portrayed teachers’ subjectivity as significant to effective change implementation. Additionally, O’Sullivan wrote that change inevitably involves loss, anxiety, and struggle because it strikes at the core of learned skills, philosophies, beliefs and conceptions of education, thereby creating doubts in the teacher about their sense of self and of their competencies. Therefore, it is necessary to take into account the cultural and historical sources of particular perspectives of teachers’ identities when exploring and investigating innovative practices because:

contradictions are not merely micro-level conflicts over the means to a shared end. They are fundamental dialectical contradictions about the object/motive of an activity system, the direction of collective activity, and they require fundamental choices with long-term consequences for the activity system. (Russell, 1997, pp. 531-532)

As the success of innovative education programmes rely “on scaffolding within the broader social context” (Parks, Huot, Hamers, & H.-Lemonnier, 2003, p. 39), support and assistance from education ministries, administrations, teachers’ colleagues, parents and other members of the community act as determinants for the successful implementation of innovative practices (Fullan, 1985). A sociocultural perspective “acknowledges that language is never decontextualized, never used outside of a particular ‘discourse’” (Hawkins, 2004, p. 4) and institutional discourse defines what is taught and learned in schools and language classrooms (Kramsch, 2000). Therefore, teachers’ classroom discourse and behaviour cannot be analysed without taking into consideration the wider social and institutional contexts in which they work (Harre & Gillett, 1994; Hymes, 1996; van Lier, 2000) because “the way teachers teach is influenced by the effects of the social structures in which they are embedded, which create them, and which they in turn create” (Crookes, 1997, p. 73). The activity system of a classroom has “important interpenetrating boundaries” (Russell, 1997, p. 529) with other classrooms, other subjects, the school administration and non-teaching personnel, the families of the students, etc. It is especially pertinent to consider these boundaries when examining teachers’ cooperation through interdisciplinary teaching because these practices transcend the usual classroom boundaries.

It is necessary to move beyond the boundaries of the teachers’ classrooms because while the classroom can be, and often is, seen as the context within which the teachers act (Lave & Wenger, 1991), it is actually only one of the activity systems to which teachers belong. Other contextual factors are the history, culture, class, and personal beliefs of the members of the activity system and those with which it interacts, and the knowledge, relationships, responsibilities, and roles of the various members of the interacting activity systems such as the subject programme, history, culture, and structure of the school.

2.5 Conclusion

Much of the prior research investigating educational innovations does not take into account “the perspective of the potential adopter, [or] ... a recognition of social and contextual structures inherent in the environment” (Russel & Schneiderheinze, 2005, p. 38). However, research argues that what teachers know about teaching is socially constructed out of their own experiences and classrooms and therefore, their knowledge is socially negotiated and continually restructured within the classrooms and schools where they work (Bullough, 1989; Clandinin, 1986; Freeman & Johnson, 1998; Grossman, 1990). For this reason it is important to utilize a sociocultural framework to examine the social and pedagogical interactions that affect the innovative educational practices of teachers, especially as relates to interdisciplinarity. This perspective allows the perceptions of the teachers involved to emerge while situating them within the activity systems of which they are members and, at the same time, addressing important contextual differences and issues.

Activity theory thus provides an appropriate investigative framework for situating teachers’ implementation of interdisciplinary pedagogical practices as it allows collective action to be the unit of analysis (Cole & Engeström, 1993; Engeström, 1987). Several researchers of teacher development use this perspective of teacher learning (Cobb, McClain, de Silva Lamberg, & Dean, 2003; Cochran-Smith & Lytle, 1999; Franke & Kazemi, 2001; Stein, Smith, & Silver, 1999); however, there is a need for more studies in education which examine the change process from the teachers’ point of view. As this study’s research perspective is based on sociocultural theory, it will attempt to enter the conceptual world of the teachers, to understand the ways in which they co-construct the meaning of interdisciplinary teaching in a situation of educational change and, to portray that understanding so that it will be insightful and illuminating for others.

2.6 Summary

This chapter has presented the conceptual framework of the study, explaining the succeeding generations of activity theory and how this theory can be used to discuss innovation in educational institutions. The following chapter presents a review of literature regarding educational change. It examines problems in educational change as well as educational change initiatives and finally, interdisciplinary teaching in the Québec context.

CHAPTER 3

LITERATURE REVIEW

3.0 Introduction

This chapter presents a review of current and relevant literature. The subject of educational change is introduced and is followed by a closer examination of how educational change affects teachers, and how teachers effect educational change. Then, two educational change initiatives, content-based teaching and interdisciplinary teaching, are introduced. Finally, information on educational change in Québec is explained and used to introduce interdisciplinary teaching in the Québec context.

3.1 Educational change

Much of the literature on educational change appears to come to the conclusion that educational change is very difficult to effect. There has been much research into the problem and difficulties of educational change (Bascia & Hargreaves, 2000a; Bissonnette & Richard, 2005; Cuban, 1990; Evans, 2000; Fullan, 2001; Fullan, Galluzzo, Morris, & Watson, 1998; Hargreaves & Goodson, 2006; Sarason, 1990). Many studies have documented the problems encountered in the implementation of government initiated or systemic reforms (Bailey, 2000; Datnow, 2005; Fink, 2003; Goodson, Moore, & Hargreaves, 2006) that promulgate changes in structure (Arhar, 1992; Hannay, Ross, & Seller, 2005), the educational environment (Payne & Kaba, 2007), pedagogical practices (Earl & Katz, 2000), curriculum (Li, 1998; Meister & Nolan, 2001; Tipton, 1997), and why educational reforms that work in one or a few schools do not succeed when they are implemented in other schools or regions (Bodilly, 1998; Datnow, Hubbard, & Mehan, 2002; Little, 1981; Menefee-Libey, 2004).

Although literature abounds concerning the variety of reasons for the failure of educational change (Adelman & Walking-Eagle, 1997; Giles & Hargreaves, 2006; Goodson et al., 2006; Hannay et al., 2005; Hargreaves & Goodson, 2006; Helsby, 2000; Ryan & Joong, 2005), researchers have found a myriad of ways to support change initiatives (Anderson & Stiegelbauer, 1994; Gunn & King, 2003; Murata, 2002; Quint, Bloom, Black, LaFleur, & Akey, 2005). Some of the elements found that lead to the sustainability of an educational reform include: cultivating reflective openness (Bascia,

1996) and open communication between teachers and school administrators (Blumenfeld et al., 2000), district and community support (Anderson & Stiegelbauer, 1994; Bodilly, 1998; Fullan, 2001), clear understanding of the reform (Fullan, 1992; Louis & Miles, 1990), teacher and leadership stability (Moffett, 2000), connecting all members of the school community through belief in a common purpose and values (Datnow, 2005; Kenny & Meadowcroft, 1999; Yonezawa & Stringfield, 2000), and ongoing and extensive professional development for teachers (Anderson & Stiegelbauer, 1994; Corriero, 1996; Fullan & Hargreaves, 1992; Moffett, 2000).

Additionally, successful educational change often depends on school culture. The implementation of policies such as new schedules and resources, and “norms of open communication and cooperation among administrators and teachers” (Blumenfeld et al., 2000, p. 151) facilitate the implementation of innovations in education. School principals who are active in promoting innovation in their schools have a great deal of influence on the teachers’ acceptance of the changes being made and that they are making to their teaching practice (Barth, 1990; Cronin, 2007; Crow & Pounder, 2000; Fullan, 2005; Smith & Karr-Kidwell, 2000; Teske & Schneider, 1999). Certain researchers claim this support is essential but, for real educational change to occur, the teachers themselves must support the change initiative (Bybee, 1993; Cooper, 1998; Fullan, 1991).

3.2 Teachers and educational change

There has been much research regarding the effect of mandated educational change on teachers (Bailey, 2000; Evans, 2000; Kohn, 2000), the problems teachers face implementing innovative practices (Könings, Brand-Gruwel, & van Merriënboer, 2007; Pace, 1992; Pugh & Zhao, 2003), and teacher resistance to educational change (Fullan, 1991; Gitlin & Margonis, 1995; Muncey & McQuillan, 1996; van Veen, Slegers, & van de Ven, 2005). This body of literature has shown that teachers are active agents in the implementation and management of educational change; they do not simply respond to government or institutional policies and instructions (Fang, 1996; Hargreaves, 1994b; Morris & Scott, 2003; Poppleton & Williamson, 2004). Their interpretation, response, and actions in their classrooms during implementation ultimately result in changes to the new policy (Datnow, Hubbard, & Mehan, 1998) as the teachers make pragmatic and situational

decisions by selecting elements from the “policy directives that work for them and trying to meld these into a coherent and defensible flow in the daily routines of their classes without compromising their personal and professional integrity” (Earl & Katz, 2000, p. 108). Therefore, teachers’ knowledge and beliefs have an effect on the teachers’ willingness and efforts to implement an educational change initiative.

Because of this, several authors have stressed the importance of teachers’ personal practical knowledge, principles, beliefs and theories in the interpretation and implementation of a new or innovative curriculum (Cronin-Jones, 1991; Day, 1990; Hannay & Seller, 1990; Munby, 1983; Thompson, 1992) and have shown the degree of congruency between the innovative pedagogical practice and the teacher’s philosophy of education is one of the key elements for the successful implementation of new initiatives (Brisco, 1991; Doyle & Ponder, 1977; Haney, Lumpe, Czerniak, & Egan, 2002; Rich, 1990; Trigwell, Prosser, & Waterhouse, 1999). Therefore, to be effective, educational reform efforts must align with or alter the belief systems of teachers as “no matter how promising a strategy for reform, if it is not incorporated into teachers’ personal belief systems, it will be unlikely to affect behaviour in the desired directions” (Combs, 1998, p. 39) or to result in any long-term changes.

One of the obstacles to changing teachers’ belief systems and practice is the traditionally isolated nature of their profession where they spend their work days separate and secluded from their colleagues, behind the closed doors of their classrooms (Hargreaves, 1992; Huberman, 1992; Rosenholtz, 1991). However, in collaborative settings, teachers believe help from their colleagues and supervisors is both necessary and legitimate (Glidewell, Tucker, Todt, & Cox, 1983; Strahan, 1994; Wehlage, Smith, & Lipman, 1992) and so there is a greater tendency to interact whenever and wherever the opportunity arises. Effective educational change provides opportunities for teachers to share and reflect on pedagogy and student learning (Blumenfeld et al., 2000). Ideas that teachers develop collaboratively through these interactions are more likely to encourage more experimentation in their classrooms which may result in greater teaching success, which in turn, may promote further collaborative efforts (Rosenholtz, 1991; Tharp & Gallimore, 1988). In order to obtain these positive outcomes, several researchers suggest the collaboration be guided and controlled by the teachers. When it is administratively

imposed and controlled, “contrived collegiality” (Hargreaves, 1994b) may be inflexible, superficial, and wasteful of teachers’ efforts and so have a negative effect on their efforts to implement pedagogical innovations (DiPardo, 1997; Hargreaves, 1994b; Leonard & Leonard, 1999).

Many researchers have argued that teachers initiate change efforts within their schools because of their personal beliefs about themselves and their students. As a result, often the grass roots innovations are directed towards reaching specific outcomes. McLaughlin and Marsh (1978) found a “primary motivation for teachers to take on extra work and other personal costs of attempting change is the belief that they will become better teachers and their students will benefit” (as cited in Guskey, 1986, p. 6). These projected student benefits relate to student autonomy and self-direction, improved planning, and cooperative skills as well as increased academic abilities (Fang, 1996; Haney et al., 2002). However, these student benefits are weighed against “the extra time and effort the new practices require, compared to the benefits such practices are likely to yield” (Guskey, 1988, p. 63). Further, even when teachers attempt to implement grass roots innovative teaching practices in their classes, they may find little support for their efforts (Pugh & Zhao, 2003).

Some of the barriers to these grass roots educational change initiatives relate to a lack of professional development opportunities (Joyce, 1990; Mathison, 1992), little support and guidance from administration, scheduling difficulties, and organizational restrictions (Fullan, 1991; Howe, 2007; Leonard, 2002; Murata, 2002). Baily (2000) and Pace (1992) also found certain teachers were marginalized or experienced outright hostility and censure from their colleagues when they tried to implement innovative teaching practices in their classes.

Although collaboration, shared planning and responsibility, widespread interaction, and peer-coaching and constructive feedback can reduce duplication, provide moral support and encouragement to teachers (Corriero, 1996; Hannay et al., 2005; Helsby, 2000; MacMillan, 2000), this type of culture is rare in schools because “it goes right against the grain of all pressures and constraints that normally come with teachers’ work” (Hargreaves, 1992, p. 227). Nevertheless, although the culture of teachers working alone is difficult to change (Huberman, 1992), many individual teachers are overcoming their isolation in order

to implement teaching practices which enable them to work more closely with colleagues. The most important two of these practices are content-based teaching and interdisciplinary teaching.

3.3 Educational change initiatives

There are a few ways that teachers are implementing collaborative teaching practices. Some of these require greater collaboration and others somewhat less. Three types of collaborative teaching are instruction involving the composition of dual-language texts, content-based teaching, and interdisciplinary teaching. The first two are presented briefly below, while the second is developed more extensively as it is the focus of this thesis.

3.3.1 Dual-language texts

A recently developed area of collaboration is where student learning is promoted through student-written dual-language texts. Much of the literature about dual-language writing is related to minority-language students in an ESL situation in the United States. Dual-language texts are used to promote literacy in both languages and ensure students' English literacy development through opportunities to build their first language literacy (Cummins, 2001a, 2001b; Wong-Fillmore, 2000). To help increase both first language and ESL literacies, Cummins suggested teachers "adopt a both/and rather than an either/or orientation to L1 and L2. When promoted together, the two languages enrich each other rather than subtracting from each other" (2001, p. 121). Some schools obtain dual-language books and tape collections, and where these are not available, involve students in the creation of dual-language texts. In New York, some school districts are developing dual-language testing for Spanish speaking students. However, these tests raise concerns among educators as "tests in two languages are not equivalent" and "it is not yet known how to make questions equally difficult in two languages" (Rossell, 2000, p. 222). Nonetheless, it is an ongoing process towards helping minority-language students be successful in schools.

In Canadian schools, 60 different language groups have been identified; however, the focus of some schools seems to be placed more on multicultural literature than dual-language literature in order to "help students appreciate the geographic and cultural

diversity of their classes” (Bascia & Jacka, 2001, p. 338). There is very little writing which discusses the question of dual-language texts in the Canadian context which does not relate to minority-language students. And while much of the literature on the creation of dual-language texts does not specifically mention the collaboration of two teachers, it does appear to take place. One recent study (Parks et al., 2003) of Francophone learners of ESL included the description of the students’ development and writing of a dual-language text linking their French and English classes. In this example, in their French class, the students wrote texts about themselves as they were in the past and as they projected themselves in the future. Then, the students wrote “blurbs” in English commenting on either the past or future self of their partner. These were then incorporated into the French texts to create dual-language texts for a student-built web site. This study provides an example of a dual-language task in a context very similar to that of the current study.

3.3.2 Content-based teaching

One of the educational change initiatives which has endured over time is that of content-based teaching. The basic premise of content-based teaching is that language classroom activities are designed to enhance the integration of both language and content learning (Wesche & Skehan, 2002). In the early 1970s research began advocating the integration of language and content learning through content-based or adjunct courses (Marland, 1977; Mohan, 1979; Widdowson, 1978). Studies published in the early 1980s (Burger et al., 1984; Edwards, Wesche, Krashen, Clément, & Kruidenier, 1984; Jurasek, 1982; Lafayette & Buscaglia, 1985) showed positive results with content-based teaching and over the last 30 years these studies have continued (for example, Creese, 2005; Darn, 2006; Gibbons, 2003; Sherris, 2008; Watanabe, 2008), with most indicating content-based teaching is highly effective for the students enrolled in such programmes (Cummins, 2001a, 2001b; Wesche, 2000).

Content-based ESL teaching integrates the language instruction with that of the subject matter. This implies the students not only learn English, but also use the second language course to support learning and academic skills in the other academic subjects. There are three general models of content-based teaching: sheltered, adjunct, and theme-based teaching (Wesche, 1988). There are five key features of content-based teaching,

regardless of the model. These include the premise that both content knowledge and language proficiency are increased, expository texts and discourse are central, students are socialized into a new learning culture, language input and context are adapted to accommodate the learners' language abilities, and the focus is on academic language proficiency (Wesche & Skehan, 2002, p. 221). Linking English with other subjects provides the students with opportunities to see how knowledge and skills related to the language are more useful than just for their ESL class. Wesche described this as a "two for one" approach in that students gain "both content knowledge and increased language proficiency" (1993, p. 58) as they learn about content through ESL.

In the sheltered model, the subject matter of the content course is taught using a more simplified manner in order to match the students' proficiency levels in English. The main aim is to develop the learners' English language proficiency through the content of the subject course. According to Snow "the term sheltered derives from the model's deliberate separation of second/foreign language students from native speakers of the target language for the purpose of content instruction" (2001, p. 307). In 1982, the University of Ottawa was among the first post-secondary institutions to implement sheltered courses. In the second trimester of that year, two sheltered Introduction to Psychology courses were offered to 23 Francophone students and 17 Anglophone students in their second language. In each of these one and a half-hour courses, the first 20 minutes were reserved for the second language instructor who provided instruction in vocabulary and language use to assist the students' learning of the academic material in the psychology course. There were no separate language courses but the second language instructors provided supplementary assistance where required within the psychology course. Further, while the psychology instructors presented the same material as that of the mainstream course, they adapted their teaching through a more extensive use of the blackboard and a greater use of concrete examples. Additionally, their discourse was slower with more simple sentence forms, they paused more often, and they used more gestures and other non-verbal cues (Burger et al., 1984) to facilitate the second language students' appropriation of the content material.

In adjunct courses, the content course is taught separately from the language course; however, they are coordinated in that the English language course draws material and texts from the subject course. In this type of course, language is used as a vehicle for content

mastery (Gee, 1992) in that the students' requirements and needs for success in the content course dictate the activities and assignments in the language class (Snow, 2001). In an adjunct programme, Gee (1992) and Short (1993) maintain it is necessary for both the content and second language instructor to jointly build the foundation for the adjunct second language course and that regular and frequent meetings are necessary in order to coordinate the pace and content of the two courses. The immersion courses currently offered at the University of Ottawa provide examples of this type of approach. In these courses, a 3-hour content course is taught in the second language, in conjunction with a separate 90-minute second language course. The second language component is designed to assist the students' understanding of the content course material and vocabulary through activities related to the themes discussed in the content course. For the fall session of 2008, there are four English second language and 35 French second language immersion courses offered in several fields including anthropology, history, political science, psychology, sociology, etc. (University of Ottawa, 2008).

One key element of the adjunct course model is that there must be a collaborative relationship between the content and the second language instructors (Bunch, Abram, Lotan, & Valdés, 2001); however, the structure of most universities means inter-faculty collaboration is difficult to achieve (Bretag, 2001; Wesche, 1993). Further, several authors have noted it is necessary for the second language teacher to have a deep understanding of the content material (Gaffield-Vile, 1996; Kerans, 2001; Shih, 1986) which may not necessarily be the case, leaving "many ... to assign papers that they are ill-equipped to handle" (Spack, 1988, p. 30). This becomes a "serious problem" (Spack, 1988, p. 37) when the second language teacher cannot explain or answer students' queries regarding the content material. In her reports of an action-research study, Chen (2000) showed how difficult it could be for second language teachers to appropriate content-specific knowledge sufficiently well to provide adequate support for their students. While admitting a lack of basic concepts in the content-material, she had set up an adjunct course for second language students with a university level production and operations management (POM) course. As the students "complained about ambiguous explanations of reading selections" (Chen, 2000, p. 392), she "perceived the desperate need... to become familiar with basic POM concepts so as to identify the subject matter information that the linguistic forms conveyed"

(p. 393). Ultimately, she found she needed to attend the POM content-course component in order to acquire the content knowledge and terminology to effectively assist her students.

Theme-based teaching is the most common form of content-based instruction (Brinton, Wesche, & Snow, 2003; Oxford, 2001; Pally, 2001) and integrates language skills in the study of a theme. It is different from sheltered and adjunct courses in that second language instructors generally work by themselves and not in conjunction with a subject area instructor. At times labelled English for special purposes (ESP), English is developed through mastery of problems based on authentic materials and can be used with second language learners of all ages and proficiency levels (Wesche, 1993). Students in schools may work on themes related to subjects such as science, social studies, language arts, or school life, and life in the community. Students at the university level or professionals may work on language used within specific areas such as science, business, medicine, law, etc. An example of this type of content-based teaching at the university level was an advanced Spanish course for students from a wide variety of faculties (Klahn, 1997). The main theme of contemporary Mexican topics included sub-themes such as the history of Mexico, the political system of Mexico, means of communication, the Mexican economy, etc. Authentic materials from Mexico were used in the course such as political speeches, biographical and autobiographical texts, tourist brochures, soap operas and documentaries, etc. According to Klahn, the course had “very positive results in the cognitive, linguistic, and affective domains” (1997, p. 209).

However, one criticism of theme-based teaching is that often the themes are general and “have little relationship with a specific discipline” (Loepp, 1999, p. 24). As a result, Brinton, Snow and Wesche (2003) called them the weakest form of content-based teaching in comparison with the sheltered and adjunct models. Another criticism of theme-based teaching is that second language teachers often do not have the requisite knowledge of the subject content. Thirty years ago (Selinker, 1979), ESP teachers began to realize there were inherent difficulties in teaching subject material without any degree of content knowledge. More recently, in a survey of ESP teachers in the science and technology field, Orr (1995) found “only 5% of the language teachers who responded had university degrees or employment experience in the field they currently serve.” He claimed the other 95% of the respondents “studied” in order to teach content material in their language courses. Other

authors have supported this assertion, such as Master (1999, p. 33), who deplored that “in most cases, professional ESP practitioners train themselves, learning as they go.” The result has been that the language classes may trivialize the content learning (Mohan, 1986). Additionally, as with the adjunct course model, there appears to be a certain amount of literature that seems to show it is difficult for second language teachers to gain enough skills and knowledge in content-specific areas to provide adequate support for their students (Baron, 1992; Huang, 1997; Palmer, 1983; Troike, 1994) in theme-based teaching.

Much of the research on content-based teaching in North America has focused on its implementation situations in which the language of the two classes involved is generally the same as the broader school and social system (Beckett et al., 2004; Burger et al., 1984; Cummins, 2001a; Gaffield-Vile, 1996; Klahn, 1997; Newell, 1992; Pally, 2001; Ready & Wesche, 1992; Snow et al., 1989; Wesche, 1985). However, in Québec, English second language teachers, especially those outside Montréal, teach English while French is the language of the school and surrounding community. This particular phenomenon does not appear to have been the subject of much research.

3.3.3 Interdisciplinary teaching

In some ways similar to content-based teaching, interdisciplinary teaching also links two or more courses. However, while content-based teaching requires one of these be a language course, this is not the case for interdisciplinary teaching where all the courses involved may be related to other academic disciplines than languages. Additionally, while content-based teaching is designed to improve students’ language abilities in relation to a course with a specific content, interdisciplinary teaching is designed to enable students to make links between different subjects in order for them to develop a broader understanding of the issues or themes.

Interdisciplinary teaching is generally designed to reflect everyday challenges and demands students face both in school and out. The theory is that daily life is not separated or divided into discrete subjects or divisions, but rather, are constantly intertwining and interacting with one another (Maute, 1992). Therefore, some researchers assert that because life is interdisciplinary, at least some portion of the school curriculum should also be interdisciplinary (Barab & Landa, 1997; Vars, 1987). Interdisciplinary teaching then is

perceived as a means to further students' learning by "bringing the world into the classroom and taking the class out into the world" (Heck, 1992, p. 61).

The main benefits interdisciplinary teaching offers students are improved problem-solving and critical thinking skills, and improved learning and understanding (Beane, 1993; Jacobs, 1989; Worsham, 1992). Additionally, an interdisciplinary curriculum enables students to better transfer learning from one subject or context to another by assisting and encouraging them to use similar problem-solving or thought processes in different subjects. St. Claire and Hough (1992, p. 7) described interdisciplinary teaching as a way to provide students "a more holistic view of the world" in order to better prepared them "for citizenship in the 21st century."

Interdisciplinary teaching also offers benefits for teachers as well. Kruse and Lewis (1997, p. 264) believed there were four specific benefits teachers accrued from interdisciplinary teaching. These included emotional and moral support, personal dignity, intellectual assistance, and personal encouragement. Because interdisciplinary teaching offers opportunities for teachers to work together to integrate subject matter, it has often been recommended as a means to lessen teacher isolation and to promote collegiality and collaboration (McCracken & Sekicky, 1998; Murata, 2002; Oldfather & Thomas, 1998; St. Claire & Hough, 1992; Trent, 1998).

However, interdisciplinary teaching may also have less favourable outcomes as well. For example, teachers collaborating in interdisciplinary teaching may encounter differences regarding pedagogic philosophies, learning, and student achievement which may become points of contention, issues of control, or result in struggles for status and authority (Gunn & King, 2003). Doda (1992, p. 47) claimed the successful management of such conflicts was "the single most critical factor in the wellness" of a team and presented two other factors essential for successful interdisciplinary collaboration. One related to teachers' interpersonal relations and the second to a specific school policy of providing scheduled time for teacher teams to plan and prepare their interdisciplinary teaching.

Lytle and Fecho (1991) observed that collaborative cultures take time to develop and require trust and mutual understanding between the participants. They believe these can only be developed through long-term relationships. Several other researchers agree that an important factor that facilitates innovative teaching practices and interdisciplinary teaching

is the quality of interpersonal relationships between the team members (Barth, 1990; Conley, Fauske, & Pounder, 2004; Cronin, 2007; Jang, 2006; Johnson, 2003; Lieberman, 1995; Murata, 2002). Bennet et al. (1992) specify there must be a mutually supportive atmosphere where the teachers involved feel they can freely discuss issues or problems that arise within the project, without feeling threatened by a more public exploration of their teaching beliefs and practices. However, researchers have found this is not easy for teachers to do as the structure of most high schools favours teacher isolation by encouraging autonomy, egalitarianism and privacy (Murata, 2002). Other teachers do not believe it is worth their while to form collaborative relationships with their peers (Crow & Pounder, 2000) and so may reject the advances by their colleagues to implement interdisciplinary teaching.

While good relationships between teachers were considered important, many researchers believe common planning time is an essential element for the successful implementation of interdisciplinary teaching (Conley et al., 2004; Corriero, 1996; Cronin, 2007; Howe, 2007; Jang, 2006; Kysilka, 1998; Leonard, 2002; National Middle School Association, 2005; Smith & Karr-Kidwell, 2000; Warren & Muth, 1995). Murata (2002) found common planning periods were more important to teachers than having classes where the teachers could share teaching time together in the classroom. However, some researchers have found school administrators are unable to provide this time to teachers and so many teachers are obliged to do their interdisciplinary planning on their own time (Corriero, 1996; Smith & Karr-Kidwell, 2000).

Interdisciplinarity has been shown to improve teacher efficacy and enhance the professional work life of teachers through increasing their knowledge of their students, their professional commitment, and their work motivation (Corriero, 1996; Pounder, 1999). Corriero also found teachers involved in interdisciplinary teaching experienced greater levels of collegiality within the school, reversing “many of the traditionally negative occupational norms of teaching, including norms of individuality, privacy, and isolation” (1996, p. 14). Further, according to Pounder (1999), interdisciplinary collaboration leads to greater teacher satisfaction, motivation, and professional commitment.

Despite its increasing usage in elementary schools, interdisciplinarity is less common at the secondary level due to the different organizational structure (Doyle &

Ponder, 1977; Evans, 2000; Lee, Dedrick, & Smith, 1991). Further, studies which do examine secondary school teachers' efforts to implement interdisciplinary teaching practices are most often situated within a context where interdisciplinarity is mandated by the school. Golley's (1997) study is one of these. She examined the processes and actions of two physics and two trigonometry high school teachers at a large suburban high school, in the South-eastern United States, as they attempted to implement an interdisciplinary curriculum. The school commission and a local university designed and provided the school a computer-mediated tool to investigate the concept of sound. Through the use of observations and interviews, from fall to spring of one year, Golly investigated the teachers' construction of the interdisciplinary curriculum, their beliefs about the interdisciplinary curriculum, and the concerns they had about interdisciplinary curriculum development. She found the teachers' interest in interdisciplinarity was the main facilitating factor in the success of interdisciplinary project. Her participants believed the benefits of interdisciplinary teaching enabled them to have their students work on "real world" problems. Hindrances included team work conflicts, the teachers' lack of familiarity with the course content of their partners and the computer-mediated tool, and difficulties with the process of interdisciplinary teaching.

In Houston, Norton (1998) conducted a study on secondary school teachers' perceptions of an interdisciplinary programme that was instituted by the school administration and designed to meet the needs of at-risk students in the school. Her interviews with participating teachers of language arts, math, science, and history took place between September and May in the fourth year the programme was in place. Over the four years of the programme, some teachers volunteered to teach the programme and others were assigned to it. Norton found there was little administrative leadership, no professional development opportunities to facilitate the teachers' efforts, and strong disapproval for the programme and the teachers participating in the programme from the teaching staff who were not involved.

Meister (1997) studied five high school teachers' perception and understanding of imposed educational change which involved teaming, interdisciplinary teaching, and block scheduling. The five teachers taught English, Spanish/French, mathematics, science, and social studies at a private boarding school in Pennsylvania. The study took place during the

first year of implementation and began six months after the team had begun to prepare for the restructuring that block scheduling required. Data collection procedures included interviews, in-class observations, and copies of documents such as minutes from team meetings. Meister (1997) found that although the teaming, interdisciplinary teaching, and block scheduling had been imposed by the school, there was little administrative leadership, leaving the teachers feeling uncertain as to the quality and value of what they were doing within the restructuring effort. This lack of leadership in the school also had an effect on the teachers' work load because the new teaching practices required a great deal of time and effort which were not supported. This meant the teachers did much of the planning and preparation on their own time. However, the extra work took them away from their departments and these latter ultimately ostracised the teachers, resulting in conflicts between allegiance to their interdisciplinary team and their respective departments.

As part of a larger multi-year research project on interdisciplinary education, Miller (2006) investigated the reasons why 12 Boston secondary teachers from a variety of disciplines become involved in interdisciplinary teaching. In-depth interviews and seminar discussion notes were used to collect data as were in-class observations of each teacher's interdisciplinary project. He found there were three main reasons for the teachers' interdisciplinary collaboration. One of the reasons identified was that the teachers had knowledge-centred goals which could be disciplinary or related to a larger understanding of an issue on which the different disciplines offered different perspectives. Another category of reasons related to student-centred goals; the teachers were motivated to use interdisciplinary teaching in order to make the learning process more exciting or relevant for their students. Teacher-centred goals were described as the third category and related to how interdisciplinarity affected teachers' intellectual or professional identities. This included their interests, their teaching abilities and competence, and the social and interpersonal benefits gained from working with other teachers. However, it is important to note that, as defined in this paper, their projects were not interdisciplinary but multidisciplinary. Each teacher drew on explanations and resources from other disciplines, but their "interdisciplinary" projects involved no collaboration with any other teachers in their schools.

While Golley's (1997) and Norton's (1998) studies presented information on high school teachers' attitude toward imposed interdisciplinary teaching and showed some of the results of this contrived collegiality, in neither study were second or foreign language teachers involved. Meister's (1997) was the only study where a second/foreign language teacher was involved in the interdisciplinary teams. This teacher found working on the interdisciplinary team intensified work and time demands because she had to add the projects of the team to her curriculum. However, like Golley (1997) and Norton (1998), interdisciplinary teaching was administratively imposed in the school. None of these studies provide information on teachers' involvement in interdisciplinary teaching at the grass roots level. Miller's (2006) study was the only one found that investigated why secondary teachers choose to become involved in interdisciplinary teaching; however, he did not address the issue of teachers' conceptualization of interdisciplinary teaching. This may be the reason some of his participants used multidisciplinary teaching as opposed to interdisciplinary teaching as defined in this paper. Nonetheless, as the other three, this study took place in the United States. There were no studies on the implementation of interdisciplinary teaching at the secondary level in Canada.

The next section of this chapter will turn to educational change in Québec. It will present information on educational reform in Québec, the current educational reform, and the place of interdisciplinary teaching within this context.

3.4 Educational change in Québec

The Québec education system has been undergoing a series of reforms since the Parent Report in the 1960s where each reform has taken place within a distinct historical period in the province (Smith, Foster, & Donahue, 1999). The first reform introduced a new structure of progressive education services that modernized and opened up the curriculum. Because it was based on the "assumption that the educational problems of the country could be attributed to low scholastic standards and poor quality teaching" (Smith, Foster, & Donahue, 1999, p. 207), the reform intended to give "all young people access to educational services from preschool through secondary school ... [enabling] a very large proportion" (MEQ, 2004c, p. 4) to obtain post-secondary education.

The second reform occurred in the late 1970s and early 1980s. This reform instituted a highly centralized education programme reflecting a back-to-basics movement (Henchey & Burgess, 1987) in an attempt to improve and equalize standards of learning. It highlighted “practical know-how and knowing how to respond appropriately in various situations” (MEQ, 2004c, p. 4), and prompted renewed emphasis on exams, testing, and high academic standards. However, in the 1990s, criticisms of the effectiveness of the education system were expressed by the Commission for the Estates General, the *Conseil Supérieur de l'Éducation*, and the Task Force on Curriculum Reform. These included disapproval of excessive detail in programmes; too much centralization; too little opportunity for schools to adapt to local needs; too little rigor, especially in basic literacy and numeracy; a low rate of school retention; and a mismatch between schooling and the labour market (Commission for the Estates General on Education, 1996; Conseil supérieur de l'éducation, 1994; Task Force on Curriculum Reform, 1997).

As a result, the MELS issued a policy document *Québec Schools on Course* (MEQ, 1997a) which became the guideline for the third reform. Moving away from the “one-size-fits-all” (Freeland, 1999) education programme of the last 20 years, the MELS is now “insisting on the importance of meeting the particular needs and interests of each student” (MEQ, 2004c, p. 4). The new Québec education programme is the result of efforts to adapt the Québec education system to new social and cultural trends such as “internationalization, globalization, the information explosion, rapid technological development and the growing complexity of social life” (MEQ, 2004c, p. 4).

3.4.1 The current educational reform in Québec

The MELS has identified three points that set out how schools are to define their mission in the current educational reform. Schools cannot only provide instruction through the transmission of knowledge and encourage intellectual development in their students, they must also socialize the students to increase their sense of belonging to the community, instil the beliefs of democracy and responsible citizenship, and help students resolve concerns about the meaning of life. These can be interpreted in a narrow sense, imparting knowledge, discipline, and career training, or in a broader sense as the necessary knowledge and intellectual skills students need in modern society. They include values

related to meaning and sense of identification with community, and the skills of lifelong education and independent learning necessary for students to continue their learning and to support them in their future careers.

The new educational reform changes not only the mission, but also how schools are structured. While the grade levels still exist, they are regrouped in different cycles. Primary school has three 2-year cycles and secondary school has one 3-year cycle followed by one 2-year cycle. One of the purposes for cycles is to help teachers establish the scope of their collective actions (MEQ, 1997b) so as to approach the development of student competencies over a longer term than just one year. It allows teachers to address different rates of learning and so implement a greater variety of pedagogical practices that will better address the learning needs of their students. Additionally, the organization of cycles “makes possible the formation of teams of teachers, who may stay with a class for more than one year, providing pedagogical support and evaluating learning” (MEQ, 2001, p. 5). While the education programme of the three cycles of primary school is published in the same document, there are two education programmes for the secondary level: one for each cycle. The purpose for this is to provide teachers the necessary information to enable them to situate their subject within the curriculum as a whole in order to assist the students to achieve the objectives of the cycle and to show how links can be made between subjects taught within one cycle (MEQ, 1997b).

The new education programme is built around three core components: broad areas of learning, cross-curricular competencies, and subject areas with their own specific competencies (MELS, 2007a; MEQ, 2004b). The broad areas of learning, as set out in the Québec Education Programme, are the framework of the new educational reform and are intended to encourage students to make connections between their personal, social, and cultural circumstances and what they learn in the subject-specific programmes.

The MELS defines competencies as the “ability to act effectively or respond appropriately in situations of a certain complexity” (MEQ, 2004c, p. 7). Cross-curricular competencies are just one type of the different competencies Québec teachers are expected to develop in their students. What distinguishes a cross-curricular competency from one that is subject-specific is that it is a more abstract concept, independent of the contexts in which it could be used. In the current programme, these cross-curricular competencies are

divided by the MELS into four main groups: communication-related, intellectual, methodological, and personal and social (MELS, 2007a; MEQ, 2004c). These competencies “have greater scope than subject-specific competencies, since they go beyond the boundaries of the subject areas” (MEQ, 2004c, p. 15). As a result, the entire school is responsible for their development.

The new mission and structure of the education system require an in-depth transformation of teachers’ roles, task definitions, teaching style, and collegial work practices (Brassard, 2005). Although some of these practices have been in place to a greater or lesser degree in the schools for some time (Berrier, 2000; Brassard, 2005), for some teachers they represent a break with what they have been doing and how they perceive the practice of teaching (Boucher & Jenkins, 2004; Boutin & Julien, 2000; Godard & Pierre, 2000). One of the innovative practices, promoted within the current educational reform, is interdisciplinary teaching.

3.4.2 Interdisciplinary teaching as educational change in Québec

The MELS specifically advocates “ESL teacher[s] and teachers of other subjects collaborate” (MEQ, 2004b, p. 177) on interdisciplinary projects so that “students can construct knowledge and develop strategies that can be reinvested in other fields of study and areas of interest, both inside and outside the classroom” (MEQ, 2004b, p. 174). However, while teachers are to “cooperate with other teachers to develop interdisciplinary learning and evaluation situations” (MELS, 2007a, chpt. 5, p. 7), when different subjects are joined through interdisciplinary projects, integrating course content across the participating classes may become a challenge. Until the current reform came into effect, “specialists, homeroom teachers, administrators and non-teaching professionals who make up the cycle team may never have worked together before ... many teachers are not used to working with others” (Mill, 2001, p. 3). Therefore, the success of interdisciplinary projects in Québec requires teachers to extend beyond traditional disciplinary borders (Mill, 2001; Sauvé, 2001) and to find shared elements in different subjects. Teachers participating in interdisciplinary projects “must find out what they have in common, in order to choose cross-curricular competencies to develop... [and], they must achieve a shared understanding of the competencies they select” (Mill, 2001, p. 3) in order to relate the

cross-curricular competencies to the projects which contextualize them. Therefore, teachers need to have a clear understanding of interdisciplinary teaching and its practical uses in order to implement those aspects of the current educational reforms based on interdisciplinary principles.

However, although certain teachers have been implementing interdisciplinary teaching practices to a greater or lesser degree in elementary schools for some time (Lenoir et al., 2000), this innovative pedagogical practice does not appear to be widespread. Additionally, as so little research has been done regarding interdisciplinary teaching in Québec, it is difficult to draw conclusions regarding its implementation in the schools. The literature which deals with interdisciplinary teaching in the education systems of Québec relates solely to a few studies conducted at the primary (Gilbert, 2007; Lenoir, 1991; Lenoir et al., 2000) or pre-university level (Geoffroy, 2003). In each of the following studies except that of Gilbert (2007), the aspects related to attitude, conceptualization, and implementation of interdisciplinary practices were situated in studies with additional objectives. The discussion of these research projects therefore examines only those aspects most pertinent to this study.

Gilbert's (2007) study examined how she, a primary school art teacher, could create collaborative relations with her colleagues to create more significant learning situations for her students. Her study was initiated due to dissatisfaction with her classroom management abilities and a desire to teach arts in a more innovative manner to her students. Her 2-year introspective study was carried out with the assistance of a home-room teacher. Gilbert found the presence of the home-room teacher resolved many classroom management difficulties; resulted in the home-room teacher's better understanding of art and art projects; helped her students to successfully complete larger, more innovative art projects; and enabled her to develop a pedagogical model she was comfortable with.

Lenoir (1991) conducted an exploratory study of the conceptualization and interdisciplinary pedagogical practices of primary school teachers. Out of the province of Québec, 249 primary school teachers completed a questionnaire containing 19 multiple choice items, six open questions, and two ordering items. For the majority of the respondents, interdisciplinarity and the integration of subjects were synonyms. For the 69 other teachers, interdisciplinarity was a relation between subjects which could be made

through objectives, shared procedures, the integration of material, activities, themes, projects, etc. (Lenoir, 1991). From the total number of respondents, 87% had either used or developed interdisciplinary activities for two main reasons. The first reason was the opportunity interdisciplinary teaching offered teachers to teach the different subjects at the same time, and so save time. The other reason was the opportunity offered teachers to incite interest and learning in their students (Lenoir, 1991).

Geoffroy (2003) examined 37 College of General and Professional Education (CEGEP) social science instructors' understanding of interdisciplinarity and its integration in their regular teaching practices. Information was primarily collected through one semi-structured interview. The majority of the participants believed interdisciplinarity was the establishment of relations or links between disciplines or areas of knowledge. The other 15 instructors saw interdisciplinarity as the application of two or more disciplines in the study of a phenomenon or in the accomplishment of a task. Of the 33 responses received regarding the integration of interdisciplinary teaching, 20 instructors were very much in favour of this pedagogical practice, believing it was an "excellent goal, wonderful idea, good thing, ..." while 13 were more uncertain, describing it as "difficult to put into practice" or expressing reservations as to its requirement or the benefits offered (Geoffroy, 2003, pp. 254-255).

Lenoir and his colleagues (Lenoir et al., 2000) created a typology of interdisciplinary practices at the primary school level. They found that although teachers claimed to use interdisciplinary teaching, often the actual practices varied a great deal. The researchers classified the practices they found in schools as eclectic, where "disconnected and decontextualized" (p. 96) elements from two or more subject areas were joined; holistic, which they called "simplistic" (p. 99) as teaching was based on general learning which trivialized disciplinary content and structure; pseudo-interdisciplinary, where there were no real links or relations between the different subjects; and hegemonic, where one subject matter held predominance over the others, or where one subject was used simply to provide material for the dominant subject. They concluded interdisciplinary teaching was often used as "a justification for curricular arrangements and pedagogical practices which do not respect educational outcomes, disciplinary structures, or learning processes" (Lenoir

et al., 2000, p. 103). In other words, interdisciplinarity was used to resolve “teaching problems” rather than to improve student learning.

While these studies provide certain information regarding teachers’ attitudes and use of interdisciplinary teaching, two other studies focused other aspects. Lataille (1994) examined the effect of interdisciplinary teaching on Francophone primary students’ learning, especially as regards their learning of vocabulary. The other study, that by Lefrançois (1997), investigated cooperative learning and the writing process using computer technology and hypermedia tools through the treatment of interdisciplinary subjects, also at the primary level.

These studies offer different perspectives and information regarding interdisciplinarity in primary schools or CEGEPs in Québec; however, none of them offer any insight regarding interdisciplinary teaching at the secondary school level. Further, only Gilbert (2007) and Geoffroy (2003) examined interdisciplinary practices as defined in this paper, where two or more teachers collaborate together. The participants in the other studies were individual teachers, incorporating knowledge, material, and ideas from two or more subjects into one activity or project. For the most part, these focused on the development of written French; none of the studies incorporated any element of second language learning. Therefore, the present study seeks to redress this issue and provide information on a subject not yet investigated, that of secondary school ESL teachers’ conceptualization and implementation of interdisciplinary teaching.

3.5 Summary

This chapter offered a review of relevant literature on the subject of educational change and how educational change effects and is affected by teachers. Subsequently, two innovative educational change initiatives, content-based teaching and interdisciplinary teaching were presented.

Through this review, it became apparent there were no studies on interdisciplinary teaching at the secondary level in Québec, or even in Canada. Those studies that were situated within Québec dealt with primary schools or CEGEPs, and none were in any way connected with second language teaching. Further, of those studies which dealt with interdisciplinary teaching at the secondary level in the United States, all except one dealt

with administratively imposed interdisciplinarity. The one study which ostensibly presented information from teachers who had become involved in interdisciplinary teaching of their own accord showed, according to the definitions of this paper, the teachers were not involved in interdisciplinary but multidisciplinary teaching. Therefore, there is a large gap in the literature regarding Québec secondary level teachers who initiate grass roots efforts to implement interdisciplinary teaching, their conceptualization of interdisciplinary teaching, why and to what degree they value interdisciplinary teaching, and the factors which facilitate or constrain their efforts.

The following chapter presents the methodology of the study. It explains the research methodology, the participant sample, and the data collection and analysis procedures.

CHAPTER 4

METHODOLOGY

4.0 Introduction

This chapter presents the research methodology, including the study design, a description of the participants, and the data collection process which includes interviews, observations and questionnaires. It then presents and explains the data analysis procedures.

4.1 Research design

As this study was exploratory in nature, with the main goal being to uncover and describe high school ESL teachers' conceptualization of and experiences with interdisciplinary teaching, it was best served with a qualitative research design. This type of research holds the premise that:

the world is not an objective thing out there but a function of personal interaction and perception. It is a highly subjective phenomenon in need of interpreting rather than measuring. Beliefs rather than facts form the basis of perception. (Merriam, 1988, p. 17)

This type of study design requires the "study [of] things in their natural settings" (Denzin & Lincoln, 2000, p. 3), in this case, teachers in their communities of practice as they plan and teach interdisciplinary projects so that their frames of reference, perspectives, conceptions, and experiences may be used to develop "a comprehensive understanding" (Becker, 1968, p. 233) of their innovative teaching practices in a context of educational reform.

4.2 Context and participants

This study took place during the second year of implementation of the new Québec educational reforms in the secondary, cycle one level. However, because interdisciplinarity is not widespread in schools, the participant selection criteria included teachers from all levels of secondary school in order to find a sufficient number of participants. Originally, the goal had been to have at least 10 teachers from four different schools; however, this was impossible due to reasons which will be presented below. Ultimately, six teachers from five schools, teaching Secondary 2, 3, 4, and 5 participated in the study.

Before the participant recruitment process was begun, the study was submitted for approval from the university ethics committee. Once approval had been obtained, prospective teachers were contacted regarding participation in the study. After the teachers had agreed to participate in the project, I approached their school administrators for permission to conduct my study in their school. Permission and agreement from all teachers, their schools, the students and their parents were obtained prior to the start of in-class observations in each of the respective schools (see Appendices A to D for letters of agreement and permission). The school administrators, and the ESL curriculum consultant for the school commission of three of the teachers, were also approached for an interview after the data collection process had been completed in the schools (see Appendices E and F respectively for letters of agreement).

The study took place in school commissions in and around the capital city region, in the Province of Québec, Canada, and involved schools both within and outside the city limits. Purposive sampling was used to recruit participants as this type of selection “allows the researcher to select those participants who will provide the richest information, ... and those who manifest the characteristics of most interest” (Best & Kahn, 2006, p. 19) in order to provide a detailed exploration and understanding of the subject or issue being examined. For this reason, it was necessary to find and engage participation from teachers who were already, to some degree, engaged in interdisciplinary teaching.

In order to identify prospective teachers for the study, two avenues were pursued. Initially, ESL curriculum consultants from the four school commissions in and around the city were contacted by telephone. They were asked for information regarding teachers they knew to be involved in interdisciplinary teaching. However, of the four school commissions, only one ESL curriculum consultant knew of teachers who were implementing interdisciplinary teaching. He provided the names of the three teachers and their schools. These teachers were subsequently contacted by telephone and an appointment was made with them in order to present the study. All three teachers agreed to participate in the study and were then asked to recommend colleagues whom they knew were involved in interdisciplinary teaching; however, none knew of any other teachers implementing this innovative pedagogical practice.

Therefore, the second avenue used to find further participants involved contacting by telephone all public and private secondary schools in and around the city. I spoke with either the school administration or the head of the ESL department at each one. When the study was explained, there were usually two types of responses. The most common was the person contacted indicated there were no teachers in their school involved in interdisciplinary teaching or, because of the educational reforms, interdisciplinary teaching that had taken place in the past had been dropped or abandoned while the teachers appropriated the new programmes. I had several long discussions with school principals and ESL teachers who were interested in my project and spoke a great deal about projects that had been done in the past in their schools; however, they were unable to recommend teachers to participate in the study as there were currently no teachers at their schools implementing interdisciplinary teaching.

The second type of response was that I was referred to specific teachers within the schools. It was very difficult to find teachers who were currently involved in interdisciplinary teaching; soliciting the participation of these few was even more problematic. Teachers I spoke with generally seemed hesitant to become involved in the project. There were probably several reasons for this. Some teachers may not have understood the purpose of the project and the in-class observations. Others may have been concerned about having their teaching observed and perhaps assessed by me. Still others may have worried there would be too much work demanded of them. At the end of the recruitment process, there were six teachers from five different schools participating in the study.

By chance, there were an equal number of female and male participants, with two teachers aged between 20 and 29, two teachers aged between 30 and 39, and two teachers aged between 40 and 49. Additionally, there was also an almost evenly distributed range of years of teaching experience. One teacher had fewer than three years teaching experience, two had between four and nine years, and three had over 10 years teaching experience. There were two teachers from one large school, three teachers from medium sized schools, and one from a small school. There were four teachers from public schools and two from private schools. For their participation in the study, each teacher was given a compensation of \$200 to be used for activities involving their students. Table 4.1 provides a summary of

the information regarding the participating teachers. All names of people, schools, and special programmes are pseudonyms.

Table 4.1: Participant information summary

Teacher name	Luc	Renée	Benoît	Louise	Danielle	Pierre
Gender	Male	Female	Male	Female	Female	Male
Age	30-39	30-39	20-29	40-49	20-29	40-49
Education	*BEALS	*BEALS	*BEALS	BEEd	*BEAL	*BEALS
Students	Secondary 3	Secondary 4	Secondary 5	Secondary 2	Secondary 5	Secondary 3
Programme taught	Language concentration	Protagonists for Change	Protagonists for Change	Language and Multi-media	Core	Interdisciplinary teaching
Other grades & programmes taught	Secondary 3 Core	Secondary 4 Core	Secondary 5 Core	Secondary 1 Language and Multi-media Secondary 1 & 2 Core	Primary 1-4 Core Secondary 3 & 4 Core	Secondary 4 & 5 Interdisciplinary teaching Secondary 3, 4 & 5 Core
School size**	Medium	Large	Large	Medium	Small	Medium
School type	Public	Public	Public	Public	Private	Private
Years teaching	10 or more	4-9	4-9	10 or more	3 or less	10 or more
Years teaching ESL	10 or more	4-9	4-9	4-9	3 or less	10 or more
Years teaching interdisciplinary projects	10	1	1	2	1	3
School	<i>École secondaire BelleVue</i>	<i>École secondaire le Carrefour</i>	<i>École secondaire le Renommé</i>	<i>École Saint-Ésprit</i>	<i>École Coeur-de-Jésus</i>	<i>École Coeur-de-Jésus</i>
School administrator	Mrs Fontaine Principal	Mr Bergeron Principal		Mr Fortin Vice-principal	Mr Voyer Principal	Mr Simard Vice-principal

* *Baccalauréat en enseignement de l'anglais, langue seconde* (Bachelor of Arts in teaching English as a second language)

** Large = more than 1000 students, Medium = 500 – 999 students, Small = fewer than 499 students

4.3 Data collection

Data collection took place through formal, semi-structured interviews, informal interviews, classroom observations, and a student questionnaire. Artifacts were gathered from the teachers and students when and where possible. I was also invited to and attended a training seminar for an interdisciplinary project that was planned in one of the schools. A field journal was kept to record the entire data collection process, including a day-to-day log of activities, all contacts with teachers and schools, the steps of the research process with impressions from in-class observations, notes taken during interviews, and insights and flashes of inspiration. Included were records of documents collected, in-class observation and interview dates. A personal diary was also kept containing my impressions of the research project, ideas on developing constructions, questions to ask participants in

order to complete or verify information, questions for my directors, and reflexive notations about the positive aspects and difficulties experienced throughout the entire project.

4.3.1 Interviews

The six teacher-participants were interviewed twice and six selected students from their respective classes were also invited to participate in an interview. The school administrators were interviewed as was the ESL curriculum consultant for the school commission of three of the teachers. Table 4.2 contains the pertinent dates for the study. This table can be found on page 58, at the end of this section on the data collection procedures.

4.3.1.1 Formal semi-structured interviews

Formal semi-structured interviews are used to determine how participants view events and experiences and how they determine meanings and interpretations of what they see and what happens to them. This type of interview sets out in advance the topics, subject areas, and issues to be explored; however, the person conducting the interview has the flexibility to decide on the sequence and wording of questions during the course of the interview (Legard, Keegan, & Ward, 2004; Marshall & Rossman, 2006; Patton, 1990; Rubin & Rubin, 2005). An interview outline or guide helps ensure that “interviewing across a number of different people [is] more systematic and comprehensive by delimiting in advance the issues to be explored” (Patton, 1990, p. 283). This increases the comprehensiveness of the data and helps ensure the data collection is somewhat systematic while at the same time allowing the “researcher to be responsive to relevant issues raised spontaneously by the interviewee” (Legard et al., 2004, p. 141) and allowing “the perspective of the person being interviewed” (Patton, 1980, p. 196) to emerge. While analyzing and coding transcripts from this type of interview, gaps in data can be found and questions to close them can subsequently be structured into following interviews.

Teacher-participants

Each teacher participated in two formal semi-structured person-to-person interviews. The interviews took place at two different times during the study period; the

first near the beginning of the interdisciplinary project and the second after the interdisciplinary project had been completed. The first interviews lasted, on average, 90 minutes; the second interviews lasted between 30 and 45 minutes. Most of these interviews took place at the teachers' respective schools; however, one was carried out in a restaurant and one other in a coffee shop.

The objectives of the first interviews were to discover how the teachers conceptualized interdisciplinarity through their pedagogical practices, how past experiences influenced their conceptualization of interdisciplinary teaching, what elements facilitated or constrained the implementation of interdisciplinary practices in their classes, and their interpretation of interdisciplinary teaching in the current MELS education programme. (See Appendices G and H for interview questions for the first and second interviews respectively.) The objectives of the second interviews were to complete missing information from the first interview, clarify responses and information from the first interview, and to gather teachers' impressions of their completed interdisciplinary project. Each interview was digitally audio recorded and completely transcribed within three days so vocal cues, gestures, etc could be used to add perspective and descriptions of elements within the conversations. The participant's names were not used in any of the transcripts, but transcripts were labelled to identify each individual so connections could be made among the participants' responses. Table 4.2 provides the dates for both interviews with each of the teachers who participated in the study. All interviews took place in 2007.

Students

After the questionnaires (see section 4.3.4) had been completed by the students, three students from each class who had the most favourable impression of interdisciplinary projects and three students who had the least favourable impression of interdisciplinary projects were asked to participate in a 10-minute interview. The purpose of these interviews was to elucidate the reasons for the students' perspectives and to obtain a more complete understanding of how they viewed interdisciplinarity in their classes. (See Appendix I for student interview questions.) The students were not informed of the decision as to why they were chosen to be interviewed and in all instances except one, they accepted. In the group where one student declined, another student with a similar level of agreement to the

questionnaire was asked to take her place. This student accepted and was interviewed in turn. The students' participation in the interviews was solicited at the beginning of their English class, after the interdisciplinary project had been completed. After six students had accepted in each class, they were called upon in alphabetical order, one at a time, to leave the class for the interview. All interviews were conducted either in an empty neighbouring classroom or seated at desks set up in an area of the hallway some distance removed from the closed door of the classroom. The information obtained from these interviews was digitally audio recorded and subsequently transcribed within four days to ensure vocal and non-verbal cues were incorporated into the transcripts. Student names were not used in any of the transcripts; however, each one was identified in a manner that allowed me to make connections to their respective teachers.

Louise requested that I not conduct interviews with her students and so, while her students did complete the questionnaires, none of her students were interviewed. Table 4.2 provides the dates for the student interviews.

School administrators

School administrators at each of the schools were asked to participate in one formal semi-structured interview, regarding their view of the implementation of interdisciplinary practices in their school, their interpretation of interdisciplinarity in the current MELS education programme, and to try to determine what elements facilitate or constrain interdisciplinarity in their schools. (See Appendix J for interview questions for the school administrators.) Each interview lasted approximately 90 minutes and took place towards the end of the interdisciplinary project in their school. In each instance, the interviews with the school administrators took place in their respective offices. The interviews were digitally audio recorded and subsequently transcribed within three days to ensure vocal and non-verbal cues were incorporated into the transcripts. The names of the school administrators were not used in any of the transcripts, but these latter were labelled to identify each individual in order to make connections with the participating teacher(s) in their school. Table 4.2 on page 58 provides the dates for the interviews with each of the school administrators.

Curriculum consultant

The ESL curriculum consultant for the school commission of three of the participating schools was asked to participate in one formal semi-structured interview. This interview took place in his office and lasted for approximately 120 minutes although the agreed upon length of time had been 90 minutes. This extension of the interview was the choice of the curriculum consultant. After 90 minutes, I noted to the curriculum consultant that our time was up but that I still had a few more questions. He offered the rest of his morning for the interview as he found our conversation interesting and had much to say regarding interdisciplinary teaching. We were able to complete the interview in the following half-hour. The objectives of the interview were to discover his views regarding the implementation of interdisciplinary practices in his school commission, his interpretation of interdisciplinarity in the current MELS education programme, and the elements that facilitate or constrain the implementation of interdisciplinarity in his school commission. (See Appendix K for interview questions for the curriculum consultant.) The interview was digitally audio recorded and, similar to the other interviews, was subsequently transcribed within three days. The name of the curriculum consultant was not used anywhere in the transcript but the transcript was labelled to identify the individual. The curriculum consultant was interviewed on June 12th, 2007.

After the transcriptions for each of the interviews with the teachers, the school administrators, and the curriculum consultant was completed, information was copied onto a 120 by 150 cm wall chart in function of the research questions. By entering data onto this chart, it was possible to see where information was missing in order to ensure questions were included in the second interview with each of the teachers to complete any missing information. This chart was also useful in the preliminary analysis of the data as it ensured an understanding of the data and permitted a rapid overview of the information from each of the teachers, school administrators, and the curriculum consultant. A sample of part of the transcripts from one of the interviews with a teacher can be found in Appendix L.

4.3.1.2 Informal interviews

Informal interviews take place as part of observation field work and rely “entirely on the spontaneous generation of questions in the natural flow of an interaction” (Patton,

1990, p. 280). Informal interviews emerge and are built on observations and the immediate context and so the salience and pertinence of the questions is significant to the situation. Additionally, because questions are asked as they arise in natural situations, the interview can be matched to the individual and the circumstances. Only the teacher-participants were interviewed in this manner. These informal interviews took place throughout the interdisciplinary project, usually after observation of classroom activities and so depended on what emerged from the observations. At times these interviews took place in the teachers' classroom, the staff room, or on the way to the staff room from their classroom. Information from these interviews was subsequently recorded in field notes as soon as feasible.

4.3.2 Observations

Observations in the field provide an opportunity to observe and record “events, behaviours, and artefacts in the social setting” (Marshall & Rossman, 2006, p. 98). The purpose of observation is to observe complex interactions under natural conditions while making field notes that “contain sufficient information to recreate the observations. They should be complete and descriptive, and include everything [that] may have import” (Best & Kahn, 2006, p. 265). These notes are written up in detailed narrative form as soon as possible after the observation session (Kumar, 2005; Marshall & Rossman, 2006; Merriam, 1988; Patton, 1990) so that they may be used to interpret the interactions, provide deeper insight into the interaction, and enable the researcher to draw conclusions from them.

There are variations on a continuum of observer involvement in any setting, ranging from a complete participant to strictly an onlooker (Patton, 1990), and the position of the researcher can change over time in the setting. Gans describes a researcher-participant as one “who participates in a social situation but is personally only partially involved, so that he can function as a researcher” (1982, p. 54). In this situation, the researcher’s “participation in the group is definitely secondary to his or her role of information gatherer” (Merriam, 1988, p. 93). This was the main role of observer that I assumed; the teachers and students knew that I was there to observe and listen to the activities that took place while only minimally participating in them. This position allowed greater latitude for observations with less chance of missing significant events or details than acting as a

participant-researcher where my role in the activities would have been greater. Observations took place in the participating teachers' classrooms, and in one instance, at an interdisciplinary training seminar followed by a planning meeting.

In-class observations

A sociocultural perspective requires "holistic qualitative methodology" (Ohata, 2000, p. 53). This is exemplified by certain studies (Brilliant-Mills, 1993; Christie, 1995; Lin, 1993; Mercer, 1994) that establish the theoretical need to observe a complete sequence of lessons in order to provide an accurate understanding of what and how teachers implement innovative practices in their classes. Because it is necessary to understand the situational context and ongoing discourse within which any particular action occurs in order to determine the meaning, it is important for the analysis of any excerpt or interactional sequence to be situated within the larger, ongoing discourse that has been built up over time. Therefore, the classroom observation data from each school were drawn from several consecutive days of work on the interdisciplinary project. For most of the interdisciplinary projects, this meant in-class observations were conducted from the first day the project was introduced until the final day of the project. Field notes from each class were taken in a systematic manner using an observation protocol (Creswell, 2003) which included the date, time, and place of the setting at the top of the page, and two columns where the descriptive notes were written on the left and the right side was reserved for comments, personal thoughts, and "emerging analytic insights" (Marshall & Rossman, 2006, p. 99). As soon as feasible after each observation period, usually within the following three days, these notes were written up in as much detail as possible. The dates for the in-class observations of the interdisciplinary projects carried out by each of the teachers can be found in Table 4.2 on page 58. A sample of the transcripts from an in-class observation can be found in Appendix M.

Interdisciplinary meeting

On January 29, 2007, Benoît invited me to attend a training seminar for an interdisciplinary project he was planning with another teacher. On February 2, I attended the seminar and observed the subsequent interdisciplinary planning meeting that took place.

Data gathered from that day included field notes as well as the material and student books for the project that were offered the teachers by the seminar leader. Field notes from the seminar and meeting were written up in detail within the following three days.

4.3.3 Artifacts

Artifacts that were relevant to the study were gathered wherever possible. These included such items as: the current education programme from the MELS, teacher-produced material related to the interdisciplinary project, training material from the interdisciplinary planning meeting, calendars indicating the timing of interdisciplinary projects during the school-year, and teachers' schedules. Certain students were approached about obtaining copies of student-produced material related to their interdisciplinary project and teacher-produced material from the components of the project from their other subjects. In all cases, the students seemed pleased to share with me their work and explanations of what each item was and from which class it came. The review of these documents was used in function of the research questions to allow a greater understanding of the interdisciplinary project.

4.3.4 Student questionnaire

A short questionnaire was administered to students in the respective classes of each teacher-participant in order to obtain some idea of how the students viewed interdisciplinarity within their classes. The questionnaire was piloted on March 5, with Danielle's class of Secondary 4 students. This group of students was chosen to pilot the questionnaire because they were finishing an interdisciplinary project whereas the Secondary 5 students, who were followed for this study, were just beginning an interdisciplinary project. Because Danielle and the French teacher were involved in both interdisciplinary projects, it was surmised the students' experiences of the two projects would be similar. The pilot test enabled me to verify the instructions and items were clear and to determine certain faults in the questionnaire such as repetitive and ambiguous items. The questionnaire was corrected accordingly. The pilot test also provided an opportunity to ascertain the length of time necessary for the students to complete the questionnaire. Based

on the pilot test, the instructions to be given the students were written in notes to ensure I provided the same oral instructions and information to each participant group.

The final version of the questionnaire took approximately 25 minutes to complete, and because it was administered collectively in each class, it was possible to explain the purpose, relevance and importance of the questionnaire. It also provided an opportunity to answer any questions the students had. (See Appendix N for a copy of the student questionnaire.) The questionnaire permitted a generalization of the students' view of and attitude toward the interdisciplinary projects, and assisted in the selection of candidates for formal semi-structured interviews. The dates the questionnaires were administered in each of the classes are presented in Table 4.2 on the following page, along with the other pertinent dates for the study.

Table 4.2: Overview of pertinent dates for the study

Teacher's name	Luc	Renée	Benoît	Louise	Danielle	Pierre
Dates of first interview	March 1	February 20	February 20	May 4	March 3	April 4
Dates of in-class observations	February 6	January 25	January 30	May 4	February 5	April 2
	February 21	January 29	February 1		February 16	April 4
	March 19	January 31	February 8		February 23	April 19
	April 12	February 7	February 13		March 16	April 26
	April 25	February 14	February 28		March 23	May 9
		February 19	March 19			
		February 23	April 3			
			April 17			
			April 24			
			April 26			
Dates of administration of student questionnaires	May 8	April 16	May 15	May 24	March 23	May 11
Dates of student interviews	May 14	June 5	June 5	No interviews	April 27	May 22
School administrator's name	Mrs Fontaine	Mr Bergeron		Mr Fortin	Mr Voyer	Mr Simard
Dates of school administrator interviews	April 25	May 10		May 31	March 23	May 25
Dates of second interview with the teachers	June 8	July 5	June 19	June 8	April 30	May 25

4.4 Data analysis

The data gathered during the study necessitated both qualitative and quantitative analysis. The interviews, in-class observations, and interdisciplinary planning meeting required qualitative analysis. The student questionnaires were analyzed quantitatively.

Qualitative data analysis is the search for general statements about relationships and underlying themes. It is a recursive rather than linear process that involves three aspects: description, analysis, and interpretation. These three aspects are not mutually exclusive; there are no “lines drawn where description ends and analysis begins, or where analysis becomes interpretation” (Wolcott, 1994, p. 11). In qualitative studies, data collection and analysis typically take place at the same time in order to build a coherent interpretation.

Patton (2002, p. 453) describes the processes of inductive analysis as “discovering patterns, themes, and categories in one’s data” to generate typologies that reflect the understandings expressed by the participants in an emerging theory which guides further data collection; however, others (Miles, 1983; Miles & Huberman, 1994) discuss the problematic nature that is inherent in the analysis of the large amount of data that qualitative research generates. Therefore, it is necessary to analyse research data in a systematic manner. The process begins with extensive interaction with the raw data so that it may be coded. The codes must be significant, mutually exclusive, and “relate to each other in study-important ways” (Miles & Huberman, 1994, p. 62). Boyatzis (1998) presents five guidelines on recognizing and describing concepts for coding: determine a label, develop a definition that fits in all instances of use, establish how the concept will be recognized in the interview transcript, determine what does not qualify as an instance of use, and find a clear example from the transcripts. Miles and Huberman stress the need for the codes to “have conceptual and structural order” and that they “relate to one another in coherent study-important ways” (1994, p. 62). Throughout the data collection and analysis it was necessary to verify the coded data as new data were added to ensure “both the integration and the refinement of categories, properties, and hypotheses” (Merriam, 1988, p. 144). Miles and Huberman (1994) also recommend beginning the data analysis early in the data collection process and present some helpful methods to assist the melding of the two into an organized cyclical progression that both “direct[s] the data collection phase more productively, as well as develop[s] a data base that is both relevant and parsimonious” (Merriam, 1988, p. 145).

As the data collection/analysis process continued, through intensive analysis, significant patterns were revealed. Then, through further analysis, these patterns were “crossed with one another to generate new insights or typologies for further exploration of the data” (Marshall & Rossman, 2006, p. 159). The purpose was to produce a “thick description” (Geertz, 1973) “balanced by analysis and interpretation” (Patton, 1990, p. 430) that allowed a greater understanding of the conceptualization and experiences of the teacher-participants as regards interdisciplinary teaching in the current situation of educational reform.

4.4.1 Interviews

Digital audio recordings of all formal semi-structured interviews were transcribed and then shared with the participants for verification and approval. Each document contained the pseudonym of the interviewee, the time and location of the interview, and the length of the interview. These recordings were transcribed, edited and entered in a computer using Word documents.

4.4.2 Observation field notes

During observation sessions in the classroom, how the teacher organized interdisciplinary lessons and student work, and how the teacher implemented interdisciplinary lessons and projects were noted. Students' activities during the project were noted as well. During the interdisciplinary planning session, notes were taken about the practices and logistics of planning the interdisciplinary project: who initiated the project, how it was organized, the relations between the teachers, and how they went about planning the interdisciplinary project. Notes and information from informal interviews were also recorded in the field notes. In order to incorporate the field notes into the data analysis process, they were written up in narrative format as soon as possible after leaving the site.

4.4.3 Artifacts

Where available, material produced at the interdisciplinary planning meeting, examples of students' and teachers' work, lesson plans, administrative information, and interdisciplinary training material were collected to assist in the analysis of how resources affected teachers' implementation of interdisciplinary practices.

4.4.4 Student questionnaires

The questionnaires were analyzed to determine whether the students had a positive or negative perception of interdisciplinary practices in their classes. The answers to the questions were tabulated and the descriptive statistics were presented in table form. To further analyze the data, an ANOVA analysis of variance using SAS (2003) statistical analysis software was used to compare the groups.

4.4.5 Qualitative data analysis software

The computer software NVivo 7 (2006), developed by Qualitative & Solutions Research (QSR) International, was used to assist in the analysis of the qualitative data that were gathered. This software allows coding and the organization of data into categories and themes, annotations and memos, and “queries” that help find patterns and themes in the data in order to develop theoretical concepts.

Initial codes and their definitions were determined in function of the research questions and entered in the software. All interview transcripts and observation field notes were coded and analysed in function of the research questions. (See Appendix O for codes and definitions, and Appendix P for a screen shot of the coding process.)

All interview transcripts were uploaded into the software and, as each one was coded for analysis, annotations were made where relevant. The coding of the interviews was done immediately following verification of the transcript by the interviewee, thus at different times in the data collection process. During this coding procedure, some codes were created progressively through the analysis process to account for important pieces of information or relationships that emerged from the data in function of the research questions. Documents previously coded, were then recoded in function of these new codes. Because the documents were coded on an on-going basis, it was possible to complete information or clarify confusing data on subsequent visits to the schools. Observation field notes were also uploaded and coded in the same manner.

After the data were coded and themes identified, I could begin to put the data together into a descriptive framework. By continuously interacting with the data it was possible to identify the participants’ perceptions of factors regarding interdisciplinarity, to identify how they differed or aligned, to determine how their pedagogical beliefs affected the implementation of interdisciplinary teaching practices, and to discover what factors aided or constrained their efforts to implement pedagogical practices involving interdisciplinarity.

4.5 Validity and reliability of the study

The concepts of validity and reliability in qualitative research, although similar, do not have the same tests or measures as in quantitative research. In qualitative research,

“reliability meaning ‘sustainable’ and validity meaning ‘well grounded’ ... have relevance ... since they help to define the strength of the data” (Lewis & Ritchie, 2004, p. 270). Thus, for qualitative research, it is necessary to examine the components, the “processes and procedures that undergird the study” (Lincoln & Guba, 1985, p. 378). Through careful attention to the study’s conceptualization and the way data are collected, analyzed, and interpreted, it is possible to assess the validity and reliability. In the present study, validity and reliability were addressed through the following techniques:

- 1) Prolonged engagement time - Some time was spent at the respective schools of each of the teachers in order to allow them time to get to know me a bit better before the data collection began. This, along with the collection of data over the duration of each interdisciplinary project allowed the development of a certain degree of trust between the participants and myself. Merriam (1988) stresses the need for long-term observation and gathering of data in order to better understand the context of the situation and to develop the trust of the participants. Other authors also discuss the substantial time commitment (Lewis, 2004; Lincoln & Guba, 1985; Marshall & Rossman, 2006) necessary in qualitative research that is required in order to enhance the validity of the study.
- 2) Triangulation – Triangulation (Best & Kahn, 2006; Eisner, 1991; Lincoln & Guba, 1985; Marshall & Rossman, 2006; Merriam, 1988; Patton, 1990; Ritchie, 2004; Suter, 2006) was accomplished through the use of multiple sources, the different actors in each school as well as the curriculum consultant who were interviewed, and a variety of data collection methods, such as interviews, observations, questionnaires and documents. The triangulation process was carried out through the collection of data from different sources and the comparison and verification of data from one source with another. For example, observations were conducted in order to ascertain whether teachers’ stated beliefs about the implementation of interdisciplinary teaching were actualised in their classes; teachers participated in two semi-structured interviews, allowing me to return to information from either the previous interview or informal interviews to verify information, or to return to aspects of the in-class observations which might not have been addressed in previous interviews; teachers’ descriptions of the rules governing the operations of the school affecting their ability to implement

interdisciplinary teaching were checked with those of the school directors; information from student questionnaires was further clarified through individual interviews with students, which were conducted after classroom observations of the students' work on the interdisciplinary projects, etc.

- 3) Referential adequacy - The audio-taping of all formal semi-structured interviews enabled me to "provide a benchmark against which later data analyses and interpretations [could] be tested" (Lincoln & Guba, 1985, p. 313) in order to demonstrate validity. The storage of the digital archives offered the opportunity to return to the interviews while writing the case studies, to refresh my memory of parts of the conversations to ensure what I was writing was reflective of what had been said.
- 4) Member checks - The validity of the study was enhanced by the use of member checks. Interview transcripts and then drafts of the case studies were returned to the participants to verify their plausibility and meaningfulness (Lincoln & Guba, 1985; Merriam, 1988). The teachers, the school administrators, and the curriculum consultant each received transcripts of the interviews within a week of each interview. This provided participants with the opportunity to comment upon and provide input regarding the interviews. Their feedback was important in verifying the quality of the information in the interpretation process. Further, all case studies were written up within three months of the end of the data collection period. Initially, a case study was written for each teacher, school administrator, and the curriculum consultant and shared with them in order to assess whether they offered an accurate portrayal of their experiences. These also offered the opportunity for these actors to comment on my interpretation and analysis.
- 5) Careful record keeping - A careful record of how and why the participants were selected, data were collected, categories for codes were determined, and decisions such as data analysis and synthesis were made were part of the audit trail (Lincoln & Guba, 1985; Merriam, 1988; White, Woodfield, & Ritchie, 2004). A clear description of the conduct of the study and comprehensive field notes helped establish the reliability of the study. A large wall chart was created, in function of the research questions, upon which I entered information gathered through in-class observations

- and interviews with each teacher, school administrator, and the curriculum consultant. All through the data collection process, as interviews were transcribed and field notes written up, information was entered on the chart. This enabled me to ascertain where I needed to return to the participants for clarification or for missing information, and facilitated the comparison of information from the different sources in each school.
- 6) A reflective journal - A reflective journal was used to record the history of the research process in order to “describe issues of entry and access, dates and times of observations and people interviewed, ... organize notes and store research memos” (Webb & Glesne, 1991, p. 792). Lincoln and Guba recommend keeping “a daily schedule and logistics of the study; a personal diary ... for reflection ... and for speculation about growing insights; and a methodological log where methodological decisions and accompanying rationales are recorded” (1985, p. 327). This journal was helpful in the coding process as it enabled me to add meaning to the findings and interpretations. It was also used to note issues that required further attention (Miles & Huberman, 1994; Patton, 1990) during subsequent visits to the schools. My feelings about the data collection process and study, frustrations and difficulties (especially in finding participants), successes, and anecdotes from interactions in the schools were also recorded.

4.6 Summary

This chapter has presented the methodological procedures used in this study. A description of the context and participants was presented, along with the data collection procedures. Analysis procedures for each of the different forms of data collection were also discussed, as were issues related to the validity and reliability of the study. The following chapter presents five case studies, one for each of the schools. These case studies provide both a rich and thick description of each teacher’s efforts to implement interdisciplinary teaching in their classes.

CHAPTER 5

FINDINGS: CASE STUDIES

5.0 Introduction

This chapter presents interdisciplinarity from the perspective of the different participants in the study. Although six teachers participated in the study, there are five case studies, one for each school, as two of the teachers who participated in the study worked at the same school. Each of the schools is presented with the information gathered through interviews with the school administrators, the teachers, the students, and classroom observations organized in such a way as to provide some illumination on the research questions. The teachers are each presented by their given names as that was how they were addressed by their students. The social climate in schools in Québec is casual and in primary and secondary schools teachers are commonly addressed by their first names. However, while some of the teachers addressed their school administrators by their first name, others used a more formal form of address. To be consistent, all principals and vice principals are herein presented by their family name. All names of people, schools, and special programmes are pseudonyms.

Throughout this chapter, links will be made the Engeström's (2001b) activity system as the broader social community within which teachers work is instrumental in determining their conceptualization and use of innovative teaching practices. Briefly, the rules of an activity system regulate and constrain the relationships among the members of the community. The community then negotiates these rules in the manner it functions. Different members of the community carry out different activities and the rules, both formal and informal, guide their actions and define the distribution of tasks between the cooperating members of the community. These three interact with the tools and signs in relation to the subject's pursuit of the object of the activity system. In order to facilitate comparisons, each of the five case studies will be presented in the same manner.

5.1 *École secondaire BelleVue* – The science fair interdisciplinary project

The *École secondaire BelleVue* was a medium-sized public school situated in a suburban area. It offered both the MELS core and language concentration programmes to

its 700 students. The school served students in the first three grades of the secondary level; when the students reached Secondary 4, they moved to another secondary school in the region. The participating teacher at this school was Luc and the school principal was Mrs. Fontaine.

5.1.1 Luc

Luc was a teacher in his late 30's who had obtained a degree in teaching English as a second language from a local French university. At the time of the study, he had taught ESL for over 13 years at the *École secondaire BelleVue*. Luc taught ESL in a language concentration programme where the students studied the Secondary 1 and 2 ESL programme in their first year, the Secondary 3 and 4 ESL programme in their second year, and the Secondary 5 ESL programme in the first half of their third year. The second half of their third year was spent developing and expanding their English skills. Luc initially taught computer science as well as ESL when he started teaching at the school but for the last several years he had taught only English to students in both the core and language concentration programmes.

The science fair project

Over a 4-year period, Luc had taught the science fair project every year with Robert, the biology teacher. Robert had originally started the project for his students five years earlier and during the first year, because he was unable to provide adequate technological assistance, he had asked Luc to provide computer support for the students. As a result, Luc would go into the computer room with Robert during their lunch-hour to help the students with questions regarding the computers or the Internet. The two teachers found because Luc was the students' English teacher, the students spoke to him in English while working on the project. Consequently, the following year Luc and Robert decided to work together on the science fair project with Luc using the project as his end-of-year oral evaluation of the students' English and Robert using it as his end-of-year written evaluation in biology. Since that time, the project has begun in September and run until the beginning of May when the science fair is held.

The year of the study, as in the past, there were two groups of Secondary 3 students in the language concentration programme. They worked on the science fair project every Day 9, the first two periods of the morning. For the first group, both Luc and Robert worked together in the classroom; however, because of schedule constraints this was not possible for the second period. Because of this, the second group worked with Luc in class and during the lunch-hour, Robert opened his classroom to them to answer questions and provide assistance related to biology and their topic. At the beginning of the project, the students in groups of up to three, chose a topic in biology they wished to explore and study in depth. Once the topic was chosen, they were required to develop a repertoire of information from a variety of sources such as specialized revues and magazines, medical dictionaries, journals, encyclopaedias, and the Internet. This repertoire was to be built by the end of December. The second step of the project, beginning in January was to write syntheses of the information in order to begin writing the report. The composition of the paper and research on the Internet were ongoing processes that lasted until the end of the project. Step three was to establish a strategy to simplify and explain the information for the general public. Step four, in April, was the creation of the material in English and French for the presentation kiosks. The final step was the actual exposition at the science fair in May where the students presented their topic in both languages. Throughout much of the year, Luc tried to reserve the computer lab for the first two periods of Day 9 and so the students did most of their research and writing during the English class. Although both groups were followed, for the purposes of this paper, only the first group of students is discussed.

Research Question 1: How do teachers conceptualize interdisciplinary teaching?

In this section, Luc's definition of interdisciplinary teaching will be presented. This is followed by an explanation of how his conceptualization of interdisciplinary teaching has changed over time.

A How do teachers define interdisciplinary teaching?

Luc defined interdisciplinary teaching as using "other subjects to complete yours. That you use other subjects to improve or get the students to practice their English." He

believed almost any subject or activity had something in it that could be used to forward the goals of teaching English. Interdisciplinary teaching was just another tool he could use to help his students improve their English.

B How does teachers' conceptualization of interdisciplinary teaching change over time?

When asked how his conceptualization of interdisciplinary teaching had changed over the 10 years he had been involved in projects with other teachers, Luc replied, "I don't think it has changed." Nonetheless, later in the interview he acknowledged a certain transformation had taken place. Previously he had believed interdisciplinary projects could only be done with students in special programmes; however, he realized he could have his students in the core programme do some of the same interdisciplinary projects as his language concentration students. Ten years earlier he had not been able to have his students in the core programme work on interdisciplinary projects because "it would have been a disaster." With time and experience he had learned that "it's a lot the way you present it to students, the way you organize it, the way you sell it to the students" that makes the difference. As a result, in the year prior to the study, both his language concentration and core student groups worked on the seven wonders interdisciplinary project. In English class, this project explored the seven wonders of the ancient world and then the students chose seven wonders of the modern world, one of which had to be from a country where Spanish was the language spoken by the general population. The students wrote texts in English on each of the wonders they chose except for the one related to Spanish; that text was written in Spanish and corrected by the Spanish teacher.

Research Question 2: Why and to what degree do teachers value interdisciplinary teaching?

The factors and influences that first incited Luc to begin using interdisciplinary teaching are presented below. These are followed by explanations of how interdisciplinary teaching has an impact on his classroom practices and then his estimation of the degree to which he uses interdisciplinary teaching during the school-year.

A What are the factors that prompt teachers to become involved in interdisciplinary teaching?

There were five main reasons for Luc's involvement in interdisciplinary teaching. Four of these related to the pedagogical choices he made to use interdisciplinary projects as a tool to attain the object of having his students use and improve their English. The other reason was through the influence of the broader school community.

Luc stated, "The first reason why I got involved, and the main reason why I am interested by these things, is it's that I constantly try to find new things or new ways to get the interest of the students... I think that doing projects like this, it changes from the classical way of teaching so the students see it different so they get more interested." When he first became involved in interdisciplinary teaching Luc believed working with other teachers on projects allowed him to create "something bigger" for his students and they would get a lot of satisfaction with the project at the end because of the effort they put into it. Luc believed the value in interdisciplinary teaching was the involvement of the students in the resultant projects. This belief was still one of the main reasons he continued to use interdisciplinary projects. He also believed student motivation, the way his students got involved and participated in the interdisciplinary project, was a result of their seeing "the friendship [and] the collaboration" he had with Robert. Luc explained the students' perception of the collaboration between teachers was an important aspect of interdisciplinary teaching and therefore had a positive effect on the students' involvement in the project.

Another of his objectives in using interdisciplinary projects was to have the students practice their English. He said some of the students did not participate often in class discussions and so having to present in front of an audience at the science fair, in a context completely different from the classroom, encouraged them to practice speaking English more, improving their speaking skills. Therefore, these projects were one way of getting "all the students to participate because the more they're going to participate, the more they're going to speak English" because "the only way [they're] going to improve" in English is by practicing. He felt the students did not perceive their efforts as practicing English so much as practicing for the science fair with the end result being they practiced "English without realizing they're practicing English." However, he wanted the students to

develop and use more than “only common language.” Luc found the science fair interdisciplinary project to be an ideal vehicle for the students to extend their vocabulary as the topics the students chose in the project required them to learn vocabulary from biology, sciences, medicine, law, nutrition, etc.

Luc also used interdisciplinary projects in his teaching in order to help his students develop autonomy. He began to use the projects as a way to show the students how to gather information and to organize it so it would be useful for them, helping them build skills and learning and work strategies. He said interdisciplinary projects like the science fair project taught students to “learn more how to organize themselves and how to structure what they’re doing to do something bigger.” He recounted how students he had taught in the past “came back and said that what they did here really prepared them for CEGEP.”

In the larger school community, Luc had found “all the English teachers [he had] worked with in the past” had had an influence on his participation in interdisciplinary teaching because “all these English teachers... [were] the kind of teachers who like to collaborate and have new things, new ideas, [and were] not too conservative.” Besides his colleagues in the English department, Luc felt his colleagues in other departments also had a great deal of influence in his becoming involved in interdisciplinary teaching. He had first been approached by the history teacher and then by Robert to participate in projects in his capacity as computer science teacher. These invitations had been his first experiences of working collaboratively with teachers of other subjects.

B What impact does interdisciplinary teaching have on teachers’ classroom practices and relationships with colleagues?

Within the classroom

Luc believed working on interdisciplinary projects did not have an impact on his teaching because he generally taught English using projects. He felt the only difference was that an interdisciplinary project was something special because of its size; all the interdisciplinary projects he had been involved in had been “bigger, they [were] always bigger” than subject-specific projects. Because they were bigger, the students’ pride in accomplishing them was greater, and so this increased their motivation. However, through

our conversations, other aspects emerged that showed interdisciplinary teaching did result in some differences.

He thought his classroom rules did not change but, as his main rule was that the students use only English in class, sharing teaching time with Robert in the computer lab resulted in changes. When the students addressed Luc, or when he addressed them, all interactions were in English but the interactions between the students and Robert were all in French. That the students spoke two languages with the two teachers in the English class was related as much to the subjects these latter taught as to the different types of support they offered the students in the computer lab. Finally, while Luc did not believe interdisciplinary projects necessarily had an effect on the students learning of English, he did think the science fair project increased their autonomy and resourcefulness. Further, it helped improve their use of work strategies.

Within the interdisciplinary team

According to Luc, the planning of interdisciplinary projects must be made jointly and all decisions need to be agreed upon with his interdisciplinary partner. The most important of these are the timing of the project in the school-year, the length of the project, and the amount of time devoted to the project. However, other than the joint decisions about the aspect of time, he said there was “not much difference” in the division of labour in planning interdisciplinary projects as compared to the projects he developed alone.

C To what degree do teachers use interdisciplinary teaching?

When asked what percentage of the teaching he does is interdisciplinary, Luc replied, “It’s very easy. I have 24 periods and I have two periods with the [science fair] project, so it’s about 8%.” He felt it would have been a bit more had he been able to do the seven wonders project with the Spanish teacher. When asked to give an estimate of the percentage of interdisciplinary teaching done by other teachers in the school, he replied “it would be zero.” He thought teachers from different subjects working together on a project were extremely rare and believed that he and Robert were the only two in his school who did so.

Research Question 3: What factors constrain or facilitate teachers' efforts to implement interdisciplinary teaching in their classes?

This section presents the factors Luc cited as having either a positive or negative effect on his abilities to implement interdisciplinary teaching. First the constraints are presented and then the facilitating factors. These two are further divided into different sections, those elements that come from within the classroom, the interdisciplinary team, the school, the school commission, and the MELS.

Factors that constrain efforts

Within the classroom

Luc claimed about 25% of the students in regular classes made interdisciplinary teaching more difficult because they were not interested in school, they were “not reliable to be on time, to be prepared,” nor to develop good strategies. Rather, “they develop strategies, but it’s strategies like who’s gonna do the least.” However, he had not allowed this to deter him; he had begun using interdisciplinary projects with his regular students and found, although slightly more difficult to carry out, the projects were possible and had a positive effect on his students’ learning.

Within the interdisciplinary team

Within the interdisciplinary team, Luc felt the development of the tool, interdisciplinary projects themselves, was a constraining factor. He claimed interdisciplinary teaching was “a lot of work” and teachers “have to put in a lot of time together” in order to develop interdisciplinary projects. He was sure this extra work was the main reason teachers “don’t want to get involved” in interdisciplinary teaching.

Within the school

Luc found there were two types of factors at the level of the school that constrained his efforts to implement interdisciplinary teaching. These factors related to the school community and the rules that governed the community.

Luc considered certain teachers’ profiles made them less likely to become involved in interdisciplinary teaching. He felt these were teachers who were more secure in their

routine, who planned their classes and lessons closely, and who did not want to change or experiment with interdisciplinary projects. He found it “tough to plan projects with them.”

Teacher resistance to involvement in interdisciplinary teaching had resulted in the near-failure of the science fair project in the past and had threatened the completion of the science fair project the year of the study. In the first instance, because of scheduling, it was impossible for Robert to work with both groups of students and so the other biology teacher in the school had been assigned to one of the groups. This teacher very reluctantly participated in the science fair interdisciplinary project; however, because the other teacher was doing the project “not because he really wanted to” but because “he was forced to do it,” the science fair project did not work well. As the year advanced, he offered his students the option of writing a final exam instead of the research reports they were to produce as part of the interdisciplinary project. This resulted in students in both his and Robert’s class abandoning the research process. Because of this Luc believed it was essential that interdisciplinary projects not become school policy, that teachers not be constrained to work together because when collaboration is imposed on them, interdisciplinary projects are not successful.

Teacher involvement also became an issue during the course of this study when Robert became ill in March and was absent for the rest of the year. The teacher the school hired to substitute for him until the end of the school-year was a physical-education teacher who refused to get involved in the science-fair project or to grade the final written reports the students produced during the project because he didn’t know the material or the criteria. The principal then informed Luc that the science-fair (to be held in six weeks) would have to be cancelled although the students had been working on it since September. Luc protested and eventually, the other biology teacher in the school agreed to assist Robert’s students with the project in the final weeks before the fair and apparently the principal agreed to hire someone to grade the students’ papers. Luc explained this was the principal reason he did not do more interdisciplinary projects. It took too much time to build and carry out interdisciplinary projects when he was not certain of his partner. Further, the choice of teachers with whom he could collaborate was constrained because almost half the teachers in his school did not have a permanent contract and he never knew if they would be back the next year or not. He felt this situation and the difficulties he had experienced

with the science fair project acted to encourage teachers “to stay in their class and leave the door closed, and just do their own thing.”

Luc offered another example of how the scheduling had a negative effect on the implementation of the science fair project. The year of the study, Robert and Luc had approached the principal to have both teachers scheduled with the same groups at the same time in order to work together with their students on the science fair project. She had complied but it caused “big schedule problems at the beginning of the year and two weeks after, we all had to change our schedules. Everyone in the school.” In order to provide the two teachers with common classes as requested, the schedule “penalized” other teachers, causing them to have more periods or more days of four periods. Because of this, on Day 9, when Luc went to the computer lab with the students to work on the science-fair project, Robert was able to be there during the first period with one group, but with the second group in the second period he could not. Therefore, he had to open his classroom over the lunch-hour to assist the students from this group with their work on the interdisciplinary project.

Within the school commission

Luc believed the school commission was largely irrelevant to the implementation of interdisciplinary teaching.

At the level of the MELS

Luc believed because teachers were “trying to adapt themselves to the reform, it [would] take a few years before they would like to get involved” in interdisciplinary teaching. During the time they appropriated the programme, Luc thought teachers would be less likely to embark on projects that linked their subject to others. Further, because the new education programme “changes every month,” he thought other teachers would do like him and not start examining the new programme until the summer before they had to implement it.

Factors that facilitate efforts

Within the classroom

According to Luc, the most important factor in the implementation of interdisciplinary teaching “is that you really get along with this other teacher.” He reiterated later, “The number one thing, [is] the teachers have to get along.” All through both interviews he repeated this was the key criteria for success in the implementation of interdisciplinary teaching. For him, other elements supported interdisciplinarity but the most important was the relationship between the teachers before the creation of the interdisciplinary project.

One element Luc named as facilitating interdisciplinary teaching was his ability to pair English with any other subject in a way that could be used to help students improve their English. He said, “If there is something that can be done in biology, geography, or any other subject, I can use it in English.” He found this ability to pair his subject matter with all other subjects meant the options he had available to collaborate with other teachers in the development of projects were only limited by the attitude of the other teachers towards interdisciplinary teaching.

Within the school

The same two types of factors at the level of the school that constrained Luc’s efforts to implement interdisciplinary teaching were those that also facilitated these efforts. The school community and the rules that govern the community were the most important elements.

Luc found his school principal very supportive of his and Robert’s efforts in the science fair project. A willingness on the part of the school to provide a certain number of periods to help teachers get an interdisciplinary project started would facilitate the initial development of a project, and although he and Robert had not asked to have this time provided them, he was certain Mrs. Fontaine would have agreed, partly because the benefits the students would get from the project and partly because this type of project enhanced the image of the school.

Similarly, Luc found it very important the principal agreed Robert would be assigned the language concentration students at least once in the cycle when Luc had the

same group. The fact that both teachers could be in the class with the students at the same time reinforced the links between the subjects and allowed them to capitalize on their respective strengths when working with the students on the interdisciplinary project.

Luc had also found having closed students groups made interdisciplinary teaching much more possible, “for example, right now, the language concentration [students] are always together.” This permitted both him and Robert to address the students regarding the science fair project at any time. It also meant there were no class groups with students from different programmes mixed together.

Within the school commission

According to Luc, the previous curriculum consultant offered a lot of help to the teachers to start interdisciplinary projects and would have been helpful as a resource if the teachers had taken advantage of what he had to offer. Additionally, while there were no training programmes regarding interdisciplinary teaching, he thought training or even information on interdisciplinarity would be a factor which would encourage more teachers to become involved.

At the level of the MELS

Luc said the new MELS programme that encouraged interdisciplinary teaching was helpful in that it raised teachers’ awareness of the possibilities for collaboration. He further suggested that any documentation from the MELS or publishers of school materials that made it easier to implement interdisciplinary projects would be positive.

Summary

Although Luc did not use it as much as he would have liked, interdisciplinary teaching was a way for him to mediate his students learning of English. The interdisciplinary project was a tool that helped increase motivation and interest on the part of his students. Further, it worked equally well with the students in the core ESL programme as with his language concentration students. This factor was also the main reason he had become involved in interdisciplinary teaching. He found projects that were developed in collaboration with other teachers increased student motivation and interest,

helped them appreciate collaboration, and encouraged development of autonomy and useful work methods that would assist them as they moved through the education system. His introduction to interdisciplinary teaching had been the result of invitations from other teachers and, while Luc did not believe interdisciplinary teaching made any changes to his classroom practices, in-class observations showed that because of the different roles he and Robert played in the class, change did occur due to the division of labour between the two teachers.

According to Luc, there were not many factors which either constrained or facilitated his efforts to implement interdisciplinary teaching. However, through the interviews, elements emerged related to the community and rules which did have an effect. Within the school community, his colleagues' lack of interest or lack of cooperation in interdisciplinary teaching constrained his efforts, but good relations with colleagues and a supportive principal who saw the value of interdisciplinary teaching and tried to facilitate its implementation were considered positive factors. The rules within which the community operated, such as those regarding the creation of schedules for the school, had a negative effect on Luc's efforts to implement interdisciplinary teaching; conversely, closed student groups were seen as facilitating.

5.1.2 Luc's students

The 28 students in Luc's class were in the language concentration programme; they studied both English as a second language and Spanish as a third language. They had completed the Secondary 1 and 2 ESL programmes in their first year of secondary school, the Secondary 3 and 4 ESL programmes in their second year, and at the time of the study, had completed the Secondary 5 ESL programme. The students had six 75-minute periods in English over the nine-day cycle.

Research Question 6: How do students view interdisciplinary teaching within their classes?

The students' perception of the science fair interdisciplinary project was elicited through the use of a questionnaire and then individual interviews. First, the information from the questionnaire is presented. This information is divided into two sections: that of

the Likert-style items and then information obtained through the open-ended questions. This is subsequently followed by information gathered through individual interviews.

Questionnaires: Likert-style items

The questionnaire in Table 5.1 is presented in themes so certain items are not in the positions they were in the questionnaire distributed to the students. There are three main themes: transferability which includes the transfer of competencies, ideas, knowledge, and strategies either from other subjects to English, or from English to other subjects; benefits to learning English; and other considerations which includes interest and motivation, and general appreciation. The original French version of the questionnaire can be found in Appendix N.

The results of the questionnaire are given with the number of student responses indicating agreement for each of the items as well as the average response for each item.

The values for the responses are as follows:

- 1 indicates strong disagreement with the statement
- 2 indicates disagreement with the statement
- 3 indicates neutrality regarding the statement
- 4 indicates agreement with the statement
- 5 indicates strong agreement with the statement

The subsequent discussion of the results of the questionnaire uses these same five terms.

Table 5.1: Results of the student questionnaires from Luc's class

Themes	Secondary themes	Items	Number of responses					Mean
			1	2	3	4	5	
Transferability	Transfer to English from other subjects	2. In my English class, I was able to re-use ideas which I first dealt with in my other subject area class(es).	0	0	4	16	8	4.14
		3. In my English class, I was able to extend my knowledge of the topic dealt with in my other subject area class(es).	0	1	1	11	15	4.43
		4. In my English class, I was able to re-use strategies/ skills which I used in my other subject area class(es).	0	1	8	17	2	3.71
		5. In my English class, I was able to learn the English equivalents of words/ expressions related to the topic dealt with in French.	0	0	3	11	14	4.39
		6. In my English class, I was able to re-use work methods dealt with in my other subject area class(es).	0	2	4	17	5	3.89
	Transfer to other subjects from English	7. In my other subject area class(es), I was able to re-use ideas which I first dealt with in my English class.	1	8	7	9	3	3.18
		8. In my other subject area class(es), I was able to extend my knowledge of the subject dealt with in my English class.	0	4	4	12	8	3.86
		9. In my other subject area class(es), I was able to re-use strategies/ skills first dealt with in my English class.	1	6	9	11	1	3.18
	Benefits to learning English	10. This interdisciplinary project helped me to improve my English speaking skills.	0	0	3	11	14	4.39
11. This interdisciplinary project helped me to improve my English listening skills.		0	6	10	9	3	3.32	
12. This interdisciplinary project helped me to improve my English writing skills.		6	5	6	10	1	2.82	
13. This interdisciplinary project helped me to improve my English reading skills.		2	6	9	9	2	3.11	
14. This interdisciplinary project helped me to improve my English vocabulary.		0	0	2	9	17	4.54	
18. I learn more English with interdisciplinary projects than in a regular English class.		3	7	14	2	2	2.79	
Other considerations	Interest and motivation	15. I found this interdisciplinary project as interesting as me regular English classes.	2	2	11	8	5	3.39
		16. Interdisciplinary projects are more motivating for me to learn English than regular English classes.	2	3	14	6	3	3.18
	Differences	17. Interdisciplinary projects are different from regular English classes.	0	0	2	13	13	4.39
	Appreciation	1. I liked the interdisciplinary project we recently finished.	0	1	5	15	7	4.00
		19. Interdisciplinary projects should be taught more often.	1	0	11	12	4	3.64
		20. I prefer interdisciplinary projects to regular teaching activities.	1	9	13	4	1	2.82

In general, the students indicated agreement or strong agreement with the items related to the transfer to English of the ideas, knowledge, learning strategies, and work methods first used or learned in subjects given in French. However, their degree of agreement decreased a great deal with the items related to the reinvestment in subjects taught in French of ideas, knowledge and learning strategies first learned in their English class. This could partly be because the project was based on information and topics discussed and developed in the biology class by Robert. However because the science fair project, although worked on in English class, had the students doing research and writing in French for the most part, the students might have felt there was little done in English that could be reinvested in their other subject classes.

Although there was agreement for most of the items related to the perceived benefits of learning English through the interdisciplinary project, two items from this theme were among the only three items the students indicated they disagreed more than agreed. They agreed the science fair interdisciplinary project had helped them improve English vocabulary, their speaking, listening, and writing skills. This agreement was likely because they had had to learn the English equivalents of French terms and expressions for their presentations at the fair. However, the science fair project had no written English component other than bilingual posters made for the fair presentation. This may be the reason for the disagreement with the item related to the improvement of writing skills in English through the interdisciplinary project. The item to which the students indicated the greatest degree of disagreement was the statement positing the students learned more English in the interdisciplinary projects than in their regular class. For these students, all communication within their regular English class was in English. However, while the students spoke with Luc in English while working on the science fair project, they spoke with Robert in French. Additionally, for many of the students, most of their interactions within their teams were French, the vast bulk of the research on the Internet was completed in French, and the research report the students wrote at the end of the project was in French. This very possibly coloured their vision of the amount of English they learned through the interdisciplinary project.

For the theme of other considerations, there were some interesting results. The students were mostly neutral towards the items except for three exceptions. The students

overwhelmingly found the interdisciplinary project to be different from their regular English class, and while they indicated agreement that they had appreciated the project, there was disagreement with the item that they preferred the interdisciplinary project to their regular English class. Part of the reason for this might have been because the students found the project too long and the work load very onerous whereas the projects they worked on just in their English class were of shorter duration and so perhaps required less work.

Questionnaires: Open questions

There were three open questions on the questionnaire. These asked the students to indicate what they liked most about the interdisciplinary project, what they liked least, and in what manner the interdisciplinary project was different from their regular English class.

The element the students indicated they liked most about the science fair interdisciplinary project was their ability to put into practice knowledge they had learned and to share this knowledge with their peers. Many of these responses made reference to the satisfaction the students felt as experts on their topic when giving their presentation to their peers and others in the school community at the fair. Several students appreciated being able to make links between their English and biology classes, and a few indicated they found the interdisciplinary project to be interesting and motivating. This may be because they felt they learned things in the science fair project they did not usually see in their regular English class. Greater autonomy over their learning and the opportunity to work with partners of their choosing were other elements the students appreciated. This information is summarized in Table 5.2 on the following page. For this table, as in the tables containing information for the other two open questions, as several students indicated more than one response for each of the three open questions, the total number of responses for each of these questions exceeds the number of students in the class in each of these three tables.

Table 5.2: Luc's students: Responses for Open Question 1

Responses (28 students)	Number of students indicating this response
The opportunity to put knowledge into practice/share new knowledge	13
The links the project made between the different subjects	9
The project was motivating/interesting	6
The opportunity to learn things not normally seen in English	6
The increased autonomy in studying/learning	4
The opportunities for team work	3
The ability to receive assistance from more than one teacher	1
The absence of a final exam in biology because of the final written product	1
The opportunity to see what other students had done	1
The opportunity to work at the computer lab	1

The elements the students liked least about the interdisciplinary project were they felt either there was too much work or homework involved in the project, or that it lasted too long because it was worked on over the entire school-year. Another point many students raised was that the preparation and then the presentations at the science fair were stressful and very tiring; they had had to stay standing at their kiosks for the entire school day, and then into the evening as well when the parents came to see the presentations. While they had enjoyed giving their presentations at the science fair, they felt the day had been too long. A few students were unhappy that the interdisciplinary project made up their end of term grade for their class in biology, while others had disliked the amount of translation from French to English they felt obliged to do for the interdisciplinary project. The students' responses to this question are presented in Table 5.3 below.

Table 5.3: Luc's students: Responses for Open Question 2

Responses (28 students)	Number of students indicating this response
The amount of work/homework was too onerous	11
The project lasted too long	11
The preparation for and the presentation at the science fair was stressful and tiring	9
The project counts for end of term grade in French	4
The project required translation of French to English	3
A lack of autonomy was penalizing	1
The team did not function well/team work is difficult	1

As was seen by the response to Question 14 in the first part of the questionnaire, many students believed the interdisciplinary project had provided greater opportunities than their regular classes for them to learn vocabulary in English. Two other elements the students found different in the interdisciplinary project compared with their regular class was the increased freedom to choose a topic that was personally interesting, and the increased interest and motivation an interdisciplinary project provoked. Greater autonomous learning, more opportunities for team work, the opportunities to develop more time and work management strategies, and the increased opportunity the project offered for the students to find and then share their information with others were other ways in which the students found the science fair interdisciplinary project to be different from their regular English class. This information, as well as the responses the students wrote regarding regular classes can be found in Table 5.4 below.

Table 5.4: Luc's students: Responses for Open Question 3

Responses (28 students)	Number of students indicating this response
Interdisciplinary projects provide more learning of vocabulary	15
Interdisciplinary projects allow more freedom to choose topic	4
Interdisciplinary projects are more interesting/motivating	4
Interdisciplinary projects have more autonomous learning	3
Interdisciplinary projects develop competencies in team work	3
Interdisciplinary projects provide more chances to put learning into practice/less theory	2
Interdisciplinary projects allow links to be made between the different subjects	1
Interdisciplinary projects require more written communication skills	1
Regular classes teach more general oral skills, vocabulary, and grammar	14
Regular classes mean the teacher provides all information	3
Regular classes mean individual work	1

Interviews

Based on the results from the Likert-style items on the questionnaire, the three students who indicated the highest agreement with the items and the three students who indicated the lowest agreement with the items were invited to take part in a short interview. The six students agreed, and each participated in a 10-minute interview, the purpose of

which was to elucidate the reasons for the students' perspectives and to obtain a more complete understanding of how they view interdisciplinary teaching in their classes.

Each interview began with a request for the student's definition of an interdisciplinary project. Although the definitions differed slightly, they all made reference to "mixing" or "linking" two or more subjects together. Through the interviews it was possible to determine the elements the students liked most about the science fair interdisciplinary project related to their class and the larger school community. Most believed their relationships with their peers had improved as they spent time together working on the projects. And, while they did not perceive any changes in their relationship with Luc, they found the interdisciplinary project meant they had more contact with other teachers in the school, either through assistance provided during the project or due to their presentations at the fair. They greatly appreciated the opportunity to present their topics to their peers and the other teachers at the school during the fair and to receive their feedback. Overwhelmingly they found this to be the most positive aspect of the interdisciplinary project.

Luc used interdisciplinary projects to help his students improve their English, and the interviews showed the students perceived them as being somewhat effective tools for that purpose in that all six of the students interviewed believed the interdisciplinary project had helped them enriched their vocabulary. Additionally, the students found they were required to work on their own and become more autonomous and resourceful. Building the portfolio, doing research, and transferring knowledge from one subject to another meant the students took on the role of the teacher in their own learning and were helped by their partners to learn and understand new material as well.

Despite three of the students having been chosen for having a negative perception of the interdisciplinary project, the six students interviewed were unanimous in their praise for the interdisciplinary project, claiming it had a very positive effect on their level of motivation because it was "not like another regular class like yesterday or like before." However, the reason most cited by the students for their appreciation of the interdisciplinary project was that it was more motivating as they were able to choose their own topics and so work on something they were interested in.

Summary

It would appear from the information gathered from the students that Luc's use of the science fair interdisciplinary project as a tool to increase the students' learning and use of English was moderately successful. The students indicated they had enjoyed the project and seemed to feel they had learned more vocabulary and improved their spoken English through the project; however, they also felt they had not particularly improved their written English. Further, they indicated they felt they learned less English with the interdisciplinary project than they did in their regular English class. The elements the students appreciated most about the project related to their classroom and the school community in that they found the greater interpersonal interactions rewarding. The aspects they enjoyed least related to the great amount of time and homework required to complete the project. It is perhaps for this reason they indicated on the questionnaires that they did not believe interdisciplinary projects should be implemented more often in their English class.

5.1.3 Observations of the science fair project

Luc's classroom policy was that all conversations, all interactions were to be in English, at all times. In his regular classroom, this rule was respected. Upon entering the classroom in the morning, the students would switch from French to English and continue their discussions with their peers as they went to their desks. However, once the students were led out of their classroom and through the corridors to the computer lab, this adherence seemed to weaken. All interactions with Luc were in English, but working in pairs and small groups in the computer lab, the students generally spoke French among themselves. Additionally, all conversations with Robert were in French as was the vast majority of the research done on the Internet. The English period was given to work on the projects, but the projects were not worked on in English.

Besides the language differences, during the observations it was apparent that Luc and Robert had clearly defined roles in the class. Luc was usually approached by students with problems or questions concerning the computer, the presentations and construction of the kiosks for the science fair, and the format for the glossary and reference sections of the final written product the students had to build. Any questions directly related to the topic the students were investigating were directed to Robert; Luc's assistance was only solicited

when Robert was not available. In class, the students would raise their hands and Luc or Robert would point to themselves and if the students nodded, they would go over to where the students were sitting in order to provide assistance. If the students shook their heads, the teacher would continue to circulate around the class while the students waited for the other teacher to become available. Luc explained the division between roles was natural as he used to teach computer science whereas Robert had very few computer skills. However, while Robert was very passionate about science and very knowledgeable about most of the topics on which the students were working, Luc did not have the background knowledge in biology that was necessary to provide assistance on the students' topics. The following extract from the observation notes provides an illustration.

One group of three students were sitting with their hands in the air. Both Robert and Luc were busy with other groups. Luc finished first and pointed at himself. The students said "No," and pointed at Robert. Luc looked at Robert who was engrossed in a conversation with a group of students on the usage of luminal in the Pickton investigation and then walked over to the students with their hands in the air.

Luc: What's your question, maybe I can help.

Students: What is *cellule souche*?

Luc: Stem cells.

Students: Yes, but what is it?

Luc: Stem cells. ... Oh, you want to know what they are?

Students: Yeah.

Luc: Let me see what you're working on.

He looked at the notes the students were working from, and one of the students read the text on the paper with him.

Luc: I can't help you with that because I'm not sure. I don't want to tell you something wrong. You have to ask Robert about that; he'll be able to explain it better.

As he walked away, the students raised their hands again and waited for Robert to come around.

This incident provides an example of how the second language teacher may not have the requisite content knowledge to support students' learning. As was noted in the

literature review, the second language component of adjunct courses is designed to improve the students' knowledge of the content material; when the second language teacher does not have this knowledge, they may have problems facilitating and supporting the students' learning.

Luc and Robert not only had different roles in the class, they provided different materials to the students. Unlike when he worked on English-only projects with his students, with the science fair project Luc was not concerned with finding or choosing English materials because the project was based in biology and the students used information and material from Robert to develop the project. Instead, Luc provided the students with information and assistance regarding the computers and the use of the Internet to gather information and data on their topics. Luc did not appear to supply any reference books or source material for the students to use while working on the project. The only materials I saw Luc provide were construction paper for the students' bilingual posters for the science fair and various URL addresses for the Internet-based English and bilingual dictionaries the students used.

Each Day 9 throughout the year, the English class was devoted to the science fair project. There were six 75-minute ESL classes per nine-day cycle, meaning the students spent 20 English classes out of 120 working exclusively on this project. However, the only parts related to English occurred at the very end, in the actual science fair, and these were basically built on the translation of texts from French to English. Because the students were to present their information at the science fair without the use of cue cards or other aids, they did not produce any documents in English other than the bilingual posters for the science fair. These posters generally presented terminology and so the English generally involved one-word translations for the French equivalents. Further, although they were to practice the English part of their presentation during the period before the science fair, most students spent this time working on their posters. Based on the presentations at the fair, it was clear most of the students' presentations had been translated from French as well. At no time did I see any documents written by the students in English.

One of the conditions Luc placed on his agreement to participate in this study was that I act as one of the evaluators of the students' English presentations during the science fair. During the presentations, other than a few notable exceptions, the students did not

interact with me in English. Giving a prepared spiel was not interaction, and when I asked follow-up questions regarding the students' topics, if the answers were not in the information they had memorized in English for the presentation, most of the students were only able to respond in French.

The students did not reinvest understanding of authentic English texts because most of their research was conducted in French. Both the material and books the students brought to class and the Internet sites they visited were in French. Only on rare occasions did I see students looking at English websites; when the websites were bilingual, the students used the French versions. Therefore, there was very little negotiation of understanding or the completion of meaningful tasks that would have allowed them to develop either speaking and listening skills or comprehension of written texts in English. And while the students created posters that contained English and French terms to provide visual support for their presentations, there was no use of the writing process or production of written texts in English. Therefore, as the students' oral and written use of English throughout the project was very limited, it is possible, as emerged in both the Likert-style items and open questions of the questionnaire and interviews, the students did not learn any more English than the vocabulary words they were required to translate for their posters and presentations.

This did not appear to be a concern for Luc. When questioned about the specific learning outcomes he had projected for the science fair project, Luc claimed that although "English should be my number one objective, but the first thing still that I see, I think that students perform better at school when they have a good self-esteem... That's the number one thing I would say." He believed the interdisciplinary project indirectly helped the students learn English as they were so proud of what they had accomplished at the science fair that they would want to do better. However, while this objective was certainly reached, the interdisciplinary project, as carried out, did not fulfill all the benefits to English language learning that it could have potentially offered.

5.1.4 Mrs. Fontaine

Mrs. Fontaine had begun her teaching career as a physical education teacher. She had three sons, two of whom were deaf. Because of this she had become involved in issues

for students with special needs and then retrained as a special education teacher. She subsequently became the curriculum consultant for special education in her school commission in Montréal, and then did a Master's degree in school administration. Currently in her 40's, Mrs. Fontaine had been the principal at the *École secondaire BelleVue* for four years.

Research Question 4: How do school administrators view the implementation of interdisciplinary teaching within their respective schools?

This following section will present Mrs. Fontaine's perspective of interdisciplinary teaching. It is presented in three sections; her conceptualization of interdisciplinary teaching, her view of interdisciplinary teaching as it relates to the new MELS educational reform, and the factors that facilitate or constrain her efforts to promote interdisciplinary teaching in her school.

A How do school administrators conceptualize interdisciplinary teaching?

Mrs. Fontaine explained interdisciplinary teaching was when *"l'enseignant de bio, qui enseigne la bio, le fait avec l'enseignant de français. Donc, les textes de français sont sur la bio"* (the biology teacher, who teaches biology, does it with the French teacher. So the French texts are on biology). When asked if she could provide a definition of interdisciplinary teaching, she said, *"La première idée que j'ai, c'est le transfert des connaissances"* (my first idea is it's the transfer of knowledge) whereby what is learned in one class is transferred to be used in another. She believed interdisciplinary teaching should be carried out in such a manner so the students would see it as "natural" and that the skills and knowledge they learned in one subject were applicable in others as well, not just for the project, but in everything they did.

Because she had been involved in interdisciplinary teaching for several years, starting as a special education teacher, Mrs. Fontaine explained her conceptualisation of interdisciplinary teaching had changed a great deal over time. She said she understood interdisciplinary teaching much better now than she had before. She saw interdisciplinarity as having greater transferability *"parce que moi, avant, c'était pour l'enfant ou encore l'adolescent avec des troubles spécifiques. Maintenant ce que je vois est qu'on peut*

l'appliquer partout" (because for me, before, it was for the child or adolescent with specific challenges. Now I see it can be applied everywhere). She had found interdisciplinary teaching was an effective tool to promote learning for all types of students.

B How do school administrators view interdisciplinarity in the context of the current MELS' educational reform?

Mrs. Fontaine saw interdisciplinary teaching as a valuable tool that increased student learning therefore, because her main focus was on student outcomes, she classified interdisciplinary teaching as something "essential." Within the last two or three years, with the implementation of the educational reform at the secondary level, she had seen more documentation from the MELS that indicated it was necessary for teachers to work together.

Within the classroom

Mrs. Fontaine believed the MELS' emphasis on interdisciplinarity was to enable students to make the links between subjects and to help them to see how information from the different subjects could be melded into a coherent whole that could then be applied elsewhere. She thought this ability to make sense, to learn in a meaningful manner, was the object of interdisciplinary teaching. Additionally, because it changed both what and how students learned, interdisciplinary teaching meant students could examine and learn about things that the teachers had not anticipated, thus making their learning more natural. Further, she thought because the learning was being done in pursuit of project goals, often the students would learn a great deal without realizing it because a successful interdisciplinary project would solicit student motivation.

However, Mrs. Fontaine found the students did not know their grammar rules in French and so their written productions were not well done, they did not know their mathematics tables and so had difficulties with basic calculations, and they did not know important people in history. Her opinion was this was the opposite of traditional, teacher-centred classes and while she agreed interdisciplinary teaching helped the students develop competencies and abilities so they would know where and how to find the information, it

was necessary to make some adjustments so the students would be able to balance knowledge with abilities and competencies.

Mrs. Fontaine posited interdisciplinary teaching changed some of the rules which governed operations in a classroom but these different classroom management techniques were difficult for those who did not feel competent managing students in a context where they were moving around and working on their own. Mrs. Fontaine found some of the teachers just getting involved in interdisciplinary teaching were not always comfortable managing students in these situations.

Also within the activity system of individual teacher's classrooms, Mrs. Fontaine thought interdisciplinary teaching made differences in teacher-student relationships. She found interdisciplinary projects allowed teachers to develop closer, friendlier relationships with their students because of the changes in classroom management. As a result, the students felt more comfortable approaching the teachers and talking to them about a variety of issues in their lives.

Within the school

In the broader school community, Mrs. Fontaine did not believe interdisciplinarity changed relationships between teachers; however, it did have an effect on her relationships with those teachers who implemented interdisciplinary teaching. She found she saw them more, spoke with them more often, and gave them more support than other teachers who were not involved in interdisciplinarity simply because of the difference in the amount of contact time. She found her relationships with those who participated in interdisciplinary teaching developed "naturally" through the increased contact.

This also had an effect on the division of labour and the roles Mrs. Fontaine held in the school. She found encouraging teachers to become involved in interdisciplinary teaching and then supervising and supporting their subsequent efforts required she change from a more administrative role to more that of a pedagogical supervisor. She said she spent a great deal of time talking with teachers who were trying to elaborate interdisciplinary projects, guiding and helping them with their planning. Because of the lack of experience among certain participants, some of these projects required closer supervision and more support from her during their implementation as well.

Another reason Mrs. Fontaine had more contact with teachers involved in interdisciplinarity was because she felt it important to help them determine how to evaluate their students' learning. She believed the changes in the form of evaluations which were put forth in the new MELS programme were difficult for the teachers and so it was necessary to assist their efforts to set up grading schedules that would respect their subject-specific objectives but still reflect the interdisciplinary nature of what the students' produced, determining which aspects would or would not be graded by which teachers.

Within the school commission

Within the activity system of the school commission, Mrs. Fontaine saw interdisciplinary teaching and interdisciplinary projects as promotional material and marketing tools to recruit more students from the primary schools from which her school drew its population base. She felt her school was in competition with the private schools in the surrounding communities and advertised interdisciplinary teaching as a selling point of the school. Inviting and coordinating student groups from the primary schools to see or participate in the interdisciplinary projects required a great deal of time as she organized these visits and expositions.

C In their particular context, what factors constrain or facilitate the implementation of interdisciplinary teaching?

When asked what elements facilitated or constrained interdisciplinary teaching in the school, Mrs. Fontaine took a piece of paper and drew on it a very large dollar sign (\$) and a heart. At a later point she wrote "time" on the paper and drew arrows between this and the other two factors. During the remainder of the interview, while speaking about points which helped or constrained teachers' efforts to implement interdisciplinary teaching, she would point to one or another of these elements or underline them as emphasis.

Factors that constrain efforts

Within the school

Mrs. Fontaine found a lack of tools, specifically funding, to be the factor that most constrained her efforts to promote interdisciplinarity in her school. Throughout the entire interview, the conversation was punctuated by comments on how interdisciplinary teaching was expensive and required more resources than teachers working alone. She said, *“L’argent, l’argent, l’argent. Fait que c’est, c’est partout, c’est partout, c’est partout, partout, partout, partout. Fait que c’est pour ça que je dirais l’argent”* (Money, money, money. So it’s, it’s everywhere, it’s everywhere, it’s everywhere, everywhere, everywhere, everywhere. So that’s why I say money). When teachers asked to be released from their teaching task in order to elaborate and plan an interdisciplinary project together, it required funding. When teachers requested a training seminar on interdisciplinary teaching it meant an unanticipated expenditure. The photocopies the teachers made for the students to use in the interdisciplinary projects cost money, etc, etc, etc. She wanted to take one teacher and, for one year, reduce his teaching load from 24 to 20 periods per cycle in order for him to spend the other four periods working with teachers who wanted to become involved in interdisciplinary teaching. This was not possible because to release him from four classes per cycle would cost too much money. Mrs. Fontaine believed the effect of funding or rather, a lack thereof, was the single factor that most constrained her efforts to promote interdisciplinary teaching.

After funding, Mrs. Fontaine found the community of teachers to be the next main hindrance to interdisciplinarity. She felt interpersonal relations between the teachers to be important because if two teachers did not get along, or if they did not agree with how the other worked or their teaching philosophy, trying to get them to work together on interdisciplinary projects was very difficult. Mrs. Fontaine also had teachers who, no matter what innovations were suggested or presented, always refused. She said they were also the first to complain if they perceived others as having preferential treatment or if they felt themselves penalized in some manner as a result of other teachers’ efforts to implement interdisciplinary teaching.

Another area of difficulty was that out of the 45 teachers working at the school, 50% did not have full-time status. This meant they would often be at the school for one

year and then they would be replaced by someone else the following year. Mrs. Fontaine explained that, as a result, many teachers who were interested in interdisciplinary teaching were unwilling to develop projects because they did not know from one year to the next with whom they would be working. As the elaboration of interdisciplinary projects was onerous, Mrs. Fontaine understood teachers with permanent status did not want to invest the time and effort involved when the following year it was entirely possible the next part-time teacher would not be interested in participating in the interdisciplinary project. Because of this, interdisciplinary teaching in her school was done almost exclusively among teachers with permanent status.

The other element Mrs. Fontaine identified as constraining her efforts to promote interdisciplinarity in her school related to the rules in the school community, specifically, the school's master schedule. Mrs. Fontaine claimed it took three weeks with five people working eight to 10 hours a day over the summer to create the master schedule for the school; she alternately described the elaboration of the master schedule as mathematic, extremely complex, and a game of chess played on several boards at once. It was necessary she take into consideration the facilities and rooms, the teachers' tasks, the teachers' level of seniority, the different programmes, the students' options, the classes that were offered over lunch-hour, and a myriad of other factors. This was exacerbated when teachers who wanted to work together requested a common planning period or a period where they could share students. She explained that often these could only be accomplished if she "*pénalise*" (penalized) other teachers. Or, if she was able to arrange this for two teachers, others complained because she was unable to do so for other pairs or groups of teachers who made the same request. As a result, teachers were obliged to meet over their lunch-hour, or before or after school in order to collaborate on interdisciplinary projects.

Mrs. Fontaine also found the teachers' union constrained efforts to promote interdisciplinarity in the school. For example, she was obliged to justify to the union, in response to complaints, why she released certain teachers and not others or why she favoured certain teachers' requests regarding scheduling over others. The previous year the teachers had negotiated for salary equity, teaching tasks, student integration and other issues but had lost on many points. She said each year there were negotiations, the following year was very difficult and so, while it was normal that year was more

problematic and the union more present, it made encouraging and promoting interdisciplinarity difficult as interdisciplinary teaching was seen to be integral to the educational reform.

Within the school commission

Curriculum consultants, coming to the school from the activity system of the school commission, were not well received by the teachers in her school. Mrs. Fontaine thought the situation had been exacerbated by the unhappiness the teachers felt with the negotiations the preceding year and so were not very open or receptive to curriculum consultants. As a result, curriculum consultants who arrived at the school to present information related to the educational reform were perceived as coming to disturb or bother the teachers who were not interested in what they had to say. Unfortunately, the ESL curriculum consultant was among those not particularly welcomed by the teachers.

The other difficulty Mrs. Fontaine had at the level of the school commission was the dearth of qualified substitute teachers. She claimed there were not any and when the commission was able to supply substitute teachers, they were often not qualified. Therefore, because teachers were obliged to redo or recover missed classes, this made them hesitant about asking to be freed up from their classes in order to work on interdisciplinary projects or to attend training seminars on interdisciplinarity.

At the level of the MELS

At the level of the MELS, Mrs. Fontaine said that, "*Présentement, il n'y a pas beaucoup de choses qui facilitent*" (Presently, there isn't very much that facilitates) the implementation of interdisciplinary teaching. The implementation of the educational reform meant the teachers were in a process of change and disorganization. Because the teachers felt the educational reform required them to change everything about their teaching practices, this engendered much resistance to all aspects of the reform and so Mrs. Fontaine had a great deal of difficulty trying to convince teachers of the value of interdisciplinarity.

Mrs. Fontaine had two further issues with the MELS that she felt constrained interdisciplinary teaching. She believed part of the difficulties she was having encouraging interdisciplinarity was because the MELS was not supplying the means to comply with the

changes the educational reform required the teachers to make, causing them to resist innovations connected with the reform. An example of this was that the new programmes for the second cycle of the secondary level were not yet out. The Secondary 3 teachers were to start using the new programme in September but, as it was not yet available at the end of April, the teachers did not know how the new programme would change what they did in their classes nor what material they would need. Because teachers did not know what the new programmes covered, how they were to cover their material, or even what material was to be used, they felt it impossible to collaborate with other teachers in order to elaborate and plan interdisciplinary projects.

That the MELS continually made changes to things that had been decided on previously was also a source of frustration for Mrs. Fontaine. Teachers were sent to professional development seminars in the fall only to be told in January that the changes which had prompted the training had been modified or cancelled, programmes that were to be offered had been cancelled just after the changes they required had been made, and changes were made to the evaluations and then retracted. She felt these actions by the MELS decreased her credibility with the teachers and hardened their resistance to the reform and the innovations it proposed, such as interdisciplinary teaching.

Factors that facilitate efforts

Mrs. Fontaine did not believe there were many factors which facilitated the implementation of interdisciplinary teaching. Those that did were almost all related to the community members of the activity system of teachers' classrooms, or the activity system of the school.

Within the classroom

Mrs. Fontaine explained that having students who had had all their schooling following the new MELS education programme meant it was often easier to do interdisciplinary projects with them. Because the Secondary 1 and 2 students already had experience working in interdisciplinary projects, they had developed good team-work skills. They also had the learning and work strategies necessary to be successful in these

kinds of projects, making it easier for teachers to implement interdisciplinary projects in their classes.

Within the school

The only elements Mrs. Fontaine could name as facilitating were the teachers who were already interested or involved in interdisciplinary teaching and students who had had all their schooling following the tenets of the educational reform. According to Mrs. Fontaine, she had a great team of teachers at the school and overall, they were very engaged, highly capable, and got along well together. Tapping the heart drawn on her paper she explained teachers' relationships were the key to getting teachers involved in interdisciplinary teaching. "*Il faut qu'il s'entende bien avec l'autre enseignant avec lequel il voudra le faire. Ça passe par là... fait qu'il faut qu'il s'entende bien avec l'autre*" (He has to get along well with the other teacher with whom he wants to do [an interdisciplinary project]. It goes through that... so he has to get along well with the other). She also thought teachers' emotions were important, not only how they felt about the other teacher, but also how they felt about themselves. She found teachers who were comfortable with themselves, comfortable making errors, and comfortable with the teachers they were working with were those who were most open to becoming involved in interdisciplinary teaching.

Having teachers who were school "leaders" involved in interdisciplinary teaching was another element Mrs. Fontaine found facilitated efforts to get others involved. Because they were "very credible," they were able to attract and encourage others to try interdisciplinary teaching. She thought having teachers who had completed interdisciplinary projects and were willing to explain what they did to teachers who were perhaps interested would engender more projects. Further, she said there was an atmosphere particular to the school wherein the teachers worked together very well as a team. She found them to be very implicated in the school, they worked hard, and there were very few instances of conflict or discord. She felt this greatly increased teachers' willingness to watch what the other teachers were doing, to learn from them, and to try interdisciplinary teaching.

Summary

Mrs. Fontaine believed interdisciplinary teaching was a valuable tool to improve student learning and would have liked to see it implemented by more teachers in her school. She felt constrained in her efforts to promote interdisciplinarity due to a variety of elements in the school activity system related to tools, rules, and certain teachers in the school community, and in the wider activity systems of the school commission and the MELS. However, she found certain teachers in the school community greatly facilitated and promoted interdisciplinary teaching through their actions and the support they offered others. She believed it was teachers' interpersonal relations which was a key factor in determining whether they would become involved in interdisciplinary teaching or not.

5.1.5 Case study summary

Luc's, Mrs. Fontaine's, and the students' conceptions of interdisciplinary teaching were very similar. They all saw interdisciplinary projects as tools that linked different subjects together to promote student learning. Both Luc and his principal had found their conceptualization of interdisciplinary teaching had changed over time in similar ways. They had realized that it was possible to implement interdisciplinary teaching and use interdisciplinary projects with a wider range of students than just those within specific programmes or with specific abilities. They saw its use as beneficial for all the students in the school.

Luc did not perceive the educational reform as having an effect on his ability to implement interdisciplinary teaching, nor did he see interdisciplinary teaching as having an effect on his classroom practices. He believed the new MELS curriculum did not have and would not have an effect on his teaching and use of interdisciplinary projects because he considered he already worked quite closely in line with the concepts it conveys. Mrs. Fontaine, on the other hand, believed the context of educational reform meant fewer teachers were implementing interdisciplinary teaching because of the introduction of the new education programmes. Further, others resisted efforts to introduce interdisciplinarity simply because it was part of the innovations proposed by the educational reform.

Within the classroom activity system, the community appeared to be the most salient element regarding the perception of the ability to implement interdisciplinary

teaching. Good relationships between the teachers was a requirement raised by both Luc and Mrs. Fontaine. The students found working in teams improved their interpersonal relationships, not only with their peers, but with teachers working in other areas of the school. However, while the school community was generally considered as facilitating, it also had the potential to constrain efforts in interdisciplinarity.

Teachers in the school who were less interested in accepting and implementing the innovations put forth by the educational reform, who resisted or resented efforts to promote interdisciplinarity within the school were considered as factors which constrained the different actors' efforts to implement interdisciplinary teaching. Luc, Mrs. Fontaine, and the students also mentioned rules as elements which constrained efforts; on the students' part, this meant excessive homework. For Luc and Mrs. Fontaine, it was more related to the master schedule and the teachers' inability to share class time while working on the interdisciplinary project.

Although all the actors involved in the science fair interdisciplinary project appeared to value interdisciplinary teaching for the benefits it provided as a tool to improve student learning, it was not always used to good effect in the science fair interdisciplinary project. The students' learning of English was not necessarily facilitated through the project, and in fact, because they used less English than they normally did in subject-specific projects, the great amount of time devoted to the project possibly meant they learned less English in the science fair interdisciplinary project than they would have learned had it not been implemented.

5.2 École secondaire le Carrefour - La ferme des animaux, Identité, and action-research interdisciplinary projects

The *École secondaire le Carrefour* was a very large secondary school serving over 1700 students at the Secondary 3, 4, and 5 levels. The school was situated just outside the capital city and drew its students from many of the other secondary schools in the city and region. The *École secondaire le Carrefour* was a public school that offered the MELS core and language concentration programmes as well as a special programme, developed in the school commission, to help students develop social awareness, knowledge of global issues,

and skills to help them become protagonists for change. For the purposes of this study, this latter programme is called the Protagonists for Change (PC) programme.

Two teachers from this school participated in the study. Renée taught students in the core and PC programmes at the Secondary 4 level and Benoît taught students in the same two programmes at the Secondary 5 level. However, because of diverse circumstances they had very different experiences of their respective interdisciplinary projects. This section of the chapter first presents information gathered from Renée and her students, then Benoît and his students, and finally information gathered through the interview with their school principal.

5.2.1 Renée

Renée was a teacher in her 30's who had been teaching ESL for 10 years. She graduated from a local French university with a Bachelor's degree in teaching English as a second language and at the time of the study taught ESL to Secondary 4 students at the *École secondaire le Carrefour*. Renée had been at this school for six years and over this time had taught core students, language concentration students and for the two years preceding the study, students in the PC programme. At the time of the study she was teaching ESL to students in Secondary 4 in the MELS core programme as well as the Secondary 4 students in the PC programme.

The interdisciplinary project *La ferme des animaux*

This project was Renée's first experience with interdisciplinary teaching. On orders from the PC programme department head, Renée was constrained to elaborate and implement an interdisciplinary project with the French teacher and the philosophy teacher. In this project the novel *La ferme des animaux*, the French translation of the book *Animal Farm*, by George Orwell, was read in the French class and the different traits of the characters were identified and analysed. When the students were approximately half-way through the book, the philosophy teacher took those elements and started discussing the norms and values of the characters and story in his class. Renée subsequently took the analysis of the characters and the norms and values brought forward in the two other subjects and used these as a basis for in-class student debates on values in English. The

project was run sequentially in the three classes with the part in French beginning in September followed by the component in philosophy running partly congruently. Renée was to have begun the English part of the project immediately after the students had finished reading the text; however, she did not begin the English part of the project until the end of January, more than three months after the other two teachers had finished with the interdisciplinary project in their subjects.

Research Question 1: How do teachers conceptualize interdisciplinary teaching?

In this section, Renée's definition of interdisciplinary teaching will be presented. This will be followed by an explanation of how her conceptualization of interdisciplinary teaching has changed over time.

A How do teachers define interdisciplinary teaching?

Renée defined interdisciplinary teaching as "using what has been seen and taught in other subjects as a base to move forward in the classes." She saw interdisciplinary teaching as a tool. Interdisciplinary projects simply provided ideas, knowledge, and elements from other subjects that could be used to forward her goals for her students in English.

B How does teachers' conceptualization of interdisciplinary teaching change over time?

Renée initially felt this was her first experience teaching interdisciplinary projects; however, through our discussions she remembered she had first worked with another teacher on projects in the language concentration programme at the school five years earlier doing bilingual theatre projects. Since that time, she found her conceptualization of interdisciplinary teaching had changed somewhat. Initially, she felt when working with interdisciplinary projects it was necessary to provide a complete framework for the project or to "control the students very much." Students were allowed little scope to expand, to build their own project or to develop the project according to their own initiative. For this reason it became important to "let them build their own project." She said, "Now I am more like I give them the tools and they have to understand that [it's their responsibility]. And maybe the results aren't what I was expecting, but I have stopped controlling them, over

controlling them.” Thus, the changes she saw in her conceptualization of interdisciplinary teaching related to her role as a teacher and the subsequent transformations it engendered in the division of labour in her classroom.

Research Question 2: Why and to what degree do teachers value interdisciplinary teaching?

The factors and influences for Renée’s involvement in interdisciplinary teaching are presented below. These are followed by explanations of how interdisciplinary teaching has an impact on her classroom practices. It concludes with her estimation of the degree to which she uses interdisciplinary teaching during the school-year.

A What are the factors that prompt teachers to become involved in interdisciplinary teaching?

The reason for Renée’s participation in interdisciplinary teaching was related to the influence of the school community and the rules that governed the community. In the first instance, an English teacher, whom Renée described as “visionary,” had set up an interdisciplinary project whereby he and the French teacher worked together with the students in the language concentration programme to put on a bilingual theatrical play. Five years earlier, when Renée started working in the language concentration programme, she took over the teaching task of the person who had originally set up the project and so that year, she had inherited an established project with the French teacher.

For the interdisciplinary project *La ferme des animaux*, Renée’s involvement resulted from the directive of the PC programme department head. Renée explained that she and her colleagues were “strongly recommended” to create and implement some kind of interdisciplinary project for their students that year. When asked how strongly, Renée replied, “I had to do the project and I hated it because they imposed the project on me ... [as] part of the philosophy of the *commission scolaire* and they said well, you know, you need to do interdisciplinary projects or you are not an appropriate teacher for the PC programme. And we were very much pushed, especially by [the department head],.. She really pushed very, very hard on us.” As a result, three of the teachers from the Secondary 4

level of the PC programme got together to build the interdisciplinary project *La ferme des animaux*.

B What impact does interdisciplinary teaching have on teachers' classroom practices and relations with colleagues?

Renée believed interdisciplinary teaching changed almost everything in her classroom practices. The interdisciplinary project *La ferme des animaux* had an effect on the tools she used to promote student learning and on this learning as a final object. Further, she believed it had an effect on the division of labour, the community of her classroom and her school, and the rules that governed the interactions of her classroom community.

Within the classroom

The tools she used to promote student learning underwent a certain transformation due to her usage of the interdisciplinary project. Renée felt her curriculum had changed as a result of the interdisciplinary project and when asked to elaborate explained that “a lot of activities, grammar, and so on that I was supposed to do, I had to push aside.” For Renée, this was one of the biggest differences the interdisciplinary project made to her teaching; it left her fewer opportunities to present and practice English grammatical concepts with her students. She said, “In the beginning of each class I would teach them, I don't know, the usage of modals, the usage of present perfect progressive, and really do like maybe 30 minutes at the beginning of each period.” She found when she was “doing this [interdisciplinary project] with them I'm not doing other stuff and for me it feels I'm losing my time [sic] because I'm not teaching them anything.” She explained, “Maybe I'm a little old school, but I believe you need to teach grammar and [the students] need to read, and they need to speak. I'm about the only one in the department that teaches grammar [but] I'm not going to change that.” Renée felt the interdisciplinary project took time away from this instruction which she believed was most important for her students' learning of English.

The interdisciplinary project also resulted in changes to the division of labour in Renée's classroom. She found the interdisciplinary project made her “more like a tool, like

a dictionary and a computer” the students could use, rather than the main source of information. However, she had difficulties adapting to this new role.

Renée: You know, and it’s the only time for the, I would say this year, it’s the only time that I feel that I’m not, I would not say working as much, like doing the work for them like I am normally doing. You know, I always feel like I am always working instead of them. Normally I’m teaching, writing on the board, talking, na, na, na, na, na and they are just sitting there. Now they’re...

DB: Putting more effort into it?

Renée: They have to. So, once the project is on the go, you have maybe, maybe two or three classes where you say yes, you feel like maybe you are sitting back a little bit, [when] it feels like you are not necessarily working as much as you would normally when you are assisting them. But you’re still there. It’s not that you’re not doing anything. I have a little bit of a hard time. For myself, I think I feel a bit uhm... I’m not sure I’m doing my job when I’m doing that.

DB: Why?

Renée: Because I feel, I’m not sure I’m teaching, I’m not teaching them something... So I feel sometimes a bit bored, and I feel sometimes that I’m not doing my job. It feels like it’s, a little bit, an easy way out in that, in a way. But, I know it’s not.

Because she felt she was really “not teaching” her students in a manner she felt benefited them most, this new role left her feeling rather uncomfortable.

Nonetheless, she thought the object of her teaching, the students’ improvement in English, was furthered by the project. She felt it helped her students “learn better, different vocabulary” because the discussion on the different topics brought the students “out of their everyday English... [The project is] kind of giving them another, it’s kind of expanding their vocabulary.” She also said the interdisciplinary project was useful for developing the students’ reading, writing, listening and speaking skills. Additionally, Renée thought the project helped the students improve or expand their use of language learning strategies, to organize and to “develop better work ethics,” note-taking, and listening strategies.

The rules that governed her classroom were also affected by her use of the interdisciplinary project. Her evaluation of the students’ learning changed as a result of the project. Because they were required to orally debate in their second language, Renée

evaluated their effort more than the content of the presentation because she felt the topics covered in the book and the interdisciplinary project were too complex and difficult for her students to understand in English. In her regular classes she judged their usage of English more strictly.

The interdisciplinary project also had an impact on the community of Renée's classroom and that of the wider school activity system. She discovered her relationships with her students became "more rewarding"; the interdisciplinary project provided her an opportunity "to get more personal with each student... to really go sit down with them." However, she felt the interdisciplinary project made her interactions with her students less dynamic. "I think it was a lot more fun before we started. And the project, you know, I found myself boring so I think they found me boring too." She was more used to teacher-centred classes and perhaps because she was no longer providing her students with the information they required, but rather supporting their learning efforts, she found the role of guide less interesting and less comfortable than that to which she was accustomed.

Within the activity system of the PC department, Renée found she had gotten to know better her partners in the interdisciplinary project and found this to be a positive change; however, her relationship with the French teacher had been strained by his rigid control of the interdisciplinary project. Further, her relationship with the department head of the PC programme degenerated greatly because of the department head's perceptions of the shortcomings of the interdisciplinary project *La ferme des animaux*.

C To what degree do teachers use interdisciplinary teaching?

La ferme des animaux was the only interdisciplinary project Renée participated in during the year of the study. Her team had been planning on doing a second project for that year, but it was never elaborated. Renée was planning one for the following year but she said, "I'm not gonna overdo interdisciplinary projects. I'm not, I might have one over the year and that's it. And if [the administration] are not happy well, that's too bad. Too bad."

Research Question 3: What factors constrain or facilitate teachers' efforts to implement interdisciplinary teaching in their classes?

For Renée, there were a number of factors within her classroom, the school, the school commission, and at the level of the MELS that had an effect on her ability to implement interdisciplinary teaching. The following discussion will first examine those elements she felt constrained her efforts and then those which facilitated them.

Factors that constrain efforts

Within the classroom

Within her classroom, Renée believed the proposed object, the increased learning of English, was not necessarily well served by interdisciplinary projects. She thought having the students work on interdisciplinary projects in English made it difficult “to have the project be really worth it for them.” She saw the language in itself as being an obstacle in the sense that “it is easier to have students perform in their own language, and read in their own language, and research in their own language, and write and speak.”

As for the community members of her classroom, Renée was certain it would not be possible to do interdisciplinary projects with students in the core ESL programme. She felt these types of projects “would be way too advanced. Way too advanced. Way too advanced for them. What we are doing there, they would not be able to do that.” She also felt trying to do interdisciplinary projects with students in the core programme would be difficult because “all those students who are just there to be there and don't care about what is going on. All they think about is losing time and not doing anything.” She said if she tried to do an interdisciplinary project with a class of students in the core programme, she would only get about one-third who would actually work well; she thought the rest wouldn't work at all.

Within the interdisciplinary team

The development of the interdisciplinary project as a tool to facilitate students' learning of English was problematic for Renée. She felt the main factors constraining teachers' efforts regarding interdisciplinary teaching were the amount of work and the amount of time required to elaborate and implement interdisciplinary projects. She said an

interdisciplinary project “is more work,” “most teachers, they don’t want it because it’s more work.” Work and time requirements were refrains that punctuated our discussions of interdisciplinary teaching.

Renée posited the individuality of teachers was another factor that constrained interdisciplinary teaching. “I think teachers are very individual people. They are not, they don’t work so good in a team” and at another point, referred directly to her colleagues involved in the project *La ferme des animaux* saying, “I’m not saying we don’t get along but it’s a bit more difficult to uhm... I guess maybe we are a bit more individuals, you know, like we are more, we like to work individually a little bit more.” She felt this individuality would inevitably result in some kind of struggle, exemplifying her point by describing her partners. She said the French teacher was very negative, very rigid and not flexible; he took control of the project and laid out what each of the other teachers were to do in their respective classes. She philosophized, “There will be a leader or somebody who will impose his style and his way of seeing and doing things and the others will uhm... So anyways, he comes and he kind of imposes his way of doing things and we have to follow. And if we don’t follow, we’re gonna fight with him all the time, so we kind of, you know, alright, let’s do it your way.” In the end, Renée felt she “didn’t fight enough” for herself and she “got into the project without even liking the idea of what [she] was going to do.”

In contrast, she said the other teacher in the interdisciplinary team, the philosophy teacher, did not always come to the planning meetings and “it’s kind of well known that he never gets involved in anything. So sometimes we’re just gonna meet without him and not ask him or... Not necessarily not ask him but we’re gonna try to ask him but if he’s not there well we’ll just carry on.” So, while Renée believed the two other team members involved in the elaboration and implementation of the project *La ferme des animaux* were “great people. I don’t have nothing personal against them but...” she found they were difficult to work with as partners in the project.

Within the school

In the larger activity system of the school, Renée believed certain of the rules that governed the school greatly constrained efforts in interdisciplinary teaching. These were rules that related to time. References to a lack of time provided by the school to plan and

elaborate interdisciplinary projects was a common refrain throughout our conversations: “The only problem is the lack of time for the preparation of those projects”; “If we really had a lot of time to prepare and build something up that is more, that uses more, other subjects, I could do I think something better. But it’s difficult, it’s the lack of time”; “I think the problem is that we are a little bit short in time”; “We don’t have a period where all of us can meet”; “The rest of it we are doing it on our own time,” etc. She felt it was necessary for meeting and planning time to be built into the teaching schedule, not tacked on afterwards. She appreciated that the school provided four half-days throughout the year where the three teachers in the interdisciplinary project could meet to plan and build the project *La ferme des animaux*; however, she found it was not really a benefit because she still had to prepare for the classes where she would be absent. This again brought her back to the amount of work required to elaborate and implement an interdisciplinary project.

Renée also found the school community members constrained efforts to implement interdisciplinary teaching. Most importantly, not only did the head of the PC department impose the elaboration of an interdisciplinary project on the teachers, Renée felt she belittled their efforts to comply. Renée explained the department head “spent the year saying what we were doing was not okay, was not good, was not adequate, was not what we were supposed to be doing and she really, really, really diminished [our efforts]... You know, really, it was negative, very negative.” She and her colleagues were further offended when the department head “had a chart made, of the pros and cons [of the interdisciplinary project *La ferme des animaux*] and all you can see is *manque de, ne fait pas de* (missing this, doesn’t do this). But you know it was used, it was used, a power that she had over us, it was used to, it was abused. She abused it really, seriously. Everybody hated her by the end of the year... and the year that she has been there, it’s been hell.” As a result, she and her partners “all wanted to get out of PC. It was very hard. We got into big meetings, big, very ugly meetings and now I think she’s not in, well, I’m pretty sure she’s not in charge of PC next year... because she has lost the trust and also the respect that we had for her.” Renée said if the department head had not been removed, she and her colleagues involved in the interdisciplinary project that year would have refused to continue teaching in the PC programme.

The school community constrained interdisciplinarity, not only within the department, but outside it as well. Renée claimed that it was not well seen to talk about interdisciplinary teaching with the other teachers in the school. She said the teachers involved in the interdisciplinary project “don’t brag about it too much. I think if I were to talk about it then maybe I would get comments.” Renée had found a low-level undercurrent that seemed to indicate a lack of support from her colleagues. She described it as “small sentences and comments, nothing humongous, but it’s...” she shrugged slightly and left the sentence hanging. Twice she also mentioned how there appeared to be some jealousy on the part of the other teachers in the English department. At one point she said, “Well, everybody, PC is like the joke. Everything goes to PC, every... You know, teachers kind of joke about it.” When asked what she meant by ‘joke,’ she replied, “Well, maybe a little bit of, I think there is jealousy because PC received a little bit of money at the beginning of the programme and it was invested in books and this and that.” While she saw this lack of support as more due to the programme than interdisciplinarity, nonetheless, the result was she felt little support from colleagues outside the PC programme in her efforts to implement interdisciplinary teaching.

Within the school commission

Renée had not received any documentation, information, or workshops on interdisciplinarity from her curriculum consultant. She found this lack of tools to be a dissuasive factor.

At the level of the MELS

Renée believed the tools the MELS provided did not facilitate interdisciplinary teaching; specifically, she felt the new MELS programme would not be beneficial for student learning. “You know, the Ministry of Education wants us teachers to stop maybe giving too much grammar and start focusing on projects so the students learn by themselves. I’m sorry, but it doesn’t work. They are not going to teach themselves anything.” Additionally, she believed the new ESL programme from the MELS did not provide enough guidelines as to what the students needed to learn and what material needed

to be covered and therefore, it was difficult to see where and how interdisciplinary projects fulfilled requirements within the programme.

Factors that facilitate efforts

While Renée found there were many factors which constrained the implementation of interdisciplinary teaching, she was less able to pinpoint facilitating factors.

Within the classroom

Renée believed the most important element to the success of interdisciplinary teaching, was the students. She felt having students in the PC programme was a key factor for the success of interdisciplinary projects. Because they were in a special programme, these students were able to work harder, do more, remain more focused, and to understand better what was required of them. Renée found the PC students were the “cream of the cream” and because of this, it was possible to do interdisciplinary projects with them.

Within the school

One of the elements Renée named that would facilitate interdisciplinary teaching related to the rules which governed the operations of the school. Specifically, she saw where the school had attributed special classes for the Secondary 5 PC groups and thought one should also be built into the school plan for the Secondary 4 PC groups. Having one classroom where the students in the Secondary 4 PC programme would have all their different subjects taught, that would be open for them to congregate, and to meet and eat lunch together would be positive in helping the students develop a sense of team spirit. It would also provide a common room in which the teachers could work.

Renée was very recognisant that the school had tried to facilitate the elaboration of the interdisciplinary project by providing some time for the participating teachers to work together. She said, “They tried to give us two periods, half a day, four times during the year where we can concentrate on that”; however, it meant time away from the classroom and so supplementary planning and preparation to set up the class for the substitute teacher. Despite this, she was grateful “they still tried, which was good.”

Within the school commission

Renée was not able to think of any way in which the school commission or the curriculum consultant would or could facilitate the implementation of interdisciplinary teaching. When asked if she felt funding from the school commission would help teachers implement interdisciplinary projects, Renée replied, "No, even if they gave us a million dollars, it's time we need, you know, it's time."

At the level of the MELS

Renée did not see the MELS as having a facilitating or positive effect on the implementation of interdisciplinary teaching in the schools.

Summary

Renée's participation in interdisciplinary teaching was the result of the effect of members of her school community and the rules of that community. However, while she found the interdisciplinary project *La ferme des animaux* had been a learning experience, she found it "very, very rough." She felt she had been "pushed to do something [she didn't] really want to" and was "really, actually very sick of it" by the time it was finished. It was that obligation which galled the most; she felt she had been forced to participate in the elaboration and implementation of an interdisciplinary project or lose her position in the programme.

Interdisciplinary teaching had an effect on all of the elements of the activity system of her classroom and Renée perceived most of these changes as negative. The change in the use of tools, the interdisciplinary project itself, meant she felt her students were not being exposed to or learning grammar therefore, the whole object of the project lost meaning as the students were not learning what she felt was most important. Other changes she perceived as negative were those it provoked in the community, the division of labour, and the rules governing the activity system of her class. In the community, her relationship with her students changed, and although it was more rewarding, it was less dynamic; the division of labour changed in that the students were more in charge of what they learned and less reliant on her, leaving her feeling that she was not doing her job; and because she felt she could not evaluate the students' level of English in the debates as she believed the

topics to be too difficult, she was unhappy with how the interdisciplinary project effected the rules governing her class. However, she felt the most constraining factor was the interdisciplinary project itself. She found it to be too much time and work for the benefits the students obtained.

There were three main factors which constrained Renée's efforts to implement interdisciplinary teaching. Within the community of the PC programme, her main complaint related to the imposition and subsequent overview of the interdisciplinary project by the PC programme department head, resulting in a very strained relationship between this person and Renée. Additionally, she felt one of her interdisciplinary partners took control of the interdisciplinary project and made all the decisions while the other did virtually nothing, not even attending all the planning meetings. Finally, she felt her ability to implement interdisciplinary teaching was constrained by the rules which governed the operations of the activity system of the school as they did not take into account the necessity of scheduled planning time for the interdisciplinary project.

The tools supplied by the school and rules governing the school were given as facilitating factors, as were the members of the PC department community. That the school had offered planning sessions four times over the year was positive, even though she felt it was insufficient. Additionally, she felt the school had to ensure fairness in the department by reserving a special room for the fourth year PC students; she was certain this would facilitate future interdisciplinary teaching projects. However, the most important facilitating factor was the effect of the students in the PC programme themselves. Renée felt interdisciplinary teaching was possible with these students as they were among the best in the school. She considered the school commission and the MELS to be largely irrelevant and having little concrete impact on teachers' efforts to implement interdisciplinary teaching.

Although Renée did not have a positive experience with interdisciplinary teaching the year of the study, she believed interdisciplinary teaching was a "valuable, very valuable" tool to promote student learning. As a result, she had started the elaboration of another interdisciplinary project for following year with the same partners. The difference was that in the new interdisciplinary project, she would have more control over what she did in her class and how she approached the project.

For this project the book, *Tuesdays with Morrie* by Mitch Albom was to be read in her class. In the book, a man goes every Tuesday to visit his old professor, Morrie, and each time, Morrie tells him parts of his life story. While the students are reading the book, the history teacher will show the students a movie about people who were hanged because of their beliefs; the philosophy teacher will examine the death penalty, euthanasia, assisted suicide, suicide, and other ways people die. Renée was not certain what the French teacher was planning to do, because “it is so complicated.” Returning to English, using their exploration of the life of Morrie and the concepts from the other classes, the students will then explore the life of people in their community who have also won some kind of personal battle. Renée suggested these could include battles against cancer, drug addiction, discrimination, etc. The final project was to be a student-made documentary or movie in English, on the person chosen.

5.2.2 Renée’s students

This group of 32 Secondary 4 students were in the PC programme of the *École secondaire le Carrefour*. This programme had closed class groupings and so the students had been together for two years. The students had four periods of 75 minutes per nine-day cycle in English. A short time after the end of the interdisciplinary project *La ferme des animaux* (the French translation of Orwell’s *Animal Farm*), the students completed the questionnaire. After compilation of the information in the questionnaire, six students were invited to participate in individual interviews.

Research Question 6: How do students view interdisciplinary teaching within their classes?

The students’ attitudes toward interdisciplinary teaching were elicited through the use of a questionnaire and then individual interviews. First, the information from the questionnaire is presented. This is divided into two sections: information related to the Likert-style items and then information obtained through the open-ended questions. A third section presents information gathered through interviews with a selected few of the students.

Questionnaires

In Table 5.5 below, the questionnaire is presented in themes so some items are not in the same positions as in the questionnaire completed by the students. The three main themes are: transferability which includes the transfer of competencies, ideas, knowledge, and strategies from other subjects to English, or from English to other subjects; benefits to learning English; and other considerations which includes interest and motivation, and general appreciation. The original French version of the questionnaire can be found in Appendix N.

The results of the questionnaire are given with the number of student responses indicating agreement for each of the items as well as the average response for each item.

The values for the responses are as follows:

- 1 indicates strong disagreement with the statement
- 2 indicates disagreement with the statement
- 3 indicates neutrality regarding the statement
- 4 indicates agreement with the statement
- 5 indicates strong agreement with the statement

The subsequent discussion of the results of the questionnaire uses these same terms: strong disagreement, disagreement, neutrality, agreement, and strong agreement.

Table 5.5: Results from student questionnaires from Renée's class

Themes	Secondary themes	Items	Number of responses					Mean	
			1	2	3	4	5		
Transferability	Transfer to English from other subjects	2. In my English class, I was able to re-use ideas which I first dealt with in my other subject area class(es).	2	3	8	17	2	3.44	
		3. In my English class, I was able to extend my knowledge of the topic dealt with in my other subject area class(es).	1	3	7	18	3	3.59	
		4. In my English class, I was able to re-use strategies/ skills which I used in my other subject area class(es).	2	7	8	15	0	3.13	
		5. In my English class, I was able to learn the English equivalents of words/ expressions related to the topic dealt with in French.	2	3	5	18	5	3.63	
		6. In my English class, I was able to re-use work methods dealt with in my other subject area class(es).	5	7	8	10	2	2.91	
	Transfer to other subjects from English	7. In my other subject area class(es), I was able to re-use ideas which I first dealt with in my English class.	5	9	10	8	0	2.66	
		8. In my other subject area class(es), I was able to extend my knowledge of the subject dealt with in my English class.	3	9	7	11	2	3.00	
		9. In my other subject area class(es), I was able to re-use strategies/ skills first dealt with in my English class.	3	7	13	8	1	2.91	
	Benefits to learning English	10. This interdisciplinary project helped me to improve my English speaking skills.	0	3	5	17	7	3.88	
11. This interdisciplinary project helped me to improve my English listening skills.		0	8	8	14	2	3.31		
12. This interdisciplinary project helped me to improve my English writing skills.		1	4	9	15	3	3.47		
13. This interdisciplinary project helped me to improve my English reading skills.		4	9	7	12	0	2.84		
14. This interdisciplinary project helped me to improve my English vocabulary.		0	3	2	20	7	3.97		
18. I learn more English with interdisciplinary projects than in a regular English class.		2	13	8	9	0	2.75		
Other considerations	Interest and motivation	15. I found this interdisciplinary project as interesting as me regular English classes.	3	4	12	9	4	3.22	
		16. Interdisciplinary projects are more motivating for me to learn English than regular English classes.	2	5	8	11	6	3.44	
	Appreciation	Differences	17. Interdisciplinary projects are different from regular English classes.	0	4	3	17	8	3.91
			1. I liked the interdisciplinary project we recently finished.	3	7	16	5	1	2.84
		19. Interdisciplinary projects should be taught more often.	2	1	19	9	1	3.19	
		20. I prefer interdisciplinary projects to regular teaching activities.	3	6	13	9	1	2.97	

The students were of divided opinions as to the transferability of ideas, knowledge, and work and learning strategies between the different disciplines involved in the interdisciplinary project *La ferme des animaux*. Overall, the majority of the students indicated they reinvested in their English class concepts and competencies learned in their other subjects. However, the students indicated disagreement with or neutrality towards the items regarding the transfer to their other subjects the ideas, knowledge, and work strategies and skills they had learned in their English class. This could have been because the English component of the interdisciplinary project *La ferme des animaux* was begun three months after the other two subjects had finished their components of the interdisciplinary project.

The students generally indicated agreement they found the interdisciplinary project to be beneficial for their learning of English. The English component of the interdisciplinary project *La ferme des animaux* required the students hold a debate on issues raised in the book. This naturally required they speak in English and listen to the other teams' arguments in order to present a valid rebuttal. As they prepared their arguments in English, the project required they find words or expressions they might not have had to learn otherwise, thus leading them to believe the project had helped improve their vocabulary in English. This was the item with the strongest degree of agreement at 3.97/5. However, out of all the items in the questionnaire, the students disagreed most with the statement that they learned more English with interdisciplinary projects than they did in a regular English class (2.75/5). There were several possible reasons for this. The first could be that, despite one of the classroom rules requiring students to speak in English at all times, when working in their teams, most of the groups spoke only in French. Another reason could be because the students had been used to Renée teaching grammar at the beginning of each class; however, the project required they decide themselves what was necessary to learn and know in order to carry out the debate. Also, because they were responsible for finding and developing their arguments to use in the debate, they may have felt they had less guidance from their teacher than they normally received.

There appeared to be a division of opinions regarding the elements of the other considerations of the interdisciplinary project. The students indicated agreement with the items related to interest and motivation, and slightly stronger agreement that the

interdisciplinary project *La ferme des animaux* was different from their regular English classes. This was likely because Renée normally used teacher-centred classes characterized by the transmission of information to the students; however, as the students' work in the interdisciplinary project was very student-directed, it was likely very different from what they were used to. Nonetheless, the students had, in the majority, negative or neutral opinions about their appreciation of the interdisciplinary project. This could possibly be explained by the students' complaints about the project. They bemoaned the lack of choice in the topics of the project and complained about the length of time the project had lasted over the year.

Questionnaires: Open questions

The students offered a variety of responses to the three open questions on the questionnaire. This provided some elaboration on the information obtained in the previous section of the questionnaire.

The first question asked the students what they liked most about the interdisciplinary project *La ferme des animaux*. The majority of the responses were related to the students' ability to put into practice knowledge they had learned and to share this knowledge with their peers. This was followed by their appreciation of the opportunities the interdisciplinary project offered them to work in teams. A few students indicated they enjoyed working on the interdisciplinary project because it regrouped all the subjects together rather than completing an individual project in each of the subjects. Others appreciated the opportunity the project afforded them to learn things they would not normally have covered in their English classes. A couple of students indicated they savoured the increased autonomy the interdisciplinary project allowed in their studying and learning, and the same number wrote they enjoyed the opportunity to improve their oral skills in English through the interdisciplinary project. This information is presented in Table 5.6 on the following page. As several students indicated more than one response for each of the three open questions, the total number of responses for each of these questions exceeds the number of students in the class in each of these three tables.

Table 5.6: Renée’s students: Responses for Open Question 1

Responses (32 students)	Number of students indicating this response
The opportunity to put knowledge into practice/share new knowledge	18
The opportunities for team work	13
The utilisation of one large project rather than several small ones	4
The opportunity to learn things not normally seen in English	3
The increased autonomy in studying/learning	2
The opportunity to improve English in the project	2

The students only indicated five things about the interdisciplinary project they had not liked, but most of their responses related to two points. They found the project had lasted too long and the work necessary to complete the project had been too onerous. These responses are likely because the interdisciplinary project *La ferme des animaux* was drawn out over more than half the school-year. Several students also indicated they were unhappy with a perceived lack of coherence or agreement between the teachers involved in the interdisciplinary project and a few students wrote they found the subject the interdisciplinary project was based on to be not interesting to them. A table presentation of this information from the questionnaire can be found in Table 5.7.

Table 5.7: Renée’s students: Responses for Open Question 2

Responses (32 students)	Number of students indicating this response
The project lasted too long	12
The amount of work/homework was too onerous	10
The lack of coherence/agreement between teachers	7
The subject was not interesting	4
The lack of competencies to do the project	1

The third open question asked the students to indicate what they felt made working on interdisciplinary projects different from their regular class. Most of the responses related to the perception that these projects allowed greater opportunities for autonomous learning and that they provided more opportunities to put into practice grammatical concepts learned in their English class. A few found the interdisciplinary project *La ferme des animaux* to be more motivating and interesting than their regular English class while two students indicated the interdisciplinary project provided more opportunities for student interaction.

However, there was one complaint about the differences as well; one student found there was less direct contact or help from the teacher when they were working on the interdisciplinary project. This information, as well as the responses the students wrote regarding regular classes are found in Table 5.8 below.

Table 5.8: Renée's students: Responses for Open Question 3

Responses (32 students)	Number of students indicating this response
Interdisciplinary projects have more autonomous learning	16
Interdisciplinary projects provide more chances to put learning into practice/less theory	8
Interdisciplinary projects are more interesting/motivating	6
Interdisciplinary projects provide more learning of vocabulary	4
Interdisciplinary projects allow more oral interaction in English	2
Interdisciplinary projects have less direct contact/help from teacher	1
Regular classes teach more general oral skills, vocabulary, and grammar	7
Regular classes mean the teacher provides all information	2

Interviews

Based on the results from the Likert-style items on the questionnaire, the three students who indicated the highest agreement with the items and the three students who indicated the lowest agreement with the items were determined. These six students were invited to participate in 10-minute individual interviews. One of the three students who had low agreement with the items on the questionnaire declined so another student with a similar level of agreement was approached regarding an interview. This student accepted.

The first question of each interview was a request for the student's definition of an interdisciplinary project. All six students interviewed defined them as projects that regroup "*plusieurs*" or "*toutes les matières*" (several or all subjects). One provided a more complete answer when she said, "*Un projet interdisciplinaire c'est un projet qu'on fait dans plusieurs, bien dans toutes les disciplines dans le fond. Tous les cours qu'on a interagissent avec, il se fait des liens avec les cours qu'on a puis tout ça. Puis, ça a plus l'aire d'avoir rapport avec ce que les autres profs nous ont demandé de faire*" (An interdisciplinary project is a project we do with several, well all the disciplines. All the subjects we have

interact with, make links with the other subjects we have and all that. And, they have more the sense of being related to what the other teachers have us do).

The students were divided over the learning outcomes they obtained from the use of the interdisciplinary project. One student thought the interdisciplinary project had helped improve her English, two did not believe it had an effect that was different from their regular English class, and the other three found its use constrained their learning of English because they had "*moins le temps pour voir la grammaire puis les choses comme ça*" (less time to have grammar and things like that). Further, one said because it was a large project, her group had done their research in French and worked in French while building their arguments for the debate. They had subsequently translated their texts to English for the presentation. Because of this, she thought they had "*moins travaillé l'anglais*" (worked less in English) than if they had had a "normal" English class.

However, it was the use of the interdisciplinary project itself which engendered the greatest number of comments, and these were put forth by all of the students interviewed. The six students complained the project had lasted too long, that it had extended over too much of the school-year. During our interview, one student told me she and some of her peers had gone to see the PC department head to complain about the interdisciplinary project and the inordinate amount of time it took to complete it. It was highly possible this contributed to the strained relations between Renée and the department head.

Summary

It appeared Renée's use of the interdisciplinary project *La ferme des animaux* as a tool to increase the students' learning and use of English had mixed success. As was apparent from the results of the questionnaire and further confirmed through the individual interviews, most of the students did not believe the project had been particularly helpful to improve their English skills. This, along with their complaints the project had lasted too long over the school-year and that the amount of work required to complete it was too onerous, likely contributed to their lack of appreciation of the interdisciplinary project and their preference for the usual activities of their English class.

5.2.3 Observations of the interdisciplinary project *La ferme des animaux*

I had believed I was permitted to begin classroom observations of the project from its commencement; however, through the interviews with Renée and the students it became apparent that Renée had spent at least one class and possibly two preparing the students for the project. The presentation of a film on how to carry out debates and class time spent reviewing the necessary grammar and verb tenses to use during the debates had taken place before the first day I was invited into the classroom.

During the first day of my observations, the class was very teacher-centred while Renée went over the student booklet and project guidelines with the students. However, for the subsequent classes spent working on the interdisciplinary project, she circulated around the room, talking to the students in the different groups during the period. She often spent several minutes with the members of the different groups, helping them resolve difficulties with the project and their texts and generally only returned to a group she had previously spoken with if she was called back for assistance.

Renée had informed me that her classroom rule was that the students use English at all times. On my first visit to her class, she reminded the students of this rule; however, the students did not adhere to it. The students' conversations in their teams were in French and they only switched to English if Renée or I approached. There were several instances over the observation period that Renée chastised the students for this and threatened to deduct points from their grades for breaking the English-only rule; this did not appear to have any appreciable effect on the students' language use.

The teachers had planned that the English component of the interdisciplinary project would build on the work completed in French and philosophy. However, during the in-class observations, only two groups of four students, out of the eight groups, were seen to use the handouts and work they had from these other components of the project despite the fact the information contained therein was to be used as the basis for the debates they did in English.

A lack of vocabulary on the topics could have been part of the reason some students wrote their arguments for the debate in French and subsequently translated them to English. At one point during the in-class observations, one team of students asked me to look at their arguments to see if they were on the right track. I read their paper and suggested they ask

Renée to look at their arguments as she was in a better position to let them know what she wanted. The first three sentences of the paper they showed me read as follows: "If the the animal Mr. Jones stimulus, itself far save, should it alike be. But the pigs make the beautiful life. Profit from other not obeying animals in the seven laws." The rest was equally incomprehensible. When Renée saw their text, she asked, "Who wrote this?" As if in a comedy, the students all pointed at each other. Renée said she could not even understand what it was supposed to say. She again asked the students who wrote the text and eventually one student accepted responsibility. Renée asked her if she had used a translation site from on the computer and the student replied in the negative, saying she had taken it from off the Internet. Renée responded, "It's impossible. It's so bad that I can't even understand what it is supposed to say. There is no way this came off the Internet." The students were then instructed to rewrite their text, in their own words, using their dictionaries and not a computer.

During the interviews, some of the students claimed they had worked less over the interdisciplinary project than in their regular class. This would have been difficult to dispute. During the in-class observations, I often heard the students discussing their part-time jobs, boyfriends, shopping, clothing, their peers, etc, but much more rarely the topics upon which the interdisciplinary project was based. On the third in-class observation day, Renée was absent and the majority of the students did no work at all. There were several groups where no pens or paper appeared on their desks during the entire period and when the substitute teacher approached them, they simply asked questions about why Renée was absent or personal questions of the substitute himself. During the remaining four classes over the observation period, it was apparent several groups of students only worked on their topics when Renée was in their immediate vicinity.

Renée had originally planned for the English component of the interdisciplinary project to last for one or two cycles; ultimately, it lasted for three. She had not wanted to assign work on the interdisciplinary project as homework and so she gave the students seven periods in which they could work on their debates in class. And because she thought this to be more than ample time for them to choose and develop arguments for their debate, she did not understand how they could have had to work on the project at home nor why

they found the project to be too much work. It would appear she had not really noticed how little work actually seemed to be accomplished during class time.

In the end, the students did not appear to develop many reading, writing, listening or speaking skills. Most of the students did not interact in English when working on the project in class and the debates were set up in such a way as there was no interaction between the different actors. The teams were told they would present their debates in the following manner: The students who were arguing for the positive perception of the value or norm would introduce the topic and present their case line. They would then present a definition of the value or norm to be debated and present three arguments. The students debating the negative perception of the value would then present their case line and attack the three arguments of the other team. They would then present three arguments of their own and provide a conclusion for their position. Subsequently, the students for the affirmative side would attack the negative arguments and provide a conclusion for their position. This order of presentation can be visualized as below.

Affirmative arguments

Introduction of topic
Presentation of case line
Presentation of definitions
Presentation of three 3 arguments

Negative arguments

Introduction of topic
Presentation of case line
Attack of opposing teams arguments
Presentation of three 3 arguments
Presentation of conclusion

Attack of opposing teams arguments
Presentation of conclusion

Because the students worked in teams of four, two students took the affirmative position and two took the negative position. Together, they developed the arguments for both sides. As a result, it was not necessary to listen to the opposing team's arguments in

order to respond as they had all contributed to the development of the arguments. Each side knew exactly what the other side would say and had prepared their rebuttals at the same time as their arguments. The students then simply spoke their prepared texts one after the other. There was no interaction within the debating teams nor with the rest of the students who were watching the debates. These spectators were not allowed to ask questions of the debating teams or to offer their opinions on which side had presented better arguments.

Further, while the students had been told they could only use cue cards during their debate, many students wrote their entire spiel on their cue cards and more or less simply read them. In a few cases, it was apparent the students had memorized their text, but in others, the students never looked up from their cards and simply read their text. Additionally, while some students spoke loudly and clearly, others mumbled their words or spoke so quietly that Renée was forced on several occasions to ask them to speak louder. They did, for one or two words, and then their speaking became virtually inaudible again. It also became apparent during the debates that some of the students had simply translated their texts into English from French. Inappropriate word choice, and incorrect word order and sentence structure were two of the most obvious indicators.

Renée listened to the debates, took notes, dismissed the students at the end of their debates and called the following groups to the front of the room. The students did not receive verbal feedback on their debate at that time. Once the debates were concluded, Renée provided general feedback to the class, but guidelines or suggestions on how the students could improve their oral presentations were not discussed.

At the end of the observation period, only the first half of the period was spent on oral debates for the interdisciplinary project, the second half was spent doing regular class activities. During this part of the class, Renée conducted a very teacher-centred class. She provided instruction on certain grammatical forms, led a choral reading exercise, chose different students to read aloud particular sections of a text, corrected pronunciation, and provided definitions of terms encountered in the reading. Compared to the language use and amount of work that was completed during the class time spent on the interdisciplinary project, it was easy to see why the students had the impression they learned more English in their regular English class than they had in the interdisciplinary project.

The task design of the English component of the interdisciplinary project *La ferme des animaux* had left a great deal to be desired. Renée had wanted the interdisciplinary project to help her students expand their vocabulary. She also thought the project was useful for developing the students' listening, speaking, reading and writing skills because, "if they are doing everything properly, they are supposed to be reading, they are supposed to be speaking, they are supposed to be also producing some, a text. I think it kind of touches all areas. That's what I like about this project." However, the students were able to complete the project without using any English except for the memorized or read speeches they gave during the debates, and even these were somewhat compromised. As one student had noted, it was easier and faster to work in French and then translate their work afterwards into English. Additionally, speaking and listening skills were not supported through task design. There were three obvious reasons for this. As the students did not work with English texts, they did not have the necessary vocabulary to discuss their topics in English, and Renée did not enforce her English-only rule. Further, as the individuals in each group worked together developing all the arguments for the debates, nothing that was said or done was new to any of the group. During the debate, there was no real debate. The students were not required to even listen to their group members give their spiel in order to rebut it. They had all worked together writing the 'scripts' that they would follow, so even during the debate, there was no semblance of authentic dialogue.

The delay between the end of the interdisciplinary project, the administration of the student questionnaire, the student interviews, and the final interview with Renée should be explained here. Relations with the PC department head had degenerated over the year to the point that all the Secondary 4 teachers in the programme had threatened to leave the programme if the head remained. Renée explained she had avoided me over the last few months because of these general bad feelings in the programme. Once the in-class observations had been completed, the subsequent steps were drawn out to the point I had begun to despair of interviewing her students and conducting the second interview with her. Ultimately, I interviewed her students on the last day of classes before the end of the school-year and Renée one month after that date.

5.2.4 Benoît

Benoît, a teacher in his late 20's, had graduated from a local French university with a degree in Teaching English as a second language seven years prior to the time of the study. Since his graduation, he had taught ESL at the *École secondaire le Carrefour*. At the time of the study Benoît was in his second year of teaching Secondary 5 ESL to students in the PC programme. He also taught ESL to four groups of Secondary 5 students in the core programme.

The *Identité* and action-research interdisciplinary projects

Although this was Benoît's first experience with interdisciplinary teaching, he participated in two interdisciplinary projects the year of the study. Both were projects developed for the Secondary 5 students in the PC programme. The first, called *Identité*, had been developed the previous year by the French, history, and philosophy teachers. At the end of that school-year, Benoît approached them to work out how English could be incorporated into the project and as a result, was included in the *Identité* project the year of the study. In the history class, the students examined conflicts that had taken place on different continents over the last century; in the philosophy class, the students explored the personal and ethical repercussions of these conflicts; and in French class, they wrote a first person narrative story of someone who had lived through one of the conflicts studied. In the English class, the students wrote a prologue to their completed essay. These dual-language texts were bound together and published by the school in a paperback book.

The idea for the second interdisciplinary project originated with the philosophy teacher who solicited Benoît's participation. The interdisciplinary project, called action-research, was built around the idea the students would identify problems within the school or community, investigate the problems, elaborate solutions, and then take action to resolve the issues. The two teachers attended a training workshop provided by the developers of the action-research programme at the beginning of February the year of the study, and subsequently introduced the project to the students in the PC programme. Within the project, the students were provided a logbook that explained the project and contained 13 steps, from the initial introduction of the project, through to the resolution and final self-evaluation. The student logbook was in English, and the documents the students were

required to produce at different stages of the project were either in French or in English. The project was initially presented in the English class, the final choices for the problems to be investigated were made in the philosophy class, and the students worked on the various aspects and steps of the project in both classes. Some of the issues addressed by the students included an investigation of the amount of garbage generated by the students in the cafeteria that was left on the tables and floors at the end of the lunch period, over consumption of paper in the school, water wastage in the school, a lack of recycling initiatives for the aluminium dishes used by the restaurant Chez Ashtons, etc. The students were unable to take action to neither resolve their investigated problems nor do the final self-evaluation of the project because the teachers ran out of time at the end of the school-year. As a result, the project ended at step nine, the point where the students elaborated possible solutions to the problems investigated.

Research Question 1: How do teachers conceptualize interdisciplinary teaching?

In this section, Benoît's definition of interdisciplinary teaching is presented. This is followed by an explanation of how his conceptualization of interdisciplinarity changed over the year.

A How do teachers define interdisciplinary teaching?

Benoît defined interdisciplinary teaching as "taking different subjects and different experiences from different teachers and producing a course that can integrate all those different subjects together so [the students], without learning one specific subject, can learn many subjects together." He thought interdisciplinary teaching was akin to a "melting pot" where knowledge from different sources and backgrounds were integrated into "one huge project," blurring the lines between subjects and giving the students a more global view or understanding of a situation or problem.

B How does teachers' conceptualization of interdisciplinary teaching change over time?

Because Benoît had only been involved in interdisciplinary teaching that year, he did not believe his conceptualization and understanding had undergone any changes except

he better understood the amount of work involved in elaborating an interdisciplinary project. He found the meeting and planning between teachers required a great deal of time and the interdisciplinary projects he was involved in were “way more job than [he] thought” they would be.

Research Question 2: Why and to what degree do teachers value interdisciplinary teaching?

The factors that first influenced Benoît to begin using interdisciplinary teaching are presented below. This is followed by explanations of how interdisciplinary teaching has an impact on his classroom practices and then his estimation of the degree to which he uses interdisciplinary teaching during the school-year.

A What are the factors that prompt teachers to become involved in interdisciplinary teaching?

There were two main reasons Benoît became involved in interdisciplinary teaching. The most important was the result of the broader social community in the school and the second related to the pedagogical choices he made to use interdisciplinary projects as a tool to improve his students’ learning of English. As he began working with interdisciplinary teaching, he became aware of certain benefits it offered for student learning and this second reason increasingly gained salience.

It was the influence of the community of teachers in the English department and that of the PC department that provided the main reason Benoît became involved in interdisciplinary teaching. Within the English department of the school, Benoît believed a colleague who had encouraged the English teachers to work together helped him “open the door” to the idea of working with teachers in other departments. However, it was the perception of how the teachers had “fun” together when working on interdisciplinary projects which encouraged Benoît to get involved in interdisciplinary teaching. He saw three colleagues, the French, history and philosophy teachers, working “hand in hand all the time” and “said to [himself] jeez, they’re having fun.” He had approached them to participate in the *Identité* interdisciplinary project and they had accommodated him.

Benoît's participation in the action-research interdisciplinary project was the result of an invitation, extended in January, from the philosophy teacher. At the beginning of February they attended an information and training workshop on action-research and at the end of the meeting, the representative provided them with teacher guides and sufficient copies of the student booklet for all the students in the Secondary 5 PC programme.

B What impact does interdisciplinary teaching have on teachers' classroom practices and relations with colleagues?

Within the classroom

For Benoît, the interdisciplinary projects influenced how he saw teaching and what he did in the classroom. Within the activity system of his class, Benoît found the interdisciplinary projects had an effect on his students' learning of English. Specifically, he felt both projects greatly helped his students improve their writing skills and the action-research project also helped develop their speaking skills. His indication of this was that they were able "to switch from English to French without even knowing it" regardless of whether they were in English, French, philosophy or history class. Further, he felt the projects increased the students' autonomy and responsibility, work methods, and teamwork abilities. He stated interdisciplinary teaching was very valuable in that the students saw "there is not just one way of learning," leading them to be "way more open-minded" and more easily able to integrate information from disparate sources. He thought this significantly "shortened up the step" between secondary school and CEGEP. The students' increased autonomy was partly reflected in the changes interdisciplinary teaching made to his classroom management.

The action-research interdisciplinary project had also changed the tools Benoît used in his classroom. In the action-research project, a student booklet had been supplied for use with the project and so that was what Benoît and his students followed when working on the project.

Benoît found the interdisciplinary projects had a profound effect on the division of labour. Previously he had felt he was the "the father," "the authority," "the power master," "the supreme one" in the class and so the students relied on him for the answers for everything. Interdisciplinary teaching had made him "back off" somewhat in order to

provide more scope for the students to “go after the answer, to figure out the problem.” He saw his changed role as more that of an “older brother” because he sat down, on “the same level as the students” and collectively they found answers to the various problems. This changed the dynamics of the classroom relationships in that he lost a certain degree of authority over his students. Further, this had an impact on the rules governing the activity system of his classroom. Working in interdisciplinary projects meant “there is always a problem” in classroom management. Benoît worked with the students sitting in groups at tables and not in rows and as a result found management “tougher because you can’t sit down and do nothing.”

Within the interdisciplinary team

In the activity system of the PC department, interdisciplinary teaching also had an effect on the community and the interactions within the community. In the first instance, Benoît had found collaborating with the other teachers resulted in closer friendships. At different points in the conversations he talked about how his relationship with his partners was different; they had become friends and not just colleagues.

He also believed his relationships with the other teachers involved in the interdisciplinary projects changed in that they needed to rely on each other more. The projects required he “sit down with the other teachers” involved in the projects in order to “meld everything together.” Once a project was underway, it was necessary to continue meeting regularly to discuss the project, provide feedback on what was happening in the different subjects, and ensure all the teachers were working “at the same level, at the same time.” Because of this, he had much more contact with his partners than he had had prior to becoming involved in the interdisciplinary projects.

Within the school

Besides having an effect on his partners in the interdisciplinary projects, Benoît also found interdisciplinary teaching changed his relationship with the PC department head. He said she gave him “a tap on the back” for his work in collaboration with the other teachers. He felt she was “proud of what [they] were doing” and often gave them “positive feedback.” He suggested this was because the interdisciplinary projects promoted a “good

image” of the school for which “she [was] grateful.” He claimed it was more usual for her to provide negative feedback than positive feedback to teachers, so the accolades were unexpected.

C To what degree do teachers use interdisciplinary teaching?

When asked what percentage of the school-year he spent in interdisciplinary teaching, Benoît calculated he spent about 16% of the year working in interdisciplinary projects. However, he explained he spent 50% of his planning and preparation time on the two groups that worked with interdisciplinary projects; the other 50% was used for the other four English groups in the core ESL programme.

Research Question 3: What factors constrain or facilitate teachers' efforts to implement interdisciplinary teaching in their classes?

This section presents the factors Benoît claimed had either a positive or negative effect on his abilities to implement interdisciplinary teaching. First the constraints are presented and then the facilitating factors. These two are further divided into three sections, those elements that come from within his classroom, with his interdisciplinary partners, within the school, and at the level of the school commission.

Factors that constrain efforts

Within the classroom

There were two factors Benoît identified within his class which constrained his efforts to implement interdisciplinary teaching. One related to the community members and the other was related to the rules which governed the operations of his classroom activity system. Of the two, the latter was by far the most important. He felt that as he gave the students more control of their learning, they also took more control of the classroom with the result being that “they pull pranks or they fool around just a bit too much.” He shared he had difficulties finding a balance between being the authority in a teacher-centred class and being a guide who helped the students with their interdisciplinary projects when they needed assistance. However, as will be discussed in the section 5.2.6 below dealing with observations of the interdisciplinary projects, these difficulties with classroom

management, while seemingly exacerbated by the interdisciplinary projects, were also observed when his class worked on activities related to only English.

Within his classroom community, Benoît believed it would be much more difficult to do interdisciplinary projects with students in the core programme than in the PC programme. He saw fewer “good kids” in the classes and felt if there was “a bad group or a bad year,” there would be no cooperation from the students. Benoît thought this cooperation was the key to the success of an interdisciplinary project. He mentioned how one teacher of a group of students in the core programme had tried to implement an interdisciplinary project with another teacher that year, but had been obliged to drop it part-way through because of the problems she had with her students.

Within the interdisciplinary team

Benoît perceived the amount of time and effort required to elaborate and implement interdisciplinary projects to be “too much work, way too much work.” He believed this was one reason other teachers in the school were not willing “to try that because it’s too hard.” Like Renée, conversations with Benoît were punctuated by references to the great deal of work that went into elaborating an interdisciplinary project and how much more time it took to do so than a project done only in English.

Within the school

Four rules governing the actions of the school community were identified by Benoît as constraining his efforts to implement interdisciplinary teaching. According to him, the most important was that the normal school policy of mixed classes made interdisciplinary teaching impossible. He said interdisciplinary teaching was “not possible” in the regular classes because “all the groups are not the same.” As a result, because the vast majority of the students in the school were in mixed classes, he did not believe interdisciplinary teaching was feasible beyond the PC department. His second complaint related to the inability of the school to provide him and his partners with a common planning period. Each of his partners taught 24 classes in the nine-day cycle and because they all taught the same grade level, it was not possible for them to have a free period together. As a result, it was very difficult to find time when they could meet to discuss the interdisciplinary

projects. Another hindrance to discussions on the projects was the layout of the teachers' staff room where teachers were grouped according to subject matter and not grade level. Because of this, the teachers Benoît worked with on the interdisciplinary projects were spread out in the staff room making it difficult to have even short conversations about the projects over the breaks.

The other element related to rules did not necessarily constrain his efforts to implement interdisciplinary teaching, but it resulted in conflict in certain aspects of the projects. Despite his belief that English could only be learned in an integrative fashion, Benoît's students were still required to pass the same skills-based examinations as the Secondary 5 students in the core ESL programme. Additionally, because he was required to specify objectives for each session and then test for those objectives using exams measuring students' reading, writing, listening, and speaking skills, he found it difficult to evaluate the interdisciplinary projects. He said, "You can take the project, divide the grade in two and separate afterwards" or take "the projects and melt them into the grades so that they fit" but neither choice was really appropriate because he saw competency in English as a whole, not divisible into discrete skills. Even during our last conversation, after the school-year had ended, he was still trying to determine how he could set up his evaluations for the interdisciplinary projects the following year so they fulfilled the discrete skill requirements of the school yet did not conflict with his vision of integrative skills development.

Benoît presented two areas of difficulty within the school community which also constrained his efforts to implement interdisciplinary teaching. He claimed his colleagues in other departments teased him a lot about interdisciplinary teaching and gave him a "hard time" because he was unable to join them to chat or play pool in the teachers' lounge because he was working on the interdisciplinary projects. He did not believe it was done to dissuade him; it was more because they "don't believe in [interdisciplinary teaching]. They don't believe it's possible."

However, he did receive negative comments from his colleagues when his students would go to the other classroom, next door, where his partners in the interdisciplinary projects were working. He said his students "move a lot, and that disturbs the other teachers sometimes. And the other teachers say, 'How come your kids are always out? They are

doing nothing. They are lingering.’ Well, they’re not. They are working on their t-shirts, on *cousi-cousa* [two Young Entrepreneur projects], on this project, on that project” so he felt their movements between the two classes were justified. He believed part of the negative attitude the other teachers had about interdisciplinary teaching was because those few who did it were “just a little cluster” and because they were so few, it was difficult to counteract “the negative image” interdisciplinary teaching had among the other teachers.

Benoît also identified tools as one of the elements within the school community which constrained his abilities to implement interdisciplinary teaching. He was of the opinion the school did not provide many resources to support interdisciplinary teaching. Actually, he said there were “none at all.” He was especially disparaging of the computer facilities claiming there was only one computer lab with 30 computers for a school of 1700 students. Another area where he thought resources were lacking was with the Canon projectors. First, there was an insufficient number of projectors for the needs of the 110 teachers in the school and second, when teachers used the projectors, they often did not return them to the supply room after class, meaning they were unavailable for the other teachers who had signed up to use them in subsequent periods.

Within the school commission

Benoît found the school commission to be unhelpful in his efforts to implement interdisciplinary teaching. However, he felt this was not because of what they did, but rather because of what they did not do. He claimed his curriculum consultant was “not helpful at all” because neither information nor workshops on interdisciplinary teaching were provided. He said the focus was always on the current educational reform and the changes it was making to student evaluations.

His other complaint with the school commission was that they did not have English substitute teachers. Even when the school did provide the teachers with a half-day planning session for their interdisciplinary projects, the substitute teachers were never qualified and so Benoît felt obliged to provide them with “material that a French teacher could teach” so they would not be required to actually teach his class but rather, to simply “baby-sit.” He said the classes he missed always needed to be made up at other times so he tried as much

as possible to arrange planning sessions on pedagogical days where he would not need a substitute.

At the level of the MELS

Benoît considered the MELS irrelevant to his efforts to implement interdisciplinary teaching in his classes.

Factors that facilitate efforts

Within the classroom

One element Benoît found that made it easy for him to become involved in interdisciplinary teaching was the subject he taught. “We can do anything in English” and so it was possible to envision building an interdisciplinary project with a teacher of any other subject. The only requirement was they have a good relationship.

Within the interdisciplinary team

According to Benoît, the most important element that facilitated interdisciplinary teaching was a good relationship with his colleagues. He made a point of “stressing that fact. You have to be more than just colleagues. You gotta be friends.” He emphasized there was a distinction between “teacher-colleagues” and “teacher-friends” explaining teachers were colleagues before they were friends so it was necessary to know the potential partners “before you start working” on interdisciplinary projects because “if you don’t get along with the person,” it becomes very difficult to do a project together. Benoît often repeated the key to the success of interdisciplinary teaching was a good relationship between the teachers and how important it was to develop this relationship. “To get the project started you need a good core of teachers, a good core of friends and for the project to live, you need good students.” For him, the relationship between the teachers and that between the students and the teachers were the deciding factors on whether an interdisciplinary project would be successful or not.

Within the school

Benoît identified the several factors as facilitating his efforts to implement interdisciplinary teaching. They were most importantly the rules governing the operations of the school, but also the community members of the school activity system and the tools he used.

Benoît claimed certain rules regarding the school activity system greatly facilitated his efforts to collaborate on interdisciplinary projects. One of the first he named was the assignment of specific classrooms to the teachers who worked together on interdisciplinary projects in the Secondary 5 PC programme. Because the students often would go to see one of the other teachers during class time regarding elements of the interdisciplinary projects or their Young Entrepreneur projects, the other teachers in the school complained. As a result, the school principal had allocated two rooms, next door to each other, to be used exclusively by the Secondary 5 students in the PC programme. Benoît found this to be a big advantage because once the classrooms had been assigned, the teachers were able to have certain material resources allotted to the rooms. Each room had eight computers and one printer, Internet access, and a Canon projector for the exclusive use of these two rooms. Benoît considered the teachers “very lucky” to have these resources at their disposal and was grateful to the school for providing them. He believed they were able to have these resources because of the experience of the French teacher involved in the interdisciplinary projects. This teacher had been at the school for over 15 years and so knew “who to approach and how to ask for stuff” to set up the rooms and the equipment in them.

Another element Benoît found facilitated teachers’ efforts to implement interdisciplinary teaching was the allocation of paid planning times. His department head arranged for substitute teachers for the four teachers involved in the projects to provide them with a half-day, four times in the year to plan, prepare, and manage the interdisciplinary projects. One of the planning days was early in the school-year, one in January, one just before the March break, and the other was near the end of the school-year. The time granted to them was greatly appreciated as the rest of the organization of the interdisciplinary projects was done on the teachers’ own time.

Benoît also explained that the following year, the students in the PC programme would be assigned one of their free periods as a work period where they would be obliged

to be in one of the two allocated classrooms and work on the interdisciplinary projects or material from their other subjects. This work period would similarly be included in the teachers' schedules as part of their teaching task allocation.

Within the school community, Benoît found his colleagues in the English department helped each other within and across the grade levels. He saw their relationships as close and felt they relied on each other even though they were not necessarily doing the same things. He believed this closeness was due to efforts they made to be friends, to be a cohesive group because they would "have 30 years to work together" as colleagues. He acknowledged the teachers in the English department helped him that year in the development of the interdisciplinary Music project that was to be implemented with the French, history, and philosophy teachers he worked with beginning the following year. His departmental colleagues provided him with information on different elements to be included and tried out a simplified version of the Music project in their ESL classes in order to provide Benoît with feedback on the shortcomings and strengths they saw in the English component of the project. He also thought having the support of the PC department head and school principal were important in that, if the teachers did not have this backing, any interdisciplinary project would "not go anywhere."

Benoît saw an unanticipated outcome of the use of the interdisciplinary projects. He thought the projects themselves would facilitate interdisciplinarity in the long term. He said other teachers in the school were "curious" and wanted to look at what he and the other three teachers were doing together. He felt they were interested because it was something new and thought perhaps, with time, they would also be willing to try interdisciplinary teaching. When they realized the benefits the students garnered through interdisciplinary projects, Benoît surmised they might eventually become more involved, thereby reducing the negative image he believed interdisciplinary teaching had in the school.

Within the school commission

Benoît did not believe the school commission greatly facilitated interdisciplinary teaching. He thought if someone from the school commission would come to the school and provide assistance and information on interdisciplinary teaching, the teachers could create better interdisciplinary projects. He also speculated that if more teachers were aware

of what was being done, if interdisciplinary projects were publicised, other teachers would be more willing to take the ideas and try them in their classes.

At the level of the MELS

Benoît thought the new MELS education programme would facilitate teachers' implementation of interdisciplinary projects because it offered a more "global approach" that allowed teachers to see more connections and ways to link subjects together. He said the new programme encouraged teachers to be more open-minded about working with teachers in other subjects and believed the development of the students' cross-curricular competencies was justification for teachers' involvement in interdisciplinary projects.

Summary

Although he had originally become involved in interdisciplinary teaching because of personal reasons, Benoît had discovered interdisciplinary teaching was a tool that allowed him to help his students better integrate the material they learned in the different subjects. Interdisciplinarity also had an effect on his relationships with his partners. He claimed they had good relationships before beginning to work together, but that interdisciplinary teaching had brought them much closer and they had become friends.

Benoît listed several aspects which either facilitated or constrained his efforts to implement interdisciplinary teaching. These elements were related to the activity system of his classroom, the department, the school, the school commission, and the MELS. Mixed classes, students in the core programme, no common planning periods, little proximity to his interdisciplinary partners, an incongruency between his personal beliefs and what and how the school required he evaluate his students, and negativity from colleagues in the school were elements which he felt constrained interdisciplinary teaching. Good relationships with his colleagues, paid planning time with his partners to work on the interdisciplinary projects, tools and resources provided by the school, and the new MELS programme with its emphasis on the development of cross-curricular competencies were some of the most important elements he named as facilitating interdisciplinarity.

5.2.5 Benoît's students

This group of 28 Secondary 5 students in the PC programme had been together for three years. The students had four 75-minute periods per nine-day cycle in English. Out of this group of 28, four students did not participate in the study and only 17 completed the student questionnaire as the rest of the class was away on a school trip. Benoît felt he was behind in preparing the students for their upcoming final examinations and so requested I distribute the questionnaires that day, rather than taking time from a class when all the students would be present. As both the interdisciplinary project *Identité* and the action-research interdisciplinary project had ended that week, the students were asked to complete the questionnaire based on their perceptions of both projects.

Research Question 6: How do students view interdisciplinary teaching within their classes?

The students' attitude regarding interdisciplinary teaching was elicited through the use of a questionnaire and then interviews with certain students from the class. First, the information from the questionnaire is presented. This is divided into two sections: that related to the Likert-style items and then the information obtained through the open-ended questions. The information gathered through the interviews is presented after the discussion of the questionnaire.

Questionnaires

Because the questionnaire is presented in themes, certain items in Table 5.9 are not in the positions they were in the questionnaire distributed to the students. The three main themes are: transferability which includes the transfer of competencies, ideas, knowledge, and strategies either from other subjects to English, or from English to other subjects; benefits to learning English; and other considerations which includes interest and motivation, and general appreciation. The original French version of the questionnaire can be found in Appendix N.

The results of the questionnaire are given with the number of student responses indicating agreement for each of the items as well as the average response for each item.

The values for the responses are as follows:

- 1 indicates strong disagreement with the statement
- 2 indicates disagreement with the statement
- 3 indicates neutrality regarding the statement
- 4 indicates agreement with the statement
- 5 indicates strong agreement with the statement

The subsequent discussion of the results of the questionnaire uses these same five terms.

Table 5.9: Results of student questionnaires from Benoît's class

Themes	Secondary themes	Items	Number of responses					Mean	
			1	2	3	4	5		
Transferability	Transfer to English from other subjects	2. In my English class, I was able to re-use ideas which I first dealt with in my other subject area class(es).	0	1	3	7	6	3.53	
		3. In my English class, I was able to extend my knowledge of the topic dealt with in my other subject area class(es).	1	4	1	8	3	3.47	
		4. In my English class, I was able to re-use strategies/ skills which I used in my other subject area class(es).	1	5	1	10	0	3.24	
		5. In my English class, I was able to learn the English equivalents of words/ expressions related to the topic dealt with in French.	1	3	1	11	1	3.47	
		6. In my English class, I was able to re-use work methods dealt with in my other subject area class(es).	0	2	3	8	4	3.82	
	Transfer to other subjects from English	7. In my other subject area class(es), I was able to re-use ideas which I first dealt with in my English class.	2	4	2	6	3	3.24	
		8. In my other subject area class(es), I was able to extend my knowledge of the subject dealt with in my English class.	1	4	5	6	1	3.12	
		9. In my other subject area class(es), I was able to re-use strategies/ skills first dealt with in my English class.	2	4	3	7	1	2.94	
	Benefits to learning English	10. This interdisciplinary project helped me to improve my English speaking skills.	1	4	2	7	3	3.06	
11. This interdisciplinary project helped me to improve my English listening skills.		1	4	2	7	3	3.41		
12. This interdisciplinary project helped me to improve my English writing skills.		1	1	5	9	1	3.47		
13. This interdisciplinary project helped me to improve my English reading skills.		2	1	3	9	2	3.41		
14. This interdisciplinary project helped me to improve my English vocabulary.		0	1	3	10	3	3.88		
18. I learn more English with interdisciplinary projects than in a regular English class.		5	2	1	3	6	3.18		
Other considerations	Interest and motivation	15. I found this interdisciplinary project as interesting as me regular English classes.	2	2	4	3	6	3.53	
		16. Interdisciplinary projects are more motivating for me to learn English than regular English classes.	1	0	2	6	8	4.18	
	Differences	17. Interdisciplinary projects are different from regular English classes.	1	0	2	4	10	4.29	
		Appreciation	1. I liked the interdisciplinary project we recently finished.	0	1	3	7	6	4.06
			19. Interdisciplinary projects should be taught more often.	0	0	5	5	7	4.12
			20. I prefer interdisciplinary projects to regular teaching activities.	1	0	4	6	6	3.94

The results from the questionnaire indicate the students agreed the interdisciplinary projects helped them to transfer ideas, knowledge, learning and work strategies, from their other subjects to English, and to learn English equivalents for words learned in other subjects. However, they found the transferability of ideas, knowledge and learning strategies from English to their other subjects was facilitated slightly less. The only item with which the students indicated disagreement over the entire questionnaire related to the transfer to other subjects the learning strategies and competencies from their English class (2.94/5). For the *Identité* interdisciplinary project, this was perhaps understandable as the students had completed all aspects of the project in all the other subjects before beginning to write the prologues for their stories in English. However, the action-research interdisciplinary project was carried out at the same time in the English and philosophy classes. It may be because the *Identité* project had lasted over a much longer period of the school-year and had been dealt with in four classes rather than two, the students accorded more weight to their impressions of this project.

Overall, while the students indicated neutrality to agreement they learned more English through the interdisciplinary projects than in their regular English classes, the students agreed the interdisciplinary projects had helped them improve their written English skills (3.47/5), and agreed slightly more that the interdisciplinary projects had helped them increase their vocabulary in English (3.88/5). However, there was less agreement with the statement the interdisciplinary projects had helped the students improve their speaking skills. Because the *Identité* project had the students write English prologues to stories they had written in French, it seems reasonable to accept that project had helped them learn the English equivalents to words in their stories and thus helped increase their vocabulary. The action-research project had required they write reports on different aspects of their topic of study in either English or French, so again, an improvement in writing skills could have been expected. However, the *Identité* project had no English speaking or listening components, and in the action-research project the only speaking and listening practice in English the students had was in their conversations with each other. As the students overwhelmingly used French for almost all their interactions with one other and with Benoît, it made sense they found this skill to be the least developed.

The results from the other considerations section of the questionnaire had the highest degree of agreement. The students indicated they found the two interdisciplinary projects interesting (3.53/5) and motivating (4.18/5), and very different from their regular English classes (4.29/5). Part of the reasons for the responses to the last item could be because during in-class observations, when Benoît was not having the students work on their interdisciplinary projects, he led very teacher-centred classes. However, when the students worked on their interdisciplinary projects, they worked in their teams at their tables and Benoît circulated around the room, providing assistance when needed. However, whatever the reason, the students indicated agreement with the items they had appreciated the two interdisciplinary projects, preferred them to other activities in their English class, and believed interdisciplinary projects should be offered more often.

Questionnaires: Open questions

There were three open questions on the questionnaire. These asked the students to indicate what they liked most about the interdisciplinary project, what they liked least, and in what manner the interdisciplinary projects were different from their regular English class. These questions resulted in a variety of responses, providing some elaboration to the information from the previous section of the questionnaire.

The largest number of responses for the first question, which asked the students what they liked most about interdisciplinary projects, were related to the increased motivation or interest these projects aroused and the opportunities they provided for the students to work in teams. These were followed by an appreciation for the increased autonomy the interdisciplinary projects allowed in the students' studying or learning, the class time provided by the teachers to work on the interdisciplinary projects, and the links the interdisciplinary projects made between the different subjects. The responses are presented in Table 5.10 on the following page. As several students indicated more than one response for each of the three open questions, the total number of responses for each of these questions exceeds the number of students in the class in each of these three tables.

Table 5.10: Benoît's students: Responses for Open Question 1

Responses (17 students)	Number of students indicating this response
The projects were motivating/interesting	6
The opportunities for team work	5
The increased autonomy in studying/learning	3
The ability to receive assistance from more than one teacher	3
The links the project made between the different subjects	2
The ability to use a wider variety of information	1
The chance to choose subjects that are personally interesting	1
The opportunity to expand points of view	1
The opportunity to improve English in the project	1

The question which asked the students to indicate what they liked least about the interdisciplinary projects resulted in a smaller variety but greater number of responses. The most common reason given was that the students found they either did not use or did not think they learned English while working on the interdisciplinary projects. This was followed by complaints the interdisciplinary projects lasted too long and the work load was too onerous. A few of the other reasons indicated the students were unhappy with the subjects chosen, the deadlines had arrived too close together leaving them little time to adequately complete different parts of the project, and they had not received feedback on these completed sections before the following work was due. The student responses to the question asking what they liked least about the interdisciplinary project are tabulated in Table 5.11 below.

Table 5.11: Benoît's students: Responses for Open Question 2

Responses (17 students)	Number of students indicating this response
The lack of opportunities to use/learn anything in English	8
The projects lasted too long	6
The amount of work/homework was too onerous	5
The subject was not interesting	3
The deadlines were difficult to meet	3
The time elapsed between work submitted and the corresponding feedback was too long	3
The number of classes wasted because not enough structure	2
The number of projects assigned at the same time	1
The projects required translation of French to English	1

The third open question asked the students to indicate in what manner they found interdisciplinary projects differed from their regular English class. The majority of the responses provided by the students showed they found the interdisciplinary projects allowed richer and more concrete or practical learning opportunities than their regular English class. Other students wrote the interdisciplinary projects were more interesting and or motivating than work in regular English class, possibly because the students were able to choose topics that interested them. Some students indicated the interdisciplinary projects provided more opportunities to develop team work skills and competencies related to the development of autonomy in their learning. This information, as well as the responses the students wrote regarding regular classes are found in Table 5.12 below.

Table 5.12: Benoît's students: Responses for Open Question 3

Responses (17 students)	Number of students indicating this response
Interdisciplinary projects allow richer learning	6
Interdisciplinary projects provide more chances to put learning into practice/less theory	6
Interdisciplinary projects are more interesting/motivating	5
Interdisciplinary projects develop competencies in team work	3
Interdisciplinary projects allow more freedom to choose topic	2
Interdisciplinary projects have more autonomous learning	2
Regular classes teach more general oral skills, vocabulary, and grammar	8
Regular classes are boring	6
Regular classes mean the teacher provides all information	4
Regular classes offer more restricted information	2
Regular classes teach us more English	2
Regular classes without context are useless	1

Interviews

Based on the results from the Likert-style items on the questionnaire, the three students who indicated the highest agreement with the items and the three students who indicated the lowest agreement with the items were invited to take part in a short interview. The purpose of the interview was to try to determine the reasons behind the students' responses to the questionnaire and to obtain a clearer understanding of their perspective of interdisciplinary teaching in their classes.

As with all the other student interviews, each began with a request for the student's definition of an interdisciplinary project. All six students' definitions were variations on the theme of several subjects touching or being grouped together. They saw interdisciplinary projects as a way to learn, at the same time, several aspects of material covered in the different subjects.

The object of the interdisciplinary projects had been to increase student learning; however, the students were of mixed feelings about whether the interdisciplinary projects were beneficial for their learning of English. Some stated they had enjoyed working on the projects but felt their English would have been better served if some theory had been incorporated as part of the projects. They regretted not receiving any theoretical instruction such as grammatical explanations or information on how to construct a text in English, instruction on the proper forms for writing the reports, and more feedback on their errors in their drafts for the prologue of their story. They had recently taken CEGEP entrance exams and a few found the exams difficult because they were not able to correctly identify verb tenses or use articles appropriately.

The students thought the interdisciplinary projects had a beneficial effect on their use of learning strategies and work methods. They talked about how the team work had meant they had to be more responsible for their own learning and for their engagements with their peers. Five of the six students interviewed mentioned how the interdisciplinary projects meant they had had to work more autonomously and to learn time and work management strategies; however, they felt there had been insufficient or no instruction regarding time and work management skills which would have facilitated their work in the interdisciplinary projects.

Although only two students indicated this on their questionnaires, one of the elements all six students mentioned during the interviews were the opportunities the interdisciplinary projects offered them to see the same information from the viewpoints of the different subjects. "*Au lieu de, met-on, un projet en anglais, tu fais juste apprendre, mets-on l'anglais. Tandis que la, on peut apprendre mets-on en anglais, on apprend l'historique, le philo, etcetera*" (Instead of, say, a project in English, you learn just English. However, there, we can learn, say in English, we learn history, philosophy, etcetera). The students found the *Identité* project to have been the more positive of the two interdisciplinary

projects because they had dealt with the same material in history, philosophy, French and English. Over and over through the interviews the students claimed to have found this ability to transfer knowledge and learning across the subjects to be the aspect of the interdisciplinary projects they had most appreciated.

Finally, the students felt their relationships with the teachers involved in the interdisciplinary projects were closer. For example, one student found the teachers spent more time with her when she asked questions. She said with “*les devoirs, tu peux leur poser une question puis ça reste là, tandis que les projets, souvent, c’est des questions plus élaborées. Genre, avec les devoirs ils vont t’expliquer le numéro, comment ça se fait, puis après tu retournes à ta place. Tandis que les projets, tu peux leur poser des questions mais souvent, ça se résume pas dans un ou deux phrases mais en plusieurs phrases puis souvent ça t’amène à poser d’autres questions que t’avais pas pensé. Ça fait que ça permet des fois des discussions avec les professeurs*” (homework, you can ask them a question and it stops there but with the projects, often the questions are more elaborate. Like, with homework they will explain the question, how it works and then you go back to your place. But with the projects, you can ask them questions but often, it can’t be explained in one or two sentences but with many and often, that brings more questions that you hadn’t thought of. And so that permits at times discussions with the teachers). Another explained how the interdisciplinary projects meant even his casual contact with the teachers had changed. When he was in the hallway and met one of the four teachers involved in the interdisciplinary projects, they now stopped to tell jokes and spend a few moments chatting about their day. He said that with other teachers, he simply greeted them as they crossed paths.

Summary

From the interviews and the questionnaires, it appears that the students found the use of the *Identité* and action-research interdisciplinary projects to be more or less useful as a tool to help them improve their abilities in English. The students explained that while they had enjoyed the interdisciplinary projects a great deal, they had not found them particularly beneficial for learning English. Nonetheless, they thought interdisciplinary projects should be implemented more often. The element they appreciated most about the

interdisciplinary projects was the closer relations they engendered in their community, especially those with the four teachers involved in the projects.

5.2.6 Observations of the *Identité* and action-research interdisciplinary projects

Benoît claimed finding the right balance between being “the father” and being the “older brother” was difficult for him. Classroom observations showed instances that illustrated this dilemma. He was often teased by his students and at certain times seemed helpless in the face of their lack of respect, verbal and occasionally physical onslaught. It may have been possible that his very youthful appearance had the effect that his students saw him more as a “brother” but not necessarily an older one.

From my observations, it appeared the problems with classroom management stemmed from the way Benoît conducted himself in his class. When the students were not working on the interdisciplinary projects, the classes were largely teacher-centred. However, often Benoît sat in a chair at the front of the room, tipped it back on two legs, and provided his lectures from that position. On more than one occasion, he had a bottle of coke or a cup of coffee in one hand and the papers he was reading from in the other. During one class, he removed his running shoes while he was sitting there, and subsequently became dismayed as they became missiles the students threw at each other. He spent almost 10 minutes walking back and forth between the students while they tossed around his shoes as he tried to reclaim them. On more than one day I saw students stretch out a foot to trip him as he walked past. It appeared to not be unusual for certain students to hit or punch him, and on one occasion, I saw a girl stand up and kick him in the bum. None of these actions resulted in any consequences for the students. Classroom observations noted it often took several minutes at the beginning of each class to get the students into the classroom and sitting down in their groups. Even once seated, there was regularly a complete or partial disregard for his directives regarding classroom procedure, requests for attention, or appeals to reduce the level of noise in the class. Often when he started his lectures, individual students would stand up and go to the computer consoles in the room. On one day when I was sitting close to the computers, I saw these students were sending email messages or chatting online with their friends. Other students would get up, cross the room, and sit down at a table with other students and begin conversations. However, despite the

noise level, and the lack of respect and cooperation, the students were never called to order with more than a few futile “Ok guys,” “listen up guys,” or “hey, listen!”

This appeared to frustrate Benoît but he claimed not to know how to remedy the situation. An example from the in-class observations of April 24th illustrates this dynamic. At the end of the class Benoît approached me and asked, “Why is it when I want to do stuff with them they walk all over and talk, but when I give them time like this, they are quiet?” Throughout the entire period, Benoît had had to make repeated requests for silence while the students talked over him and appeared to make no effort to follow the activities he was trying to have them complete for that section of the action-research project. Because they had been so uncooperative that day, he had “give[n] up” and granted them 10 minutes at the end of the class to work on whatever they liked as long as they were in their groups. Most stayed at their tables talking quietly while a few went to watch music videos on the computers. The room was so quiet I could clearly hear the music from the computers while sitting on the opposite side of the room. That was exceptional because often the level of noise in the room made it impossible to hear the announcements made over the P.A. system which came from a speaker just above the chair where I usually sat.

Although the classes were largely teacher-centred, there was always an ongoing conversation between Benoît and the students. As he presented information the students would comment on it, not always politely or constructively, and he would respond, some would ask questions and both he and the other students would reply. Deadlines, criteria, and information about activities and the projects themselves were negotiated between him and the students in the class. Even with the presentation of the action-research interdisciplinary project, there was negotiation over what was required in the different components of the project and the final product. When the students were working on their projects he circulated around the room, sitting at the tables of the different teams, providing feedback when requested. While the students were working on the fact-finding part of the action-research project, entire groups would leave the class to collect information or investigate some aspect related to their project. It was understandable the students found the interdisciplinary projects to be very different from their regular classroom activities.

It is important to note that almost all interactions in the English class were in French. Benoît had claimed the students had learned better speaking skills in English

because they were able to switch from English to French without noticing the language change. If he had said the opposite, I would have had difficulty believing him, but as it was, what he said was very accurate. During the observation period there were days when the students spoke only French and on other days the students spoke mostly French, but at no time did the students use mostly English during the 10 periods they were observed. There were a few students who seemed to make more effort to use English in exchanges with Benoît but most used French for both their interactions with Benoît and with those of their peers. On almost all the observation days, English was used less than French in the class, as much by Benoît as by the students. This lack of usage of English in the English class was one of the most noticeable characteristics of this group.

On February 28th I wrote in my field notes:

Benoît is circulating around the room. The students seem more or less to be talking about their topics in their teams; all conversations are in French. When Benoit arrives at a table, he asks the students a question in English about the issue they are investigating and the students respond in French. Benoît then switches to French for the rest of the conversation.

A later notation on the same day reads:

The noise level drops suddenly, for no obvious reason, and then rises again. I move to another group and, although they are talking about their issue, the interaction is all in French. Looking at their open action-research booklets, I see all the notes they have written are in French. I stop where I am and listen for a while to the various interactions taking place around the room; I do not hear any English at all. All the conversations are in French.

It was not just the conversations in French which were problematic. The English version of the student booklets had been chosen with the idea this would require them to complete the different steps in English. An examination of the students' booklets showed most students wrote in the booklet exclusively in French. They did not produce any written texts in English at all for the action-research project.

This particular situation offers a good example of the strength of triangulation, the collection of data in different ways. Had I only interviewed Benoît, I would have had to accept his assertions of his students' improved and increased English language use.

However, by not only interviewing him, but also doing in-class observations, it was possible to see that what he believed and what was actually taking place in his classes were two different things.

During the in-class observations, several different instances were noted where one or another of the teachers who were involved in the interdisciplinary projects entered the English class and either spent a few moments simply watching the class or interacting with Benoît and the students in a casual way. On one occasion, the philosophy teacher spent the greater part of the class working with the students in Benoît's class. Apparently because Benoît was not ensuring the students followed the planned schedule for the action-research project, this was causing problems for the class planning of the philosophy teacher. As a result, on April 26th the philosophy teacher came to Benoît's class and spent almost the entire period in the English class with Benoît, circulating around the groups, providing feedback, information, and assistance so the students would be able to complete step nine of the action-research project that day. By the end of the class, most groups were able to print up a report to give him with Benoît promising to deliver the remainder to him the following morning. After the philosophy teacher left the class, Benoît instructed those groups who had not submitted the report that they had to type it up overnight and hand it in to him the next day before the first class.

This was not the first instance where Benoît appeared to encounter difficulties having the students respect deadlines. The other occasion related to this issue was on April 17th. Only 15 out of the 28 students had submitted their prologues for the *Identité* project; apparently the French teacher had been asking for them for several days because he was compiling the material to send to the publisher. Benoît told the students he "needed them yesterday" and the French teacher had "threatened to kick [his] butt" if the prologues were not completed and handed in by the following morning. That day, Benoît gave the students the entire class to work on their prologue. It is significant that this was the only day Benoît had the students work on their prologues in class. He had assigned the work and the students had written a draft which Benoît had then corrected. On the day in question, he returned the drafts to the students who were then to rewrite their prologues, copying the corrections Benoît had made. There was no use of the writing process, peer editing, revising drafts, etc. for this text.

During the last interview with Benoît, when I asked if he thought the interdisciplinary projects had accomplished what he had hoped, he replied in the affirmative. His first response was that he thought the students had had fun with the action-research project. His secondary goal with the action-research project had been to have the students work on their speaking and writing skills. He felt their speaking skills “were really, really good this year. They were strong. Their writing skills, I think that the project we did, they were writing a lot because I wanted a page each, they improved on their writing skills.” His students did not appear to share this belief. The responses on the questionnaire showed they were neutral regarding the improvement of their speaking skills (3.06/5), and agreed only slightly more that they had improved their writing skills (3.47/5) through the interdisciplinary projects. While the creation of the dual-language texts for the *Identité* interdisciplinary project may possibly have helped them develop their writing skills, from my classroom observations, it was difficult to see how these or their oral skills had been developed.

5.2.7 Mr. Bergeron

At the time of the study, Mr. Bergeron was studying for a Doctorate in Learning organizations at a Francophone university some distance from the provincial capital. Currently in his late 40’s, he had begun his teaching career 20 years earlier as a physical education teacher. He had been the principal of the *École secondaire le Carrefour* for five years and the vice-principal for the three years before that. Because of his studies, Mr. Bergeron had a fairly sophisticated understanding of interdisciplinary teaching and at times used English terms and expressions for constructs particularly related to his studies. For this reason, while the majority of citations in this section of the chapter are in French, because of his code switching, there are also some in English.

Research Question 4: How do school administrators view the implementation of interdisciplinary teaching within their respective schools?

This section of the chapter presents Mr. Bergeron’s view of interdisciplinary teaching and how he perceived its implementation in his school. It is presented in three sections; his conceptualization of interdisciplinary teaching, his view of interdisciplinary

teaching as it relates to the new MELS educational reform, and the factors that facilitate or constrain his efforts to promote interdisciplinary teaching in his school.

A How do school administrators conceptualize interdisciplinary teaching?

Mr. Bergeron defined interdisciplinary teaching as “*le partage d’éléments communs ou de compétences communes à travers des champs de pratique qui n’est plus par silo. Donc, comment on peut rattacher des contenus qui sont d’une discipline à l’autre pour qu’ils retrouvent un sens pour la personne qui a à intégrer ces connaissances ou ces savoirs, les compétences, ou peu importe*” (the sharing of common elements or competencies through different fields of practice that aren’t closed off from each other. So, how we can rejoin the contents of one discipline to another so they make sense for the person who has to integrate the knowledge or learning, the competencies, or whatever). He also believed interdisciplinarity was a way to change the established teachers’ culture for a broader, more open “construction of reality.” This meant teachers needed to collaborate or at least cooperate to develop students’ methodological, intellectual, and communicative competencies.

It was not Mr. Bergeron’s conceptualization of interdisciplinary teaching that had changed over time so much as his understanding of why teachers put it into practice. He believed interdisciplinary teaching was not simply the elaboration and implementation of an interdisciplinary project, but also, “*il y a le suivi de l’élève, d’où il part, où il se rend*” (there is the support of the student, from where he begins to where he finishes). He explained this following or support of the students included understanding and taking into consideration their interests, their strengths, their understanding, and what they wanted to improve through to how they acted and interacted with others in the completion of the project. He speculated team-teaching had evolved into interdisciplinary teaching through teachers’ greater sharing of information and knowledge, and an expanding vision of collaboration and teamwork.

B How do school administrators view interdisciplinarity in the context of the current MELS' educational reform?

Within the classroom

Mr. Bergeron thought interdisciplinary projects were very beneficial in helping students develop the four categories of cross-curricular competencies. These benefits to learning and communication strategies were the result of students being "*très engagés sur le plan des apprentissages*" (very engaged in their learning) as compared to more traditional classes where students were more passive, waiting for the necessary knowledge to be transmitted to them. Mr. Bergeron also believed interdisciplinary projects resulted in increased motivation because the students were proactive and responsible for their learning in projects that "made sense" through the links made with the subjects involved. Additionally, because interdisciplinary teaching developed student competencies and not discrete notions of knowledge, both the object and the outcome of the student's learning process were changed.

Because he saw interdisciplinary teaching as part of a new paradigm in teachers' culture, Mr. Bergeron often presented his ideas of it and the effects of the educational reform by contrasting the old and new models. For example, he believed interdisciplinary teaching changed the teacher's role in terms of responsibility and thus, the division of labour in the teacher's class. In the old paradigm, the teacher was responsible for the students' learning; he was the sole authority who decided what and how the students would learn, and when and how the students would be evaluated. In the new paradigm, the teacher accompanied the students to enable them to understand they were responsible for their own learning. He then assisted the students and adapted his teaching in relation to what they needed.

Mr. Bergeron believed interdisciplinary teaching resulted in changes to the other aspects of the activity system of each individual teacher's class as well. He believed teachers' understanding of the sense of logic of interdisciplinary teaching resulted in changes in the planning process of an interdisciplinary project, through the choice and use of materials, to the methods of evaluation of the students' learning. Planning an interdisciplinary project meant examining and establishing which competencies were to be

developed and not what knowledge needed to be learned and because of this, of necessity the material would be different from that of a teacher-centred class.

Within the school

In the wider school community, interdisciplinary teaching also made changes in the division of labour. According to Mr. Bergeron, in the old paradigm teaching was done in isolation, or with cooperation only within a subject department; however, he found he was supervising “*un ensemble d’individus qui sont tous compartimentés*” (a group of individuals who are in separate compartments). This was problematic as he did not have the knowledge of each of these divisions and so was obliged to meet with, consult, and observe how the different groups made decisions. It was this which brought him to interdisciplinarity. He found he needed to work with the department heads, to work together and talk about material, the school organization, teaching practices, student supervision to have a coherent view of what was happening in the school. Mr. Bergeron saw these changes to the paradigm altered his role in that he had to develop cross-curricular competencies such as the treatment of information, the ability to make judgements, perform actions, communicate, look for information, etc. in order to be a more effective administrator. He believed a “top down” hierarchy was no longer possible and it was becoming more and more necessary to consult with teachers to establish procedures together and make joint decisions, and to be collectively responsible for them.

However, Mr. Bergeron found these goals were not necessarily shared by all the teachers and this occasionally resulted in tension, discord, and less than ideal relationships within the community of the school. He believed the teachers in the school were divided into two camps, those who were pro-reform and believed in the value of interdisciplinary teaching, and those who were unhappy with the reform and were more “autocratic” in their classes. Because he belonged to the former group, relationships with teachers in the latter were occasionally affected by some organizational and planning “conflicts,” most often related to the management of students.

C In their particular context, what factors constrain or facilitate the implementation of interdisciplinary teaching?

The following section presents the factors Mr. Bergeron found either facilitated or constrained his efforts to facilitate interdisciplinary teaching in his school. First the constraints are presented and then the facilitating factors. These are further divided into three sections, those elements he found had an effect at the level of the school, in the school commission, and from the MELS.

Factors that constrain efforts

Mr. Bergeron found there were several factors which constrained his efforts to implement interdisciplinary teaching. These were found within the activity systems of the school, the school commission, and the MELS.

Within the school

When first asked what elements facilitate or constrain implementation of interdisciplinary teaching, Mr. Bergeron replied, "*d'abord, une contrainte c'est que l'argent, on n'en a pas, on aurait besoin de plus. Mais on n'a pas la quantité pour répondre à nos besoins*" (first, one constraint is that money, we don't have any, we would need more. But we don't have enough to meet our needs). He found liberating teachers to plan interdisciplinary projects cost the school a great deal. He explained that to free teachers from their classes in order to build an interdisciplinary project that would touch all the main subjects for one grade level was prohibitively expensive. For example, to hire substitute teachers in order to free eight teachers for just two periods, cost the school about \$1120, and he readily acknowledged that it took much more than one afternoon to elaborate and plan an interdisciplinary project that could incorporate eight teachers.

Mr. Bergeron considered the rules which regulated activities of the school organization constrained his efforts to encourage interdisciplinary teaching in his school. The most important of these was the most recent collective bargaining agreement with the teachers' union. He found the agreement constrained his efforts to ensure common planning periods in the schedules for teachers who worked in teams. He said because the master schedule was built according to fields, the rooms, the choices of special programmes, the

MELS core programmes, the students' schedules, and the teachers' schedules based on their seniority, it was "impossible" to ensure that a team of teachers shared even one planning period per cycle. He explained it was possible for two teachers but he was not capable of more than that and this greatly constrained teachers efforts to work together to build projects across subjects.

Mr. Bergeron found the rules which governed the school organization constrained interdisciplinary efforts in that everything was divided into fields. It started in the teachers' room where all the teachers were grouped according to their subjects, so the science teachers were together, the mathematics teachers were together, the English teachers were together, the French teachers were together, etc. This was carried out in the structure of the building itself where all the English classes were held in the same block, the mathematics classes were held in a different block, the science classes in the science labs, and so on. They were divided still further into Secondary 3, Secondary 4, Secondary 5, and special education. Finally, across this, there were divisions between the different programmes offered by the school, such as the special programmes and the MELS core programme. Mr. Bergeron believed all these divisions were obstacles to teachers who wanted to cooperate with others in the implementation of interdisciplinary teaching. They were physically too far apart.

Another way in which the rules or policies of the school constrained interdisciplinarity related to the organization of students in the MELS core programme into open groups. Mr. Bergeron felt, "*à partir du moment qu'on a des groupes éclatés puis qu'on ne voit pas tous les élèves dans les mêmes groupes, qui sont partagés entre enseignants, c'est difficile de faire des projets interdisciplinaires*" (as soon as you have open groups and we don't see all the students in the same groups, shared between teachers, it's difficult to do interdisciplinary projects). The same teachers needed to have the same groups of students; however, in the core programme, that became even harder because "*le régime pédagogique prévoit une promotion par matière*" (the pedagogical system means students pass their year in each of the different subjects) so if a student passes his mathematics class, but not his French class, then he will be with one group of students for his mathematics class and another for French. So, for example, a Secondary 4 French teacher might have students from Secondary 5 in his class because they had failed the year

before. Because of this heterogeneity, teachers were not able to follow their students from one subject matter to another. Mr. Bergeron said he understood why some teachers “*disent que c’est impossible*” (say it is impossible). He concurred that the current structure of the school organisation made interdisciplinary teaching outside of special programmes very problematic.

He found the school organization also constrained efforts in that interdisciplinary projects didn’t always fit into an established schedule. Mr. Bergeron said, “*la difficulté majeure que j’ai actuellement, c’est de libérer les élèves parce qu’il y a beaucoup de projets qui ne peuvent se faire selon l’horaire établi, selon par l’enseignant ou par l’élève. C’est-à-dire jour deux, période deux, puis des fois il faut déborder un petit peu*” (the major difficulty I have right now is to release the students because there are several projects that can’t be done following an established schedule, by the teacher or the student. What I mean is Day 2, period two and at times it has to run over a bit). He encountered a great deal of resistance from teachers who would not allow students to leave their class in order to complete an interdisciplinary project or activity that had been begun in another class because it would require an adaptation, a reorganization of time or planning on their part in order to accommodate those students who were temporarily out of class. He explained this occurred most often with teachers who were more traditional, who did not subscribe to the spirit of the educational reform. He found it difficult to obtain their cooperation to work and make compromises with those teachers who were using interdisciplinary projects with their students.

It was this division between teachers in the school community which engendered the most difficulties. Mr. Bergeron found there were two schools of thought within the school who had entirely opposing philosophies about education and student learning. On the one hand, he had those who believed the student was at the heart of his learning, that the student had to appropriate knowledge and competencies himself, and on the other hand, those who held it to be the teacher’s responsibility to provide the learning, to transmit what was necessary and to ensure it was learned and/or memorized. Mr. Bergeron explained the school was dealing with “*des regroupements d’individus avec les philosophies pédagogiques qui se regroupent ensemble, qui discutent ensemble*” (groups of individuals with [similar] teaching philosophies who gather[ed] together and discuss[ed] together) but

who had difficulty sharing their points of view with the members of the other group. *“C’est vraiment deux mondes. C’est deux écoles. Oui, ça emmène des conflits de, de... quand vient le temps d’organiser des activités éducatives, des sorties, des projets communs. Imaginez quand tu mets ces deux groupes de personnes pour faire de l’interdisciplinarité; les écoles de pensée sont complètement opposées. Ça travaille très difficilement en équipe. Puis, j’ai même essayé de contaminer, de forcer par les tâches”* (It’s really two worlds. It’s two schools [of thought]. Yes, it leads to conflicts of... when it is time to organize learning activities, outings, common projects. Imagine when you put these two groups of people together for interdisciplinary teaching; they are two opposite schools of thought. It makes it very difficult to work in teams. And I’ve even tried to contaminate them, to push them by their teaching load) to work together. However, there were still difficulties elaborating projects together, agreeing to educative outings, and even liberating the students to go work with the other teacher. Mr. Bergeron did not hold much hope about resolving the division between the two camps. He said it was necessary for the two sides to *“communiquer. Il faut que les gens se parlent. Il faut qu’on échange. Mais c’est impossible. Je ne veux pas être un fataliste mais c’est utopique un peu ”* (communicate. It is necessary that they talk together. It is necessary that we exchange. But it’s impossible. I don’t want to be fatalistic but it’s a bit utopian) to hope that one day the different philosophies will merge.

He explained the implementation of the educational reform meant the school was *“dans une période de turbulence”* (in a period of turbulence) and often there was dissatisfaction with the choice of personal in the distribution of classes. Certain of the programmes in the school were more innovative and required a certain standard of grades and level of motivation from the students. Because of the teachers’ union, Mr. Bergeron was required to distribute teachers’ work loads according to seniority; however, he found many teachers *“veulent la clientèle mais ils veulent pas s’investir dans l’approche, dans la philosophie du programme”* (want the clientele [of these special programmes] but they don’t want to invest in the approach, in the philosophy of the programme). This then required *“beaucoup, beaucoup de lobbying pour que je refuse tel prof ou j’accepte l’autre prof alors que la convention m’oblige à respecter certaines règles”* (lots and lots of lobbying for me to refuse one teacher or accept another teacher while the union contract

oblige me to respect certain rules). Despite all efforts to compromise, Mr. Bergeron found it impossible to please all concerned.

Further, he felt the teachers' union encouraged or sanctioned some of these conflicts as they continued to contest certain advances the school was trying to make. Mr. Bergeron was disappointed the last collective bargaining agreement was not negotiated in the spirit of the reform. As a result, the rules and procedures were modelled on the old paradigm and so did not provide for teachers' needs for meeting times or for team work. "*Donc, à la lecture des règles, principes, procédures, politiques conventionnées par le syndicat, il n'y a rien qui change. Fait que c'est sûr que, d'après moi, on va retrouver les mêmes comportements. Ça c'est clair*" (So, according to the rules, principles, procedures, and politics approved by the union, nothing has changed. So it's sure, I think, we will find ourselves with the same behaviour. That's clear). He felt as long as the union did not encourage teachers to re-examine their teaching philosophy, and to make sense of and understand the philosophy of the reform, the resistance would continue. The morning of our interview he had had a meeting with the union council and explained how they were caught up in "*une réforme pour laquelle ils ne voient pas la nécessité*" (an educational reform for which they don't see the necessity). Mr. Bergeron believed as long as the union did not understand the necessity of the reform, they would not support teachers' efforts to implement it and elements of the new reform. This included interdisciplinary teaching as it did not conform to the old paradigm.

Within the school commission

At the level of the school commission, Mr. Bergeron found the training provided constrained interdisciplinary teaching. "*La formation se donne uniquement par champs. Il n'y a pas de formation pour les profs de quatrième secondaire*" (Training is offered only by fields. There isn't any training for teachers of Secondary 4) that would help them explore ways to link their subjects together. Further, he believed the training did not take into account teachers' feelings towards the educational reform. He found the curriculum consultants were "*pas à l'écoute. Les gens veulent être rassurés*" (not listening [to the teachers]. People want to be reassured). He found the training was "*un frein terrible*" (a terrible restraint) because what was offered did not respond to the teachers' needs and as

long as they did not feel capable, as long as they did not see the sense of the educational reform, they would resist the innovations such as interdisciplinary teaching which were being proposed by the reform.

Mr. Bergeron also saw the lack of qualified substitute teachers as a problem which originated with the school commission. Not only were the costs prohibitive, but even when he tried to release small groups of teachers to enable them to work on an interdisciplinary project, often he was unable to find qualified substitute teachers to cover their classes as the school commission was experiencing a shortage of teachers. Because of this, he found teachers in the school were not overly enthusiastic about being freed from their classes to work on interdisciplinary projects. Although they prepared the lessons for when they would be absent, the teachers were often obliged to redo the lessons the next class because they had not been properly carried out.

At the level of the MELS

Mr. Bergeron found the educational reform was not understood by the teachers or by parents who did not believe there was a necessity for the change because they could not see the sense of it. He thought part of this problem was caused by the repeated changes regarding the reform at the level of the MELS. Each time there was a change in Ministers, or a certain amount of public pressure, it changed "*les règles du jeu*" (the rules of the game) which caused confusion among all concerned. He blamed the ministry for many of the problems the reform was having because they tried to impose certain procedures and then rescinded them. They required the schools to delay the implementation of the science curriculum for one year even though the teachers were ready. The same problem occurred with the abandoning of letter grades and subsequent re-adoption of averages and percentages for use in student evaluations. Mr. Bergeron felt these actions by the ministry only encouraged teachers to "*rester dans leur ancien système*" (continue in the old system) and because interdisciplinary teaching was not part of that system, teachers would continue to resist his efforts to promote interdisciplinarity in the school.

Factors that facilitate efforts:

Within the school

Mr. Bergeron believed the availability of certain tools would greatly assist the school in promoting interdisciplinary teaching. Specifically, he found the resources in the school were only barely just adequate to facilitate interdisciplinary teaching. The school had some funding to release teachers for planning, some funding to purchase material, and some to improve rooms. While this funding was for the implementation of the educational reform, Mr. Bergeron believed it facilitated interdisciplinary teaching in that this latter was part of the reform. Nevertheless, while it was “correct,” he thought the schools would be able to do more to promote interdisciplinarity if more funding was available.

He found one of the rules he had initiated was particularly facilitating to interdisciplinary teaching. He had regular meetings where he met with all the department heads, and while not all were in accord with the educational reform and interdisciplinary teaching, the meetings allowed at least, an exchange of ideas. Although it was not necessarily the case at the time of the interview, he felt with time, through these meetings, he would be able to eventually get the different departments to encourage the teachers to work together on interdisciplinary projects.

Another policy which facilitated interdisciplinary teaching was that in which certain programmes in the school worked with closed groups of students. Within these programmes, the same students had the same teachers in French, English, mathematics, philosophy, history, physical education, etc. He said, “*Quand des groupes sont fermés, oui on a trouvé naturellement des affinités entre enseignants qui faisaient, qui partageaient des projets communs, avec une finalité qui regroupait plusieurs matières*” (when there are closed groupings, yes, we have found a natural affinity between teachers who did, who shared group projects, with an end product that regrouped several subjects). Mr. Bergeron believed that the students had to be in closed groups in order for teachers to be able to implement interdisciplinary teaching in the school.

Besides the closed groupings, the number of students was also factor which facilitated interdisciplinary teaching. At the Secondary 3 level, the school had approximately 180 students. Because they were so few, although they might have been mixed within their classes, these students all shared the same teachers. Mr. Bergeron

believed this situation made it more possible for the teachers to discuss and resolve issues amongst themselves making the organization of interdisciplinary teaching feasible. However, in Secondary 4, the number of students rose to 750 which made it much more difficult, or “impossible” to coordinate groups of students in this manner.

Within the school community, Mr. Bergeron felt the determining factor was an openness to interdisciplinary teaching on the part of the teachers. Teachers who were working in the “spirit” of the reform were more likely to be interested in trying interdisciplinary teaching. He found “*les critères de sélection sont plus pointus à ce niveau*” (selection criteria are more focused at that level) and so it was now possible when interviewing candidates for teaching positions at the school to choose those who were more open to working with other teachers. He believed it was in the makeup of an individual who, because they had an interest or saw the importance of interdisciplinarity that they tried to integrate interdisciplinary teaching into their practice. He said the willingness to become involved in interdisciplinary teaching was part of the character of an individual and not a result of external factors such as age or teaching experience.

Although interest was the most important factor, Mr. Bergeron also thought teachers became involved in interdisciplinary teaching because there were “affinities” between certain individuals who decided to work together. He hoped other teachers, seeing their colleagues working together might slowly also be tempted to try interdisciplinary teaching. However, he was certain it would only be “*avec le temps, avec la pratique, le questionnement des pratiques, les échanges*” (with time, with practice, the questioning of practices, exchanges) and knowledge and understanding that it would spread through the school community.

Within the school commission

Mr. Bergeron thought “*les services éducatifs ont un gros rôle à jouer*” (educational services had a large role to play) in aiding schools and teachers to implement interdisciplinary teaching. More training from the school commission would help teachers have a better understanding of interdisciplinary teaching and what it entailed. And while the educational services currently provided more disciplinary than interdisciplinary support

and training, he speculated as the reform advanced and teachers were more comfortable with it, more training would be provided regarding interdisciplinarity.

At the level of the MELS

Mr. Bergeron found the educational reform itself had confirmed his belief in interdisciplinarity and the implementation of the reform would bring teachers to see the value and benefits interdisciplinary teaching brought to their students. He believed as more teachers understood the philosophy of the educational reform, they would naturally become more involved in interdisciplinary teaching.

Summary

Mr. Bergeron believed in the value of interdisciplinary teaching and wanted to see its implementation more often in his school. He admitted there were several problems with the rules of the school organization which constrained this. Some of these related to the difficulties he experienced with the teachers' union's strict adherence to the collective bargaining agreement, the physical divisions of the school, the organization of students in open groups, and the master schedules governing the time frames of teachers' classes. Mr. Bergeron also found he often lacked the tools to help facilitate teachers' efforts in interdisciplinary teaching, or more specifically, funds to release them from their classes for interdisciplinary training or planning. However, the greatest constraints to interdisciplinary teaching in his school came from the community of teachers. He found teachers who were more traditional resisted the educational reform and interdisciplinarity and the teachers' union supported this opposition. On the other hand, he had other teachers in the school who believed in the educational reform and in the benefits of interdisciplinary teaching and so he tried to support their efforts when and how he could. By hiring new staff who were open to the reform and whose pedagogical beliefs supported interdisciplinarity, by providing training and planning time when possible, and by mediating relations between the two camps of teachers, he tried to encourage and promote interdisciplinary teaching in his school.

5.2.8 Case study summary

Mr. Bergeron described the teachers in his school as being divided into two camps; Renée and Benoît represented the distinctions between these camps. While Renée believed in teacher-centred classes, explicit grammar instruction, and drills, Benoît believed the students did not learn through these methods but rather, through their own interpretation and exploration of concepts and topics. When he was not working on interdisciplinary projects he led teacher-centred classes; however, often these were based around ongoing student participation in the form of interactions and negotiations regarding the material being presented. Nonetheless, there was no doubt Renée's students spent a much, much larger percentage of their class time hearing and working in English.

Renée and Benoît also experienced very different relationships with their partners in the interdisciplinary projects. Benoît had become involved for personal reasons which grew out of, but also into, closer relationships with his partners. He felt genuine friendship for those he worked with. Renée, in contrast, had become involved in interdisciplinary projects against her will and experienced much more difficult relations with her partners. There had been no choice in who would work together and she found herself paired with one who tried to control all aspects of the project and another who did not contribute to the development and planning of the project and therefore, her relationships with her peers were more problematic and prone to conflict.

Similar to their relationships with their respective partners, the two teachers had very different relationships with the PC department head. For Renée, the relationship was fraught with animosity, criticism and frustration, and the year ended in acrimony with threats of resignation. Benoît on the other hand received unexpected validation from the department head for his involvement in the *Identité* and action-research projects. As both these teachers were experiencing their first interdisciplinary projects, the differing perspectives are likely based on the department head's reaction to the projects in which these two teachers were involved. Although his involvement in the *Identité* project was not large, Benoît had taken the initiative by trying to become implicated in it. Further, when offered the opportunity to work in a second interdisciplinary project, he had quickly accepted. He had also solicited the cooperation of the Secondary 5 core ESL teachers to test and provide feedback on a project which he hoped would be implemented as an

interdisciplinary project the following year in the PC programme. Certainly he must have been seen by the department head as a teacher who accepted the philosophy of the programme, or at least, he would likely have been seen as trying. On the other hand, Renée, who admitted being one of the only teachers in the school who used grammar drills and very teacher-centred classes, had had to be threatened before she became involved in an interdisciplinary project. The interdisciplinary project *La ferme des animaux* was created by the teachers but, although her two partners implemented the project as planned, she did not. It was possible that some of the criticisms she received over the year were related to this situation. That certain of her students complained to the PC department head regarding the extended nature of the interdisciplinary project may have exacerbated the problem. It was possible she was seen as a teacher who did not belong in or did not embrace the philosophy of the PC programme. In the end, the department head moved to another school and Renée and the French and philosophy teachers agreed to implement an interdisciplinary project the following year, based on the novel in English, *Tuesdays with Morrie*. For this project, Renée had chosen the book and was able to exert more control over the aspects of the project that would take place in her class.

Despite their differing relationships with others in the PC department, neither Renée nor Benoît felt comfortable speaking about these projects outside the department. They found it was better to not discuss interdisciplinary projects with the other teachers in the school, whether those who worked in the English department or those of other subjects. They both perceived interdisciplinary teaching as being negatively seen by the teachers in the school and while this was not necessarily overtly expressed, the innuendoes, jokes, and commentaries of the other teachers left no doubt. Mr. Bergeron recognized this was indeed a problem in the school, and while he tried to promote interdisciplinarity, he admitted it would take a great deal of dialogue and time before it was likely to be accepted by a sufficient number of teachers to shift the balance. He hoped to contribute to this through his hiring practices for new teachers.

5.3 École secondaire le Renommé – The web page interdisciplinary project

The *École secondaire le Renommé* was a public secondary school with just over 700 students. It was situated in a small city just outside the limits of the provincial capital and

drew most of its clientele from the surrounding rural areas. It offered the MELS core and language concentration programmes to its students. Additionally, a programme was developed by one of the teachers in the school to help the students acquire language and multimedia skills; in this study, this programme is referred to as the LAMM programme. The participating teacher, Louise, had taught at the school for 12 years and had been the force behind the LAMM programme.

5.3.1 Louise

Louise was an English teacher in her mid 40's. She had graduated with a Bachelor's degree in physical education from a local French university 18 years previously whereupon she began teaching at the primary level. Eight years later, at the same university, she studied for and obtained a certificate in English as a second language and then a further six years later completed a "micro-programme" which granted her a degree in teaching English as a second language at the primary and secondary levels. She had been teaching at the *École secondaire le Renommé* for 12 years. She was in her seventh year of teaching ESL to Secondary 1 and 2 students in the core programme, and in the second year of teaching ESL to Secondary 1 and 2 students in the LAMM programme. Louise had worked with the multimedia teacher to elaborate and develop this programme which had been implemented in the school two years previously. The LAMM programme provided languages, cinema, and multimedia instruction to students in closed groups.

Louise was the only teacher participating in this study who was working within the educational reform. It had arrived at the level of Secondary 1 the previous year and Secondary 2 the year the study took place. Therefore, Louise was in her first year of implementing the new curriculum with her Secondary 2 students, and it was this group of students who were to have been followed through the implementation of the web page interdisciplinary project.

Louise worked within a school board that had not had a curriculum consultant since 1995. At the time of the study, she had been assigned the role of "*responsable*" in her school commission and so the MELS had released her from eight teaching periods per nine-day cycle, to work with/for them to help teachers appropriate the new educational reform

and to help build learning and evaluation situations (LES) to be used by English teachers within her school board.

The web page project

Louise had been involved in several interdisciplinary projects with her students over two years. One of the projects created for use with the Secondary 2 students in the LAMM programme for the year of the study involved the students' creation of a web page. The idea for the project was presented to her by the multimedia teacher and together the two teachers elaborated and planned the project. In each year of Secondary 1 and 2, the students read two books in English. In the English class the students kept notes on the books they read including book reports, character analyses, their reaction to the stories, what most impressed them and why, etc. In the multimedia class, the year of the study, the Secondary 2 students took this information and created a web page with links to publishing houses, photos, icons, and other items to make their pages attractive. These web pages were published in the school portal. Louise planned to have the students update their pages the following year as they read more books, and hoped to be able to place these pages on the Internet, available to a wider audience than just students and staff at the school. In this project, Louise did not teach multimedia skills. She and the multimedia teacher were both present in the multimedia classroom when the students worked on the project; however, she focused her instruction on research skills, language use, and the use of resources such as the English monitor, dictionaries, Internet dictionaries, etc, while the multimedia teacher concentrated on helping the students develop skills in the use of computer technologies.

Research Question 1: How do teachers conceptualize interdisciplinary teaching?

In this section, Louise's definition of interdisciplinary teaching will be presented. This will be followed by an explanation of how her conceptualization of interdisciplinary teaching has changed over time.

A How do teachers define interdisciplinary teaching?

Louise saw interdisciplinary teaching as a coherent and logical way to teach as it required knowledge be developed in two or more subjects in order for students to complete

one project. Each subject had to have specific objectives within the project. These objectives were to be complementary across the subjects and their achievement was required in order to complete the project. The competencies the students developed through the project had to link the different subjects together.

B How does teachers' conceptualization of interdisciplinary teaching change over time?

Louise initially saw interdisciplinary teaching as something that required large and complicated projects. She perceived the projects as demanding enormous time and commitment to achieve; each one was “*un projet de vie, de huit heures du matin à quatre heures le soir*” (a project that takes up the whole life, from eight in the morning to four in the afternoon), they had to come from the students and the students had to be able to choose what they wanted to do and how they wanted to do it, and they had to have extensive criteria and develop several competencies; she described them as unrealistic. With experience she reduced the vision of the projects and focused on simple projects with more specific objectives, developing each of the subjects with more limited criteria. She believed working with several smaller projects allowed her to have the students develop and hone one or two competencies each time, but over the long term, the students ended up working on and improving their abilities in all the competencies.

Research Question 2: Why and to what degree do teachers value interdisciplinary teaching?

This section of the chapter presents the factors that first influenced Louise to become involved in interdisciplinary teaching. Subsequently, an exploration of how Louise perceived interdisciplinary teaching as having an impact on her classroom practices is presented along with her estimation of the degree she used interdisciplinary teaching in the school-year.

A What are the factors that prompt teachers to become involved in interdisciplinary teaching?

The main reasons for Louise's involvement in interdisciplinarity, apart from those related to her use of interdisciplinary teaching as a pedagogical tool, were mainly the result of contacts with different activity systems at different levels. Her initial ideas regarding interdisciplinary teaching were formed when Louise completed the micro-programme in English four years previous to the beginning of the study. At that time, some of her courses were on the implementation of the new MELS educational reform for the secondary level and, while they did not present the structure nor the means to carry out interdisciplinary teaching, they did give her ideas for projects and piqued her curiosity to try to find out more about interdisciplinary teaching. Another source of ideas for projects came from certain professional development conventions she had attended. For example, at a fall convention, Louise had attended a presentation on a theatre activity which became the inspiration for a movie preview interdisciplinary project she did with the cinema teacher the year of the study.

The other main factor prompting Louise to become involved in interdisciplinary teaching was the launch of the new LAMM programme. Part of the philosophy behind the programme was based on teacher collaboration through the implementation of interdisciplinary teaching.

Additionally, Louise explained the literature the MELS published regarding the educational reform and the new MELS ESL programme influenced her involvement in interdisciplinary teaching. She found the articles convinced her that concepts and subjects could be connected and this incited her to begin to experiment with the idea of interdisciplinary teaching.

B What impact does interdisciplinary teaching have on teachers' classroom practices and relations with colleagues?

Louise believed interdisciplinary teaching changed almost all aspects of her teaching practices. The use of interdisciplinary projects as a tool to improve student learning resulted in changes to the division of labour, the relations of the community members, and the rules which governed their actions. She found they also had an effect on

the object of her teaching, the improvement in English skills the students were to obtain through use of the projects, and the other tools she used to forward this object.

Within the classroom

Louise believed interdisciplinary projects helped her students learn more English in less time, making them more competent. The interdisciplinary projects were more significant for the students because the tasks they required were authentic, as for example, the creation of a web page. She also thought this facilitated learning vocabulary and functional language in context. She believed having the students learn in context led them to develop spontaneity and a facility with English as well as communication strategies. Because of this they took on more responsibility and helped each other. They worked to ensure their peers understood what they were saying or trying to communicate and provided help when their peers had difficulty expressing ideas. However, because interdisciplinary projects meant students learned to use the language to communicate rather than learn the about language, at one point Louise found her students “*ne savaient plus écrire*” (didn’t know how to write anymore) and when speaking, did not correctly use verb tenses. She felt this was because the emphasis in the ESL programme was on situations, processes, and communication skills and not about the language itself.

According to Louise, the interdisciplinary projects helped the students develop greater autonomy, partly because the teachers were so “low profile.” She also thought the students developed teamwork, learning strategies and critical judgment skills, and expanded their usage of available resources.

As a pedagogical tool, Louise claimed to be excited about how simple it was to create interdisciplinary projects that matched the new MELS ESL programme. She said it took her some time to comprehend and master the new programme with the competencies, the evaluation criteria, and the end of cycle outcomes, but once she understood how they worked, they became easy to apply to interdisciplinary teaching. She found because the MELS offered so many criteria to choose from, it was “not difficult to select those possible behaviours, expected behaviours” she wanted the students to develop through the interdisciplinary project.

Louise found interdisciplinary teaching resulted in changes to the relationships of the members of her classroom community. She found her role as a teacher changed considerably when she started working with interdisciplinary projects because, while she exerted a fair amount of control when working on English-only activities in her classes, she scaled back her role to that of assisting and accompanying the students when they worked on interdisciplinary projects. She felt “*moins signifiante*” (less significant) for the students when she worked on interdisciplinary projects as she became more low profile and “*un petit peu effacée*” (a little less visible) because the students took charge of their own learning. She explained how in her usual English class she had more the role of the orchestra conductor as she took the centre position on the floor in the front of the class.

As the interdisciplinary projects changed her role in the class, they also had an effect on Louise’s relationships with her students. She felt she knew her students well because she observed them over time, both in class and in interdisciplinary projects; she had seen them work, had seen their interactions and how they reacted when faced with difficulties. However, in interdisciplinary situations, she believed she was of less significance for them as she took less place in their learning and what they did. She thought her students only really got to know her in a more traditional classroom situation where she conducted the class from the front of the room. For Louise, the relationships were easier and closer in more traditional-style classes. She speculated that her perception of this difference in relationships could be because interdisciplinary teaching was new for her; she was just a “novice” and would likely change her ideas as she gained greater experience working with interdisciplinary projects.

The rules of her class changed when Louise used interdisciplinary projects. She found she had to tolerate more noise in the class and be a bit more relaxed about the classroom rules. At the beginning she also had to work a bit more to enforce the English-only rule; to do this she used French-tag, which she described with a laugh as “evil,” but admitted both she and her students enjoyed it. She also said her classroom management changed when working with interdisciplinary projects in that she had to have confidence in her students, that they were on task, that they were focused, and that they weren’t wasting time. She said over the year she had developed more confidence in her students’ work ethic as she saw their involvement in the projects.

Evaluating her students' work on the interdisciplinary project required a great deal of professional judgement because the projects changed how Louise evaluated her students. In a teacher-centred classroom, she had records of the students' work and student booklets to verify the tasks were correctly completed. Additionally, in class, she took notes of who worked well, who didn't, who had difficulties, who didn't participate, etc. However, with the interdisciplinary projects she found she provided much more immediate and formative feedback because she acted as a resource person and this role hampered her evaluations as she could not "*promener avec un chapeau, lumière rouge sur la tête puis dire j'évalue*" (walk around in a hat with a red light on the top and say, I'm evaluating [now]). As a result, she thought she had fewer observation notes and administrative records when the project was completed with which she could compile grades. To help compensate, she used some self and peer evaluations and grills and checklists she made up at the beginning of the projects but, she was still not yet very comfortable with them.

Within the interdisciplinary team

Louise's relationship with the multi-media teacher was closer because of interdisciplinary teaching. They had worked together to build the LAMM programme and then to elaborate all the interdisciplinary projects they implemented together. The realization they shared the same teaching philosophy and the increased contact brought about through the development of the programme had drawn them closer together.

Within the school

Louise had been very marginalized in previous years because of her efforts to engage other teachers in interdisciplinary practices and her enthusiasm for the educational reform. Lately, she found there had been a change in her relationships with her colleagues in the English department; however, she was uncertain whether interdisciplinary teaching was the cause or the beneficiary. The improved atmosphere was recent, but she was happy about the more open attitude.

C To what degree do teachers use interdisciplinary teaching?

Louise calculated she worked in interdisciplinary projects 40% of the school-year. Most of these projects were done in conjunction with the multimedia teacher. Her students in both Secondary 1 and 2 in the LAMM programme completed several interdisciplinary projects throughout the year. However, she admitted this was recent as she had only started working with interdisciplinary projects the previous year, when the LAMM programme was put in place.

Research Question 3: What factors constrain or facilitate teachers' efforts to implement interdisciplinary teaching in their classes?

This section presents the factors Louise cited as having either a positive or negative effect on her abilities to implement interdisciplinary teaching. First the constraints are presented, divided into those elements that come from within the classroom, the interdisciplinary team, the school, the school commission, and then from the MELS. Following this, facilitating factors are presented in the same categories.

Factors that constrain efforts

Within the classroom

Within community of her classroom, Louise thought it might be somewhat complicated to do interdisciplinary projects with the students in the core ESL programme because they lacked some of the competencies, had difficulties using only English, and had an attitude that she was required to "fix." She said it might be possible do an interdisciplinary project with the students in the core programme if she were able to choose a project she had done previously that was well worked out and she had a group that was amenable to trying something new.

Within the interdisciplinary team

One element Louise mentioned that constrained interdisciplinarity was that teachers did not necessarily know how to work in teams. She said teachers were individuals and they all had creative ideas, but for an interdisciplinary project to work, the cooperating teachers had to agree. She thought teachers were too used to working alone and not talking

to each other about what they did in their classes. She believed changing this would require desire on the part of the teachers to learn how to work together which was not necessarily the case in her school.

Within the school

The two main elements that Louise reported most constrained her efforts to implement interdisciplinary teaching in the school related to the rules and the community members of the activity system of her school.

Louise said certain policies at the school made interdisciplinary teaching more difficult. Teachers at the school had a heavy teaching load which required a great deal of time, energy, and organization on their part to handle the number of different classes and subjects. This compounded with a lack of common planning periods for those teachers who wanted to build interdisciplinary projects together exacerbated the difficulties. Louise felt even for the teachers to ask for “spare periods” together was problematic because the vice-principals in charge of creating the master schedule for the school were inexperienced and so, not “good enough or they [did] not master it well enough to answer positively to a request” for common planning times. Therefore, there was little assistance to alleviate the additional burden of the time and work required to elaborate interdisciplinary projects.

A lack of common planning periods was not the only problem with the teaching schedule. When first setting up the LAMM programme, the idea was to have the students follow the MELS Enriched ESL programme with six periods of English each cycle. The first year, therefore, they began with six classes of English but one of these had to be given up in order to integrate multimedia into the schedule. Out of those five days, one day half the group went with the multimedia teacher and the other half stayed in English; the next time the groups were inverted. The teachers wanted the two days to be consecutive but, because of the way the schedules were made, between the two days where the students were split there was one day where they were together. This caused problems for planning classes and activities throughout the entire year. As a result, Louise was obliged to give up a second ESL class to the multimedia teacher, leaving the students to follow the core instead of the enriched ESL programme.

Louise also found it hard to have access to certain rooms such as the multimedia room. Because much of her interdisciplinary teaching was done in conjunction with the multimedia teacher, her requirements were different than other teachers; however, she felt this was not necessarily understood when the school set up the schedules. For example, she had one group that never had a period in the multimedia room and so it was necessary to make arrangements with other teachers to try to give them time there. She thought at times English was not a priority, or the LAMM programme was not a priority, and that was why it was necessary to take what was left over when the schedules were made.

Prior to the previous year, the community of teachers at the school had had very negative attitudes regarding interdisciplinarity. Louise said that when she first started talking about interdisciplinary teaching her colleagues were opposed to the educational reform and her ideas were very negatively perceived and greatly resisted. It was “*difficile pour moi à ce niveau là. Je me suis tue. J’ai arrêté de parler*” (difficult for me to work with that. I kept quiet. I stopped talking). She resigned herself to working alone and not talking to the other teachers about what she was doing in her classes “because [her] colleagues were not opened to it.” She speculated age was one explanation for their reluctance to be involved in interdisciplinary teaching. She said often, “*les gens les plus réfractaires c’est des gens qui sont plus vieux, qui ont beaucoup travaillé à monter leur programme actuel*” (the ones most resistant are those who are older, who have done a great deal of work to build their programme). Louise believed the following generation of teachers was also resistant. She felt they had arrived from university certain that they “*connaissent tout*” (knew everything); they had a great deal of self-confidence but no experience. Unfortunately, they arrived when the teachers “*étaient en changement, où on était réfractaires. Fait que là, c’était facile pour eux de donner leur point de vue, puis s’embarquer*” (were undergoing a period of change, where we were resistant. And so it was easy for them to give their point of view and to get on board). Louise described the situation as having been very negative and had resulted in that generation of teachers also being resistant to change. She had felt she was facing a wall regarding interdisciplinarity. At that time she considered herself too “*avant-garde*” and so “dared” not talk about it with her colleagues.

Within the school commission

The school commission had had no English curriculum consultant at the secondary level for the past 15 years. Louise had only been "*responsable*" for one year and much of her work for the school commission was accorded to the implementation of the educational reform, at all levels of teaching, to all ESL teachers in the school commission. Louise believed she could not help teachers with interdisciplinary projects as she was too busy helping them appropriate the educational reform. Further, this year there were many teachers in the second cycle of the secondary level who had not taken any of the professional development programmes offered last year because they were resistant to the reform and certain it would not be implemented at their level. These teachers now felt they had no choice; they were obliged to implement the new programme and so it was necessary for Louise to "*mettre des gants blancs*" (handle it very carefully) because the situation was very "touchy." As a result, the training she did for the MELS concentrated on the reform; there was as yet no professional development programmes given regarding interdisciplinarity. She felt interdisciplinary teaching instruction and information would have to wait until teachers accepted the new reform and were more at ease with it and all it entailed.

At the level of the MELS

According to Louise, the main constraint to interdisciplinarity was teachers' appropriation of the educational reform. Because teachers were still trying to understand the new programmes, Louise felt implementing interdisciplinary teaching was not feasible for the majority. She believed part of the difficulty teachers had with appropriating the reform was because the MELS was not providing materials far enough in advance for the teachers to assimilate the information. She gave the example of the new programme. The educational reform was to be implemented in Secondary 3 the following September but in May the teachers still did not have a copy of their programme. Similarly, teachers were required to begin using evaluation scales in June but they had not received the information on them until late in the spring. Louise felt this lack of tools to prepare for the following year engendered much negative feeling towards the educational reform and therefore all innovations such as interdisciplinary teaching which were associated with the reform.

Factors that facilitate efforts

Within the classroom

Within her classroom, Louise believed having motivated students who had applied for the LAMM programme facilitated working in interdisciplinary projects. She saw where the type of students might be a factor which had a certain degree of impact on whether interdisciplinary teaching was feasible or not. She felt interdisciplinary projects needed to take account of the students they were developed for, but felt most students would benefit from them.

Within the school

When asked about other elements that facilitate interdisciplinarity, Louise described herself as "spoiled." She said if she asked for assistance from the school in her efforts to implement interdisciplinary teaching, they would try to ensure she received whatever she asked for. They provided her with all the tools and resources she needed to support interdisciplinary teaching.

According to Louise, the element that would most facilitate interdisciplinary teaching would be planning time with colleagues. For her that meant time incorporated in the planning schedule where she and her partners could sit and plan together; that people from each discipline could meet together to brainstorm, choose, discuss, and build a project together. However, while it was not possible to have these scheduled common planning periods with other teachers, Louise asserted whenever asked, the school provided time and substitutes to release the teachers from their classes in order to elaborate interdisciplinary projects. She said the educational reform meant the school had a budget allocated for that; however, she speculated in three years it would no longer be available.

Louise also declared the administration's efforts to ensure there were times scheduled when two teachers were in the class at the same time facilitated interdisciplinary projects because it meant the students were followed more closely in their efforts. It also provided them with more resources. In her situation, this was "not difficult" to arrange because the multimedia teacher was "not in the system." Once the master schedule was almost completed, the multimedia teacher looked to see where there were free periods at

the same time as Louise's ESL classes and then chose those that worked best for her and Louise.

Louise found the community of teachers in the ESL department "extraordinary." She said the new cohort of teachers coming into the school had studied the educational reform at university and didn't have difficulties about asking questions nor seeking advice; she found them dynamic and agreeable to work with. She explained they "*m'alimentent parce qu'ils ont quand même fait beaucoup de choses à l'université, alors ils ont des connaissances que moi, je n'ai pas. Moi, j'ai l'expérience*" (nourish me because they have done many things at university, so they have knowledge of things I don't have. Me, I have the experience). The result was an exchange of knowledge. She found this new cohort also engendered a more open attitude toward interdisciplinarity and colleagues working together. She qualified the difference as enormous and believed colleagues in other departments were beginning to open up to innovative ideas. This was the first step towards interdisciplinary teaching.

Within the school commission

Louise found the budget the school commission provided to help teachers appropriate the educational reform was an element which greatly facilitated interdisciplinary teaching. She recognized the budget was temporary; however, she thought the provision of the funds to release two, three or more teachers to plan and build a project was a significant factor in encouraging teachers' to take the time to try interdisciplinary teaching.

She thought the community of the school commission could help promote interdisciplinarity through a mentor programme. Louise believed having a mentor programme encouraged teachers to share knowledge and experience with the new teachers coming in and the exchanges that resulted from the new relationships were likely to have a positive effect on interdisciplinarity in the schools.

At the level of the MELS

When asked what elements at the level of the MELS helped interdisciplinarity, Louise replied the new programme was, in itself, a tool that greatly facilitated

interdisciplinary teaching. The number of competencies, both disciplinary and cross-curricular, the learning outcomes and the cycle objectives made planning interdisciplinary projects with other teachers easier as there was always something that could be the focus of development.

One element which was not in place but that Louise believed would facilitate interdisciplinary teaching was a better distribution of funds from the MELS through the school commission to the schools. When asked to elaborate, she explained she thought the large class sizes constrained teachers' efforts to be innovative. She said having 24 students instead of 36 per class would make all the difference in the world. She thought giving the school commissions and schools more leeway in deciding how their budgets would be spent would create situations that would facilitate interdisciplinarity.

Summary

Louise was convinced interdisciplinary teaching was a wonderful tool that had an enormous effect on her students' improvement in their English skills and she was excited by the possibilities it offered. The use of interdisciplinary teaching changed most aspects of her classroom practice. The shift in the division of labour whereby the students were given more responsibility for their own learning engendered changes in how the community functioned. This subsequently required changes to some of the rules that helped order the community, such as those related to noise and how she evaluated the students' work.

Louise felt most constrained in her efforts to implement interdisciplinary teaching by the community of teachers in her school who had negative attitudes towards interdisciplinarity. While the heavy teaching schedule and lack of common planning periods made interdisciplinary teaching difficult, before her new colleagues came to the school, interdisciplinary teaching had been impossible. Only as new teachers came in and some of the older, more traditional teachers had left had the attitude started changing.

It was these changes to the community which meant Louise was able to begin to implement interdisciplinary teaching. The school further supported the teachers' efforts by providing funding and liberating teachers so as to facilitate the elaboration of interdisciplinary projects. She found the way the new MELS educational programme was

structured and the competencies and objectives it outlined made it easy to find ways different subjects could be linked together in interdisciplinary projects.

5.3.2 Louise's students

The 28 students in this class were in the LAMM programme which provided a greater number of classes in languages, cinema, and multimedia. This special programme meant the students were in closed groups. They followed the core ESL programme of the MELS and had four 75-minute periods in English over the nine-day cycle. The interdisciplinary project the students used as reference in completing the questionnaire was the project where they constructed a web page based on books they had read.

Research Question 6: How do students view interdisciplinary teaching within their classes?

The students' perception of interdisciplinary teaching was elicited through the use of a questionnaire. This information is divided into two sections, first the data from the Likert-style items and then the information obtained through the open-ended questions. It was not possible to obtain interviews with the students as Louise was very uncomfortable with the idea of my asking questions of the students about the web page interdisciplinary project.

Questionnaires: Likert-style items

In Table 5.13 below, the questionnaire is presented in themes so certain items are not in the positions they were in the questionnaire distributed to the students. There are three main themes: transferability which includes the transfer of competencies, ideas, knowledge, and strategies either from other subjects to English, or from English to other subjects; benefits to learning English; and other considerations which includes interest and motivation, and general appreciation. The original questionnaire can be found in Appendix N.

The results of the questionnaire are given with the number of student responses indicating agreement for each of the items as well as the average response for each item.

The values for the responses are as follows:

- 1 indicates strong disagreement with the statement
- 2 indicates disagreement with the statement
- 3 indicates neutrality regarding the statement
- 4 indicates agreement with the statement
- 5 indicates strong agreement with the statement

The subsequent discussion of the results of the questionnaire uses these same terms: strong disagreement, disagreement, neutrality, agreement, and strong agreement.

Table 5.13: Results from student questionnaires from Louise's class

Themes	Secondary themes	Items	Number of responses					Mean
			1	2	3	4	5	
Transferability	Transfer to English from other subjects	2. In my English class, I was able to re-use ideas which I first dealt with in my other subject area class(es).	0	3	14	13	2	3.38
		3. In my English class, I was able to extend my knowledge of the topic dealt with in my other subject area class(es).	1	3	7	17	4	3.63
		4. In my English class, I was able to re-use strategies/ skills which I used in my other subject area class(es).	0	4	9	17	2	3.53
		5. In my English class, I was able to learn the English equivalents of words/ expressions related to the topic dealt with in French.	0	2	4	18	8	4.00
		6. In my English class, I was able to re-use work methods dealt with in my other subject area class(es).	2	2	9	14	5	3.56
	Transfer to other subjects from English	7. In my other subject area class(es), I was able to re-use ideas which I first dealt with in my English class.	4	9	8	10	1	2.84
		8. In my other subject area class(es), I was able to extend my knowledge of the subject dealt with in my English class.	2	6	9	15	0	3.16
		9. In my other subject area class(es), I was able to re-use strategies/ skills first dealt with in my English class.	0	7	8	16	1	3.34
		10. This interdisciplinary project helped me to improve my English speaking skills.	3	4	7	5	13	3.66
Benefits to learning English	11. This interdisciplinary project helped me to improve my English listening skills.	0	2	5	16	9	4.00	
	12. This interdisciplinary project helped me to improve my English writing skills.	2	5	7	15	3	3.38	
	13. This interdisciplinary project helped me to improve my English reading skills.	2	4	5	16	5	3.50	
	14. This interdisciplinary project helped me to improve my English vocabulary.	0	1	4	18	9	4.09	
	18. I learn more English with interdisciplinary projects than in a regular English class.	4	5	3	11	9	3.47	
	15. I found this interdisciplinary project as interesting as me regular English classes.	2	2	4	7	17	4.13	
Other considerations	Interest and motivation	16. Interdisciplinary projects are more motivating for me to learn English than regular English classes.	1	2	1	7	21	4.41
		17. Interdisciplinary projects are different from regular English classes.	0	1	2	9	20	4.50
	Appreciation	1. I liked the interdisciplinary project we recently finished.	0	2	5	17	8	3.94
		19. Interdisciplinary projects should be taught more often.	1	2	4	8	17	4.19
		20. I prefer interdisciplinary projects to regular teaching activities.	1	3	7	7	14	3.94

The students indicated agreement the web page interdisciplinary project had allowed them to transfer ideas, knowledge, learning and work strategies, and vocabulary from their other subjects to English; however, they indicated rather less agreement regarding the transfer from English to their other subjects. The three items of the questionnaire where the students indicated the least agreement were those related to the transfer to other subjects ideas, knowledge, and learning strategies that they first learned in English. The only item where the average of the responses fell below neutral was that related to the transfer of ideas from English to other subjects (2.84/5).

The responses to items related to the theme of perceived benefits the interdisciplinary project brought to the students' learning of English indicated the students agreed the web page project helped them improve in all four skills, but most particularly in speaking and listening skills. There was a slightly greater degree of agreement that the interdisciplinary project had helped the students improve their English vocabulary. Additionally, most of the students agreed with the item that postulated they learned more English with the interdisciplinary project than they did in their regular English classes.

Nevertheless, it was the items in the section regarding the students' perception of the other considerations of the web page project which received, overall, the highest rate of agreement. The item the students rated most agreement with was the statement that the interdisciplinary project was different from their regular English classes (4.50/5). This must be viewed in a positive light as 75% of the students indicated they strongly agreed with the statement the interdisciplinary project had been more motivating for them to learn English than their regular English class (4.41/5), and over half indicated strong agreement that the interdisciplinary project was as interesting as their regular English class (4.13/5). Further, most of the students indicated agreement or strong agreement with the items dealing with appreciation of the web page interdisciplinary project.

Questionnaires: Open questions

The three open questions asked the students to indicate what they liked most about the web page interdisciplinary project, what they liked least about the project, how they found the web page interdisciplinary project differed from their regular English class.

In response to the first question, almost half the students wrote they found the web page interdisciplinary project to be motivating or interesting. A large number of the students also indicated they believed the interdisciplinary project had enabled them to improve their English skills. Some of the students liked the web page project because they were able to enjoy themselves while working on the project, and others because they enjoyed working in the computer lab. A few students wrote they had appreciated the increase in autonomy, the opportunities for team work, the actual creation of the web page in the interdisciplinary project, and the opportunity the project provided for them to put their knowledge into practice and to share this with their peers. These results are presented in Table 5.14 below. As several students indicated more than one response for each of the three open questions, the total number of responses for each of these questions exceeds the number of students in the class in each of these three tables.

Table 5.14: Louise's students: Responses for Open Question 1

Responses (28 students)	Number of students indicating this response
The project was motivating/interesting	12
The opportunity to improve English in the project	8
The opportunity to learn while enjoying oneself	5
The opportunity to work at the computer lab	5
The increased autonomy in studying/learning	4
The opportunities for team work	4
The opportunity to create a web page	4
The opportunity to put knowledge into practice/share new knowledge	3
The ability to receive assistance from more than one teacher	1
The differences between the interdisciplinary project and regular class activities	1
The links the project made between the different subjects	1

The list of things the students did not enjoy about the web page interdisciplinary project was a bit longer, and in several instances, the responses indicated opposite points of view. For example, while several students found the web page project lasted too long, others believed it was not long enough. Some students found they had difficulties communicating in English while working in their teams but there were a few who found the project did not provide them enough opportunities to use English or learn new words in English. One student found the subject very difficult to understand in English and wished

for a less complicated subject or more instruction in French while another complained the multimedia teacher used too much French and not enough English. Another student found there were too many students for the number of teachers while one other believed having two teachers in the room resulted in too much supervision. Finally, while two students believed there were not enough interdisciplinary projects, one individual thought there were too many interdisciplinary projects taking place at the same time.

The web page interdisciplinary project linked the English and multimedia subjects together; however, two students were unhappy the two subjects were linked while another pair had not enjoyed the emphasis on the development of computer skills. There were a few students who believed the subject they had to work on was not interesting but, like some of the other groups of students who participated in this study, a large number found there was too much work and homework required to complete the project. This information is presented in Table 5.15 below.

Table 5.15: Louise's students: Responses for Open Question 2

Responses (28 students)	Number of students indicating this response
The amount of work/homework was too onerous	10
The project lasted too long	8
The difficulties understanding/being understood	4
The subject was not interesting	4
The project was too short	4
The lack of opportunities to use/learn anything in English	3
The heavy emphasis on computer work	2
The lack of projects to do/not enough projects	2
The links the project made between the different subjects	2
The heavy supervision	1
The lack of coherence/agreement between teachers	1
The large number of students per teacher	1
The number of interdisciplinary projects assigned at the same time	1
The subject was difficult to understand in English	1
The teachers did not all speak English with the students	1

Just over half the students believed the biggest difference between working on an interdisciplinary project and regular English activities of their class was that the former provided more opportunities for the students to take fewer notes and instead, put their knowledge into practice. Another difference many students believed important was the increased interest and motivation they felt and the increased opportunities for interaction in

English with their peers and teachers when working on the web page interdisciplinary project. Other students wrote the interdisciplinary project allowed them to make links between the different subjects that they were not able to do with regular activities, provided a richer learning experience, and offered them more autonomy in their learning. Two students indicated they learned more and different vocabulary when working in interdisciplinary projects than they did when working on subject-specific activities. This information, as well as the responses the students wrote regarding regular classes are found in Table 5.16 below.

Table 5.16: Louise's students: Responses for Open Question 3

Responses (28 students)	Number of students indicating this response
Interdisciplinary projects provide more chances to put learning into practice/less theory	15
Interdisciplinary projects are more interesting/motivating	12
Interdisciplinary projects allow more oral interaction in English	10
Interdisciplinary projects allow links to be made between the different subjects	2
Interdisciplinary projects allow richer learning	2
Interdisciplinary projects have more autonomous learning	2
Interdisciplinary projects provide more learning of vocabulary	2
Interdisciplinary projects have more computer work	1
Interdisciplinary projects mean assistance from more than one teacher is available	1
Regular classes mean the teacher provides all information	10
Regular classes are boring	9
Regular classes teach more general oral skills, vocabulary, and grammar	7
Regular classes mean more memorization	1

Because it was not possible to interview the students, further information on their attitude toward interdisciplinary projects could not be obtained. It would have been interesting to try to find some of the reasons for the dichotomous responses to what the students disliked about the interdisciplinary project. Without interviews to obtain elaboration on these and other points, it is impossible to explain these results. Nonetheless, based on the above data, it would appear the students from this class had a mostly positive view of interdisciplinary teaching.

Summary

Overall, the students indicated they believed their English learning benefited a great deal from the project and that the web page project was interesting and motivating for them to work on. The students enjoyed the use of the project and felt it offered benefits to their learning of English. However, many found the workload related to the project to be very onerous and felt that it had lasted too long.

5.3.3 Observations

Louise was very reticent about having classroom observations and in the end, they were only possible on one day and it was not a period the students were working on the web page interdisciplinary project. The observations for that day showed a mix of teacher-centred and student-centred classes.

The period began with Louise calling on individual students to provide their responses to questions from their text book that they had completed as homework. This subsequently led to a teacher-directed discussion. She asked questions of different students and then solicited further information from them regarding why they gave that particular answer. Her corrections and comments were all related to context and the students' explanations. Only very occasionally did she have the students correct grammatical errors.

The second half of the class was spent with the students working in teams on a classroom activity. The teams of students rotated around the room at different stations set up by Louise before the beginning of the class. These were 11 medium-size pieces of pink poster paper glued up around the room, each one containing a category such as table manners, going out, dating, sports, on the phone, planes and trains, hygiene, etc. In the first instance, the students had to write two or three recommendations for good etiquette regarding that particular situation. On a signal from Louise, their team then rotated one station clockwise around the room. At each station the students read what the previous team had written on the situation and then added their own information and ideas. During this part of the class, Louise remained at the front of the class, limiting her role to responding to student queries and acting as time keeper. At the end of the period, the students had the opportunity to return to the different stations to see what their peers had written. Throughout the entire period, all interactions were in English.

5.3.4 Mr. Fortin

Mr. Fortin was a vice-principal in the *École secondaire le Renommé* which served nearly 700 students at the secondary levels. He had begun his career as an English teacher seven years previously at the same school and during that period had also taught geography for two years. At the time of the study he was in his late 20's, completing his first year in his new position.

Research Question 4: How do school administrators view the implementation of interdisciplinary teaching within their respective schools?

This following section will present Mr. Fortin's view of the implementation of interdisciplinary teaching in his school. It is presented in three sections; his conceptualization of interdisciplinary teaching, his view of interdisciplinary teaching as it relates to the new MELS educational reform, and the factors that facilitate or constrain his efforts to promote interdisciplinary teaching in his school.

A How do school administrators conceptualize interdisciplinary teaching?

Mr. Fortin explained interdisciplinary teaching was "*deux, au moins deux disciplines qui s'unissent pour créer un projet en commun. À travers ce projet, à ma perception, il faut pas que les visées soient seulement pour une matière. Il faut vraiment que le projet touche vraiment le programme des deux matières, ou des trois matières, ou des quatre matières*" (two, at least two subjects that unite to create a common project. Through the project, at least as how I understand it, there can't be goals for only one subject. It really is necessary the project really touches the programmes of the two subjects, or the three subjects, or the four subjects). He believed it was necessary the teachers were aware of the content and the evaluation criteria of the other teachers participating in the project in order to develop a reasoned and constructive interdisciplinary project.

Mr. Fortin originally thought interdisciplinary teaching meant large, daunting projects that lasted almost a whole semester. However, he realized "*c'est pas nécessaire que ça soit gros, c'est pas obligatoire que ça dure deux cycles puis que ça soit un projet énorme. Des fois ça peut être juste des petites, petites, petites choses qu'on fait en une ou deux périodes*" (it's not necessary that it be big, it's not necessary that it lasts two cycles

and is enormous. Sometimes it can be just small, small, small things that we do in one or two periods). He thought it important that teachers realize interdisciplinary teaching could be done on a smaller scale and that these smaller projects were much easier to elaborate but equally beneficial for the students.

B How do school administrators view interdisciplinarity in the context of the current MELS' educational reform?

Mr. Fortin largely saw interdisciplinary teaching as having an effect on the activity system of a teacher's classroom. The only other effect he had noticed related to the impact of interdisciplinarity on the community members of the larger activity system of the school.

Within the classroom

Mr. Fortin believed students with behaviour or learning difficulties received the most benefits from interdisciplinary teaching because it helped them make the connections between the subjects so they had a more global view of the topic. Without necessarily realizing it, the students learned more and learned different things and, because the interdisciplinary projects allowed the students to make sense of what they were learning, they found the projects more interesting. Mr. Fortin believed the increased motivation of the students was one of the most positive aspects of interdisciplinary projects.

However for these projects to be successful, he stressed it was necessary to help students develop some learning and work strategies. Because the students became responsible for their own learning, they needed to learn organizational skills such as note-taking, the use of checklists, and time management. They also had to develop good teamwork strategies. Mr. Fortin believed the development of autonomy, skills and strategies through interdisciplinary projects would help students, not only in their classes in secondary school, but also through CEGEP and university.

Mr. Fortin believed interdisciplinary teaching had its greatest effect on the tools teachers used along with the interdisciplinary project to facilitate student learning. He said if an English teacher wanted to develop the competency of 'Reinvests understanding of texts,' they would choose texts for their students that would be aligned with the subject matter of their partner. For example, texts on the environment might be chosen if the

interdisciplinary project was done with the geography teacher or, texts related to historical eras would be chosen for an interdisciplinary project done in conjunction with a history teacher.

The use of interdisciplinary teaching resulted in great changes in the division of labour of the classroom activity system as it had a significant effect on the teacher's role in the classroom. According to Mr. Fortin, interdisciplinary teaching meant a teacher became "*vraiment un guide. C'est plus l'image du bureau de l'enseignant surélevé en avant qui dicte quoi faire. C'est plutôt une aide. C'est une ressource que les élèves doivent apprendre à utiliser aussi. C'est au niveau de l'encadrement*" (really a guide. It's no longer the image of the teacher's desk raised on a platform at the front of the class with the teacher dictating what to do. It's more that of an aide. It's a resource the students need to learn to use as well). He saw how this corresponded to the educational reform advocating students be in charge of their learning. The teacher had to become a guide, a learning guide and provide the structure to ensure students respected the steps required in the project, enabling them to develop knowledge, abilities and strategies themselves in order to complete the project.

These changes had an effect on the rules of an individual class, especially those related to classroom management. Mr. Fortin thought an interdisciplinary project needed better management and communication between the teacher and students or else "*le bordel va poigner dans la classe*" (all hell would break loose in the class) because managing students who were working on their own, taking charge of their learning and how the project developed was very different than a teacher-centred class where all the students were seated at their desks, listening to the teacher and working quietly.

Within the school

Mr. Fortin acknowledged interdisciplinary teaching was a divisive force within the school. The members of the school community were very conservative. The introduction of interdisciplinary teaching in the school had perhaps brought out more of this nature so that teachers who were more innovative often found themselves marginalized.

C In their particular context, what factors constrain or facilitate the implementation of interdisciplinary teaching?

This next section presents the factors that Mr. Fortin felt constrained his efforts to promote the implementation of interdisciplinary teaching in his school. These constraints are presented in three sections, those related to the school, the school commission, and the MELS. Subsequently, factors that facilitate efforts to implement interdisciplinary teaching are presented, again in the three categories of school, school commission, and the MELS.

Factors that constrain efforts

Within the school

The two most important factors Mr. Fortin named as constraining efforts to implement interdisciplinary teaching related to the rules of the activity system of the school and the community of teachers in the school.

The logistics of making the school schedule meant it was very difficult for Mr. Fortin to arrange common planning periods for teachers who wanted to work together. In a cycle of nine days, teachers taught between 24 and 26 periods out of 36. Out of these 24 or 26 classes, the teachers might teach two or three levels and/or one or two different subjects. This meant finding a period when two Secondary 2 teachers could have a common period in their schedules to plan interdisciplinary projects was “*très difficile à faire*” (very difficult to do) and this problem increased exponentially if there were three or four who wanted to elaborate and implement interdisciplinary projects together.

However, Mr. Fortin did not believe it was the logistical problems which most constrained interdisciplinary teaching. Rather, he was certain “*la plus grosse barrière*” (the biggest barrier) to interdisciplinary teaching was the heavy teaching load of the teachers. He said they “*manquent de temps; souvent ils sont trop essoufflés pour se lancer dans des projets comme ça*” (don’t have enough time; often they are too tired to undertake projects like that). And even when teachers did become involved in interdisciplinary teaching, they found the extra work involved so onerous they resisted or refused to become involved in subsequent interdisciplinary projects.

Mr. Fortin thought there was one other rule under which the school operated which was also a serious constraint to interdisciplinary teaching. Other than a few special

programmes where there were closed class groups, most students in the school were in open groups and Mr. Fortin thought this made interdisciplinary teaching very next to impossible.

The community of teachers was the other area where Mr. Fortin perceived serious constraints as he saw where interdisciplinary teaching was a divisive force within the school. As interdisciplinarity was connected in many teachers' minds with the educational reform, this created tensions between those who were involved in interdisciplinary teaching and those who resisted the reform and, while teacher attitudes were changing, those in the school who supported the reform were in the minority.

Mr. Fortin explained the school had experienced a period two or three years previously where teachers "*qui étaient pro-réforme n'étaient pas nécessairement bienvenus dans l'école*" (who were pro-reform were not necessarily welcome in the school). Their efforts to implement innovative teaching methods, such as interdisciplinarity, were neither encouraged nor supported by their peers. Rather, these efforts had been "*vus d'une façon négative*" (seen in a negative light) and a certain amount of pressure had been exerted on these teachers to bring them back in line with the majority. According to Mr. Fortin, even now teachers were still very reticent about being too openly in favour of the educational reform. He thought the teachers' union had a great deal to do with this as it was "*pas nécessairement pour la réforme*" (not necessarily in favour of the reform) and even the previous year directives had been issued to the teachers in the school regarding non-participation at training seminars related to the educational reform.

This problem with the training seminars was exacerbated because teachers in the school saw "*les journées pédagogiques comme les journées de congé, malheureusement. Et souvent les grosses formations de la commission scolaire, ça donne pendant les journées pédagogiques*" (pedagogical days as holidays, unfortunately. And often, the big training sessions of the school commission are given on pedagogical days). It was necessary to come to an agreement with the teachers' union that, for one out of every two pedagogical days, the teachers were required to attend the workshops. Mr. Fortin believed things were getting a little better with the union "*parce qu'ils voient qu'ils n'ont plus nécessairement le choix. Ils pensaient que l'affaire bloquait au primaire mais je pense qu'ils se sont rendus compte que c'est là pour rester,, donc ils ont décidé d'embarquer*" (because they see they

don't really have a choice. They thought [the reform] would get stuck at the primary level but I think they have realized that it's here to stay so they've decided to get on board). And because they were required to implement the reform when they were "*pas nécessairement prêts*" (not necessarily ready), Mr. Fortin thought many teachers would spend the next year or two simply trying to learn their new programme.

Within the school commission

This period of appropriation of the new education programme was the other factor Mr. Fortin believed constrained his efforts to promote interdisciplinary teaching. He believed it would only be after teachers were comfortable with the changes the new programme made to their classroom practice would they perhaps begin to look at trying interdisciplinary teaching. He thought this was further exacerbated as there appeared to be few pedagogical development workshops on interdisciplinary teaching. Even though he considered it "hyper-reform," among all the seminars on the reform offered by the school commission, there were no training sessions on interdisciplinary teaching. The professional development programmes "concentrated" on the reform itself.

At the level of the MELS

One problem Mr. Fortin identified as constraining the implementation of interdisciplinary teaching at the level of the MELS was the tardiness in their publication of the new programmes. He wondered how teachers were expected to implement new programmes in September when in June they still had not yet received them. He thought teachers needed to know and understand their own programmes before they could start looking to see how links could be made with other subjects and so by not providing the programmes in advance, he thought the MELS itself constrained interdisciplinary teaching.

The other grief Mr. Fortin lodged against the MELS, the same as the other public school administrators, were the ongoing revisions made to policies. He said, "*on a l'air des clowns parce qu'une journée ils nous disent quelque chose puis, ben, comme un jour ils vont dire bleu et le lendemain ils vont dire blanc ou noir ou... Mais c'est la politique. Ils savent pas nécessairement toujours de quoi ils parlent donc nous, on essaie quand même de se débrouiller malgré tout, mais on n'a pas le choix que d'aller avec ce qu'ils nous disent*"

de faire” (we look like clowns because one day they say something and, well, like one day they say blue and the next they say white or black or... But it’s politics. They don’t necessarily know what they are talking about and we, we try anyway to manage despite everything but, we don’t have any choice but to go with what they tell us to do). He explained the morning of our interview the school had received notice that student evaluations were returning to averages and percentages instead of the letter grades they had been trying to “sell” to the teachers and parents for the last few years. The result of reversals such as this was the school administration’s “loss of credibility” with both teachers and parents. He wondered how the MELS expected the school administration to encourage teachers to invest time and effort in interdisciplinary teaching when other important aspects of the reform, such as evaluations, were continually in flux.

Factors that facilitate efforts

Within the classroom

Mr. Fortin believed it was possible to do interdisciplinary projects with all types of students. He had previously worked on interdisciplinary projects with students with learning and behaviour difficulties and found they benefited a great deal from these types of projects. Therefore, he believed the type of students teachers found in their classroom could never have a negative effect on their ability to implement interdisciplinary teaching.

Within the school

There were three elements which Mr. Fortin felt most facilitated interdisciplinary teaching in the school. Two of these factors, rules in the school and tools from the school commission, worked conjointly in that the school had a policy to free up teams of teachers who wanted to work on interdisciplinary projects and also had also received the necessary financial resources from the school commission that had enabled them to do so.

Within the school, the most important facilitating factor was for interdisciplinary teaching was that the school had basically made it a policy that any group of teachers who requested time to elaborate an interdisciplinary project would be granted it. There was no limit to the number of times in a year teachers could request to be freed from their classes, nor a limit to the number of teachers who could be freed at one time, within reason. For

example, while the school could not release all the teachers from one grade level, they would have been happy to free up four or five if that many teachers had made a request. The school would have looked at which day of the cycle would cost the least and then released the teachers from their classes on that day. Mr. Fortin explained the school did everything they could to encourage teachers to work together to build interdisciplinary projects and so tried to find solutions which would work for everyone.

There was also no limit to the amount of time teachers could request to have to work on an interdisciplinary project. *“Ça peut être d’une demi-journée, ça peut être d’une journée, ça dépend du temps qu’ils ont besoin. Mais c’est sûr que nous, on demande une copie du travail. On les libère pour des projets que nous, on peut après ça partager avec les autres, que ça soit avec les autres écoles ou avec les autres enseignants ici”* (It could be a half day, it could be a whole day, it depends on the amount of time they need. But it’s sure that we demand a copy of the work. We free them up for the projects that we can afterwards share with others, with the other schools or with the other teachers here). This exchange agreement regarding interdisciplinary projects had been established by the principals of the high schools in the school commission in order to make available to their teachers a greater variety of interdisciplinary projects than just what had been or could be developed within their respective schools. They hoped having a selection of interdisciplinary projects to choose from, from all the different levels and subjects, would encourage teachers to try interdisciplinary teaching. Once the teachers had seen how it worked and that interdisciplinary projects were possible in their own classes, the principals hoped they would then also be willing to try to elaborate interdisciplinary projects as well, thus further expanding the pool.

Mr. Fortin believed the school provided all the tools and resources requested by the teachers to facilitate the implementation of interdisciplinary teaching. He said they were “well equipped” with three and a half computer labs, three with 35 computers and one with 15. There were DSL Internet connections in all the classrooms and at least one computer per class, five or six Canon projectors, a television in each department, a mobile computer lab, and several portable computers for teachers to use with the projectors.

The third factor which facilitated interdisciplinarity was one related to the changes being made in the community of teachers in the school. Changes in teaching personnel over

the last five years had significantly facilitated the implementation of interdisciplinary teaching. Between 15 and 20 teachers had retired from the school over this period and Mr. Fortin qualified the young personnel who replaced them as more open to trying new things. He believed this change in the personnel had a great effect on changing the attitudes of many of the teachers in the school. He had a theory about this change in attitudes which he called "*le balancier. 15% des enseignants, qu'importe ce qu'on va faire, ça va être toujours du côté négatif. Puis on a 15% que, peu importe ce qu'on va faire, ça va être du côté positif. Tu sais, il faut jouer avec la balance, ce qui reste, le 70%. Donc je pense que nous, présentement, on est dans le positif. Ben, avant c'était dans le négatif, puis là notre 70% s'est déplacé vers le positif*" (the swing. Fifteen percent of the teachers, no matter what we do, will always be negative. And we have 15%, no matter what we do, who will always be positive. You know, you have to work with the rest, the 70%. So I think we are presently in the positive. Before we were in the negative but now, our 70% has swung towards the positive). He had the impression the balance had shifted with the turnover in teachers as older teachers retired and younger teachers took their places. As a result, teachers were more open to talking about interdisciplinary teaching and there were more interdisciplinary projects being implemented.

Another element he found facilitated interdisciplinary teaching was when teachers who were more dynamic were seen to be involved in interdisciplinary teaching and perhaps demystified it for the other teachers in the school. These teachers saw what the "*leaders pédagogiques*" were doing and realized "*qu'il n'y a pas personne qui meurt en les faisant*" (that nobody died from it), that it was not so difficult, and that it was possible to make it work in their school. As a result, the school tried to focus on helping these teacher-leaders because the more interdisciplinary projects they developed and implemented, the more they encouraged other teachers to take some steps towards also trying interdisciplinary teaching.

Within the school commission

The resource Mr. Fortin found most facilitated interdisciplinary teaching was that the school commission provided funding to free teachers from their classes if they wanted to elaborate an interdisciplinary project. "*On a beaucoup de libération. Tu sais, des enseignants qui veulent monter des projets comme ça, s'ils me présentent ça, c'est sûr*"

qu'on va les libérer pour qu'ils aient le temps pour le monter comme il faut. Donc ça, je pense que c'est un moyen qui a facilité que plusieurs enseignants embarquent là-dedans" (We have a lot of liberation. You know, teachers who want to build projects like that, if they present it to me, it's sure we will free them up so they have the time to put it together properly. So that, I think is a means that has facilitated several teachers getting involved). However, Mr. Fortin thought this was a resource which was being underutilized by the teachers as there were still very few who took advantage of it. He recognized the school commission would likely only be able to offer it for another four or five years and so hoped as more teachers became comfortable with their programmes and became more open to the idea of interdisciplinary teaching, the number of requests would increase.

While the funding the school commission provided expressly to assist the school in appropriating the reform and encouraging interdisciplinarity was one of the most important facilitating factors, they offered other resources as well. Whenever requested, the school commission provided in-house training seminars, the services of curriculum consultants and educational services staff to support teachers at the school in their appropriation of interdisciplinary teaching.

Mr. Fortin noted that one school in his school commission had been able to have the standard school schedule of four periods per day over a nine-day cycle changed so that every afternoon of every day nine, the students worked on interdisciplinary and school-wide projects. He explained all the teachers in the school had voted on and agreed to this change which subsequently had required a great deal of lobbying on the part of teachers and parents in order to have the school commission agree. He thought the designation of a day or afternoon such as this would be ideal to encourage interdisciplinarity in the school.

Finally, an exchange agreement regarding interdisciplinary projects between the high schools in the school commission was another element which greatly facilitated interdisciplinarity in the school. The school principals had collaboratively decided to pool projects elaborated and implemented in their respective schools so teachers would have access to a greater variety of interdisciplinary projects than just what had been or could be developed within their respective schools.

At the level of the MELS

According to Mr. Fortin, the new MELS education programme greatly facilitated interdisciplinary teaching through the cross-curricular competencies and the broad objectives for the different subjects. He said the subject-specific competencies “*en anglais,[comme] Interacts orally c’est assez vague, en autant qu’il respecte les autres sphères... ça n’affecte pas du tout*” (in English, [such as] ‘Interacts orally’ is vague enough that as long as [the teacher] respects the other subjects... it has no effect at all) on the methods the teacher uses to attain this. Rather, he believed this general nature facilitated a teacher’s implementation of interdisciplinary projects as it meant an English teacher could develop any or all of the three subject-specific competencies in an interdisciplinary project regardless of the objectives the other teachers pursued in their own subject matter. Besides the new programmes, Mr. Fortin thought perhaps the MELS could assist if they could or would try to ensure the new material being produced by the publishing houses took interdisciplinary teaching into account.

Summary

As a teacher, Mr. Fortin had had experience collaborating with his colleagues and implementing interdisciplinary teaching and through that experience had learned that interdisciplinary projects could be small and involve only a few subjects while still providing great benefits to the students.

Mr. Fortin named the rules that governed the school, including the complicated process of creating a master schedule, the heavy teaching load of the teachers, and open class groupings as constraining factors to the implementation of interdisciplinary teaching in the school. Additionally, he found the community of teachers who had been very resistant to the educational reform and the teachers’ union also constrained his efforts to promote interdisciplinary teaching. However, the changes to the community of teachers meant these latter negative factors were slowly being neutralized as more of the more recalcitrant teachers left and younger, more open teachers took on positions in the school. He also expressed hope the teachers’ union would cease their resistance efforts to the educational reform as they realized it would be implemented despite their opposition to it.

Mr. Fortin believed the new MELS programme, greatly facilitated interdisciplinary teaching through the general nature of the cross-curricular and subject specific competencies. He thought the use of these competencies made it particularly easy for teachers to find ways to collaborate and link their subjects together through interdisciplinary projects.

Two other factors also greatly facilitated teachers' efforts to implement interdisciplinary teaching. These were the school commission's provision of funding to support teachers' efforts to implement interdisciplinary teaching, and the school's policy of encouraging and supporting this collaboration.

5.3.5 Case study summary

The most salient characteristic of this school was the effect of the community in the activity system of the school. The closed attitude and resistance of the teaching staff to the educational reform contrasted with the very open and encouraging position of the school administration. This latter had obtained funding from the school commission so as to provide as many resources as possible to encourage teachers to become involved in interdisciplinary teaching. However, while the school administration did everything they could to promote interdisciplinarity in the school, a very large majority of the teachers were resistant and, apparently with the support of the teachers' union, discouraged those who believed in the reform and tried to implement innovative pedagogical practices. As a result, there were very few teachers who became involved in interdisciplinary teaching as they were virtually ostracized by their peers. Both Louise and Mr. Fortin commented on the negative attitude that reigned in the school and recounted how those teachers who implemented interdisciplinary teaching were faced with peers who "*se croisent les bras et qui se disent j'espère ou je suis sûr qu'ils vont se casser le nez*" (cross their arms and say I hope or I'm sure they'll fall flat on their face). They both also expressed the sentiment the situation was changing to a more positive atmosphere and were certain this was the result of the change in the makeup of the community of teachers with the retirement of some of the more traditional and recalcitrant teachers and their replacement with younger teachers who believed in the educational reform.

Also related to the school community, Mr. Fortin had experience implementing interdisciplinary teaching with students who had learning and behaviour difficulties and found interdisciplinary projects helped them make sense of and understand what they were learning. He admitted there would be some students who might not enjoy that type of project but felt interdisciplinarity benefited all types of students. Louise, on the other hand, felt her LAMM students were really the only group with whom she could use interdisciplinary projects because they had had to apply for the programme, have good grades, and show they were motivated. She thought she would only be able to implement interdisciplinary teaching under exceptional circumstances if she had to do so with students in the core programme.

Nonetheless, both perceived the usage of interdisciplinary teaching resulted in great changes to the activity system of the teacher's classroom. These changes affected the division of labour within the classroom by changing the role of both the teacher and the students. These new roles both provoked and were caused by corresponding changes in the rules which governed the teacher's class, such as classroom management and evaluations, and the projected outcome of the use of interdisciplinary projects to facilitate student learning.

5.4 École Saint-Ésprit – The book jacket interdisciplinary project

The *École Saint-Ésprit* was a small private school with fewer than 300 students. It catered to all grades at the primary and secondary levels. There was only one class of each of the grades in the school except for Secondary 4, which had two groups of students. The school was situated in a residential community but the majority of the students were bussed in from different areas of the capital city.

5.4.1 Danielle

Danielle was a young teacher in her 20's. She had graduated from a local French university the previous year with a degree from the Bachelor's programme in Teaching English as a second language. At the time of the study she taught ESL to Secondary 4 and 5 students, Spanish to Secondary 5 students, drama to the Secondary 3, 4, and 5 students, and

physical education to Primary 1, 2, 3, and 4 students. She also held English recuperation periods for the students in the secondary levels twice a week.

The book jacket project

Danielle was involved in two interdisciplinary projects with her Secondary 5 students, both with the French teacher, and both in the second half of the school-year. For the purposes of this paper, only the first project will be presented. In the French class, the students wrote a narrative story of their own creation. This project was already underway when the French teacher described it to Danielle who had already had an idea about a book jacket, but had not developed it as she had yet nothing to connect it with. Upon hearing about the French teacher's book project, Danielle presented her with the idea of creating a book jacket for the story the students were writing. Based on this conversation a project was developed with work in the two subjects done sequentially. Once the students had completed their stories in the French class, Danielle began the English component of the project. She presented a booklet to the students that set out the steps the students were to take in the creation of a book jacket for their story. The students had to complete a plot diagram, write a summary of their story, and design a book jacket that included artwork, the title of the story, the name of the author on the front cover; the book title, the author's name, and the publishing company's logo on the spine; a synopsis and an ISBN barcode for the back cover; several reviews of the story on the left inside flap; and on the right inside flap was to be a biography of the author. The summary was to be included in the final project and most students attached it to the inside of their book jacket. The students were encouraged to use fonts and colours that complemented their stories. Once the project was completed, the students were to present their book jackets to their classmates; however, these presentations did not take place for a variety of reasons. At the end of April, Danielle was examining the possibility of having the completed book jackets displayed in a public area of the school.

Research Question 1: How do teachers conceptualize interdisciplinary teaching?

Danielle's definition of interdisciplinary teaching is presented in this section, followed by an explanation of how her conceptualization of interdisciplinary teaching had changed since she first began working with the book jacket interdisciplinary project.

A How do teachers define interdisciplinary teaching?

Danielle defined interdisciplinary teaching as "the integration of two different subjects or two different classes into one single project, work, whatever, that might be done" with the students. She thought it was a way for the students to see how different subjects were "linked together and to see that it's possible to make links" between subjects and things extraneous to school. It was a way to help her students stop compartmentalizing what they saw in one class to just that class but rather, make connections between what they saw in one subject to not only other subjects but also to other aspects of their lives as well. Language learning was not just something to be done in English class; it was something that could be done anywhere, at any time, with everything. Interdisciplinary teaching meant opening up her students' perspectives of what they saw in school and helping them make connections between subjects and between aspects of their lives outside of school.

B How does teachers' conceptualization of interdisciplinary teaching change over time?

Because interdisciplinary teaching was so new for her, Danielle did not believe her conceptualization had changed other than the realization that elaborating and implementing the interdisciplinary projects took longer and was more complicated than she had believed. She suggested her conceptualization of interdisciplinary teaching would possibly change in the future, after she had gained more teaching experience and more experience with interdisciplinary teaching.

Research Question 2: Why and to what degree do teachers value interdisciplinary teaching?

The factors and influences that first incited Danielle to begin using interdisciplinary teaching are presented below. These are followed by explanations of how interdisciplinary teaching had an impact on her classroom practices and then an estimation of the degree to which she used interdisciplinary teaching during the school-year.

A What are the factors that prompt teachers to become involved in interdisciplinary teaching?

There were three reasons Danielle became involved in interdisciplinary teaching. The first was related to the pedagogical choices she made to use interdisciplinary projects as a tool to change her students' perception of English, the learning of English, and their understanding the interrelationships between subjects.

It was her own language learning experiences that initially prompted Danielle to look at interdisciplinary teaching. She explained she had first started learning Spanish in Spain but when she returned to university she "was shocked when [she] came into the Spanish class and it was so, so not the way [she] learned it." She "was very, very sad to see how" her Spanish class was taught because it was "almost mathematic. You know, almost like this word equals this word and that's all." She believed most students see language learning this way and it was not how she wanted her students to see English. She did not want them to see it as a "box" that was closed when the class was over.

Another reason was through the influence of the broader school community or more specifically, one member of that community. Danielle's colleague who taught French to secondary students provided the way for Danielle to implement her idea of interdisciplinary teaching. The French teacher's desk was next to that of Danielle and the two women spoke a lot about their classes and what they were doing. They discovered they had "the same vision" about language learning and resolved to try to find ways to open their classrooms and link the two subjects together for their students.

The other factor prompting Danielle's involvement in interdisciplinary teaching related to her perception of the MELS education programme and its use as a tool mediating how she taught and made sense of her classroom practice. Although Danielle had accepted

a teaching position with Secondary 5 students, she had decided to not use the old programme but to start right away working along the lines of the educational reform. There was not yet a programme for the second cycle of the secondary level; however, because she believed the subject-specific competencies would remain unchanged, she used the new ESL programme for the first cycle and adapted it for her second cycle students. As she became more comfortable with the programme she realized the MELS was promoting interdisciplinary teaching as they provided an example in the programme. This validated her idea it was necessary to develop links between subjects.

B What impact does interdisciplinary teaching have on teachers' classroom practices and relations with colleagues?

Danielle did not believe the use of interdisciplinary teaching had a great effect on her classroom practices as the greater part of her teaching was project-based. Nonetheless, elements emerged through our conversations that showed the use of interdisciplinary teaching did occasion some changes. These were related to Danielle's perception of the students' learning as well as the division of labour and the relationship between Danielle and the French teacher.

Within the classroom

As regarded the reason for the use of interdisciplinary teaching, Danielle believed interdisciplinary projects helped the students "change their mentality" of seeing English as something done only in English class; this was her main learning goal for her students. Nonetheless, she thought the interdisciplinary projects also helped students in a concrete manner as they encouraged the students' development of oral and written skills, as well as expanding their vocabulary. The majority of the students worked on the book jacket interdisciplinary project in teams and were required to speak on their topics in English at all times.

She also thought the interdisciplinary projects had a great deal of impact on her students' use of strategies. She said they were "important because the students had to make links" between the two subjects. She believed "this is a strategy that actually is so important and that we don't focus on a lot, so this I think is a really important aspect"

because the students are required to “put together two different classes.” The interdisciplinary projects helped students become more organized as they needed to bring material from both subjects to classes when working on the interdisciplinary projects. These projects also helped her students develop autonomy as Danielle provided the information of what needed to be done and the deadline and the students had to plan their own time and work in accordance; she thought this autonomy would help them develop better learning strategies and work methods.

When asked if the interdisciplinary projects had an effect on student motivation, Danielle replied she thought so perhaps, for some, but not all of the students. However, she felt these projects had a positive effect on student motivation “in the long term.” She surmised they would help the students realize the importance of English if the students could see English was not just a subject they had to take in school but was linked with everything else. If they were able to realize how they would “need it in the real life, then it [would] become motivating for them.”

Within the interdisciplinary team

Because the community at the school was so small, Danielle claimed it was very close-knit. For example, there were only three English teachers in the school and Danielle had met one at university and they had graduated together. The only person Danielle’s use of interdisciplinary teaching affected was the French teacher with whom she collaborated. She felt they had become closer because they were often together, “talking about the projects and everything.” She and the French teacher had had to meet to decide what they would do for the interdisciplinary projects and decide how the different elements would fit together. She explained the meetings were not structured or scheduled; rather, the two teachers just casually talked about the projects and discussed what they wanted to do, and how the projects would be implemented in their respective classes.

C To what degree do teachers use interdisciplinary teaching?

Danielle speculated 25% of her teaching was interdisciplinary. She implemented at least one interdisciplinary project in every class she taught.

Research Question 3: What factors constrain or facilitate teachers' efforts to implement interdisciplinary teaching in their classes?

This section presents the factors Danielle claimed had either a positive or negative effect on her ability to implement interdisciplinary teaching. First the constraints are presented and then the facilitating factors. These are further divided into three sections, those elements that come from the interdisciplinary team, the school, and the MELS. The school Danielle worked at was a private school and therefore did not belong to any school commission.

Factors that constrain efforts

Within the interdisciplinary team

One of the important elements Danielle cited as constraining her efforts to implement interdisciplinary teaching related to time. She thought planning the projects took a substantial amount of time, and this was difficult as she was juggling course plans for so many subjects.

Within the school

The factors that most constrained Danielle's efforts to implement interdisciplinary teaching resided in the rules that governed the activity system of the school. To a much lesser extent, the effect of the school community and her place in it occasioned other constraints.

A heavy teaching load and a lack of common planning time with other teachers were the two elements Danielle found most constrained her efforts to implement interdisciplinary teaching. She taught several subjects at several grade levels. Additionally, it was her first year teaching and this meant she had to spend a great deal of time planning classes and building material for the different subjects. She described her task load and the planning it required as "a lot of work" and the creation of materials to use in her class as very time consuming. She speculated if she had "only Secondary 5, [interdisciplinary teaching] would be easier because [she] could really concentrate and do other things related to the projects and journals or whatever." Danielle believed a lighter teaching load would

enable her to do more interdisciplinary teaching; however, because of the small size of the school, she was certain a change in her task load was not likely.

Additionally, although she was able to meet regularly with the French teacher, she saw the other teachers at the Secondary 4 and 5 level a great deal less often. She said without common planning periods with the other teachers, the creation of interdisciplinary projects was difficult.

Within the community of the school, Danielle's perception of her status as a newly graduated teacher meant she was reticent about approaching older and more established teachers regarding interdisciplinary teaching. She felt not quite at ease with some of the other older teachers in the school and while she did not think they would overtly reject her if she approached them about interdisciplinary teaching, she nonetheless felt rather intimidated. For example, the science teacher in the school had been her science teacher when she was in high school. She said she "wouldn't be comfortable in going to see him" and proposing they do a project together. She imagined his reaction would be along the lines of, "What does she want that young one. She doesn't know about it or she doesn't know about teaching." She admitted he probably would like to be approached about collaborating on an interdisciplinary project but felt nonetheless, "in a way, he's right." Her lack of teaching experience translated into a hesitation to approach other or older teachers in the school.

At the level of the MELS

Danielle felt the MELS did not necessarily support interdisciplinary teaching. She believed they offered some training sessions regarding interdisciplinarity at the Secondary 1 and 2 levels, but because the educational reform was not yet in place for Secondary 3, 4, and 5, there were none available for her. She was unhappy with this absence of training sessions for teachers who were trying to implement elements of the educational reform before its arrival at their grade level.

Factors that facilitate efforts

Within the classroom

Danielle felt the student population was made of “nice kids” and because it was such a small school, she was able to get to know all her students well. Ultimately, she got to know the other students as well through a myriad of extra-curricular activities. She organized an exchange programme and teaming with another school in Alberta, coached the girl’s volleyball team, and supervised student committees compiling the year-book and planning the graduation ceremony. Because she had such close contact with the students in the school, she felt more at ease to try innovative activities with those in her class.

Within the interdisciplinary team

Danielle found it was the small school size which was the main facilitating factor in her efforts to implement interdisciplinary teaching. Because of the school size she was able to have close relations with the French teacher in the school. Their personal relationship meant they could “sit side by side and just talk about what we’re doing and say Wow! We could do this or we could do that together.” They had found they had similar pedagogical beliefs, and as they were almost the same age, they often just sat and talked together.

Within the school

It was the activity system of the school itself which facilitated Danielle’s efforts to implement interdisciplinary teaching. The specific elements related to the rules that regulated operations within the school, the tools the teachers had to work with, and most importantly, the school community.

One element Danielle found particularly facilitated interdisciplinarity was the placement of the French teacher’s desk beside hers, and while she acknowledged it was more because of the school size than anything else, this proximity made it easy for the two teachers to “just sit and talk.” This was further helped by the two teacher’s schedules; they had “quite a few” planning periods in common. She said it was “an accident,” that the school “didn’t really plan it that way,” but these provided the teachers with time to work together so they were able to do all the planning for the interdisciplinary projects within these periods. Danielle also found the schedules made it possible for the two teachers to

visit each other's classrooms to talk to the students which also made working together "very, very, very easy." Danielle speculated that if requested, the school would try to arrange for a common planning period for two or three teachers to work together to elaborate an interdisciplinary project. Because of the school size, she was not certain it would be possible to arrange for a whole year, but was sure "they would surely want to for a period of time." She thought the school administration was "very open" and willing to help the teachers when they thought it would benefit the students.

One element Danielle found helpful was most of the grades in the school had one cohort of students. Even in Secondary 4, where there were enough students for two classes, the students were in closed groupings. Danielle recognized this was because of the school size and not the result of planning but affirmed nonetheless it was a factor which greatly facilitated interdisciplinary teaching.

The school provided the teachers with materials, computers, and Canon projectors "according to the resources they have." Danielle explained this facilitating factor was not specific to interdisciplinary projects but found them helpful nonetheless. Additionally, because the school funds were limited, the teachers found creative ways to make use of existing resources and shared these with each other.

Within the school community, Danielle felt she had a "really close" relationship with the two other English teachers. She said she felt "free to ask for advice or everything," partly because she had known the primary English teacher at university, but also because the three teachers were of similar ages. With her colleagues in other departments she also felt she had good relations. She explained because "it's such a small school, all the teachers are really together so it's easy for us to talk." She believed it was because *École Saint-Ésprit* was such a small school it was easy for them to have close relationships, but it was her relationship with the French teacher which most facilitated interdisciplinary teaching.

At the level of the MELS

At the level of the MELS, Danielle thought the English programme itself was an element that facilitated interdisciplinary teaching. Because it was "very easy to integrate English everywhere," she believed the three subject-specific competencies of 'Writes and produces a text,' 'Interacts orally,' and 'Reinvests understanding of texts' could be

developed in any interdisciplinary project. She thought the cross-curricular competencies would also encourage teachers to try interdisciplinary teaching because they presented ways to link different subjects together. She said it was this aspect of the English programme that “encouraged” her to try interdisciplinary teaching.

Summary

Danielle believed interdisciplinary projects provided students “a wider idea of school in general, and offered them the opportunity to create links between different things” and so when offered, she capitalized on the opportunity to do a project in conjunction with the French teacher. Nonetheless, because she used projects so much in her teaching, she did not believe interdisciplinarity had a great deal of effect on her classroom practices. The main differences lay in the collaborative planning and arranging of the interdisciplinary teaching with the French teacher and, she hoped, the effect it had on the students’ learning. Additionally, the size of the school resulted in the rules and the wider school community having both constraining and facilitating effect on her efforts to implement interdisciplinary teaching. The rules constrained in that she had a heavy teaching load and little common planning time with most of the other teachers; however, the proximity of the French teacher’s desk to hers and the small class sizes facilitated interdisciplinary teaching. The small size of the school also meant she was able to develop close, friendly relations with the other teachers in the school although she felt hesitant about approaching some of the older teachers with ideas for interdisciplinary teaching because of her youth and inexperience.

5.4.2 Danielle’s students

This group of 20 Secondary 5 students made up the only class of this level at the *École Saint-Ésprit*. These students followed the MELS core ESL programme but had five 75-minute periods of English in a 10-day cycle. These students also had two periods in the 10 days for recuperation in English. They had the option of working alone or working in pairs in the development of their book jackets, and most students chose to work with a classmate on one of their stories.

Research Question 6: How do students view interdisciplinary teaching within their classes?

The students' perception of the book jacket interdisciplinary project was elicited through the use of a questionnaire and then individual interviews. The results of the questionnaire the students in Danielle's class completed are presented below, divided into two sections: the results of the Likert-style items and the open response questions. These are followed by the information the students provided during the interviews.

Questionnaires: Likert-style items

In the chart below, the questionnaire is presented in three main themes: transferability which includes the transfer of competencies, ideas, knowledge, and strategies either from other subjects to English, or from English to other subjects; benefits to learning English; and other considerations which includes interest and motivation, and general appreciation. This version means the order of the items is different from the original questionnaire which can be found in Appendix N.

The results of the questionnaire are given with the number of student responses indicating agreement for each of the items as well as the average response for each item. The values for the responses are as follows:

- 1 indicates strong disagreement with the statement
- 2 indicates disagreement with the statement
- 3 indicates neutrality regarding the statement
- 4 indicates agreement with the statement
- 5 indicates strong agreement with the statement

The subsequent discussion of the results of the questionnaire uses these same terms: strong disagreement, disagreement, neutrality, agreement, and strong agreement.

Table 5.17: Results of student questionnaires from Danielle's class

Themes	Secondary themes	Items	Number of responses					Mean	
			1	2	3	4	5		
Transferability	Transfer to English from other subjects	2. In my English class, I was able to re-use ideas which I first dealt with in my other subject area class(es).	0	2	2	7	9	4.15	
		3. In my English class, I was able to extend my knowledge of the topic dealt with in my other subject area class(es).	0	2	5	10	3	3.70	
		4. In my English class, I was able to re-use strategies/ skills which I used in my other subject area class(es).	0	2	6	11	1	3.55	
		5. In my English class, I was able to learn the English equivalents of words/ expressions related to the topic dealt with in French.	0	3	5	9	3	3.60	
		6. In my English class, I was able to re-use work methods dealt with in my other subject area class(es).	0	2	6	9	3	3.65	
	Transfer to other subjects from English	7. In my other subject area class(es), I was able to re-use ideas which I first dealt with in my English class.	2	9	2	6	1	2.75	
		8. In my other subject area class(es), I was able to extend my knowledge of the subject dealt with in my English class.	1	8	2	8	1	3.00	
		9. In my other subject area class(es), I was able to re-use strategies/ skills first dealt with in my English class.	2	7	6	4	1	2.75	
	Benefits to learning English	10. This interdisciplinary project helped me to improve my English speaking skills.	2	1	4	8	5	3.65	
11. This interdisciplinary project helped me to improve my English listening skills.		2	3	2	11	2	3.35		
12. This interdisciplinary project helped me to improve my English writing skills.		1	0	0	9	10	4.35		
13. This interdisciplinary project helped me to improve my English reading skills.		1	2	3	10	4	3.70		
14. This interdisciplinary project helped me to improve my English vocabulary.		1	0	4	6	9	4.10		
18. I learn more English with interdisciplinary projects than in a regular English class.		0	4	7	8	1	3.30		
Other considerations	Interest and motivation	15. I found this interdisciplinary project as interesting as me regular English classes.	0	1	7	6	6	3.85	
		16. Interdisciplinary projects are more motivating for me to learn English than regular English classes.	0	2	4	6	8	4.00	
	Appreciation	Differences	17. Interdisciplinary projects are different from regular English classes.	0	3	3	5	9	4.00
			1. I liked the interdisciplinary project we recently finished.	0	0	0	12	8	4.40
			19. Interdisciplinary projects should be taught more often.	0	2	5	10	3	3.70
			20. I prefer interdisciplinary projects to regular teaching activities.	1	1	7	8	3	3.55

While the students agreed with the statements they reinvested in their English class ideas, knowledge, and learning and work strategies from other classes, the transfer was not made in the other direction. The three items regarding the transfer to other subjects the ideas, knowledge, and learning strategies first presented in their English class were the only three items that the students indicated neutrality or disagreement (2.75 – 3.00/5). Part of the reason for this could have been because the French component of the book jacket project was completed before the students began working on the English component with no subsequent return to the project in French once the English component was completed.

The students indicated agreement with the statement they learned more English through the interdisciplinary project than their regular English class, and agreement or strong agreement that the book jacket interdisciplinary project was beneficial to their learning of English vocabulary, and speaking, listening, reading, and writing skills. They also indicated strong agreement (4.35/5) with the item that their writing skills had improved as a result of the book jacket project. This might be explained because the students wrote a text in English summarizing the story they had written in French. In the end, the students wrote three drafts of their text because these were edited twice by Danielle; the writing process involved in the development of their texts required they pay attention to sentence structure and vocabulary.

The theme of other considerations was the most highly rated on the questionnaire. The students indicated agreement they found the interdisciplinary project interesting and motivating, and that it was quite different from their regular English activities. The highest rated item on the questionnaire was that the students had appreciated the book jacket project (4.40/5); this could be because they had created a book jacket based on a story they had written themselves. There was only a slightly lower degree of agreement with the statements that interdisciplinary projects should be implemented more often and that the students preferred interdisciplinary projects to their regular classroom activities.

Questionnaires: Open questions

The three open questions on the questionnaire resulted in a wide variety of responses. The first question asked the students to indicate what aspect of the interdisciplinary project they had liked most. One-half of the students wrote they enjoyed

being able to make links between the two subjects, others wrote the project was interesting or motivating, that it was different from their regular class and that they were able to practice translating texts from French to English. The other main item indicated related to the community of the classroom where one third of the students responded to the question by writing they appreciated working with their partners on the book jacket. This information is presented in Table 5.18 below. As several students indicated more than one response for each of the three open questions, in the tables, the total number of responses for each of these three questions exceeds the number of students in the class.

Table 5.18: Danielle's students: Responses for Open Question 1

Responses (20 students)	Number of students indicating this response
The links the project made between the different subjects	10
The opportunities for team work	7
The project was motivating/interesting	4
The project was different from the regular English class	2
The chance to practice translation	2
The writing process with feedback from the teacher	1
The opportunity to improve English in the project	1
The opportunity to put knowledge into practice/share new knowledge	1
The increased autonomy in studying/learning	1
The impression the teachers work together to find new and interesting projects for the students to do	1
The writing tasks helped prepare for a writing exam	1

When the students were asked to indicate what they had least enjoyed about the book jacket project, the number of students who had not enjoyed working in teams was the same as those who had. Other than problems working with their peers, the other main element the students had not enjoyed related to a lack of opportunities to learn anything new in English or to use what knowledge they had. The number of responses can be found in Table 5.19 on the following page.

Table 5.19: Danielle's students: Responses for Open Question 2

Responses (20 students)	Number of students indicating this response
The team did not function well/team work is difficult	7
The project lasted too long	5
The lack of opportunities to use/learn anything in English	3
The adaptation of previously completed work rather than the creation of something new	1
The amount of work/homework was too onerous	1
The project was linked with another subject	1
A distaste for project work	1

As the third open question asked the students to indicate how interdisciplinary projects differ from their regular English class, the students mostly wrote information regarding the use of the interdisciplinary project as a tool to promote learning. Their responses indicated the project was more interesting and/or motivating than their regular English classes but it also entailed more work and the translation of their texts. Regarding the object of the use of interdisciplinary projects, the students wrote the book jacket project promoted more autonomy, resulted in richer learning, and they were able to make links between their subjects. This information, as well as the responses the students wrote regarding their regular English classes are found tabulated in Table 5.20 below.

Table 5.20: Danielle's students: Responses for Open Question 3

Responses (20 students)	Number of students indicating this response
Interdisciplinary projects are more interesting/motivating	8
Interdisciplinary projects have more autonomous learning	6
Interdisciplinary projects allow richer learning	3
Interdisciplinary projects require more work	2
Interdisciplinary projects allow links to be made between the different subjects	1
Interdisciplinary projects require more translation work	1
Interdisciplinary projects develop competencies in team work	1
Interdisciplinary projects provide more learning of vocabulary	1
Regular classes mean the teacher provides all information	5
Regular classes teach more general oral skills, vocabulary, and grammar	1
Regular classes are boring	1
Regular classes teach us more English	1

Interviews

Based on the results from the Likert-style items on the questionnaire, the three students who indicated the highest agreement with the items and the three students who indicated the lowest agreement with the items were invited to take part in a short interview. The six students agreed, and each participated in a 10-minute interview, the purpose of which was to elucidate the reasons for their perspectives and to obtain a more complete understanding of how they viewed interdisciplinarity in their English class.

Each interview began with a request for the student's definition of an interdisciplinary project. Two students defined them as projects they did in two different subjects, or that they began in one subject and completed in another. The other four students' definitions were much more specific in that they defined interdisciplinary projects based on the two they had experienced that year and as a result, the definitions limited the subjects to English and French.

Three students mentioned the interdisciplinary project was helpful because they were able to have the material presented by two different teachers. This enabled them to better understand since each teacher approached the subject in different ways. There was a perception that the project was easier to do because the students worked with the same topic in both subjects and one student thought it was the link between the subjects that had made the project interesting and not the project in itself. Because the students had written their stories in French, making the book jackets in English allowed them to work on something that was interesting to them, that they had created. One student explained that if they had created a book jacket for a story they had read or for an imaginary book, they probably would have enjoyed the project a great deal less.

The interviews with the students also enabled me to determine they believed the use of interdisciplinary projects was an effective tool to help them improve their English skills and vocabulary in English. However, there were a few students who simply translated part of the text from their story from French to English and submitted that for their summaries.

The students thought the project had less value in their development of learning and work strategies because they worked so much in projects. Additionally, once the students had written their drafts, they had stood in line waiting for Danielle to proofread and edit

their drafts. One claimed to have spent one entire period standing in line and thought this was a great waste.

Summary

The information gathered from the students indicated that Danielle's use of the book jacket interdisciplinary project as a tool to increase the students' learning and use of English was relatively successful. The students indicated they had enjoyed the project mostly because of the interactions within the classroom community. There also seemed to be some indication they found the project useful for their learning of English.

5.4.3 Observations of the book jacket interdisciplinary project

One of the most notable aspects of this group of students was their attitude. They always seemed happy in class and clustered around Danielle when they arrived in the morning and often at the end of the period as well. Every time I went to Danielle's school, students greeted me in the hall, whether they knew me or not, and the students in Danielle's class greeted me by name whenever they saw me. I found the students very friendly and respectful and they seemed pleased that I was taking an interest in what they were doing in their class.

Another remarkable point was that the students spoke English almost exclusively in the class. Even when they were working in pairs spread around the classroom with Danielle seated at her desk, I did not hear any French. Danielle had said the use of English was a rule in her class and she enforced it through the use of notations in the students' agendas. In all the time I spent in her class, I only saw one instance where she did this. On most of the observation days, English was the only language spoken in the class.

In-class observations showed a mix of teacher-centred and student-centred activities. Danielle had the students study grammar with a textbook and often assigned homework from the book. When working on grammar or correcting homework assignments, her class was very teacher-centred and she decided who would answer what question. At other times, she simply provided the correct responses without giving reasons or explanations. She was the source of knowledge in the class.

In contrast, when the students were working on the interdisciplinary project, she either circulated around the room providing assistance where requested or was seated at her desk. She spent several days of the observation period seated at her desk, working one-on-one with the students editing and verifying their texts. As long as the English usage was correct, what her students wrote was up to them. Unfortunately, some of her students translated what they had written in their French class into English and while she tried to discourage this, she was unsure of how successful she was.

The students appeared to enjoy working on the book jacket interdisciplinary project. As I moved from team to team, they were happy to tell me about their stories and explain their choices for the artwork they used for the front cover. Several had created humorous blurbs by famous people to be included on the covers.

The students seemed to have no compunctions about using me as a resource for English. A few times during the observation period I was asked by the students to look at their texts as there was such a long line-up waiting for Danielle to edit their work. Other students asked questions regarding vocabulary and sentence structure in their texts, and twice I was approached with questions regarding the grammar exercises in their textbook.

Upon completion of the book jackets, the students were to present their finished product to their classmates. Several students informed me this was their favourite part of working on projects, the expositions they made for their peers. However, because Danielle decided to give the students an extra day to complete their book jackets, she was obliged to cancel the presentations as the students were to begin the MELS secondary school exit exams.

5.4.4 Mr. Voyer

Mr. Voyer was principal of the *École Saint-Ésprit* which served 280 primary and secondary students. At the time of the study, he was in his mid 40's and had been principal of the school for two years. He had begun his teaching career as a mathematics teacher and, previous to his current position, had taught mathematics to students who had dropped out of school and then returned as young adults. In that position he had collaborated with several of his colleagues implementing interdisciplinary teaching.

Research Question 4: How do school administrators view the implementation of interdisciplinary teaching within their respective schools?

This section of the chapter presents Mr. Voyer's perspective of interdisciplinary teaching and how he perceives its implementation in his school. It is presented in three sections; his conceptualization of interdisciplinary teaching, his view of interdisciplinary teaching as it relates to the new MELS educational reform, and the factors that facilitate or constrain efforts to promote interdisciplinary teaching in the school.

A How do school administrators conceptualize interdisciplinary teaching?

Mr. Voyer saw interdisciplinary teaching as a way to improve student learning. He described interdisciplinarity as when *“des profs en histoire et en français sont capables de relier les deux, dans le sens qu'il y avait un projet de fait en histoire et il était évalué en français aussi en même temps. Donc les deux l'avaient, au lieu de faire un travail à part en français et un travail à part en histoire, mais c'est du français et de l'histoire. On est en français donc on relie les deux ensemble”* (the teachers in history and French are able to link the two, in the sense that there was a project done in history and it was evaluated in French as well, at the same time. So the two had, instead of doing work only for French and work only for history, well, it's French and history. We are in French so we link the two together). He thought the resultant project was more interesting for both the teachers and the students as well as more beneficial to the students than projects carried out separately in the two subjects.

Mr. Voyer had been involved in interdisciplinary teaching at another school previous to taking up his current position as principal. When asked if his conceptualisation of interdisciplinary teaching had changed or evolved over time he declared himself unable to respond. He said, *“moi, je ne peux pas dire que oui, j'ai évolué”* (me, I can't say whether I have evolved). He felt this was because he had stopped teaching two years previously and was no longer actively involved in interdisciplinary teaching.

B How do school administrators view interdisciplinarity in the context of the current MELS' educational reform?

Within the classroom

Mr. Voyer believed it was likely that interdisciplinary teaching had a positive impact on student learning, but felt it was necessary to examine the question over the long term. He thought it "sad" that teachers would teach certain notions in their classes, and while they might provide a few examples, they would not show students how to make the links between these concepts and those studied in other classes. Interdisciplinary projects assisted the students in seeing these links between subjects, enabled them to tie information from the different subjects and different classes together and as a result, helped the students make more sense out of what they learned in the different subjects. Nonetheless, while he thought interdisciplinary teaching had a positive impact on student learning, he reiterated it was speculation and it was only by continuing to offer interdisciplinary projects over time that it would be possible to determine if this was indeed the case.

In the context of the educational reform, Mr. Voyer thought interdisciplinarity exemplified how teaching should be done. He felt it had value in the schools because he expected interdisciplinarity to become a necessary skill for students in the future and therefore, the educational reform presented a reflection of the changes taking place in society. There were more instances of people working with others at different points in their career, working with people in different fields, working with people with different jobs and he believed teachers needed to show the students how to work in that manner. Mr. Voyer believed the students needed to see how to make links between different aspects of their world and they needed to see teachers working that way as well.

Within the school

Mr. Voyer did not believe interdisciplinarity caused any changes in the school community. He thought perhaps the division of labour might be slightly affected as teachers were obliged to work together to plan and elaborate the interdisciplinary project. But while the teachers needed to plan time to meet and perhaps do more work setting up the project, he believed this was balanced by the sharing and division of the work involved. He also saw his role as being slightly more expanded with interdisciplinarity in the school. He

felt it important to make suggestions to the teachers about possible projects that could be done in collaboration, and to encourage and support their efforts when they did so. He made certain I understood he did not mean to impose interdisciplinarity on his teachers, but by returning to the subject often, he hoped to stimulate their interest.

C In their particular context, what factors constrain or facilitate the implementation of interdisciplinary teaching?

This section of the chapter presents the factors that Mr. Voyer felt constrained or facilitated his efforts to encourage the implementation of interdisciplinary teaching in his school. These two categories of factors are further divided into two sections, those related to the school and the MELS. The *École Saint-Ésprit* was a private school and so did not belong to any school commission.

Factors that constrain efforts

Within the school

Mr. Voyer recognized there were two main constraints to interdisciplinary teaching at the school, both due to its small size. The first related to the rules which governed the operations of the school. He believed the heavy teaching load constrained teachers' efforts towards interdisciplinarity. The teachers "*enseignent plusieurs matières, quatre ou cinq matières différentes sur des niveaux différents. Donc, la lourdeur de la tâche fait en sorte qu'ils ont moins de temps peut-être de s'asseoir ensemble et monter des projets*" (teach several subjects, four or five different subjects at different grade levels. So, the heavy teaching load means they have less time perhaps to sit down together to build projects). Additionally, because of this teaching load, it was very difficult for the school, when creating the teachers' schedules to arrange for common planning time because so many other factors had to be taken into account. Mr. Voyer explained, "*au niveau de l'horaire, on a beaucoup de contraintes et c'est très difficile. Aussi, puisqu'on est au primaire et secondaire, ça amène beaucoup des contraintes au niveau des locaux, le gymnase, donc c'est vraiment pas évident de le faire*" (with the schedule, we have many constraints and it's very difficult. Also, because we are a primary and secondary [school], this brings many constraints regarding the rooms, the gym, so it's really not easy to do). Therefore, because

planning time built into their schedules was generally not possible, Mr. Voyer believed teachers who wanted to build interdisciplinary projects were required to do so during their lunch-hour. He thought this "*temps supplémentaire*" (overtime) would be perceived as "*lourd*" (heavy) because the teachers were already so busy but felt there was little he could do to reduce the difficulties they faced because it was the size of the school which imposed these constraints.

Mr. Voyer believed it was not very possible for the school to provide extra tools to the teachers to facilitate their efforts to implement interdisciplinary teaching. Whatever they needed for interdisciplinary projects had to be used from the resources and materials they had. Because this was a private school and parents paid for their children's tuition, the teachers needed to pay attention to costs for whatever they did in their classes, whether for interdisciplinary projects or not. However, he did not believe the school lacked any resources that might constrain the teachers' efforts to implement interdisciplinary teaching.

The only other constraining effect Mr. Voyer could imagine was one that originated from the community of teachers in a school. He was very quick to point out the following scenario was not the case in the *École Saint-Ésprit*, but he had witnessed these difficulties in a previous school. While he was certain the teachers in his school were open to interdisciplinarity and innovative teaching practices, Mr. Voyer said this was not the case in all other schools. He believed teachers who were older and who had experienced several years teaching alone would probably find interdisciplinary teaching more difficult. He thought they would have their own way or manner of teaching so would not likely be attracted to interdisciplinarity and interdisciplinary teaching. In addition, Mr. Voyer had the impression teachers just beginning their career would be equally hesitant to embark on interdisciplinary projects. He thought these teachers would "*concentrer dans la première année à maîtriser la matière, les notions, comme il faut*" (concentrate in their first year on properly mastering the material [and] the ideas) and so would not likely be willing to collaborate with other teachers implementing interdisciplinary teaching until they were comfortable with their programmes. He also thought there were teachers between these two extremes who, simply because of their personality, would not be interested in interdisciplinary teaching. He described these as teachers who had no desire to try something new or who would be uncomfortable getting involved in interdisciplinary

teaching where “*ils ne sont pas certains de réussir, réussir le projet*” (they aren’t certain to succeed, to successfully carry out the project). Mr. Voyer saw these three types of teachers as being “closed” to interdisciplinarity.

Another aspect which he felt constrained interdisciplinarity was the perception that different subjects were more difficult to include in interdisciplinary projects. And even if the subjects and the teachers were both amenable, the teachers might not necessarily be able to conceptualize how they could link the two subjects together in a project. He believed this “*manque d’idées*” (lack of ideas) could only be rectified through experience in building and implementing interdisciplinary projects.

Finally, although this was never explicitly stated, it appeared Mr. Voyer felt imposing interdisciplinarity on his teachers would cause problems. Whenever he mentioned providing information regarding interdisciplinary teaching to the teachers, he emphasized it was only as suggestions, not as something they were obliged to do. It seemed he took pains to ensure I understood he only offered ideas and suggestions, and did not demand or require any kind of response or action on the part of the teachers.

At the level of the MELS

According to Mr. Voyer, “*le MELS, présentement n’offre pas grande chose comme formation ou quoi que ce soit au niveau d’interdisciplinarité*” (the MELS presently doesn’t offer much in the way of training or anything regarding interdisciplinarity). Rather, the training they were offering was related to the new programmes, the evaluations, and the new subjects that were to be offered at the Secondary 3 level. Further, while he knew they were helping produce projects, his understanding was they were built for just one subject, not for teachers wanting to collaborate across subjects.

Factors that facilitate efforts

Within the classroom

Mr. Voyer found the students in the school dynamic and believed there were good relations between the teachers and students. He said, “*Sincèrement, on a de bons élèves... [et] je crois que les élèves présentement ne peuvent pas faire plus qu’aider aux projets*” (Sincerely, we have good students [and] I think the students we have presently can’t do

otherwise than contribute to projects). He thought when an interdisciplinary project was proposed as something interesting, the students would become involved in it because they were motivated to learn. That the teachers had good relationships with their students also meant the students were willing to work hard for their teachers.

Within the school

It was at the level of the community that Mr. Voyer found the elements that most facilitated interdisciplinarity in the school because there were "*beaucoup de connaissances, beaucoup d'amis*" (many acquaintances and friends) among the teachers. As it was "*une jeune école*" (a young school) with many teachers who had only one or two years of teaching experience, Mr. Voyer felt the nature of the teaching staff was a facilitating factor. While he thought these younger teachers might need a year or so to learn their subject matter because they taught so many subjects, he found this did not stop them from sharing or trying to implement innovative ideas they had brought from their university studies. He said the older teachers in the school spent time helping the new teachers resolve issues they faced and, "*même rendus à cinquante-cinq ans veulent encore essayer des choses*" (even at 55 years old still wanted to try the things) the younger teachers were introducing. He believed this openness on the part of all the teachers to provide and receive information and assistance from one another was important for facilitating the implementation of interdisciplinary teaching.

Mr. Voyer also believed the teachers who were already involved in interdisciplinary teaching greatly assisted those who were beginning to be interested. These latter could "*parler à d'autres professeurs qui l'ont déjà expérimenté. Ça aide énormément à démystifier certaines choses. Et ils vont voir qu'ils peuvent monter quelque chose de bien petit, il s'agit pas de commencer avec quelque chose de très très gros*" (speak with the other teachers who had already some experience. That greatly helps to demystify some things. And they will see they can build something small, it doesn't have to begin with something very, very big), complicated, or complex. He found the teachers who had some experience with interdisciplinarity also helped those who had just finished their first project by working with them to discuss what had worked well and what had not, what were the positive or negative points, what would they have liked to do differently, and how they

could change or improve the project for the next time. He thought it was this support and encouragement from their colleagues which was the most important factor in getting more teachers involved in interdisciplinarity.

Finally, he found the teachers to be receptive to suggestions and encouragement from the school administrators. While he was careful to not appear as if he was imposing or requiring interdisciplinary teaching, he had presented information on interdisciplinarity and tried to show the teachers how it could be carried out with different subjects. "*Ce n'est pas toujours évident de leur suggérer des choses, de proposer des choses, mais on essaie au moins qu'ils se mettent ensemble puis qu'ils discutent. Puis c'est là que les projets naissent*" (It's not always easy to suggest things, to propose things to [the teachers], but we try at least to get them together so they can talk them over. And it's there that [interdisciplinary] projects begin). He believed the more the teachers talked, the better it was, not only just to develop interdisciplinary projects, but to cement their relations as part of the team. He saw the teachers as being more willing to work in teams, to watch what was going on in other classes and subjects, and to look more at how they could link different subjects together so as to be able to prepare the students for how they would be required to work in the future.

Because the school was small, Mr. Voyer believed it was easier for the teachers to plan interdisciplinary projects together. For example, in Secondary 1 and 2, there were just four teachers. This meant it was easier for them to work together to build projects because "*c'est plus facile de se rencontrer à trois que de convoquer dix personnes*" (it's easier to meet with three than to get ten people together). Getting agreement on goals and processes was also facilitated by having just a few teachers who knew well what one another were doing in their classes.

When asked if these teachers, or others in the school, had requested to be freed from their classes in order to plan interdisciplinary projects together, Mr. Voyer replied it had not yet happened; however, he believed it was necessary for the school to be open to that. If some teachers approached him with a plan for an interdisciplinary project that they wanted to implement, but needed time to build it together, he said he would do what he could to arrange this.

At the level of the MELS

Mr. Voyer believed the MELS should be responsible for facilitating teachers' implementation of interdisciplinary teaching. He felt the most helpful element would be if they were to propose ideas for interdisciplinary projects, or provide teachers with interdisciplinary projects that were already elaborated and simply needed to be adapted or adjusted to the particular school or classroom situation. He also thought the MELS should ensure the new material and books being produced for the reform included elements or activities that enabled teachers to make links to other subjects.

Summary

Mr. Voyer believed interdisciplinary teaching could be used as an important tool to improve student learning and he could foresee a time when pressure from society would mean interdisciplinary teaching would no longer be an option but rather a requirement. He believed the implementation of interdisciplinary teaching would not have a great effect on teachers' classroom practices except that it would require closer collaboration between the participating teachers.

The factors that most constrained the implementation of interdisciplinary teaching in his school mostly evolved from the small size of the school and related to the heavy teaching loads the teachers were obliged to carry. He could also see where the community of teachers could have a negative effect on interdisciplinarity but indicated it was not the case at his school as the teachers shared close relationships and were open to new ideas and practices. Elements that facilitated interdisciplinary teaching were related to the rules of the school such as small class sizes and closed class groupings, and the community of teachers. Again he felt these were the result of the small size of the school. Having teachers open to interdisciplinarity and willing to offer and receive advice and assistance from their colleagues, regardless of their age or teaching experience, facilitated interdisciplinary teaching in the school.

5.4.5 Case study summary

The most noticeable feature of this school was its extremely small size and the resultant atmosphere at the school. It was described by Danielle as "familial" and this was

very accurate. She appeared to know by name most of the students encountered in the halls and almost all greeted her as she passed. When I arrived at the school, students would hold doors open and smile and greet me. I could not help but remark how open and friendly the school seemed. The contrast was even more pronounced when I arrived there after a morning of observations in one of the larger schools participating in the study.

Of course the small size, as pointed out by Danielle and Mr. Voyer, had an effect on interdisciplinary teaching in the school. Although her students followed the core ESL programme, because there was only one group, there was no question of open class groupings. Interestingly, while some of the teachers at the other schools felt interdisciplinary teaching would not be possible with students in the core programme because of attitude or interest, Danielle's experience with her students appeared to show this was not the case. However, the size of the school possibly had a role to play in this as did the close relationships between teachers and administrative staff, and the small number of students per class.

It was interesting that Mr. Voyer hesitated to make pronouncements about interdisciplinarity in the school. My curiosity was further piqued when Danielle claimed she was not sure the school administration was even aware she was involved in interdisciplinary teaching. She said, "I'm not even sure they know. It's true! Maybe they know because you're here, but not more than that." However, it turned out there were other teachers in the school also involved in interdisciplinary teaching and Mr. Voyer was well aware of what was going on in the classrooms of his school.

Whatever their differences of perception, both he and Danielle shared the same beliefs about the type of effect interdisciplinary teaching had on a teacher's classroom practices. They saw interdisciplinarity as an important element of the educational reform and believed interdisciplinary teaching was an effective and useful pedagogical tool that had a positive effect on student learning.

5.5 *École secondaire Sacré-Coeur-de-Jésus* – the bilingual pamphlet interdisciplinary project

The *École secondaire Sacré-Coeur-de-Jésus* was a private school offering two programmes to its 850 students, the MELS core programme and another programme

implemented in schools around the world. Through the use of interdisciplinary teaching, the purpose of this latter programme is to help develop intercultural awareness and openness, communication and multimedia skills, and a better comprehension of the world and the student's place in it. For purposes of this study, this programme is called the Interdisciplinary Teaching (IT) programme. The *École secondaire Sacré-Coeur-de-Jésus* was situated in a residential community in the capital city and drew most of its students from the surrounding communities.

5.5.1 Pierre

Pierre was a teacher in his early 40's with 15 years teaching experience in ESL. He obtained a Bachelor's degree in English literature from a university in Ontario and three years later another in Teaching English as a second language from a local French university. Through his 15-year experience at the *École secondaire Sacré-Coeur-de-Jésus*, he had taught ESL to students in all grades at the secondary level. At the time of the study, Pierre was teaching ESL to Secondary 3, 4 and 5 students enrolled in the both the IT and core programmes.

The bilingual pamphlet interdisciplinary project

Pierre used many projects in his teaching but most were multidisciplinary where he incorporated information he knew the students had studied in other subjects into projects that he created himself to use in his English classes. During the year of the study, he had participated in two interdisciplinary projects, one with the teachers of four other subjects, and one with the geography and history teachers. The first of these interdisciplinary projects was done with the Secondary 3 students in conjunction with the geography, mathematics, multimedia, and French teachers. For this interdisciplinary project the students worked in groups of up to four. They examined the tourist regions in Québec in the geography class and then in their groups chose one for which they would create an information pamphlet. In math the students conducted a survey on their peers' knowledge of the different areas and then did an analysis of the data they had gathered. In the French class they examined the writing style and type of vocabulary used in pamphlets and then developed a text following these guidelines, based on the region they had chosen. In the

English class they translated the text they had written for the French class into English. In the multimedia class the students learned the formatting for pamphlets and took the texts they had written and created their bilingual pamphlet on the region they had chosen. Each of the teachers graded that portion of the project which was relevant to their class.

Research Question 1: How do teachers conceptualize interdisciplinary teaching?

In this section, Pierre's definition of interdisciplinary teaching will be presented, followed by an explanation of how his conceptualization of interdisciplinary teaching has changed over time.

A How do teachers define interdisciplinary teaching?

When asked for his definition of interdisciplinary teaching, Pierre said it was "a bunch of teachers getting together and coming up with a project and really spending a lot of time working together to elaborate that project." He then went on to explain because the teachers had little time to meet and prepare projects together, this was problematic and so he approached interdisciplinarity in another fashion. He said:

Pierre: I do a lot of interdisciplinary work but most of my interdisciplinary work is I will assign something that has to do with a history project that they have seen in class but I will not necessarily spend a lot of time with the history teacher because we don't really have a lot of prep time... And Secondary 5 right now, I'm working on debates, and debates would really fit in well with what they learn in their religion class because in religion they are really working on ethics and most of the topics they have chosen to debate, well, they have really already reflected upon them in religion class so that would be my definition of interdisciplinary work.

DB: So then, it would be kind of like taking what you know other teachers have done previously and using it for material for what you are doing.

Pierre: Absolutely.

From this conversation, it is clear that for Pierre, interdisciplinary teaching and multidisciplinary teaching are the same. As a result, I endeavoured at all times to word my questions so as to ensure his responses related to those projects which involved

collaboration with his colleagues in the elaboration and implementation of the interdisciplinary projects.

B How does teachers' conceptualization of interdisciplinary teaching change over time?

While Pierre's conceptualization of interdisciplinary teaching had not changed over time, his understanding of how it was to be put into practice had undergone a transformation. He explained it had changed when he realized he could not be "god." In his initial efforts at interdisciplinary teaching he had tried to direct what everyone was doing, having other teachers work "for" him rather than "with" him. At that time, the teachers would be involved in projects with him for a year or so, and then back off as he was too controlling. Further, Pierre had had to learn to accept the work other people did when they worked together. He explained each time he asked one of his colleagues for something, "it is never like I want it to be. It's normal because she's doing it; it's how she wants it to be." As a result, although he disagreed with how someone else might have done the work, he had had to accept the important thing was that it was completed, not that it was done as he would have done it. Nonetheless, he said he still had difficulty "dealing with this."

Pierre also said he learned he could not make decisions for elements that were not under his supervision. "If I have a History teacher I am gonna let him teach the History part, it's his job; he knows a whole lot more about it than I do." He recounted a few incidences when he or one of the other teachers had provided conflicting feedback on a part of a project taught by another teacher and the difficulties they had experienced as a result. He felt it very important teachers restrict their comments and feedback to those aspects of the interdisciplinary project which were related to their subject component of the interdisciplinary project.

Research Question 2: Why and to what degree do teachers value interdisciplinary teaching?

The factors and influences for Pierre's involvement in interdisciplinary teaching are presented below. These are followed by explanations of how interdisciplinary teaching has

an impact on his classroom practices and concludes with his estimation of the degree to which he implements interdisciplinary teaching in his classes during the school-year.

A What are the factors that prompt teachers to become involved in interdisciplinary teaching?

The factors which influenced Pierre's involvement in interdisciplinary teaching related to his past experiences in sports, the community of teachers in his school, and the rules of the school, specifically the school's adoption of the IT programme.

The main factor that had an impact on his involvement in interdisciplinary teaching was the IT programme itself which specifically included interdisciplinary teaching as part of the programme description. This programme had been adopted by the school three years previously and since that time the teachers had worked collaboratively in the development of interdisciplinary projects, at first with two or three subjects and then, across the entire curriculum.

The second factor that encouraged Pierre to become involved in interdisciplinary teaching was his relationship with his colleagues at the school. He was hired at the same time as four or five other teachers and, with others that were employed shortly thereafter, they made a cohort of young, dynamic teachers. He described them as "friends" that liked to be together, that liked working together, that liked travelling together, and that liked spending time outside of school in each others' company.

Pierre also explained how the experience he had playing university football had shown him the importance and value of collaboration. This was further reinforced by his experiences as a football coach.

B What impact does interdisciplinary teaching have on teachers' classroom practices and relations with colleagues?

Because Pierre used projects very much in his classes, he did not believe interdisciplinary teaching had a great effect on his classroom practices. However, through our conversations, a few areas were revealed where certain changes did take place, both in his classroom and in the larger school community.

Within the classroom

Pierre thought interdisciplinary projects had a positive effect on his students' use of strategies because it enabled them to "make links to what they have learned" in the different subjects involved. Interdisciplinary teaching helped them make the links between subjects, not only within the project but also related to the different kinds of information learned in the other subjects and so they retained more. He also noted interdisciplinary projects helped his students develop presentation skills and facility with the computer equipment used in their presentations.

The other area where he had noticed interdisciplinary teaching made a difference was in the students' autonomy and work ethic. Interdisciplinary teaching required they take responsibility for their learning and develop appropriate strategies to complete the project, following the requirements for each of the different subjects, within the given time frame.

It was in the students' learning of English that Pierre perceived the greatest effect of interdisciplinary teaching. He explained, "It's very hard to learn English by yourself. The more you talk with other people, the easier." The educational reform meant students were no longer evaluated on their ability to memorize information but rather to use the language in meaningful ways and Pierre believed "the interdisciplinary projects really help[ed]" his students' ability to interact in English. He described how that day the students had been preparing for debates and his reaction to their exchanges was that if he were to evaluate them according to the MELS competency of 'Interacts orally in English', his students would receive very high grades. He said they would eventually lose some points for grammar but nonetheless, "their ability to speak with each other" was impressive. He was certain "their ability to produce English" was a result of the "multiplicity of projects" he did with them, and speculated he "wouldn't see it as much if they were not [doing] interdisciplinary work."

In his classroom activity system, the use of interdisciplinary teaching resulted in minor changes to the materials he used to develop the interdisciplinary project. He said interdisciplinary projects did "not really" have an effect on his choice of materials but the year of the study, the materials had changed and he found the Scholastic books he had used previously "had more activities available for interdisciplinary work" than the new ones that had been chosen by the department. He had found the Scholastic books were better adapted

and the topics given in the books more clearly presented possible interdisciplinary projects. Nonetheless, he surmised “in a year or so” he would be more comfortable with the new material and would find it easier to adapt the topics to projects, both interdisciplinary and English-only.

Within the interdisciplinary team

Pierre felt interdisciplinary teaching had made his relationships with the teachers of other subjects with whom he collaborated were much closer. He said the interdisciplinary projects had increased his “appreciation of [the] others’ professionalism.” He thought working in teams improved communication and his appreciation of the skills, abilities, and knowledge of his colleagues.

Within the school

In the activity system of the school, the relationships Pierre had with the other English teachers appeared to be mixed. He felt he shared an understanding of what was involved in educating the students with some of his colleagues in the department; however, he admitted his relationships with others were, perhaps, strained. He believed some of the teachers, especially those at the Secondary 1 and 2 levels, did not adequately provide the necessary learning challenges for the students in the IT programme. As a result, when they arrived in his classes in the fall, they were ill prepared for the amount of work, responsibility, and autonomy he required of them when using interdisciplinary projects.

C To what degree do teachers use interdisciplinary teaching?

Pierre claimed 80% of his teaching was project based. Out of that, he estimated 30% was done using interdisciplinary projects.

Research Question 3: What factors constrain or facilitate teachers’ efforts to implement interdisciplinary teaching in their classes?

According to Pierre, there were several factors that had either a facilitating or constraining effect on his ability to implement interdisciplinary teaching. The following discussion will first examine those elements he felt constrained efforts and then those

which facilitated them. These are broken into further sections, elements within his classroom, within the interdisciplinary team, within the school, and those at the level of the MELS. Pierre worked at a private school which did not belong to a school commission.

Factors that constrain efforts

Within the classroom

One factor which Pierre felt constrained his abilities to implement interdisciplinary teaching were the students in the core programme. Pierre thought certain students might constrain interdisciplinary teaching in that they would not have the necessary skills or learning strategies to do well in them. He said students from the core programme often had no teamwork skills which made interdisciplinary teaching difficult because it was necessary to help them develop those skills before it was possible to begin an interdisciplinary project. Even with time, some of those who were involved in interdisciplinary projects were not able to develop “the techniques of teamwork” necessary to complete interdisciplinary projects. He also thought “introverted kids” had more difficulties with interdisciplinary work because of the teamwork and presentations involved and claimed those students tended to do poorly on interdisciplinary projects.

Within the interdisciplinary team

Pierre found interdisciplinary teaching was constrained in the fact that it took so much more time and effort to elaborate and implement interdisciplinary projects than projects he did by himself. This was compounded by a factor at the level of the school activity system in that planning time was not provided.

Within the school

According to Pierre, the single factor which most constrained his efforts to implement interdisciplinary teaching was related to the rules of the school activity system. He felt a lack of planning and meeting time with his colleagues meant it was very difficult to elaborate and plan interdisciplinary projects. He said most teachers at the school had about 10 periods out of 40 for planning time and felt this was “pretty good if you look at other places in public schools”; however, even though the teachers had those free periods

for planning, they were “not free at the same time as the other teachers a lot of the time. So it makes for meetings at lunch-hours, it makes for meetings after school.” Pierre explained this was “the biggest problem.” He thought interdisciplinary projects were “a spectacular idea that if it doesn’t change, its doomed to failure because the teachers need so much time to meet, to discuss the grades. They need time to meet and then they need so much more time to evaluate” but the school was not able to provide them that time.

He thought it difficult for the administration “to do a decent schedule” because of the number of teachers and the number of groups of students. He said the administration used to try to schedule back-to-back classes so teachers of different subjects would share classes for part of the day. This meant they could work together more and do other activities together. However, he thought that this back-to-back scheduling was being done less and less. Further, when the administration planned the master schedule, they began with mathematics and French because each of those subjects had one class every day. After, they planned for the part-time teachers, and then the other subjects. He said at times he had the feeling English was the last class put into the master schedule and so back-to-back classes were often not possible.

Pierre also explained how it was difficult to get the administration to allocate a half-day for planning for a group of teachers who wanted to work together to elaborate an interdisciplinary project. He said they would not hire substitutes to cover for the teachers so planning had to be done on pedagogical days or evaluation days for those teachers who had no common planning periods or when several wanted to work together on an interdisciplinary project. However, it was difficult to have time on evaluation days and attendance at the presentations during the pedagogical days was generally mandatory. Pierre felt there were several presentations that were not necessarily useful to most teachers and the time taken by these presentations could have been better spent elsewhere, such as in planning and building interdisciplinary projects.

Another school policy which he felt constrained his efforts to use interdisciplinary projects with his students was the heterogeneous nature of some of his groups of students. He explained how he had “hybrid groups” where students from the IT and core programmes were mixed. The result was that those classes were very difficult to work with.

In each of his Secondary 3 IT programme groups there were at least three students from the core programme.

At the level of the MELS

Pierre believed the MELS was irrelevant to interdisciplinary teaching within the school.

Factors that facilitate efforts:

Within the interdisciplinary community

According to Pierre, the most important element for interdisciplinary projects to be successful was a “strong bond with the [other] teacher.” He was good friends with his colleagues in other departments and he believed this to be one of the main reasons he was involved in interdisciplinary teaching.

Within the school

Pierre believed factors found in the rules that governed the activity system of the school, the community of teachers of the school, and the tools provided by of the school greatly facilitated his efforts to implement interdisciplinary teaching.

When asked if there were school policies which facilitated teachers’ efforts to implement interdisciplinary teaching Pierre replied, “Well, the IT programme. That’s a school policy.” The teachers were required to work together to create interdisciplinary projects. He felt this was the only policy which facilitated interdisciplinarity but, he believed it was a major factor. He also admitted that when the school administration was able to schedule back-to-back classes, it greatly facilitated working on interdisciplinary projects.

Another factor which Pierre felt facilitated interdisciplinarity was the school provided a good budget for the English department and they “never, ever spend all the budget.” He claimed, “Basically, if you ask for it, you get it. It’s really that simple.” There was a mobile computer lab with 37 units that was possible to book in advance and each room was equipped with Internet access. The school had 8 Canon projectors, 5 TV’s, a computer lab with 38 working computers. He described how the English department had

asked for some radios and the school had bought 15 radios so each class would have its own radio. He thought the resources provided by the school greatly facilitated teachers' efforts, not just in interdisciplinary teaching, but through all aspects of their work.

Pierre also credited the school administration as being a facilitating factor. He said "having a principal that talks to [the teachers] and believes" in what the teachers were doing made it easier for the teachers to try new things. He said the school administration gives the teachers "all the support in the world" to implement interdisciplinary teaching.

He also believed younger teachers were more open to interdisciplinary teaching because they were "all just out of university and they [were] taught that way." He speculated half of the teachers in the school had less than five years teaching experience and credited this young teaching cohort for bringing in many innovative ideas and practices. He found they were a good influence on the teachers who had had most of their work experience based in teacher-centred classes. He was certain these younger teachers would influence those who were not involved in interdisciplinary teaching because these latter would see how the students benefited from interdisciplinary projects.

At the level of the MELS

Pierre believed the MELS was mostly irrelevant to teachers' implementation of interdisciplinary teaching. He thought the old ESL programme was "kind of a joke" because his students were able to pass the Secondary 5 exam at the end of Secondary 2 or 3. Nonetheless, he admitted the reform was "supposed to be preaching" interdisciplinarity so, since it would arrive at the Secondary 3 level next year, he predicted he would "have to work a whole lot more with other teachers." He had not yet seen the programme for the second cycle of the secondary level at the end of May when we last spoke but, he maintained the new programme would likely cause an increase in interdisciplinary collaboration.

Summary

Pierre believed interdisciplinary teaching was an important pedagogical tool to mediate his students' learning and use of English. He had begun using interdisciplinary teaching when the IT programme had been adopted by the school three years earlier. Pierre

did not see how his conceptualization of interdisciplinarity had changed in the intervening three years although he admitted he had had to make changes to how he approached working with the other teachers.

He found there were two main areas where interdisciplinarity occasioned a change. The most important was he believed interdisciplinary teaching had a favourable effect on his students' learning; his students had better English skills and used better work and learning strategies when completing an interdisciplinary project. The other change related less to his classroom and more to the community of teachers in that interdisciplinary teaching had resulted in an improved perception of his colleagues' professionalism, skills, and abilities.

The factors which constrained his efforts to implement interdisciplinary teaching resulted from the rules and organization of teaching schedules in the school. Specifically, he complained of a lack of common planning periods and back-to-back scheduling which would have facilitated interdisciplinary projects. To a much lesser extent, he thought the type of students he taught restrained his efforts because some of the students did not have the necessary skills or learning strategies to do well in interdisciplinary projects.

Facilitating factors included close relationships with the community members of the larger school activity system: the other teachers and the school administrators. The rules that governed the activity system of the school were also facilitating in that the introduction of the IT programme greatly facilitated interdisciplinarity.

5.5.2 Pierre's students

The 32 students in this class were in the IT programme which offered an enriched ESL curriculum. In this programme the students had six English classes in a ten-day cycle. Each class period was 75 minutes but the students spent the first 15 minutes of each English class reading textbooks, novels, or magazines in English. The students referred to their experience of the bilingual pamphlet interdisciplinary project when they completed the questionnaire and during the interviews.

Research Question 6: How do students view interdisciplinary teaching within their classes?

The students' attitude toward interdisciplinary teaching was elicited through the use of a questionnaire and then individual interviews. First, the information from the questionnaire is presented. This is divided into two sections: information related to the Likert-style items and then, that obtained through the open-ended questions. A third section presents information gathered through interviews with a selected few of the students.

Questionnaires: Likert-style items

In Table 5.21, the questionnaire is presented in themes so certain items are not in the positions they were in the questionnaire distributed to the students. There are three main themes: transferability which includes the transfer of competencies, ideas, knowledge, and strategies either from other subjects to English, or from English to other subjects; benefits to learning English; and other considerations which includes interest and motivation, general appreciation, and differences. The original French version of the questionnaire can be found in Appendix N.

The results of the questionnaire are given with the number of student responses indicating agreement for each of the items as well as the average response for each item. The values for the responses are as follows:

- 1 indicates strong disagreement with the statement
- 2 indicates disagreement with the statement
- 3 indicates neutrality regarding the statement
- 4 indicates agreement with the statement
- 5 indicates strong agreement with the statement

The subsequent discussion of the results of the questionnaire uses these same terms: strong disagreement, disagreement, neutrality, agreement, and strong agreement.

Table 5.21: Results from student questionnaires from Pierre's class

Themes	Secondary themes	Items	Number of responses					Mean	
			1	2	3	4	5		
Transferability	Transfer to English from other subjects	2. In my English class, I was able to re-use ideas which I first dealt with in my other subject area class(es).	0	7	6	17	2	3.44	
		3. In my English class, I was able to extend my knowledge of the topic dealt with in my other subject area class(es).	1	8	7	15	1	3.22	
		4. In my English class, I was able to re-use strategies/ skills which I used in my other subject area class(es).	1	10	7	14	0	3.06	
		5. In my English class, I was able to learn the English equivalents of words/ expressions related to the topic dealt with in French.	1	8	5	12	6	3.44	
		6. In my English class, I was able to re-use work methods dealt with in my other subject area class(es).	3	3	9	13	4	3.50	
	Transfer to other subjects from English	7. In my other subject area class(es), I was able to re-use ideas which I first dealt with in my English class.	4	11	3	14	0	2.84	
		8. In my other subject area class(es), I was able to extend my knowledge of the subject dealt with in my English class.	2	8	7	10	5	3.25	
		9. In my other subject area class(es), I was able to re-use strategies/ skills first dealt with in my English class.	1	6	15	9	1	3.09	
		10. This interdisciplinary project helped me to improve my English speaking skills.	6	9	7	7	3	2.75	
Benefits to learning English	11. This interdisciplinary project helped me to improve my English listening skills.	6	6	13	6	1	2.69		
	12. This interdisciplinary project helped me to improve my English writing skills.	2	5	2	18	5	3.59		
	13. This interdisciplinary project helped me to improve my English reading skills.	3	7	7	11	4	3.09		
	14. This interdisciplinary project helped me to improve my English vocabulary.	0	5	6	13	8	3.75		
	18. I learn more English with interdisciplinary projects than in a regular English class.	16	12	3	0	1	1.69		
	Other considerations	Interest and motivation	15. I found this interdisciplinary project as interesting as me regular English classes.	9	8	12	3	0	2.28
16. Interdisciplinary projects are more motivating for me to learn English than regular English classes.			10	9	8	4	1	2.28	
Differences		17. Interdisciplinary projects are different from regular English classes.	0	1	12	13	6	3.75	
		Appreciation	1. I liked the interdisciplinary project we recently finished.	0	4	18	9	1	3.22
			19. Interdisciplinary projects should be taught more often.	7	9	13	2	1	2.41
			20. I prefer interdisciplinary projects to regular teaching activities.	12	12	8	0	0	1.88

The results of the questionnaire indicated the students agreed more with the statements regarding transferability from their other subjects to English than they did from English to their other subjects. This is likely because in the interdisciplinary project, the English component of the interdisciplinary project was begun only after all the other parts had been completed except that of formatting the pamphlet in the multimedia class. Additionally, as the students simply translated text from French to English, there was little to transfer to their other subjects.

The students indicated disagreement with the items regarding the benefits of interdisciplinary projects for their learning of English. They only agreed with three items from the section; they believed the interdisciplinary project had helped them improve their reading and writing skills and had helped them improve their vocabulary. This latter was one of the highest rated items at 3.75/5. However, the students indicated disagreement that the interdisciplinary project had helped them improve their listening and speaking skills, and almost unanimously disagreed with the statement they learned more English through the bilingual pamphlet interdisciplinary project than they did in their regular English class (1.69/5).

The students also rated most of the other considerations items as neutral or disagree. The students found the interdisciplinary project to be equally un motivating and uninteresting. There was general agreement the interdisciplinary project was different from their regular English class; however, the students indicated, in the majority, neutrality toward the item that posited they had appreciated the bilingual pamphlet interdisciplinary project. This changed to disagreement with the statement interdisciplinary projects should be implemented more often. Further, the students indicated overwhelmingly they did not prefer interdisciplinary projects to their regular English class (1.88/5). The reasons for their apparent discontent become very clear in the following sections.

Questionnaires: Open questions

In the open questions of the questionnaire, the students were asked to provide information on what they liked most about the interdisciplinary project, what they liked least about the interdisciplinary project, and to indicate in what way they found the interdisciplinary project differed from their regular English class. Overwhelmingly, the

element the students had liked most about the pamphlet project was the links between the different subjects that they were able to make through the project. Others had indicated they had been able to ask questions about the project and receive assistance from the different teachers involved in the project. Several students indicated they enjoyed working in teams with their peers. A few students wrote they liked the opportunity the interdisciplinary project offered them to improve their skills in English while a few others found they were able to learn things they would not normally have seen in their English class. Two students indicated they enjoyed being able to put into practice or share knowledge learned while two others found the interdisciplinary project motivating and/or interesting. This information is presented in Table 5.22. As several students indicated more than one response for each of the three open questions, the total number of responses in each table exceeds the number of students in the class.

Table 5.22: Pierre's students: Responses for Open Question 1

Responses (32 students)	Number of students indicating this response
The links the project made between the different subjects	17
The opportunities for team work	7
The ability to receive assistance from more than one teacher	5
The opportunity to improve English in the project	3
The opportunity to put knowledge into practice/share new knowledge	3
The opportunity to learn things not normally seen in English	2
The project was motivating/interesting	2

A large majority of the students indicated the aspect of the interdisciplinary project they enjoyed the least was the length of time the project lasted and that the amount of work required by the project was too onerous. A few others believed the deadlines for the different aspects of the project were too close together, leaving them insufficient time to complete the project to their satisfaction. Three students complained the manner the interdisciplinary project was graded was inconsistent with some students receiving better grades than others for work of an equal quality and other students protested the paucity of opportunities to use or learn English while doing the interdisciplinary project. This information is presented in point-form in Table 5.23 on the following page.

Table 5.23: Pierre's students: Responses for Open Question 2

Responses (32 students)	Number of students indicating this response
The project lasted too long	20
The amount of work/homework was too onerous	13
The subject was not interesting	7
The grading system did not appear to be standardized	3
The lack of opportunities to use/learn anything in English	3
The deadlines were difficult to meet	2
The project only dealt with writing skills	1
The project required translation of French to English	1
The team did not function well/team work is difficult	1
The time elapsed between work submitted and the corresponding feedback was too long	1

When comparing their regular English class and interdisciplinary projects, the most common points the students wrote were that interdisciplinary projects allow them to learn more autonomously, and that these kinds of projects allow them to make links between the subjects that are involved. One student indicated interdisciplinary projects provide a richer learning experience and another that they require more translation work than their regular English classes. This information is presented in Table 5.24, along with the students' view of how their regular classes are different from interdisciplinary projects.

Table 5.24: Pierre's students: Responses for Open Question 3

Responses (32 students)	Number of students indicating this response
Interdisciplinary projects have more autonomous learning	9
Interdisciplinary projects allow links to be made between the different subjects	8
Interdisciplinary projects allow richer learning	1
Interdisciplinary projects require more translation work	1
Regular classes are more concrete/practical	9
Regular classes use only English	7
Regular classes teach us more English	3
Regular classes teach more general oral skills, vocabulary, and grammar	2
Regular classes require less energy	1

Interviews

Based on the results from the Likert-style items on the questionnaire, the three students who indicated the highest agreement with the items and the three students who indicated the lowest agreement with the items were invited to take part in a short interview. The purpose of the interview was to elicit the reasons behind the students' responses to the questionnaire and to obtain a clearer understanding of their perspective of interdisciplinary teaching in their classes.

As with all the other student interviews, each began with a request for the student's definition of an interdisciplinary project. All the students indicated they were projects that touched several subjects. The answer of one student exemplified the general response. She explained an interdisciplinary project was "*un projet qui relie plusieurs matières. Par exemple, on apprendre différentes choses dans chacun de nos cours puis ça nous permet d'intégrer plus nos connaissances*" (a project that links several subjects. For example, we learn different things in each of our courses and that permits us to better integrate our knowledge). One further element a few of the students raised was that interdisciplinary projects were often done over a long period.

During the interviews, it was evident the students did not believe the bilingual pamphlet interdisciplinary project was an effective tool to help them learn English. There were two main reasons for this.

The first reason was that some of the students interviewed had not done any work in English at all in the project. They said when they work in teams, they "*divisent le travail. Ça veut pas dire qu'on va faire de l'anglais. Comme dans le travail de géo qu'on a fait, ben, c'était deux personnes. Moi, j'ai rien fait en anglais. Tu sais, j'ai fait d'autres choses*" (divide the work. That doesn't mean we will do English. Like in the geography project we did, well, it was two people. Me, I didn't do anything in English. You know, I did other stuff). They claimed their partners were better in English than they and so the English part of the project was left to their partners while they concentrated on other aspects.

For other students, the interdisciplinary project had not particularly helped them improve their English skills because the English component had required they only translate a text they had written in French. One student said he had deliberately chosen

simple words and expressions when writing his French text because he knew he would have to translate it into English.

Despite this negative impression of the value of the bilingual pamphlet interdisciplinary project in their English learning, the six students interviewed expressed a very positive perception of the use of interdisciplinary projects as a tool for learning. They felt interdisciplinary projects helped them to develop “*la culture générale*” (general knowledge/culture) because the projects touched most of their subjects. This allowed them to integrate what they learned in the different subjects and apply it in a concrete manner. Further, the students thought interdisciplinary projects required they develop and use good work strategies. Because the projects were often long term, it was necessary the students respect the deadlines they set themselves, be autonomous, and plan their time so the project would be completed by the due date. They often worked in teams so they usually divided the project and each person was responsible for different sections; however, as they were all accountable in the end for an incomplete project, they worked together to ensure everybody did what they were supposed to do. One student recounted how they had had to learn to manage the different subjects and the different requirements of each subject in order to connect them together in the project.

Summary

The students indicated they had not enjoyed working on the bilingual pamphlet interdisciplinary project and did not believe it to have been very useful to help them learn English. This group, by far, had the lowest overall rate of agreement with the items on the questionnaire than the other five groups and the fact they only translated a text from French to English for the English component of the interdisciplinary project may well be an explanation for their apparent dissatisfaction with the project. Further, certain students did not do any work in English on the project while other students organized their texts so as to simplify the translation process. However, while they believed interdisciplinary projects helped them make links between the different subjects and so integrate what they learned, they found the project had required a great deal of time and effort to complete compared to subject specific projects.

5.5.3 Observations of the book jacket interdisciplinary project

Although I spent five days observing Pierre's class, I saw very little done on the bilingual pamphlet interdisciplinary project. On the first in-class observation day, Pierre spent some time at the beginning of the class introducing the English component of the project. He then assigned it for homework, giving the students one month in which to work on their text. After reminding the students to write in their agendas that the English text was due on May 9th, he then turned to other matters. On subsequent visits to the school, the project was referred to only once. On April 26th, at the end of the class he gave the students some time to work on the project. He reminded the students their texts for the bilingual pamphlet were due in two weeks and then said, "You have a composition that counts a lot and, I think that you haven't started yet. So, I'm giving you 20 minutes, don't waste it." However, most of the students did not work. A few students continued working on the grammar assigned for the day, and a few others did pull out papers they were working on, but walking around, I did not see any that had a resemblance to a text on a geographic region of Québec. Several simply sat down next to classmates and talked. As it was the last class of the day, many packed their book bags about 10 minutes into the allotted time and spent the rest of the time speaking with their peers. On May 9th, Pierre collected the students' texts. He graded the texts on the usage of English and then returned them to the students. The students were not required to edit or correct their texts before they incorporated them into their bilingual pamphlets.

Pierre's students spent the first 15 minutes of each English class reading. While they were to be reading in English, I saw several comic books, text books for other courses, and magazines in French along with the novels and stories some of the students were reading in English. At these times Pierre remained seated at his desk correcting work or exams. The room was generally silent except for a few whispered conversations here and there.

In-class observations showed most of Pierre's classes were very teacher-centred. He often assigned grammar homework one class and then corrected it with the students the next. This correction generally took about half of the remaining 60 minutes of the class and he would call on the students one by one, row by row, to read and respond to the questions from the assignment in their textbook. When the students made mistakes, he asked the

student to explain their answer. This always seemed to be a signal the answer was wrong because the students might groan, clasp their head between their hands, slump their shoulders, or sit up straight and look at him. As they gave their explanations he would point out how their reasoning was faulty and ask the student to correct their error. If the student was not able, he asked if there was another in the room who could provide the correct answer. At other times he would provide the correct answer and explain why it was so. I never saw him ask a student to explain their reasoning for a response when their answer was correct. Once the grammar corrections were completed, Pierre would introduce and explain the next grammar point and then assign reading and homework from their text regarding the point.

Pierre and the students used both French and English during these correction sessions. English was used when Pierre requested a student provide their answer to an item from their book and when the student read the item and then answered it. Pierre's feedback was usually in English. However, whenever a grammar explanation was offered, either by Pierre or the students, these were always in French. At times the students would question a response and the ensuing responses and interactions were usually in French as well.

Because of the IT programme, the students took monthly exams and so the rest of the class was usually spent with the students working on the grammar exercises or on English reading assignments that would be covered in the next exams. While the students worked alone at their desks, Pierre generally remained seated at his desk at the front of the room, correcting exercises or exams.

5.5.4 Mr. Simard

Mr. Simard, in his 40's, was one of the vice-principals at the *École secondaire Sacré-Coeur-de-Jésus*. Fifteen years earlier he had begun his career as a geography teacher at the same school. At the time of the study he had been vice-principal for three years.

Research Question 4: How do school administrators view the implementation of interdisciplinary teaching within their respective schools?

This section of the chapter presents Mr. Simard's perspective of interdisciplinary teaching and how he perceives its implementation at the *École secondaire Sacré-Coeur-de-*

Jésus. It is presented in three sections; his conceptualization of interdisciplinary teaching, his view of interdisciplinary teaching as it relates to the new MELS educational reform, and the factors that facilitate or constrain efforts to promote interdisciplinary teaching in the school.

A How do school administrators conceptualize interdisciplinary teaching?

Mr. Simard believed interdisciplinary teaching was a very important part of teaching because it made it possible to not compartmentalize subjects but rather to fit them into each other in projects. He defined interdisciplinary teaching as *“lorsque plus qu’une matière qui prend le même thème, puis qui l’exploite de différentes façons dans les différents cours, exemple l’anglais et l’histoire, mais qui vont arriver avec un travail commun à la fin. Donc, les enseignants ont planifié le travail ensemble mais chacun a pris des moyens différents pour leur donner la capacité de faire le travail, la tâche qu’ils veulent à la fin”* (when more than one subject that uses the same theme exploits it in different ways in the different classes, for example in English and history, but finishes with a common product at the end. So, the teachers planned the work together but each one used different means to enable them to do the work, the task they wanted at the end) of the project. Interdisciplinary teaching meant each teacher would be involved in the elaboration and development of the interdisciplinary project and then in their respective classes, they would deal with that aspect of the project which was pertinent for their subject. Subsequently, when the students had produced a final product, it would have value in each of the different subjects involved in the interdisciplinary project.

Mr. Simard believed his conceptualization of interdisciplinary teaching had changed a great deal over time. When he first became involved in interdisciplinary teaching, he said the interdisciplinary projects were too big; he described them as *“immense.”* Further, throughout the projects different elements were added with the result the students were overwhelmed by the work and the scope of the projects. He and his colleagues realized the projects needed to be smaller and better structured.

Additionally, when Mr. Simard and the other teachers in his school first started interdisciplinary teaching, one or two teachers would elaborate the projects and then tell the other teachers involved what would be done in their subjects; however, as the projects

advanced it was necessary “*de tout changer*” (to change everything) because the different teachers had an imperfect grasp of the objectives of subjects not their own. As a result, all the teachers had to agree on the objectives for the final product and then each teacher became responsible for elaborating and planning that part of the project which touched their subject. Further, the teachers had to be careful not to “*aller jouer dans la cours de l’autre*” (meddle in the other’s affairs). It was important that each teacher grade and provide feedback on only those elements of the project which were pertinent to their subject.

B How do school administrators view interdisciplinarity in the context of the current MELS’ educational reform?

Within the classroom

Mr. Simard thought interdisciplinary projects were more interesting for the students because the projects made their learning “*plus concret. Ça montre que ce qu’on fait en français, ça peut être utile en histoire et ce qu’on fait en histoire, ça peut être utile*” (more concrete. It shows that what we do in French can be useful in history, and what we do in history can be useful) in other subjects as well. Teachers were able to show their students how all the subjects were linked through their own example of working together to build the project.

According to Mr. Simard, interdisciplinary projects also changed what the students learned. He thought the difference between learning through interdisciplinary projects and teacher-centred classes could be simplified into the dichotomy of knowledge versus concepts. He said “*travailler les concepts c’est plus facile en projet tandis que les cours magistraux sont peut-être plus portés sur les connaissances*” (working with concepts is easier in projects whereas teacher-centred classes perhaps deal more with knowledge). However, because of the different types of learning involved in teacher-centred classes and interdisciplinary projects, Mr. Simard believed there had to be equilibrium between the two. He thought both types of classes were necessary to enable students to acquire knowledge and then to deepen their understanding of it through an exploration of the notions presented.

Mr. Simard believed interdisciplinary teaching enabled students to gain understanding and confidence in their abilities and better critical thinking skills. They also

learned how to analyse their problem, and where and how to look for pertinent information, and to see how information from one class could be transferred or useful in another. The end result was a student who was more active in his learning, more organized, more autonomous, and more able to manage time and workload. He also thought interdisciplinary projects meant students developed better interpersonal skills because of the teamwork involved.

In the activity system of a teacher's classroom, Mr. Simard believed interdisciplinary teaching resulted in great changes in teachers' practices. To begin, he thought it changed the role of the teacher to "*un guide, un accompagnateur*" (a guide) whose role was to provide the students with the means to find the answers or resolve the problems themselves rather than to simply provide the answer. He thought teacher-centred classes meant the students were passive, waiting for the teacher to provide what they needed. This new division of labour meant the teachers were no longer at the front of the class instead, "*ils se promènent, ils sont là plus pour les aider, s'assurer qu'ils sont sur la bonne ligne... [Et] quand ils se promènent, ils les écoutent, ils les regardent, puis ils voient où ils sont rendus*" (they walk around, they are there more to help [the students], to ensure they are on the right track. [And] when they walk around, they listen, they watch, and they see where [the students] have got to) and whether they understand.

According to Mr. Simard, changes in the division of labour within the class engendered changes in the teachers' relationships with their students. He thought interdisciplinary teaching permitted teachers to better understand and know their students because they saw them as active learners and as individuals, rather than just a group of students listening to the teacher at the front of the class. While walking around his classroom, the teacher would have the opportunity to sit down and work with the students to help them understand and resolve problems and issues. Instead of being perceived as inaccessible, Mr. Simard thought the students would see the teacher as part of the team, as someone who worked with them. This closer contact with the students would change the relationships, making them closer as well.

Classroom management was also very different when working with interdisciplinary projects than when teaching a teacher-centred class. Mr. Simard thought it impossible for a teacher who used only teacher-centred teaching to do any kind of project

work because when working on interdisciplinary projects the students needed to move around, to be more active, to talk, and to work together. It also meant students had to have more respect for each other, to lower their voices, to listen to their peers, and to provide assistance when necessary. According to Mr. Simard, classroom management meant the teacher needed to circulate around the room ensuring the students remained on task while at the same time providing them the freedom to develop the interdisciplinary project according to their own interests.

Within the school

Interdisciplinary teaching also resulted in changes to the broader community of the school. Mr. Simard found interdisciplinary teaching permitted teachers to develop friendlier and more professional relationships with their colleagues. He believed teachers developed closer relationships when they exchanged and shared ideas they could work on together. He also had found it important the school administration talk to the teachers to find out what they were doing in their classes and to support those teachers who were involved in interdisciplinary teaching. He claimed that when he and the other school administrators spoke to teachers about their interdisciplinary projects, at times they were asked questions or for their opinion, *“Donc ça crée peut-être des liens plus... plus humains entre la direction puis les enseignants. Ça c’est important. S’ils savent que la direction est derrière eux, ça leur permet d’aller plus loin, de vouloir en faire plus”* (So that perhaps builds closer bonds, more humane between the direction and the teachers. That’s important. If they know the direction is behind them, it allows them to go further, to want to do more). He believed the school administration’s ongoing interest in the teachers’ practices resulted in good relationships, regardless of whether the teachers were involved in interdisciplinary teaching or not.

C In their particular context, what factors constrain or facilitate the implementation of interdisciplinary teaching?

The following section presents the factors Mr. Simard found either facilitated or constrained his efforts to encourage the implementation of interdisciplinary teaching in his school. First the constraints are presented and then the facilitating factors. These are further

divided into two sections. These sections cover the elements that originated in the school, and those that originated from the MELS. The *École secondaire Sacré-Coeur-de-Jésus* was a private school and so did not belong to any school commission.

Factors that constrain efforts

Within the school

Within the school itself, Mr. Simard believed the rules which governed the organization of time were the greatest hindrance to interdisciplinary teaching. The teachers at the school taught between 26 and 29 periods out of 40 in a cycle. In addition, each teacher taught 33 to 35 students per class in several levels in two different programmes, resulting in a heavy teaching load. Mr. Simard believed the teachers found this to be exhausting at times and speculated this had the effect of making them less willing to take the time or make the extra effort to meet and elaborate interdisciplinary projects. If the teachers "*avaient des tâches beaucoup plus légères où l'administratif était moins présent, peut-être ça leur permettrait de se rencontrer plus souvent mais avec toutes les contraintes qu'on a, c'est pas... Quand on est capable d'en faire une ou deux par niveau, on est bien contents de réussir à faire ça*" (had a lighter teaching load, or if they had less administrative duties, perhaps that would enable them to meet more often but with all the constraints we have, it's not... When we are able to do one or two per grade level, we are very happy to succeed in that). He did not foresee any improvements in teachers' tasks because while the following year the enrolment was to increase from 850 to 900 students, there were no plans to hire additional teachers.

Mr. Simard also admitted the difficulties creating the master schedule meant it was virtually impossible to schedule common planning time into teachers' schedules. Because of this, teachers would request back-to-back classes so they shared students for a half day. However, "*des fois ça se fait mais des fois ça se fait pas. Administrativement, c'est trop difficile mais on essaie de le faire quand ils le demandent*" (at times it's possible but other times it's not. Administratively it's too difficult but we try to do it when they ask).

Another constraint to interdisciplinary teaching was that the administration no longer released teachers from their classes in order to build interdisciplinary projects. For the school to hire substitute teachers in order to free teachers from their classes, the teachers

would have to be “*très, très, très persuasifs*” (very, very, very persuasive) in order to convince the administration it was necessary. They would need to present an interdisciplinary project that was well planned and well structured and even then, more often than not, the administration would try to arrange planning time for them on a pedagogical day. The school would provide them time during school hours, but not when they had classes. As a result, Mr. Simard believed most interdisciplinary planning took place early in the morning before classes, at lunch time, or after school.

Besides these factors, Mr. Simard believed teachers themselves did not knowingly constrain interdisciplinarity in the school but he described two situations where this might be done unintentionally. The teachers in the school were well aware of who were interested in interdisciplinary teaching and who were not. These latter were not pressured to become involved, neither by their colleagues nor the school administration. Other teachers who came forward and expressed an interest in interdisciplinary teaching were encouraged to use more experienced colleagues as guides and assistants in their efforts; however, not all teachers were willing to accept this assistance or to take advantage of it with the result that these initial interdisciplinary projects occasionally had problems. Mr. Simard found those just beginning to embark on interdisciplinary teaching often made errors in the planning stages which had repercussions all throughout the project. He claimed these teachers began projects that were not well prepared or where the necessary steps were not thought out with the result the students were unable to complete the project as planned and the teachers were “*pas capables de les évaluer. Puis il y a des parents qui chialent, donc ça c’est une autre chose. Des fois les enseignants disent ‘ben là, j’en fais plus de ça.’ C’est bien plus facile un cours magistral puis un examen*” (not able to evaluate them. And there are parents who complain so that’s another thing. Sometimes the teachers say well, I won’t do that any more. It’s much easier to give a teacher-centred class with an exam). After an initial effort which perhaps did not have the desired results, teachers made no further efforts but reverted back to more traditional teaching practices.

The other situation where Mr. Simard thought teachers did not necessarily promote interdisciplinarity in the school was when teachers who became involved in interdisciplinary teaching did not respect the guidelines or agreements made between the different teachers in the project, causing difficulties for those they worked with. He

believed therefore it was necessary to collaborate with colleagues who had confidence in one another when elaborating an interdisciplinary project. This meant that certain teachers who were perhaps opening up to the idea of interdisciplinary teaching might have a more difficult time finding other teachers willing to work with them.

At the level of the MELS

Mr. Simard had noted the amount of interdisciplinary teaching in the school had decreased as the educational reform advanced through the secondary school system. He believed this would continue until teachers knew and understood the new subject programmes better. However, as long as the teachers were not *“réussis pas à acquérir le programme, c’est dur à dire à l’autre qu’est ce qu’on fait. C’est dur de voir des liens parce que pour faire des projets interdisciplinaires, il faut connaître ton programme, mais aussi qu’est ce que les autres font. Fait que, quand t’es pas sûr exactement de ce que tu fais, c’est dur d’aller voir un autre prof qui sait pas lui non plus”* (able to assimilate the programme, it [would be] difficult to tell someone else what they do. It’s difficult to see the links because to do interdisciplinary projects, it’s necessary to know your programme, but also what the others do as well. And so, when you aren’t exactly sure what you do, it’s difficult to go see another teacher who doesn’t know his either) to elaborate a project together.

Further, while he considered this to be a very normal response to change, this difficulty was exacerbated by the MELS inconsistency regarding the new programme. Mr. Simard explained *“le fait d’entrer avec un programme puis de le reculer, ça c’est sûr que ça a un effet sur nous. Les profs ne savent pas où est-ce qu’ils s’en vont... On a un programme, il sort, il revient, il est reparti, il revient, puis les profs finissent par ne savoir pas trop trop où est qu’ils s’en vont. C’est sûr que ça, ça nuit”* (the fact they come out with a programme and then take it back, it’s sure it has an effect on us. The teachers don’t know where they’re going... We have a programme, it comes out, it goes back, it is distributed, it goes back, so the teachers end up not really knowing where they’re going. It’s sure that hurts). He thought that until the programme was set and the teachers had had some experience working with the new programme, interdisciplinarity would not be as prevalent in the school as it had been.

Factors that facilitate efforts

Within the classroom

Mr. Simard believed the type of student had no effect on a teacher's ability to implement interdisciplinary projects in their classes. Interdisciplinary projects were carried out with students in both special and regular programmes in the school. Students who had certain difficulties in more traditional classes were able to do very well in these kinds of projects where he said they might become leaders because they had good ideas and could see what could be done and how. As a general rule, the same interdisciplinary projects were given to students across a grade level, no matter what programme they were in and the students subsequently developed it according to their abilities and involvement in the project.

Within the school

Within the school activity system, Mr. Simard believed it was the community of teachers which most facilitated interdisciplinary teaching. Because it was a private school, Mr. Simard said it was operated on the same basis as a business. Thus, because they wanted teachers who were implicated in the school, who worked hard and were innovative, the administration did what they could to attract that kind of teacher. As a result, they had teachers who were dynamic and worked hard to "*développer plein de projets interdisciplinaires qui sont très, très, très intéressants*" (develop many interdisciplinary projects that are really, very interesting). He explained even student-teachers who arrived to do their practica found the teachers' efforts interesting and took some of the interdisciplinary projects away with them when they graduated and were hired by other schools. This publicity along with students who went home excited about what they were doing in school encouraged the teachers to try to develop more interdisciplinary projects.

He said all of this had started a few years previously when two teachers had decided to try to build a project together with the implementation of the IT programme. Other teachers saw what was done and found it interesting so they "*ont décidé de prendre la chance parce que c'est sûr que ça brise un peu le magistral qui était très très très important à l'époque*" (decided to take a chance because it broke away from teacher-centred [teaching] which was significant at the time). As a result, the school found itself

with teachers asking questions and doing more research in interdisciplinarity, building more interdisciplinary projects, or integrating into, adapting, or expanding those that had been done previously. Mr. Simard attributed the involvement in interdisciplinarity as a result of the dynamism of the teachers working in the school. He thought this was especially significant because teachers in the school had never been offered any professional development programmes or even simple workshops on interdisciplinary teaching even though it was an integral part of the IT programme.

Mr. Simard believed the school administration should also receive a lot of credit for the teachers' attitudes regarding innovation and interdisciplinary teaching. When teachers approached them for advice on interdisciplinary projects, the administration would "*leur donne des bonnes idées, mais des fois ils viennent nous montrer leur projet avant pour qu'on le regarde. Puis souvent après un cours, ils vont venir me voir 'ça a bien été, ça a mal été'. Il y a des profs où ça marche sans problèmes. Mais on est là tout le temps*" (give them good ideas, but sometimes they bring us their project so we can have a look at it. And often after a class, they will come see me, that worked well, that didn't work at all. There are teachers who sometimes never have problems. But we are there all the time) to help those who have more difficulties. He said they offered much support, encouragement and advice for teachers who wanted or needed assistance because interdisciplinarity was very important for the school.

According to Mr. Simard, there were also many resources which greatly facilitated interdisciplinary teaching. He listed computer labs, portable computer labs, Canon projectors, Internet connections in all the classes, and an extensive library among the resources available. Additionally, each department had a budget with which they could purchase material or other items during the school-year that would facilitate interdisciplinarity. If the teachers knew in advance they would need certain materials the following year for interdisciplinary projects, they could apply to the school to have those costs covered in the coming budget. Finally, even though the school was not able to free teachers from their classes in order to build interdisciplinary projects, Mr. Simard explained they were given time on pedagogical days to use for that purpose.

Additionally, while it was often difficult to arrange, the administration did try to work around the rules to schedule back-to-back classes for the teachers. When it was

possible there was much that could be done to facilitate interdisciplinary teaching. At times the teachers switched rooms in the middle of a period, at times they would mix the two groups together for the half day, at other times they were able to take the students away from the school on an outing. In an ideal school this would be arranged for all classes with common planning periods to match; however, under the circumstances the school was operating under, Mr. Simard thought they did well with what they had.

At the level of the MELS

According to Mr. Simard, the new education programme greatly facilitated interdisciplinarity because it made teachers think about teaching in a different way. Within his school the programme gave teachers new ideas and encouraged change in their practices. This was necessary because “*la nouvelle réforme est bâtie là-dessus. On peut pas passer à la réforme sans faire l’interdisciplinarité. C’est impossible*” (the reform is built on that. We can’t move on in the reform without interdisciplinarity. It’s impossible). He had found on the MELS website a page with suggestions for subject-specific and interdisciplinary projects that had already been developed. He believed these greatly facilitated teachers’ efforts because the teachers could either use these interdisciplinary projects in their classes or as inspiration to build their own projects.

Summary

Mr. Simard saw interdisciplinary teaching as a very valuable tool that brought about important changes in teaching practice. These changes related to the community of the teacher’s classroom and the division of labour between the teacher and the students, as the teachers became guides for the students and the students responsible for their own learning. He believed the rules that governed the classroom changed in that classroom management was very different when working on interdisciplinary projects or working in a more teacher-centred class situation. He found the most important factors that constrained interdisciplinarity in the school were those related to the rules that governed the school, specifically those related to teaching task and class scheduling as it was very difficult for the administration to provide common planning periods to teachers who had heavy teaching loads. The factors that most facilitated interdisciplinary teaching resided within the

community of the school: in the close relationships between the teachers, and between the teachers and the school administration.

5.5.5 Case study summary

Pierre did not distinguish between interdisciplinary and multidisciplinary teaching. However, while his definition of interdisciplinary teaching - several teachers collaborating to elaborate a project that would be implemented in all their classes - approached that of Mr. Simard, Pierre himself did not appear to be greatly involved in the process. The students' definition of interdisciplinarity showed they appreciated the purpose of interdisciplinary projects was to enable them to make links between the different subjects so as to better integrate their learning.

Both Pierre and Mr. Simard had learned that in interdisciplinary teaching, it was important that each teacher only provide instruction and feedback on their subject matter and that they not make inroads on or make presumptions about the other teachers' subjects. Each teacher had to elaborate and then grade only that part of the project which touched on their own subject. Pierre had also had to learn to accept the other teachers' opinions and respect how they perceived the interdisciplinary project and Mr. Simard had discovered the interdisciplinary projects worked much better when they were smaller and more focused.

Both Mr. Simard and Pierre believed interdisciplinarity had a beneficial effect on the relationships of the members of the school community with both gentlemen mentioning how collaboration helped teachers appreciate and come to value the skills, abilities, and knowledge of their colleagues. However, while Pierre asserted interdisciplinary teaching had its greatest effect on student learning, Mr. Simard found it had an effect on all aspects of the classroom activity system. Nonetheless, they agreed interdisciplinary teaching as a pedagogical tool was very effective in promoting students' learning. On this point, the students agreed, even though they had not found the bilingual pamphlet interdisciplinary project to have been greatly beneficial to their learning of English.

The element both Pierre and Mr. Simard found most constrained interdisciplinarity was the rules which governed the activity system of the school. The heavy teaching tasks of the teachers, the inability of the school administration to schedule common planning periods for teachers who collaborated on interdisciplinary projects, a limited ability to

schedule back-to-back classes, and the difficulty of obtaining time on the pedagogical days to elaborate interdisciplinary projects were elements they both cited.

However, while Pierre found the students in the core ESL programme lacked the necessary skills or learning strategies to be able to work well in interdisciplinary projects, Mr. Simard believed the opposite. He thought it important and tried to ensure that the same interdisciplinary projects were given to the students in both the IT and the core programme. He said the students would develop the projects differently based on their abilities, but he did not believe there was a valid reason the students in the core programme were any less able than their peers in the IT programme to carry out interdisciplinary projects.

Pierre and Mr. Simard both named the community of teachers in the school as the element that most facilitated interdisciplinary teaching. Pierre saw close relations between teachers as an important facilitating factor as well as the young teachers in the school who brought with them innovative ideas to which the older teachers were receptive. Mr. Simard credited teachers who were implicated in the school and a school administration who offered support and guidance to the teachers as important factors.

Pierre could not see how the MELS particularly helped or constrained interdisciplinarity. He found the objectives of the old programme risible but had not yet looked at the new. He assumed he would have to become more involved in interdisciplinary teaching because the educational reform would require it. Mr. Simard, on the other hand, believed the implementation of the reform meant there were fewer interdisciplinary projects being implemented as the teachers appropriated the new programmes. He also found the MELS did not facilitate interdisciplinarity because of the ongoing changes that were being made to the educational reform. Nonetheless, he thought once the teachers were able to appropriate the new programme then it would greatly facilitate interdisciplinarity.

One important point that emerged from my interactions with Pierre and Mr. Simard was that, despite interdisciplinary teaching being the foundation of the IT programme, there had been no professional development programmes offered to the teachers on the subject. They had attended informational sessions on the IT programme but all the interdisciplinary projects that had been elaborated and implemented in the school had been developed by the teachers without any support or training.

5.6 Mr. Rhodes

Mr. Rhodes was a curriculum consultant to ESL teachers in a large school commission serving 58 schools, 11 of which were secondary schools. He had begun his teaching career 25 years earlier teaching French as second language in another province. When he moved to Québec, he attended a local French university and graduated with a Bachelor's degree in teaching English as a second language, subsequently becoming an English teacher. At the time of the study, he was in his mid 40's and had been the curriculum consultant to primary and secondary school English teachers in his school commission for 10 years.

Research Question 5: How does the ESL curriculum consultant of the participating schools view interdisciplinary teaching within his school commission?

This following section will present Mr. Rhodes's perspective of interdisciplinary teaching within his school commission. It is presented in three sections: his conceptualization of interdisciplinary teaching, his view of interdisciplinary teaching as it relates to the new MELS educational reform, and the factors that facilitate or constrain his efforts to promote interdisciplinary teaching in the school commission.

A How does the curriculum consultant conceptualize interdisciplinary teaching?

Mr. Rhodes thought interdisciplinary teaching provided a way for teachers to be "more global" with their teaching. If they worked together, they could "hit the nail on the head together," so each teacher could at the same time, contribute to developing knowledge and competencies in their students. Additionally, besides simply reorganizing time so teachers dealt with the same themes at the same time, the teachers would be able to ensure better follow-up in order to help their students develop those skills, abilities, or competencies with which they had difficulties or were missing. In this way, interdisciplinary teaching could make a difference in student learning, not only on a subject level, but across the subjects as well.

As did many of the other actors in the study, Mr. Rhodes also originally saw interdisciplinary teaching as something that "had to be something extra, it had to be very deep." It was not only the breadth and scope of the projects, but also the knowledge of the

programmes that was required which caused difficulties. The curriculum consultant realized he was “basically losing the teachers” by asking too much of them. He felt this was partly because so few teachers knew the programme and were able to use it. Mr. Rhodes thought “even after all these years, the programme is still the [curriculum consultant’s] tool” and so began to look at the “little successes in interdisciplinarity.” These included teachers who were able to find ways of including other subjects in simple projects, such as combining science and ESL by exploiting the language use opportunities of English texts where the contents developed knowledge required in pursuance of the science objectives.

B How does the curriculum consultant view interdisciplinarity in the context of the current MELS’ educational reform?

Mr. Rhodes saw interdisciplinarity as having an effect on the activity system of each teacher’s class, on the activity system of each school, and on the manner he interacted with actors within these activity systems. These three points will be addressed in turn, beginning with the classroom, then the school, then the school commission.

Within the classroom

Mr. Rhodes believed interdisciplinary projects had an impact on students’ learning by increasing their perception of the relevancy and purposefulness of the activities involved in the projects. Mr. Rhodes likened it to an analogy of a hammer and nail explaining how learning would “stick more in the kids’ heads” because they would see the relevancy of what they were doing and understand the purpose of the different activities in the development of their learning. However, he thought these benefits were often lost by some teachers’ approach to interdisciplinarity. Mr. Rhodes had seen teachers simply use English as a resource where the students took sections of texts which they then translated into French, or took French texts which they translated into English. Not only was this not part of the English programme, he believed it was not particularly beneficial to students’ learning. Mr. Rhodes thought it would be so much better to have the students use the English resources to get a global understanding of the information and subsequently use the information gained in some manner to obtain the objectives of the other subjects.

Mr. Rhodes thought interdisciplinary projects would positively affect student motivation. Because their learning had a purpose, the students would see the final product as the goal. If they were allowed latitude and autonomy in choosing themselves the form of the final product, they would be stimulated even further. If the teacher followed their role of guide and facilitator, “autonomy would be the top thing that would be developed in interdisciplinary projects” along with the learning and communication strategies, cross-curricular competencies, and life skills.

Mr. Rhodes believed interdisciplinarity greatly changed much of teachers’ classroom practices. This began with the teacher’s interpretation and use of the programme and the choice and use of other materials. Interdisciplinarity affected teachers’ use of the MELS programme by “forcing” them to have a more general, more global perspective of the competencies to be developed. Similarly, the MELS programme affected teachers’ use of interdisciplinary teaching by providing a broad scope of interpretation of the strategies and competencies to be developed. Because there was not a grammar list, because it was no longer knowledge-based but competency-based, the new English programme “allow[ed teachers] to do any interdisciplinary projects with just about anybody.” If teachers knew their programme, and knew what themes or concepts other subjects were working on, it was relatively simple to find a way to create an interdisciplinary project through the broad areas of learning.

Interdisciplinarity changed the division of labour in the classroom as teachers needed to “step back and take the role more of the facilitator, set goals, give feedback, set times,” and help and encourage students’ reflection on their learning process. By having the teacher guide the students and facilitate their learning, they relinquished the role of expert or controller and so helped the students develop autonomy. Interdisciplinary teaching also provided the opportunity for the teachers to demonstrate collaboration while increasing students’ understanding of how information and ideas were more important than the subject itself; these were not confined to any one subject but rather could be and should be linked with others.

Within the school

Within the activity system of the school, Mr. Rhodes thought interdisciplinarity changed the relationships within the community of teachers. He felt teachers needed “to open up,” to be “more open-minded” about working with their colleagues and using interdisciplinary teaching as “one of the tools” to help their students progress. It was important to understand the other teacher(s) might have differing perceptions of activities and goals for the project, but this was not necessarily negative. This open-mindedness and acceptance of each other’s expertise in their respective subject matters implied it was not necessary for teachers to cooperate only with friends when elaborating interdisciplinary projects; as long as the teachers shared a common vision of student learning, cooperation with any of their colleagues was possible. Mr. Rhodes also believed interdisciplinary teaching enriched teachers’ relationships because it enabled them to become better acquainted with their colleagues, academically and socially.

Within the school commission

Mr. Rhodes felt his role as curriculum consultant meant he had to “take the concepts and sort of simplify them” so teachers could see what interdisciplinary teaching meant and how it could be applied at the classroom level. He found providing workshops and assisting teachers’ development of learning situations generally helped his relationships with them. When he was able to sit down with teachers and help them, while “trying to get in the programme and get in the interdisciplinarity and all that, without forcing it,” they were more receptive. He had schools that he was no longer in charge of which still called to ask him to come see their teachers.

When asked if he could provide an estimate or a percentage of interdisciplinarity in his school commission, Mr. Rhodes said “there are not a lot of projects going on” and estimated interdisciplinarity to make up about 20% of the teaching in the school commission. He said it was more prevalent in “some schools than others, sometimes in spite of the principal and sometimes because of the principal.” There was little to no interdisciplinarity in schools where there was apathy among the teaching staff, where teachers who were leaders held a more negative view of the educational reform and the concepts it proposed, where there was poor pedagogical leadership, or where the principal

had lost credibility. He believed “eventually” there would be more teachers and schools involved, but this would depend on the teachers themselves and their attitude toward interdisciplinarity.

C In his particular context, what factors constrain or facilitate the implementation of interdisciplinary teaching?

The following section presents the factors Mr. Rhodes found either facilitated or constrained his efforts to facilitate interdisciplinary teaching in his school commission. First the constraints are presented and then the facilitating factors. These are further divided into three sections, those factors that emerged from within the schools, from the school commission, and from the MELS.

Factors that constrain efforts

Within the school

Mr. Rhodes presented three areas that constrained efforts to implement interdisciplinary teaching within the activity system of the school. These were the rules that governed the interactions within the school, the tools teachers used, including interdisciplinary teaching, and the community members within the school.

Within the community members of the school activity system, Mr. Rhodes believed teachers who held more traditional beliefs often had great influence in their schools, and so were able to suppress others’ innovative practices. He described some schools as “socially dead” or where teachers who were school leaders “looked down [or] frowned on” teachers’ efforts at interdisciplinarity. He gave the example of one school in his school commission where one such teacher was away for four months and her substitute had had an immediate positive influence on the other teachers’ participation in interdisciplinary practices. Nevertheless, once the teacher returned from maternity leave, the changes were immediately stifled. As a result, in schools such as this, Mr. Rhodes found some teachers hid their interdisciplinary teaching while others were simply not validated in their efforts. In these cases, he said it was often a question of having to wait for these teacher-leaders to retire before it would be possible to make any changes or advances in interdisciplinary teaching in these schools.

Mr. Rhodes also found the teachers' union was a factor which constrained interdisciplinarity. In one instance Mr. Rhodes had worked with a school and principal during a year to set up teaching schedules and projects for teachers who expressed an interest in working together. However, the result of the negotiations for the collective agreement resulted "certain things getting banned" and so while the teachers professed an interest in interdisciplinary teaching, "when it came down to it, it wasn't necessarily the case." He found there were really only two years out of every four that it was possible to do things and make advances with the teachers. The other two years were lost in the bargaining process or the union's and teachers' reactions to the outcomes.

Teachers' conceptualization of interdisciplinarity itself was a hindrance to its implementation in schools. Some teachers saw interdisciplinary projects as "an aside," something to do when they had "a few days loose" or when they were "ahead of the other teachers." Other teachers exerted so much control over the interdisciplinary project in what the students had to do and how they had to do it that the idea of interdisciplinarity was lost. However, he had also encountered teachers who understood interdisciplinarity in the opposite sense. At one school, the teachers "basically did something according to their interests. And they said we are right into this whole interdisciplinarity thing." In instances when Mr. Rhodes explained that what the teachers were doing was not interdisciplinary teaching, he found he was "accused" of being an idealist. Because he was working for the Ministry and no longer a teacher in the schools, teachers felt he lacked an understanding of the practical realities of their teaching situations.

Mr. Rhodes believed interdisciplinarity was constrained if teachers felt they were obliged or pressured to work together. He said, "I don't think it's something we can force everybody to get involved" in. He believed it acceptable to try to "coax them into working with others for certain things because we can show them that it can benefit [them] and the other teacher and maybe the kids at the same time." However, he thought interdisciplinarity could not be imposed and trying to "force a teacher to be, to work with another one if they don't want to" would cause "contention" in the school.

However, he felt "one of the biggest obstacles" to interdisciplinarity was the modelling new teachers imitated when they obtained their first teaching positions when these teachers did retire. Despite their training at the university level and the seminars they

participated in, these new teachers would enter their classes and teach as they had been taught 10 years previously.

Finally, Mr. Rhodes found certain behaviours of the directors as having a constraining effect on interdisciplinarity in the schools. There were a variety of reasons some school principals made it more difficult for Mr. Rhodes to sit down and work with the teachers to help them implement interdisciplinary teaching. Some of these were related to the principal's perception of the curriculum consultant's reputation, others to differences in personalities, affinities, or expectations of the different actors. Some principals did not carry their role as pedagogical leader in their schools and so either did not invite Mr. Rhodes to their schools or did not set up situations where he could work with the teachers. Mr. Rhodes found principals who "don't necessarily believe in the programme," the educational reform, or who were frustrated "with all the dilly-dallying going on at the Ministry level" were more likely to be those who would not encourage their teachers to consult with him. The teachers' perceptions of the curriculum consultant could also mean they were less willing to work with him. This applied equally to their attitude regarding the educational reform.

Regarding tools, the schools received budgets of approximately the equivalent of one day per teacher for workshops other than those put on by the MELS and the school commission. These funds could be used for "*des journées pédagogiques mobiles*" or when teachers wanted to have curriculum consultants come to the school to provide seminars or training. However, while the budget for teacher workshops was to be utilized for that purpose, there were situations where this did not happen because the principals appropriated the funds for other uses. This loss of training and workshop opportunities constrained teachers' abilities to learn more about or receive assistance in elaborating and implementing interdisciplinary teaching.

Within the school commission

Mr. Rhodes found there was "not necessarily a lot of documentation" on interdisciplinarity that helped him present to his teachers "what it is and how to put it into place." He believed information such as this would have been very helpful for introducing and promoting interdisciplinary teaching in his schools; however, it was not available.

Additionally, he believed some of his colleagues also constrained the educational reform and the innovations it proposed. He had found some who were responsible for disseminating information about the educational reform seemed to have an imperfect grasp of what it meant. He described other colleagues who provoked teacher resistance to the educational reform because they exerted too much pressure. As a result, the teachers became resistant to the educational reform and this was applied equally across the concepts it was promoting, such as interdisciplinarity.

At the level of the MELS

Mr. Rhodes found the MELS themselves made it difficult for him to promote interdisciplinary teaching in the schools he served. He said “all the tiptoeing and the seesawing around” makes the curriculum consultants “look bad.” They go into the schools and “preach” certain things and when the MELS change their position, the curriculum consultants “lose credibility.” This then makes it “harder to get into certain schools.” Additionally, because some schools and teachers already had a certain reticence regarding the educational reform, this vacillation reinforced their opposition, causing even further resistance.

Another problem Mr. Rhodes faced was that interdisciplinarity was “sold” as part of the reform. He thought it was “too bad because if you could separate the two, despite the programmes or despite the politics and look at the whole idea of interdisciplinarity then, you know, you could advance more than right now.” Mr. Rhodes felt he was caught in “an ungrateful role” as a mediator between the MELS and the schools in his efforts to promote interdisciplinary teaching.

Factors that facilitate efforts

Within the classroom

Mr. Rhodes believed interdisciplinary teaching could be done with every student, every type of student everywhere, if the teachers believed in it. He felt that if teachers were convinced of the value of interdisciplinarity, then it was possible to do interdisciplinary projects with young children, teens, and adults. While he admitted some schools might

have more recalcitrant students, Mr. Rhodes did not think there was any group or type of student who would not benefit from nor be able to work with interdisciplinary projects.

Additionally, he believed their subject matter greatly facilitated English teachers' efforts to implement interdisciplinary teaching. He thought "English being a language... can almost be used with any other subject area so that, if they are developing something in science or if they are developing something in math and they need some type of a resource, then instead of going to the French resource, well, use the English resource." He believed collaborating on interdisciplinary projects allowed them to evaluate the development of the cross-curricular competencies and the three subject-specific competencies in English while focusing on the form of the message, leaving the evaluation of the main content to their partners in the interdisciplinary project. This meant it was possible to collaborate with colleagues of any subject.

Within the school

Mr. Rhodes presented three areas in the school as factors that facilitate efforts to implement interdisciplinary teaching within the activity system of the school, but he believed it was the community members of a school, "the relationships between teachers," which was the key to facilitating interdisciplinary teaching. He had found, in the vast majority of cases, it was the relationship teachers had with the other teacher(s) that determined whether they would become involved in interdisciplinary teaching. He believed it was more the personality of the teachers involved rather than their pedagogical beliefs or their programme that determined whether they would be implicated in interdisciplinary teaching.

Also, like many of the other participants in the study, Mr. Rhodes found it was "the younger teachers who seem to be more open" to interdisciplinary teaching, who were "making that extra effort, to have a project, to do a project with somebody else." He noticed this especially in some of his smaller schools which "had emptied" as the teaching staff retired. Their replacements were usually new teachers and within these schools, "all of a sudden," the teachers were more open to interdisciplinarity or more willing to recognize those teachers who were already involved in interdisciplinary teaching. Mr. Rhodes foggily remembered having been told "the new programmes are coming in when they are coming

in because of this fact; there is so much change in personnel. So the timing was there for it to come in because there is so much change and we've got these new teachers and they'll be more open to it." He thought part of this openness came from their university studies, some from their experiences as student-teachers, but most because they were not fighting years of experience with traditional teaching methods.

School principals could also facilitate interdisciplinarity in their schools, whether simply by being open to the concept, accepting the assistance offered by the curriculum consultant, or by actively promoting it in their schools. Principals who said, "Interdisciplinarity, this is in now and we should be doing this" and then set up conditions to make it possible for teachers to do so greatly facilitated teachers' efforts. These were principals who ensured teachers understood it was not just the teacher but the whole school who would be implicated in these changes and provided justification for them. Interdisciplinary teaching was greatly facilitated when these conditions were met, even in less than ideal school situations.

Regarding the rules that governed operations of the school and the interactions of the community, Mr. Rhodes also believed the teacher's attitude towards interdisciplinarity determined whether the distribution of their work load was an element that could be considered facilitating or constraining. While some teachers found building a large number of lesson plans made interdisciplinary teaching more difficult, Mr. Rhodes said there were also "certain people who have a number of [different lessons plans] to make up and they see the fact of working in interdisciplinary projects as a facilitator for that. It gives them twice as many teachers to work with." He found the personality of the teacher and their attitude regarding interdisciplinarity made the difference.

One element that Mr. Rhodes felt "definitely" facilitated interdisciplinary teaching was when common planning periods were incorporated into the collaborating teachers' schedules. He said they had "seen it at the Ministry level because they have given sessions on this. The areas where [interdisciplinary teaching] worked are really when the teachers are freed up to do this." He had worked with one school to try to help arrange the teachers' schedules so they would have one period free to work together per cycle. However, when the schedules were completed, "because of the famous diagonals, [the teachers] ended up having two or three periods together." And while in this particular school the teachers had

not taken advantage of this opportunity, Mr. Rhodes believed schools' attempts to find ways to provide common planning periods to teachers who were interested in interdisciplinary teaching greatly facilitated these teachers' efforts. Similarly, another factor that Mr. Rhodes felt had a positive effect was when teachers from different cycles were grouped together, rather than in subject departments. He believed the proximity would naturally facilitate interdisciplinarity.

Mr. Rhodes felt even when tools were limited and resources were slim, if teachers believed in interdisciplinarity, they would find ways to organize and carry out interdisciplinary projects. In his school commission there were large schools with only one computer lab and other smaller schools with two fully functioning labs; some schools had extensive libraries with English sections that contained both novels and resource books, others had very little in their library; and some schools were situated in wealthier sectors of the school board and others in less affluent areas. The variety of resources in the different schools, although facilitating in certain instances did not dictate whether interdisciplinary teaching took place. Rather, Mr. Rhodes thought the teacher's attitude towards interdisciplinarity and how they made use of the resources available had a greater influence on whether teachers actually implemented interdisciplinary teaching in their classes.

Within the school commission

Mr. Rhodes asserted the school commission offered "a lot of sessions" on interdisciplinarity. In these sessions, the teachers were not seated with their colleagues in their department, but rather with teachers from other departments so they could talk and share ideas of how they could link their subjects. When teachers were able to "get outside" their subjects, they realized the other teachers were experiencing the same difficulties and problems in their respective subjects as well. Mr. Rhodes explained some of his colleagues were invited to schools to offer seminars like this, where all the teachers from one grade level would attend the training session and the curriculum consultants would work with the teachers to help them develop links between their subjects. These cohorts of teachers would also receive training, follow-up, and assistance from the curriculum consultants at their schools.

One way Mr. Rhodes thought the school commission could greatly facilitate interdisciplinary teaching in the schools would be to create the need for interdisciplinarity. He found this could be fostered by presentations of videos of teachers talking about or providing a demonstration of interdisciplinary projects in their actual classrooms. "Teachers, when they can see the concrete project in action and the result afterwards, then they sometimes get hooked on it." Subsequent to the creation of the desire to try interdisciplinary teaching based on what they had seen in the videos, the school commission needed to provide the teachers with the resources to ensure this was possible. Mr. Rhodes thought once these teachers began interdisciplinary teaching in their school, other teachers in the school might also become interested and then become involved in interdisciplinarity as well.

At the level of the MELS

Mr. Rhodes believed the format of the education programme itself was a factor which helped teachers implement interdisciplinary teaching. That the programme was built so the information of each of the different subject areas was structured in a similar fashion meant any teacher would be able to find the competencies or evaluation criteria of the other subjects easily. He considered the grading scales that were made all the same in all the different subject areas also simplified understanding of the other subject areas. However, he thought it was the first four chapters of the programme which really facilitated interdisciplinary teaching; because the broad areas of learning and the cross-curricular competencies stretched across the entire programme, teachers could use them to make links with any of the other subject areas. Additionally, teachers as the teachers were to teach English as a "whole language," they no longer had to teach prescribed grammatical points. Mr. Rhodes felt this opened up all kinds of new possibilities for them.

Summary

Mr. Rhodes saw interdisciplinarity as an important pedagogical tool that teachers could use to "go more global" with their students so as to help them to see how their different subjects were connected and to develop both subject-specific and cross-curricular competencies instead of discrete skills. He believed the use of interdisciplinary teaching as

a tool occasioned changes in all aspects of the activity system of a teacher's classroom, but most importantly on the object, the students' learning. Interdisciplinarity also resulted in changes in the activity system of the school and in his own interactions with the community members of the school.

The factors within the school which most constrained teachers' efforts to implement interdisciplinary teaching were mostly related to the community within the school, and to teachers' negative attitudes towards the educational reform and the concepts it proposed. Mr. Rhodes believed for both principals and teachers, constraining factors were their perception of the curriculum consultant, the reform, and/or interdisciplinary teaching.

As did the school principals of the public schools, Mr. Rhodes also believed the recalcitrant attitude of the teachers' union towards the educational reform did nothing to assist in the promotion of interdisciplinarity in the schools. Further, Mr. Rhodes had also found the vacillation of the MELS regarding policies resulted in resistance to the reform and innovations put forth by the reform, such as interdisciplinary teaching.

Mr. Rhodes believed it was a teacher's openness to interdisciplinarity and "to how other subjects can contribute to the development" of their students which was the most important aspect for the success of interdisciplinary teaching. Therefore, teachers who were open to other subject areas, other methods, and other ways of looking at their subjects, who were at the same time very secure in their own subject were the ones most likely to become involved in interdisciplinarity and to persist in their efforts because of the perceived benefits it brought to their students. Other facilitating factors were teachers' relationships with their colleagues, and the support and encouragement of their principal in their efforts to implement interdisciplinary teaching. He felt common planning periods built into teachers' schedules was also an important element which greatly facilitated their efforts to implement interdisciplinary teaching.

5.7 Summary

This chapter has presented information regarding the information gathered from the different actors involved in the study. It has become apparent that several of the participants hold some of the same beliefs about different aspects of interdisciplinary teaching. This is the same whether examining information from just the teachers, the school administrators,

the students, or information gathered from each of these actors within one case study. These recurring themes lay the groundwork for the following chapter. The composite overview will begin by presenting answers to each of the research questions through the commonalities and typical responses obtained from the different participants.

CHAPTER 6

FINDINGS: COMPOSITE OVERVIEW

6.0 Introduction

The preceding chapter examined each case study in depth. This chapter provides a composite overview of the findings for the five case studies, examines the results, and presents explanations and evaluations of the findings in function of the research questions. It is divided into seven main parts, one for each of the six research questions, and a final section which presents a summary of the main findings for each research question.

The information from each of the research questions is summarized in their respective tables and is organized in the same manner as the previous chapter: first the factors or elements related to the classroom activity system are presented, then those of the interdisciplinary team, those from within the school, those within the school commission, and finally those at the level of the MELS. Within each of these divisions, the information is presented in order from the most common responses to the least; however, where the information from one actor is widely divergent from the rest, this information is presented just below so that these differences are easily perceived. The exception to the above format is the section on the sixth research question, that which dealt with the students' view of interdisciplinary teaching within their classes. In this chapter, the information is presented in the same order as it was in Chapter 5; first the Likert-style items of the questionnaire are examined followed by the three open-ended questions, the information gathered through the individual interviews, and then that gathered during the in-class observations. This discussion of the sixth research question is supplemented with a section on the students' orientation to the interdisciplinary projects.

6.1 Research Question 1: How do teachers conceptualize interdisciplinary teaching?

This research question had two components. Each of these is addressed in turn and a summary of the information can be found in Table 6.1 on page 278.

A How do teachers define interdisciplinary teaching?

The definition of interdisciplinary teaching, as set out in the first chapter posited that interdisciplinary teaching involved teachers from two or more disciplines working collaboratively to elaborate a theme, topic, or project which would then be implemented by the teachers in order to enable the students to integrate knowledge from the respective subjects, so as to develop a broader perspective and deeper understanding of the content. This appeared to correspond to the teachers' definitions of interdisciplinary teaching as their definitions all included the necessity that two or more teachers be involved in the development of one project that would be implemented in their respective classes. Further, the teachers incorporated into their definitions the idea that interdisciplinary teaching makes use of or integrates knowledge and information from the different subjects in order to promote student learning. The definitions of the six teacher-participants contained many of the same characteristics as those of teachers who participated in other recent studies examining teachers' implementation of interdisciplinary teaching. For example, Golley (1997) found two of the four teachers of her study defined interdisciplinary teaching as allowing students to make links between subjects while one other said it was collaborative teaching between teachers. In Tipton's (1997) survey of 184 teachers, 179 definitions of interdisciplinary teaching included the idea that content from various disciplines were combined, that it involved collaboration with other teachers, and that often it meant instruction developed around themes or topics.

B How does teachers' conceptualization of interdisciplinary teaching change over time?

Changes in the attitude and behaviour of teachers occurs over time as they become familiar with innovative teaching practices (Combs, 1998; Fullan, 2001). This was true for the six teachers in the study as their conceptualization of interdisciplinary teaching had undergone certain changes. For Benoît and Danielle, these changes related to their understanding of interdisciplinarity and their perception of the large amount of extra time and work required to implement interdisciplinary projects. This was one of the issues raised by Johnson (2003). It also echoed similar findings of Meister (1997) who found one of the

five themes that emerged from her study regarding the change from disciplinary to interdisciplinary teaching was the issue of intensification of work load and time limitations.

Renée and Louise had also raised this issue, but believed reducing the size and scope of interdisciplinary projects to smaller, less complicated projects with more fixed objectives resulted in just as many benefits for their students. The decisions they made regarding the implementation of interdisciplinary teaching enabled them to reconcile the educational innovations involved in interdisciplinary teaching with their pedagogical beliefs. Renée also found interdisciplinary teaching meant she had to step back from the students and allow them to take control of their own learning. Pierre had found interdisciplinarity required he relinquish control and management of the interdisciplinary project to allow those teachers collaborating with him more choice in the development of the project and more autonomy in how it would be implemented in their classes.

Finally, Luc's conceptualization of interdisciplinary teaching had changed in that he found it to be as useful and beneficial for students following the core programme as for the students in the language concentration programme. It would appear the MELS holds this same belief as within the education programme, references are made to interdisciplinarity and the benefits students incur from its implementation (MEQ, 2004b). It was interesting to note that Luc, who had the most experience with interdisciplinary teaching, and Danielle, the teacher with the least teaching experience, were the only two who seemed to feel students in the core programme were just as able to successfully work in or complete interdisciplinary projects as those in special programmes. It could be that Luc, who had worked with a variety of interdisciplinary projects over 10 years, was perhaps more comfortable with interdisciplinary teaching and thus felt fewer reservations about the use of interdisciplinary projects with his students in the core programme. On the other hand, Danielle did not appear to have ever questioned whether interdisciplinary teaching should be implemented with her students in the core programme.

Table 6.1: Summary of information regarding teachers' conceptualization of interdisciplinary teaching

	Luc Science fair	Rénée <i>La ferme des animaux</i>	Benoît <i>Identité & Action research</i>	Louise Web page	Danielle Book jacket	Pierre Bilingual pamphlet
A. How do teachers define interdisciplinary teaching?	• Interdisciplinary projects use other subjects to help students improve their English	• Interdisciplinary projects use other subjects to help students improve their English	•		•	• Interdisciplinary projects use other subjects to help students improve their English
	•	•	• Interdisciplinary projects use knowledge of other subjects to help students make transfers, see links between subjects	• Interdisciplinary projects use knowledge of other subjects to help students make transfers, see links between subjects	• Interdisciplinary projects use knowledge of other subjects to help students make transfers, see links between subjects	•
B. How does teachers' conceptualization of interdisciplinary teaching change over time?	•		• Interdisciplinary projects require much more work and time to elaborate and implement than had been anticipated	•	• Interdisciplinary projects require much more work and time to elaborate and implement than had been anticipated	•
	•	• Interdisciplinary projects do not need to be large involved projects; they can be smaller with limited objectives	•	• Interdisciplinary projects do not need to be large involved projects; they can be smaller with limited objectives	•	•
	• Interdisciplinary projects can be carried out with students in the core programme just as well as in special programmes	•	•	•	• Interdisciplinary projects can be carried out with her students in the core programme.	•
(Continued next page)						

	Luc Science fair	Rénée <i>La ferme des animaux</i>	Benoît <i>Identité & Action research</i>	Louise Web page	Danielle Book jacket	Pierre Bilingual pamphlet
How does teachers' conceptualization of interdisciplinary teaching change over time?	•	• Interdisciplinary projects should allow students freedom to expand and develop the project. This requires transferring control of the project to the students	•	•	•	•
	•	•	•	•	•	• Interdisciplinary projects require he be less controlling and more receptive to other teachers' input

6.2 Research Question 2: Why and to what degree do teachers value interdisciplinary teaching?

There were three components to this research question. The first related to the factors that influenced teachers to become involved in interdisciplinary teaching. The second dealt with the effect interdisciplinary teaching had on the teachers' classroom practices. The third explored the degree to which teachers implemented interdisciplinary teaching. A summary of the following discussion regarding these questions can be found in Table 6.2 on page 287.

A What are the factors that prompt teachers to become involved in interdisciplinary teaching?

The factors which prompted the teachers to become involved in interdisciplinary teaching mostly resided in the actors themselves or were related to the activity systems of their respective schools. This information is presented through an exploration of ever larger activity systems beginning in the classroom, through the interdisciplinary team, to the larger school environment, and then to the MELS.

As the prime agents acting within their classroom activity system, four of the teachers' decision to use interdisciplinary teaching as a pedagogical tool reflected their attitudes and perceptions of good teaching and good teaching practices. For Luc, Benoît, Louise, and Danielle, the use of interdisciplinary teaching and the collaboration it required rested on their willingness to move beyond traditional classroom practices and work more closely with colleagues from other disciplines in order to improve their students' learning. This desire to improve teaching practice has been found by others to be a positive impetus to teacher-initiated educational innovation (Cronin-Jones, 1991; Grossman & Stodolsky, 1994; Ravitz, Becker, & Wong, 2000; Solomon, Battistich, & Hom, 1996) and involvement in interdisciplinary teaching (Beane, 1997; Klein, 2002; Miller, 2006). It is of note that neither Renée nor Pierre cited the use of interdisciplinary projects as a method to improve students' learning as a factor influencing their involvement in interdisciplinary teaching. As interdisciplinary teaching had been imposed on Renée, this was perhaps to be expected in her situation.

Within the larger activity system of the school, for all the teachers except Renée, the positive effect of close relations with colleagues within the school activity system was a very important factor influencing their participation in interdisciplinary teaching. However, while certain researchers have found good interpersonal relationships are often one of the strongest reasons for collaboration and the implementation of innovative educational practices (Becker & Riel, 1999; Gallucci, 2003; Johnson, 2003) and interdisciplinary teaching (Conley et al., 2004; Cronin, 2007; Murata, 1998), this did not hold true for Renée. She experienced coercion in her department and would not have collaborated on the implementation of the interdisciplinary project had she not been under duress.

Also within the school activity system, the implementation of certain new programmes requiring interdisciplinarity was welcomed by Louise and Pierre as this mandated change promoted professional development, greater collaboration, and new challenges. However again, Renée had a more negative response to the imposed changes of the PC programme which required interdisciplinary collaboration. This latter reaction has also been noted by other researchers (Hurley, 2004; Lasky, 2005; Ryan & Joong, 2005; Woods, Jeffrey, Troman, & Boyle, 1997) examining the effects of mandated change within schools.

Legislated change such as educational reform mandates have also been shown to have a negative effect on teachers' feelings of efficacy and professionalism (Helsby, 2000; Lasky, 2005; Levin & Riffel, 2000; Perrenoud, 2005). However, for Louise and Danielle, the new MELS education programme was seen as a positive stimulus to implement interdisciplinary teaching as it validated their pedagogical beliefs. This was especially evident for Danielle who, working three years ahead of the arrival of the educational reform at her grade level, adapted the first cycle ESL programme for use with her second cycle students.

Louise, Danielle and Pierre stated other factors had also influenced them to become involved in interdisciplinary teaching. For Louise, this impetus found its roots in the stimulus of university courses and professional development workshops. As a result of her language learning experiences, Danielle wanted to structure her ESL classes so the students could see the connections between English and the other subjects at school. Finally Pierre had learned of the benefits of collaboration through his past experiences in football.

B What impact does interdisciplinary teaching have on teachers' classroom practices and relations with colleagues?

The implementation of interdisciplinary teaching resulted from and in new patterns of activity for the six teachers. These changes found expression through changes within their classroom, within their interdisciplinary team, and within the school.

Within the classroom

The use of the interdisciplinary projects as a pedagogical tool affected the proposed object which was increased student learning. All the teachers credited the students' increased autonomy and/or improved learning and work strategies to the use of interdisciplinary projects. Certain researchers have shown teachers in other studies related to curricular integration also hold this belief (Hough, 1994; Tipton, 1997). However, while five of the teachers felt interdisciplinary teaching had a positive effect on the students' learning of English, either for oral and written skills, or vocabulary development, Luc did not believe this to be the case. He thought subject-specific and interdisciplinary projects offered the same benefits to the students' development of English skills.

Danielle found interdisciplinarity engendered few other changes as her regular classroom practices followed the educational reform and centred on group work and projects in the development of student competencies. Other teachers found interdisciplinary teaching transformed some or most of the aspects of their classroom activity system. For Renée, and Pierre, interdisciplinary teaching meant the materials they used in their classes changed. Renée could no longer use grammar activities and exercises, and Pierre decried the loss of his favourite textbooks as he found the new ones did not offer as many ideas for interdisciplinary projects. According to Benoît and Louise, the implementation of interdisciplinary teaching also changed the materials they used in their classes. Benoît introduced the action-research student booklet to guide the students through the interdisciplinary project. Louise found the use of the new MELS programme facilitated finding links and selecting learning goals and competencies to be developed in the interdisciplinary projects.

Luc, Renée, Benoît and Louise found interdisciplinary teaching caused changes in the rules that governed the activity system of their classes; except for Renée, these were

changes related to classroom management. Luc's rule of English only in the classroom was relaxed so that students could interact with Robert in French. For Louise, interdisciplinary teaching meant she had to be more tolerant of noise and student interactions; however, Benoît found interdisciplinary teaching raised more serious problems with classroom management. Others (Blumenfeld et al., 1991; Fishman, Marx, Best, & Tal, 2003; Veugelers, 2004) have also noted that the movement away from teacher-centred classes may result in a decrease in teachers' authority, thus creating classroom management problems. With respect to this latter point, as a result of his findings on interdisciplinary team organization, Corriero (1996) recommended teachers have access to professional development opportunities that extend beyond traditional classroom management in order to avoid this type of situation. Renée found the rules that changed as a result of her implementation of the interdisciplinary project related to how she evaluated the students. Renée felt she could not evaluate the students' use of English in the same manner as she usually did in her classes; she had to be less strict than she normally would be as she thought the material too difficult for the students.

According to Renée, Benoît and Louise, interdisciplinary teaching resulted in changes in the division of labour in their classrooms. For all three, interdisciplinary teaching ascribed new roles for them as they became facilitators and resources for their students to use, rather than the source of knowledge in the class. Hartnell-Young (2003) also found the introduction of new practices, in her case, computer technology, engendered changes in teachers' roles as they could no longer be "knowledge brokers" but had to become mediators of their students' learning.

These new roles also had an effect on the teachers' relationships with the students in their classes. However, these new roles were not always comfortable for the teachers. Renée thought her relations with her students were more rewarding, but was afraid they found her boring when they worked on the interdisciplinary project. Benoît believed his students' greater autonomy meant they saw him as less of an authority in the class and more of a "big brother," which perhaps led to some of his classroom management difficulties. Louise also found interdisciplinary projects changed the relationships between members of the activity system that was her class; it meant she felt less visible and so less significant for her students.

Within the interdisciplinary team

For all the teachers except Luc, interdisciplinary teaching effected changes in their relationships with their partners in the interdisciplinary projects and with other members of the school community. For the most part, the changes in relationships with interdisciplinary partners were positive as the teachers found they enjoyed closer relationships. However, as was previously seen for Renée, the changes interdisciplinarity engendered in her relationships with her partners were rather negative. Her participation in the interdisciplinary project resulted in lowered morale and increased resistance to interdisciplinarity as it brought censure and criticism from her colleagues in the project. This situation exemplifies one reason why encouraging interdisciplinarity among teachers may be difficult. According to Hargreaves (1994b), the isolation which teachers experience by closing their door and teaching their subject allows them privacy and protects them from outside interference and evaluation by their colleagues.

Luc, Benoît, and Danielle noticed interdisciplinary teaching also meant they had increased contact with their partners. For Luc, this meant coordinating planning of the project; however, Benoît and Danielle found they needed to meet with their interdisciplinary partners on a regular basis to regulate the implementation of the project and obtain feedback. Other studies regarding the implementation of interdisciplinary projects have also noted teachers required time to meet with their interdisciplinary partners in order to interact and exchange regarding interdisciplinary projects (Corriero, 1996; Cronin, 2007; Golley, 1997; Howe, 2007; Meister, 1997).

Within the school

As Meister (1997) also found in her study of five high school teachers' involvement in interdisciplinary teaching, Renée, Benoît, and Louise discovered their implementation of interdisciplinary teaching meant they were to some degree marginalized by the other teachers in their schools. Difficult relationships ranged from open hostility through sly jokes and innuendos to a lack of interest towards interdisciplinary collaboration. Other researchers have described these same reactions while examining or documenting the implementation of interdisciplinary teaching practices (Cronin, 2007; Crow & Pounder, 2000; Johnson, 2003; Norton, 1998; Tipton, 1997). Besides the other teachers in the school,

the interdisciplinary project resulted in very strained relations between Renée and the PC department head. This was in direct contrast with Benoît who enjoyed better relations with the PC department head because of his implementation of interdisciplinary teaching. Pierre also found his relations with other teachers suffered as he felt the Secondary 1 and 2 teachers did not adequately prepare the students for interdisciplinary projects; however, the deteriorating relationships were perhaps more related to his perception of weaknesses in these teachers' pedagogical practices and not because of their attitude towards interdisciplinary teaching.

C To what degree do teachers use interdisciplinary teaching?

The amount of interdisciplinary teaching varied from one teacher to another, with claims of the use of interdisciplinary teaching reaching as high as 40% of the year. However, while some of these numbers appear accurate, based on conversations and observations, others need to be viewed with a certain amount of suspicion. For example, Pierre saw no difference between interdisciplinary and multidisciplinary teaching and for his third and fourth year students in the IT programme, he used only one interdisciplinary project with each group over the year. For the group followed for the study, the project was referred to in only three classes: the day it was assigned, one class period where the students were given some class time to work on it, and the day the students submitted their texts. For this reason, the estimate of 30% must be viewed with a certain amount of scepticism. In another case, while Benoît implemented two interdisciplinary projects with his groups, one took place during only one period of the year and the other lasted nine periods. He taught two groups of Secondary 5 students in the PC programme, so it was difficult to see how a total of 20 periods of the school-year equalled 16%. Questioned on this apparent discrepancy, he asserted this figure was correct. In contrast, the information given by the other three teachers appears more accurate. Danielle tried to implement at least one interdisciplinary project with each group of students she taught, and her ESL students in Secondary 4 and 5 respectively completed two interdisciplinary projects. Luc had also begun implementing interdisciplinary teaching with his students in the core programme. He completed one smaller interdisciplinary project with these students as well as the year-long science-fair project with both groups of Language concentration students. Louise claimed

40% of her teaching was interdisciplinary and this may also have been an accurate estimate. She implemented several interdisciplinary projects with her Secondary 1 and 2 students in the LAMM programme over the course of the year.

Table 6.2: Summary of information regarding why and to what degree teachers value interdisciplinary teaching

			Luc Science fair	R�n�e <i>La ferme des animaux</i>	Beno�t <i>Identit� & Action research</i>	Louise Web page	Danielle Book jacket	Pierre Bilingual pamphlet
A. What are the factors that prompt teachers to become involved in interdisciplinary teaching? (Continued next page)	Individual agency		Pedagogical choices to use interdisciplinary projects to promote student learning		Pedagogical choices to use interdisciplinary projects to promote student learning	Pedagogical choices to use interdisciplinary projects to promote student learning	Pedagogical choices to use interdisciplinary projects to promote student learning	
	Within the school activity system	Community members	Positive influence of colleagues		Positive influence of colleagues	Positive influence of colleagues	Positive influence of colleagues	Positive influence of colleagues
				Negative influence of colleagues (orders from the department head)				
		Rules				Positive influence of introduction of the LAMM programme		Positive influence of introduction of the IT programme
				Negative influence of PC programme (the PC programme requires interdisciplinary projects)				
	At the level of the MELS	Tools				Positive influence of new MELS education programme	Positive influence of new MELS education programme	

	Activity system		Luc	Renée	Benoît	Louise	Danielle	Pierre
A. What are the factors that prompt teachers to become involved in interdisciplinary teaching?	Other					Positive influence of university and professional development seminars		
							Positive influence of language learning experiences	
								Positive influence of past experiences in football and musicals
B. What impact does interdisciplinary teaching have on teachers' classroom practices and relations with colleagues? (Continued next page)	Within the classroom	Object of learning skills	Improve learning strategies and work ethics	Improve learning strategies and work ethics	Improve learning strategies and work ethics	Improve learning strategies and work ethics	Improve learning strategies and work ethics	Improve learning strategies and work ethics
			Increase autonomy and resourcefulness		Increase autonomy and resourcefulness	Increase autonomy and team-work skills	Increase autonomy and resourcefulness	Increase autonomy
			Increase motivation				Increase motivation	
		Object of learning English			Improve writing and speaking		Improve writing and speaking	Improve speaking
				Improve vocabulary		Improve vocabulary	Improve vocabulary	
						Learn more English in less time		

	Activity system		Luc	Renée	Benoît	Louise	Danielle	Pierre	
B. What impact does interdisciplinary teaching have on teachers' classroom practices and relations with colleagues?	Within the classroom	Tools		Can no longer use grammar activities and exercises				Can no longer use old materials which offer more options for projects	
					Use new action-research student booklet				
						Use new MELS programme for learning goals			
		Rules	English only rule changes as all interactions with Robert are in French						
				Use less strict guidelines to evaluate English					
					Have more classroom management difficulties				
						Be more tolerant of noise and less strict about classroom management			
		Division of labour		Change role to tool or resource		Change role to tool or resource			
					Transfer task for finding answers to students				
		(Continued next page)							

	Activity system		Luc	Renée	Benoît	Louise	Danielle	Pierre
B. What impact does interdisciplinary teaching have on teachers' classroom practices and relations with colleagues?	Within the classroom	Community members		Engender more rewarding relationships				
					Reduce his authority			
						Reduce her significance for the students		
	Within the interdisciplinary team	Community members			Engender closer relations with partners	Engender closer relations with partners	Engender closer relations with partners	
				Engender more difficult relations with partners				
								Engender greater appreciation of partners' skills, abilities, and knowledge
		Division of labour			Require regular meetings		Require regular meetings	
			Require joint decision making					
		Within the school	Community members		Cause marginalization	Cause marginalization	Cause marginalization	
				Engender worse relations with department head				Engender worse relations with Secondary 1 & 2 teachers
					Engender better relations with department head			
	(Continued next page)							

			Luc	Renée	Benoît	Louise	Danielle	Pierre
C. To what degree do teachers use interdisciplinary teaching?			8% of his teaching (He would like it to be more)	Will only do one interdisciplinary project per year	16% of his teaching (It takes up 50% of his planning and preparation time)	40% of her teaching this year (More than the previous year)	25% of her teaching (She implements at least one interdisciplinary project in every class she teaches)	30% of his teaching

6.3 Research Question 3: What factors constrain or facilitate teachers' efforts to implement interdisciplinary teaching in their classes?

This section is divided into those factors which constrain teachers' efforts and those factors which facilitate teachers' efforts to implement interdisciplinary teaching in their classes. As in the previous chapter, each of these is further subdivided into those factors that arise within the classroom, the school, the school commission, and those that originate at the level of the MELS. A summary of the information from this section of the chapter can be found in Table 6.3 on page 304.

Factors that constrain efforts

Despite efforts to draw teachers out on factors which facilitated their efforts to implement interdisciplinary teaching, there seemed to be a general tendency to focus on the aspects which had a constraining effect. Most of the difficulties the teachers cited related to the activity system of the schools or the school commissions and were elements over which the teachers had no control.

Within the classroom

Most of the teachers named the students they taught as a factor which constrained their efforts to implement interdisciplinary teaching. All of the teachers except Danielle taught students in special programmes as well as students in the core programme. Renée, Benoît, Louise and Pierre believed it would be very difficult or impossible to attempt interdisciplinary projects with the students who followed the MELS core ESL programme as they believed these students had fewer English skills and learning and work strategies. There seems to be a certain amount of research which would tend to explain this attitude. Roelofs and Terwell (1999) and Simplicio (2004) found teachers' beliefs that their students were less able, or that their students did not appear to have an interest in learning, negatively affected the teachers' implementation of new teaching practices. However, these four teachers in the present study used teacher-centred classes with their students in the core programme. The stereotype of passive students, which may be the result of the students' lack of control over and responsibility for their learning in this type of classroom situation, may have contributed to these teachers' negative impressions.

Benoît also identified classroom management as a problem which constrained his efforts to implement interdisciplinary teaching. The changes interdisciplinary teaching made to the division of labour among the members of the classroom community made it more difficult for him to retain control of the students' behaviour. As he no longer worked with a more teacher-centred approach, he complained the students took more control of his class. This made classroom management more difficult for Benoît.

Finally, as was noted in the previous chapter, Renée believed the use of English as the language of instruction was inappropriate for the interdisciplinary project. She felt the students had difficulty understanding the concepts and the vocabulary of the issues to be debated. Rather than seeing this as an opportunity for English learning, she believed it to be an obstacle.

Within the interdisciplinary team

Renée, Benoît, Louise and Danielle found the interdisciplinary projects, as tools used to promote student learning, were, in themselves, constraining as the elaboration of the interdisciplinary projects required more time and effort than the elaboration of regular classroom activities. While it was not the case for Luc, he echoed their belief that this was one reason other teachers were not willing to become involved in interdisciplinary practices. Especially for Renée, the perceived added burden of the interdisciplinary project was excessive and she was reluctant to invest so much time and energy in something she felt had less pedagogical value than her regular classroom activities. Other researchers have also found interdisciplinary teaching requires teachers invest a great deal of time and effort (Corriero, 1996; Meister, 1997). Norton (1998) found the same attitude among teachers who were assigned to teach in an interdisciplinary programme in a secondary school. These teachers found the work too demanding in time and effort and ended up leaving the programme at the end of the year. Only those teachers who volunteered for the programme were willing to accept the extra hours involved in interdisciplinary collaboration and remain in the programme for a second or third year.

Both Renée and Louise made the observation that teachers were used to working alone and so they lacked the skills and experience to effectively collaborate to implement interdisciplinary teaching. Four of the eight teachers in Dougherty's (1999) study also cited

the difficulty teachers have working in teams as a barrier to curriculum integration. This problem has similarly been identified by others as an area of difficulty for those teachers who wish to collaborate (Meichtry, 1990; Whinery & Faircloth, 1994).

As was seen previously for Renée, negative interpersonal relations with her partners in the interdisciplinary project resulted in difficulties in its implementation. Of the six participating teachers, she alone had no choice of with whom she worked. The resulting interdisciplinary team appeared to be slightly dysfunctional with one member who controlled too much of the project, one member who did not participate in the elaboration or planning of the project, and Renée who did not complete the project within the planned time-frame. Other researchers (Bascia, 1996; Crow & Pounder, 2000; Hargreaves, 1994a, 2000; Whinery & Faircloth, 1994) have written about these concerns regarding equitable sharing of work load and expectations. In her study as well, Cronin (2007) found unequal partnerships between teachers resulted in a loss of trust and confidence among interdisciplinary team members.

Within the school

According to all six teachers participating in this study, the most important constraint to interdisciplinary teaching related to the rules governing the school which were mainly policies regarding school schedules, teaching tasks, and open class groupings. Despite time being a necessary critical condition for educational change (Sikes, 1992), five of the teachers in this study decried a lack of common planning time with interdisciplinary partners as the factor which most constrained their efforts to implement interdisciplinary teaching. Similarly in the United States, certain researchers consider common planning time to coordinate interdisciplinary teaching to be a fundamental element for interdisciplinary team organization. Much of the literature and research regarding changing teachers' practice and the implementation of interdisciplinary teaching makes emphasizes of the need for teachers to have opportunities to interact and cooperate with their colleagues (Conley et al., 2004; Corriero, 1996; Crow & Pounder, 2000; Howe, 2007; Jang, 2006; Kruse & Louis, 1997; Meister & Nolan, 2001; Murata, 1998; National Middle School Association, 2005; Tipton, 1997). Heavy teaching loads further compounded the absence of common planning periods; however, with the constraints of budgets, human resources, and

the organizational structure of schools (Ancess, 2000; Fullan, 2001; Salinitri, 1998; Sherry, 2002), it is unlikely these issues will be resolved in the near future.

Three of the teachers also found their teaching schedules meant it was difficult to participate in interdisciplinary projects. These difficulties related to the timing of the participating classes. For example, Luc and Robert were unable to share the second group of students involved in the science fair interdisciplinary project because Robert's teaching schedule meant he did not have a free period at the necessary time. Louise's complaint was similar. She and the multimedia teacher were unable to share one of Louise's groups because, due to the school's master schedule, one group was unable to have any time scheduled where they could be slotted in for both the ESL and the multimedia courses. It is of note that Luc and Louise were the only ones in the study who shared scheduled teaching time in the classroom with their interdisciplinary partners.

Somewhat related to the concept of inadequate planning time, Pierre found the school did not provide him a schedule with back-to-back classes with his interdisciplinary partners nor opportunities to plan with those partners on pedagogical days. He wished the school would adjust policies so that it would be possible to take part of the pedagogical days to collaborate with colleagues in the elaboration of interdisciplinary projects.

Benoît and Pierre both cited open class groupings as elements which would preclude the implementation of interdisciplinary teaching. They believed having the students change groups for different subjects meant it was impossible to carry out interdisciplinary teaching as there was no way they could ensure all the students in any given group would be together in the participating subjects. This appears to be a topic that has not received much attention in the literature. Most of the studies on interdisciplinary teaching at the middle-school level in the United States that address the issue of student groupings appear to take it for granted that interdisciplinary teachers share the same students in block schedules (Kysilka, 1998; Meister, 1997; Murata, 1998, 2002). The only study where closed class groupings was explicitly addressed was in Younk (2004), who made mention of how closed class groupings promoted success for students with difficulties.

Two other issues related to the rules of the school were listed by Benoît as constraining his efforts to implement interdisciplinary teaching in his class. The first was

the layout of the school staff room where teachers were grouped into subject areas, making it difficult to have conversations with his interdisciplinary partners during the breaks between classes. This is another topic which has received little attention in the literature regarding interdisciplinary teaching. As with block schedules, in the studies on interdisciplinary collaboration in the United States, most of the teachers work in teams with their own rooms and no apparent difficulties in having access to their interdisciplinary partners. On the contrary, they may experience difficulties in terms of whether their allegiance is first with their interdisciplinary team or that of their subject discipline (see for example, Meister, 1997).

Within the activity system of the school, the other teachers could also pose difficulties for teachers wishing to implement interdisciplinary teaching. Renée, Benoît and Louise found the negative attitudes regarding interdisciplinary teaching and the resultant lack of cooperation from other members of their school communities were factors which also greatly constrained their efforts to implement interdisciplinary teaching. A comment by a teacher who participated in the study by Norton (1998) was disturbingly similar to that made by a colleague of Louise. One teacher, involved in interdisciplinarity, described the reaction of her colleagues to the initial implementation of an interdisciplinary programme for at-risk students at the secondary level. She said of her colleagues, "I think people actually wanted it to fail. I really do" (Norton, 1998, p. 74). Teachers in other studies have also indicated their colleagues' negative attitudes towards interdisciplinary teaching created barriers to collaboration (Meister, 1997; Miller, 2006; Murata, 1998; Pugh & Zhao, 2003; Tipton, 1997). Schmidt and Datnow noted that when "reforms are characterized by conflict, change and ambiguity, intense and negative emotional reactions are often the consequence" (2005, p. 961). As certain tensions have accompanied the implementation of the educational reform in Québec (see for example, Baillargeon, 2006; Lebrun, Lenoir, & Desjardins, 2004; Martineau & Presseau, 2007), a negative attitude could perhaps be expected. This issue was among many others raised as concerns by Deniger et al. (2004) in their report on the implementation of the MELS educational reform at the primary level.

Louise also noted that older, more conservative or traditional teachers were less likely to be supportive of educational innovations. She had found their resistance to the educational reform and interdisciplinary teaching to have had a negative effect on the other

teachers in the school and as a result, her efforts to interest her colleagues in interdisciplinarity. Tipton (1997) and others (Gitlin & Margonis, 1995; Hargreaves, 2005; Olsen & Kirtman, 2002) have also found teachers had a certain perception that older teachers found it difficult to change attitudes and teaching practices. However, there is also literature which claims older teachers are simply more cautious when faced with innovation in education as they may have seen several innovative pedagogical practices come and go over the course of their teaching careers (Hargreaves & Goodson, 2006).

Also regarding colleagues, Danielle's reticence to approach some of the teachers she worked with who were older and had more experience also constrained her efforts to implement interdisciplinary teaching. While acknowledging that her fears were likely groundless, she nevertheless did not feel comfortable about approaching certain colleagues regarding collaboration on interdisciplinary projects.

Finally, Benoît found there were not enough tools provided by the school to assist in the implementation of interdisciplinary teaching. Specifically, he found the limited number of computers and the restricted availability of materials such as data projectors limited interdisciplinary teaching.

Within the school commission

Although much has been published in the past regarding the necessity of professional development programmes with commensurate support for teachers to be able to successfully implement educational change initiatives, it is of note that none of the teachers who participated in this study had received any training in the elaboration or implementation of interdisciplinary teaching. Research on teacher collegiality and team teaching indicates inadequate training can constrain teachers' abilities to effectively collaborate (Conley et al., 2004; Corriero, 1996; Cronin, 2007; Meister, 1997). This paucity of professional resources, development programmes for the implementation of the reform, documentation, and information regarding interdisciplinarity within their school commission was named by Renée, Benoît, Louise, (and Danielle at the level of the MELS), as factors which constrained their efforts to implement interdisciplinary teaching. Conversely, while Luc and Pierre had not received any training either, they did not perceive this as a hindrance. Pilote (2004) explained the 1990s saw a significant reduction in the

number of professional development personnel in Québec due to severe budget cuts in the school commissions. It is possible the repercussions of those measures were being felt at the time of the study in the reduced number of professional development programmes for various elements of the educational reform, notably interdisciplinary teaching.

Luc and Benoît also pointed out there was a shortage of qualified substitute teachers. While Luc's complaint was more general, due to the school's inability to obtain a science teacher to replace Robert when he left on sick leave, Benoît specifically mentioned the lack of qualified ESL substitute teachers. The MELS (2004a) had started introducing ESL teaching at the first grade in the primary level in 2000, and this may have affected on this situation as it may have allowed teachers who had acted as substitutes to obtain their own classes, thus reducing the pool of qualified ESL substitute teachers in the school commission.

At the level of the MELS

Luc and Louise believed the implementation of the educational reform through the secondary grades would result in a decrease in interdisciplinarity. Like so many of the school administrators and teachers I spoke with while searching for participants, they believed teachers would need time to appropriate and feel comfortable with the new education programme and their subject programmes before they would be ready to try to find ways to link their subjects to others through interdisciplinary teaching. It was surprising how often the implementation of the new reform was raised as a hindrance to interdisciplinarity as this latter is one of the more salient aspects of the educational reform.

Louise indicated the MELS also constrained interdisciplinary teaching by not providing teachers with access to the new programmes early enough for the teachers to appropriate the material before they were to start using it. She believed that if teachers did not know and have a good understanding of their own programme, they would be unable to find ways to link their subject with others.

For Danielle, because her school did not belong to a school commission, she was dependant on the MELS to provide professional development seminars on interdisciplinary teaching. She complained there was nothing offered on interdisciplinarity for teachers, like

herself, who were trying to implement the reform or aspects of the reform before it arrived at their grade level.

Finally, Renée noted the new ESL programme does not contain specific guidelines for English. She wanted more structure from the MELS guiding her in what she should be teaching her students.

Factors that facilitate efforts

The activity systems of teachers' classrooms are nested within the activity system of their interdisciplinary team. This is further nested within the activity system of the school, which is nested within the school commission. There were a number of policies and support factors at each of these levels which were perceived by all or most of the teachers as elements which facilitated their efforts to implement interdisciplinary teaching in their classes.

Within the classroom

Renée, Louise and Danielle found their students facilitated interdisciplinary teaching. Because her school was so small, Danielle knew and had good relations with all her students. This close relationship meant she knew her students would be open to trying innovative activities. Renée and Louise believed the students they taught made interdisciplinary teaching possible. Because the students in the PC and LAMM programmes were self-selected, they were considered to be better students, to be more highly motivated, and to have better developed learning and work skills than students in the core programme. However, the issue may not be the type of student so much as the attitude of the teachers. Luc and Danielle implemented interdisciplinary projects with their core programme students. They found not only did these students enjoy the projects, but they were successful in them as well. Therefore, it appears possible the difference was more related to the teachers' beliefs about the students and the effect of open and closed class groupings than with the type and actual ability level of the students. This perception may find support in that certain research has found at-risk students can be successful within interdisciplinary teaching situations (Anness, 2000; Norton, 1998; Petrie, 1992; Tipton, 1997).

Luc and Benoît both mentioned how their subject matter facilitated their efforts to implement interdisciplinary teaching as they felt they could always find a way to link the students' second language course with that of others. The broader objectives in the ESL programme meant it was possible to find some way with which English could be used and evaluated within an interdisciplinary project. Within the MELS new programme, there is only one example of an interdisciplinary project that links different subjects and this example is given within the ESL programme (MEQ, 2004b, 2004c).

Within the interdisciplinary team

For Luc, Benoît, Danielle, and Pierre, the positive relations and support from their interdisciplinary partners were the most important elements facilitating their implementation of interdisciplinary teaching. While a certain amount of research in interdisciplinary teaching cites the respect teachers need to have for each other or the need for teachers to get along well together (Conley et al., 2004; Golley, 1997; Howe, 2007), there may be more involved. Joining together with other teachers in an interdisciplinary team opens teachers to criticism and vulnerability as their perception of their subject and what they do with their students may not necessarily be shared by their colleagues in other departments. In-class observations or sharing teaching time with colleagues opens teachers to the judgement of their colleagues. That their interdisciplinary project partner will respect them and what they do, and not discount their practices just because they differ, requires a certain leap of faith. That is perhaps one reason close relationships were so important. Not just because the teachers were friends, but because there was a sense of trust and a willingness to try to understand the other. Other researchers have also noted that in situations where the teachers were less sure of the reaction of their colleagues, there may have been greater hesitation in opening up to others their classrooms, their methodology, and their beliefs about teaching (Ashton & Webb, 1986; Bennet et al., 1992; Grossman, Wineburg, & Woolworth, 2001).

Within the school

At this level, the three main facilitating elements related to the rules that governed the operations of the school, the tools the schools provided the teachers to assist the implementation of interdisciplinary teaching, and the community members of the school.

All six teachers believed the rules governing the operations of the school which were related to time were the most important elements that facilitated interdisciplinary teaching. Other researchers have also found school policies which release teachers from their classes in order to elaborate and plan interdisciplinary projects, and policies which attempt to provide common planning periods with colleagues, are necessary for the successful implementation of interdisciplinary teaching (Crow & Pounder, 2000; Howe, 2007; Murata, 2002; National Middle School Association, 2005; Smith & Karr-Kidwell, 2000). Policies which ensure closed class groupings, policies regarding special programmes, policies which support professional development, and policies regarding class sizes and the disposition of teachers' and staff rooms were also named by the teachers in this study and others (Clark & Clark, 1994; Crow & Pounder, 2000; Erb, 1995; Supovitz, 2002) as positive factors that facilitated their efforts to implement interdisciplinary teaching in their classes.

The tools seemingly most appreciated by the teachers related to the access and utilization of computer equipment and computer rooms. The introduction and use of computer technology has also been seen by others as an effective tool to improve student learning (Armstrong & Yetter-Vassot, 1994; Bush, 1997; Kasper, 2000; Salaberry, 2001) and while not all of the interdisciplinary projects covered in this study required the use of computer technology, it was apparent the students, in some form or another, availed themselves of resources found on the Internet. The teachers of this study also listed other factors related to curriculum materials, rooms, budgets, and decentralized resources as elements facilitating interdisciplinarity.

All the teachers except Renée noted positive relations with members of the community of the school activity system were important in facilitating interdisciplinary teaching. This seems to be supported in current literature on the subject as much has been written about collegiality and the effects of the school organization on the change process (Ball & Rundquist, 1993; Cooper, Iorio, & Poster, 2001; Erb, 1995; Maeroff, 1993;

Pounder, 1999). Additionally, certain researchers have written about how improved communication within schools facilitates the process of educational change (Hall & Hord, 1986; Wahr, McAspurn, Hadgraft, & Gray, 2005).

Louise and Pierre noted that younger teachers in their schools appeared to be more open to interdisciplinary teaching than some of their colleagues who were older. However, some research has indicated that older teachers may be just as open to interdisciplinary teaching as younger students. In Cronin's (2007) study on interdisciplinary teaming in middle schools, she found one of her interdisciplinary teams had three teachers over 50 years of age who were very receptive to the philosophy of teaming and proud of their integrated curriculum.

Within the school commission

Luc and Benoît believed access to professional development programmes and training would facilitate interdisciplinary teaching for teachers. Many authors consider professional development programmes that offer training and support for the change process greatly facilitate and influence the implementation of an educational innovation (Clark & Clark, 1994; Crow & Pounder, 2000; Erb, 1995; Hartnell-Young, 2003; Joyce & Showers, 1988; Proulx, 2005; Relan & Kimpston, 1993; Wilkinson & Smith, 1995) and the successful implementation of interdisciplinary teaching (Arnold & Schell, 1999; Clinchy, 1997; Drake, 1993; Hurley, 1999; Leonard, 2002; Norton, 1998; Walsey, 1995). Researchers of the educational reform in Québec also noted training in elements of the educational reform would be likely to assist teachers in the successful implementation of the different facets of the MELS educational reform (Conseil supérieur de l'éducation, 2003; Deniger et al., 2004; Giguère, 2004; Henchey, 1999; Martinet, Raymond, & Gauthier, 2001; Riente, 2003; Rioux-Dolan, 2004).

In the case of Louise, the school commission had made available to the schools certain funds which enabled the school to release the teachers from their classes in order to elaborate interdisciplinary projects. Further, her school commission offered a mentor programme where new teachers entering schools had the assistance of older, more experienced teachers. She thought the younger teachers brought in new ideas to their older mentors, and thus through the exchanges, encouraged this innovative teaching practice.

At the level of the MELS

Luc, Benoît, Louise, Danielle, and Pierre cited the new MELS education programme as the tool which most facilitated interdisciplinarity from the level of the MELS. The broad areas of learning, the cross-curricular competencies, and the vague subject-specific guidelines meant their subject could easily be paired with any other subject in an interdisciplinary project.

Finally, Louise believed that if the MELS allowed the school commissions greater control over funding would facilitate interdisciplinary teaching as these monies could then be directed towards supporting interdisciplinary teaching.

Table 6.3: Summary of factors constraining or facilitating teachers' efforts to implement interdisciplinary teaching in their classes

	Activity system		Luc Science fair	Rénée <i>La ferme des animaux</i>	Benoît <i>Identité & Action research</i>	Louise Web page	Danielle Book jacket	Pierre Bilingual pamphlet
Factors that constrain efforts	Within the classroom	Community members	Students in the core programme lack work ethics	Students in the core programme lack work ethics and English skills	Students in the core programme lack work ethics and English skills	Students in the core programme lack work ethics and English skills		Students in the core programme lack work ethics and English skills
		Rules			Classroom management difficulties			
		Tools		Subject matter of English is in itself an obstacle				
	Within the interdisciplinary team	Tools	Amount of time and effort required to elaborate and implement interdisciplinary projects	Amount of time and effort required to elaborate and implement interdisciplinary projects	Amount of time and effort required to elaborate and implement interdisciplinary projects		Amount of time and effort required to elaborate and implement interdisciplinary projects	Amount of time and effort required to elaborate and implement interdisciplinary projects
		Community members		Teachers lack team-work skills		Teachers lack team-work skills		
	Within the school	Rules		No planning time provided within teaching schedule	No planning time provided within teaching schedule	No planning time provided within teaching schedule	No planning time provided within teaching schedule	No planning time provided within teaching schedule
			Difficulties with teaching schedule			Difficulties with teaching schedule		Difficulties with teaching schedule and no time for planning on pedagogical days
(Continued next page)								

	Activity system		Luc	Renée	Benoît	Louise	Danielle	Pierre	
Factors that constrain efforts	Within the school	Rules				Heavy teaching load	Heavy teaching load		
					Open class groupings			Open class groupings	
					Physical layout of staff room				
		Community members		Negative perception of interdisciplinarity	Negative perception of interdisciplinarity	Negative perception of interdisciplinarity			
			Lack of cooperation		Lack of cooperation	Lack of cooperation			
						Older, more recalcitrant teachers			
				Poor relations with department head					
								Lack of teaching experience might engender a negative reaction among the other members of school community	
		Tools			Poor computer facilities and material				
		Within the school commission	Tools		No professional development related to interdisciplinarity	No professional development related to interdisciplinarity	No professional development related to interdisciplinarity	Does not belong to a school commission	Does not belong to a school commission
Community members	Lack of qualified substitute teachers			Lack of qualified substitute teachers					
(Continued next page)									

	Activity system		Luc	Renée	Benoît	Louise	Danielle	Pierre	
Factors that constrain efforts	At the level of the MELS	Tools	Implementation of the new reform means teachers need time to learn programme before they become involved in projects			Implementation of the new reform means teachers will need time to learn programme before they become involved in projects			
						Excessive delay in delivery of promised material and programme			
							No training related to interdisciplinarity		
				New MELS programme does not provide enough guidelines					
Factors that facilitate efforts	Within the classroom	Community members		Students in special programmes have higher motivation and work skills		Students in special programmes have higher motivation and work skills	Students in the school are open to innovative activities		
		Tools	Ability to pair English with any other subject		Ability to pair English with any other subject				
(Continued next page)	Within the interdisciplinary team	Community members	Good relations with partners		Good relations with partners		Good relations with partners	Good relations with partners	

	Activity system		Luc	Renée	Benoît	Louise	Danielle	Pierre
Factors that facilitate efforts	Within the school	Rules	Planning periods to elaborate projects	Planning periods to elaborate projects	Planning periods to elaborate projects	Planning periods to elaborate projects	Planning periods to elaborate projects	Planning periods to elaborate projects
			Shared teaching time in the class with partner			Shared teaching time in the class with partner		Back-to-back classes with partner
	Within the school	Rules		Single classroom assigned to be shared by subjects involved in interdisciplinary project	Single classroom assigned to be shared by subjects involved in interdisciplinary project			
			Closed class grouping				Closed class grouping	
					One period per cycle is allocated for interdisciplinary work			
							Physical layout of school and staff room	
								Introduction of IT programme
		Tools			Material resources		Material resources	Material resources
		Community members	Positive relations with members of the school community		Positive relations with members of the school community	Positive relations with members of the school community	Positive relations with members of the school community	Positive relations with members of the school community
					Younger teachers		Younger teachers	
(Continued next page)								

	Activity system		Luc	Renée	Benoît	Louise	Danielle	Pierre
Factors that facilitate efforts	Within the school commission	Tools	Documentation, information, or professional development in interdisciplinarity		Documentation, information, or professional development in interdisciplinarity		Does not belong to a school commission	Does not belong to a school commission
						Budget liberating teachers to elaborate and plan interdisciplinary projects		
	Within the school commission	Tools				Mentor programme that encourages sharing between teachers		
	At the level of the MELS	Tools	New MELS programme		New MELS programme	New MELS programme	New MELS programme	New MELS programme
						Redistribution of financial resources to school commissions		

6.4 Research Question 4: How do school administrators view the implementation of interdisciplinary teaching within their respective schools?

This research question had three components. The first component related to the administrators' conceptualization of interdisciplinary teaching, the second component related to their view of interdisciplinarity in the context of the educational reform, and the third related to factors which constrained or facilitated the implementation of interdisciplinary teaching in their schools. The information was presented in the previous chapter in ascending orders of activity systems: first the classroom, then the school, then the school commission, then the MELS. This format is continued in the following overview as well as in Table 6.4 on page 321, which presents the following information in a summary format.

In the table, the information is presented in order from the most common responses to the least. Nonetheless, in cases where one actor held beliefs that were significantly different from the others, the information is presented immediately below that of the majority so as to make these divergences easily apparent.

A How do school administrators conceptualize interdisciplinary teaching?

The five school administrators' indicated they saw interdisciplinary teaching as a way to enable students to make links and integrate knowledge from the different subjects in order to see the relevance of what they were learning. Additionally, their definitions of interdisciplinarity included the concept that interdisciplinary teaching is a way to link, join, or unite different subjects in one common project. Mr. Bergeron and Mr. Fortin also made mention of the competencies or objectives students were to develop through the different subjects, and Mr. Simard specified the final student product had to have value in each of the different subjects. Mr. Bergeron, probably because of his doctoral studies, had a more sophisticated view of interdisciplinarity and saw it as a way to create a new paradigm in teachers' culture, encouraging teachers from different subjects and disciplines to work together. This is especially important as some researchers (Lieberman, 1995; Maeroff, 1988; Yu & Yeung, 2003) have found a strong school culture and collaboration between teachers are important ways to foster innovation in schools.

B How do school administrators view interdisciplinarity in the context of the current MELS' educational reform?

Within the classroom

The school administrators believed, to a greater or lesser extent, that interdisciplinary teaching had an impact on the object of its usage, greater student learning. According to Mrs. Fontaine, Mr. Fortin, Mr. Voyer, and Mr. Simard, the use of interdisciplinary teaching meant the students' learning was more natural and more concrete, and this enabled the students to make sense of what they were learning. Further, Mrs. Fontaine, Mr. Bergeron, and Mr. Fortin thought interdisciplinary teaching increased student motivation and interest, thus resulting in a greater involvement in the projects. Mr. Fortin and Mr. Simard believed interdisciplinary teaching translated into increased autonomy, responsibility, and the use of learning, work and teamwork strategies for the students, and both Mrs. Fontaine and Mr. Bergeron believed interdisciplinary teaching helped the students develop the different categories of the cross-curricular competencies. However, while Mr. Simard thought interdisciplinary teaching helped students deepen their understanding of what they were learning. Mrs. Fontaine expressed concern that, although the students were learning higher-order thinking skills, they were not learning enough of the basics. In her interviews with four school principals, Tipton (1997, p. 83) found they also had concerns about the need "to improve [students'] basic skills without sacrificing the interdisciplinary units." Buechler (1993) had found this same concern was raised in another study of a group of teachers implementing interdisciplinary teaching.

The school administrators believed interdisciplinarity resulted in several other changes within the activity level of teachers' classrooms. Mr. Bergeron, Mr. Fortin, and Mr. Simard thought interdisciplinary teaching had an effect on the division of labour in the classroom in that the teacher's role changed from that of the sole provider of knowledge to more of a role of guide or assistant to the students whose new role required they become responsible for their own learning.

Mrs. Fontaine, Mr. Fortin, and Mr. Simard explained how this change in the division of labour resulted in a change in the rules of the classroom. They thought classroom management would change because a teacher-centred class had very different

dynamics than a class where students were working on their own or in groups in interdisciplinary projects.

Mr. Bergeron and Mr. Fortin felt interdisciplinary teaching required the teachers needed to learn to plan their courses differently. Additionally, because of the changes in their roles, the materials they used would also be different. Further, as the students would be evaluated on the competencies, they felt teachers would have to change the way they evaluated their students.

Mrs. Fontaine and Mr. Simard also thought interdisciplinary teaching would change the relations between the members of the activity system of the classroom. They believed the relationships the teachers had with their students would be closer and therefore more rewarding. In his study based on interviews with five middle school principals, Jennings (2006) found two of the principals also believed interdisciplinary teaching helped teachers establish better relationships with their students. In their opinion, this was something the teachers had to build through “a concerted effort” (p. 124). However, in the current study, the school administrators seemed to believe this better relationship was more a product of interdisciplinary teaching and less a required component.

Within the school

Mr. Bergeron and Mr. Fortin found their promotion of interdisciplinarity in their schools resulted in conflict with certain teachers as they were resistant to the changes and innovations brought by the educational reform. Further, as did those principals in the study by Jennings (2006), these two administrators believed interdisciplinarity resulted in conflict between the teachers themselves. This translated into a certain amount of “balkanization” (Hargreaves, 1994a) as the teachers divided themselves into two camps or schools of thought. Some researchers have explained this happens when certain groups perceive themselves as advantaged or disadvantaged by innovations or engage in power struggles or disputes with their colleagues (Day, Pacheco, Flores, Hadfield, & Morgado, 2003; Johnson, 2003; Knight & Trowler, 2000; Schmidt & Datnow, 2005; van Veen et al., 2005). Their efforts to safeguard their “vested interests” (Evans, 2000, p. 186) may lead to problems and conflict regarding both pedagogical and pragmatic beliefs.

In contrast, Mrs. Fontaine and Mr. Simard found their promotion of interdisciplinary teaching in the school resulted in improved relationships between them and their teachers as they found encouraging interdisciplinary teaching in the school brought them more into contact with the teachers. One principal in Jennings's (2006) study also indicated the same belief. Mrs. Fontaine and Mr. Simard further believed teachers who collaborated on the elaboration and implementation of interdisciplinary teaching enjoyed closer and better relationships with their partners. In this regard, a certain amount of research has shown positive collaboration and collegiality develop when teachers work in teams as this reduces isolation and increases support and morale (Ashton & Webb, 1986; Bennet et al., 1992; Grossman et al., 2001; Lee et al., 1991; Puchner & Taylor, 2006). However, Mr. Bergeron and Mr. Fortin had found interdisciplinary teaching resulted in a deterioration of relationships between teachers in their schools. This was likely because of the division of teachers into two distinct groups in their respective schools, those teachers who supported and/or implemented interdisciplinary teaching and other teachers who were more conservative and rejected this innovative pedagogical practice.

Mrs. Fontaine, Mr. Voyer and Mr. Simard saw changes in the division of labour in the activity system of their school as they exerted their role as pedagogical leaders, collaborating with teachers and supporting their efforts in interdisciplinary teaching. Jennings (2006) found the principals in his study held the same beliefs. This role was important as collaboration between teachers improves when school administrators show support for and model collegiality by working with teachers, and when they reward collegiality by recognizing teachers who collaborate (Howe, 2007; National Middle School Association, 2005). Similarly, Mr. Bergeron believed he should model interdisciplinarity for the teachers in his school by holding regular meetings with the department heads and then acting on their collective decisions, rather than simply his own ideas.

Finally, Mr. Voyer found interdisciplinary teaching changed the division of labour among the teachers. He thought it required more meetings with a sharing of the work load in the development of the interdisciplinary projects.

Within the school commission

Mrs. Fontaine used interdisciplinary teaching as a tool to promote her school. As there was a certain amount of competition in the school commission for students, she felt she could attract more and perhaps better students by promoting the interdisciplinary projects carried out in the school.

C In their particular context, what factors constrain or facilitate the implementation of interdisciplinary teaching?

This section is divided into those factors which constrain or facilitate the implementation of interdisciplinary teaching in the school. Each of these factors is divided into three categories related to the constraining or facilitating factors that arise out of the activity systems of the school, the school commission, and the MELS.

Factors that constrain efforts

Within the school

All five of the school administrators felt unable to adequately support teachers' efforts to implement interdisciplinary teaching because of certain rules that governed the operations of the school. Scheduling issues, especially as related to common planning periods, time pressures, and the physical layout of the schools and the staff rooms, were some of the factors named by the school administrators. A similar view was expressed by Roberts and Kellough (2000) who suggested school administrators could resolve some of these issues through alternative schedules or structuring the school in "houses" or small divisions. Further, Mr. Voyer, Mr. Fortin and Mr. Simard believed the teachers were required to carry a heavy teaching task load, which they felt may have reduced the teachers' desire and ability to implement interdisciplinary teaching. Mr. Bergeron and Mr. Fortin also thought interdisciplinary teaching was not possible when students were not in closed groups.

Among the members of the school community, there were hindrances that came about either from conscious or unconscious efforts on the part of the teachers. Mrs. Fontaine, Mr. Bergeron, Mr. Fortin, and Mr. Voyer felt issues such as teachers' more traditional pedagogical beliefs, misconceptions about interdisciplinarity, competitiveness,

and interpersonal conflict between teachers were hindrances to their efforts to promote interdisciplinarity in their schools. These elements are also common in literature related to resistance of educational reform efforts (Crow & Pounder, 2000; DiPardo, 1997; Kruse & Louis, 1997; Leonard & Leonard, 1999; Murata, 2002; Pace, 1992; Tipton, 1997; VanScriver, 2007; Welch, 1998).

Additionally, the school administrators of the public schools, Mrs. Fontaine, Mr. Bergeron, and Mr. Fortin, raised the issue of the interactions between the school activity system and that of the teachers' union. The administrators perceived the teachers' union as deliberately obstructive of their efforts to promote interdisciplinarity in their schools. Some of the ways the union constrained interdisciplinarity was by putting up posters against the innovations put forth by the reform, encouraging teachers to boycott professional development seminars, and demanding strict adherence to teaching assignments, organizational conditions, and collective bargaining agreement provisions. Because the teachers' union may negatively impact innovations such as interdisciplinary teaching which require changes to working conditions, Howe (2007) believed policy makers should actively seek their support with the schools to facilitate the change process. Along these lines, Proulx (2005) encouraged the teachers' union in Québec to relax interpretations of contracts and job descriptions to allow teachers the time necessary to understand the educational reform and appropriate the accompanying innovations.

For different reasons, Mr. Voyer and Mr. Simard thought teachers' misconceptions about interdisciplinary teaching constrained its implementation. Mr. Voyer's complaint was that certain teachers perceived certain subjects as being more difficult to include in interdisciplinary projects. While Mr. Simard had not observed that perception among his teachers, he had found certain teachers did not understand their roles and obligations when they did participate in interdisciplinary teams. Teachers who did not comprehend the amount and type of work involved, or who did not complete their components of the interdisciplinary project as planned constrained the efforts of the other teachers.

Mr. Voyer did not specifically address the issue, but through the interview made it plain he thought it was necessary the school administration not oblige teachers to participate in interdisciplinary practices. Finally, Mr. Bergeron found the two camps of teachers who held widely different philosophies on teaching constrained his efforts to

promote interdisciplinary teaching in his school. He tried to engage more reluctant teachers in interdisciplinary teaching practices but felt it to be very difficult and an extremely long term process.

Related to the tools they had available to promote interdisciplinary teaching in their schools, Mrs. Fontaine and Mr. Bergeron cited a lack of funds as a hindrance to their efforts to encourage interdisciplinarity. This included a shortage of funds for purchasing materials, for liberating teachers, for hiring substitute teachers, and for professional development programmes. This appears to be a difficulty for other school administrators as other researchers (Conley et al., 2004; Jennings, 2006) have also found school districts may not have the resources to support teachers' efforts through training programmes in interdisciplinarity and team teaching.

Mrs. Fontaine claimed insufficient funding was partly to blame for the large number of part-time teachers in her school. She felt she did not have enough financial resources to safely hire permanent teachers for the positions that became open in the school. She was never certain from one year to the next how many new students she would have and did not want to hire teachers whom she might not need, but would still have to pay, the following year.

Within the school commission

Mr. Bergeron and Mr. Fortin found the school commission offered few tools to help them promote interdisciplinary teaching in their schools. Specifically, they felt there were very few or no professional development seminars on interdisciplinary teaching offered by their school commissions. All the training opportunities offered in the school commission related to the new education programme and student evaluations and so resulted in a lack of support and documentation on interdisciplinarity. The complaint of inadequate professional development opportunities has been raised in other literature regarding the implementation of innovative teaching practices (Conley et al., 2004; Corriero, 1996; Cronin, 2007; Meister, 1997). In the other public school, Mrs. Fontaine explained there was little to no interaction between the teachers and the ESL curriculum consultant because of poor relations. Whatever the reason for this antipathy, there were no workshops or information on interdisciplinarity for the ESL teachers at that school.

Mrs. Fortin and Mr. Bergeron also raised the issue of the paucity of qualified substitute teachers within the community members of their school commission. Without qualified substitutes, there were few teachers willing to be released from their classes for interdisciplinary planning as it placed an added burden on them.

At the level of the MELS

The MELS was blamed for a great deal of the perceived opposition to the educational reform. Mrs. Fontaine, Mr. Bergeron, Mr. Fortin and Mr. Simard found as the MELS continued to change the rules regarding certain procedures and offered and retracted the tools necessary for the teachers to implement the reform, resistance grew. They perceived these ongoing changes as eroding their credibility in the eyes of their teachers and the parents of their students. Pelletier noted this as well and wrote there were likely several who supported the educational reform at the secondary level but had "*perdu une partie de leur scalp dans la valse-hésitation des décisions ministérielles*" (lost part of their scalps in the ongoing vacillation in the MELS' decisions) (2005, p. 92). Of these four school administrators, only Mr. Bergeron did not mention the need teachers had for time to appropriate their new programmes before they would be able to begin collaborating with their colleagues on interdisciplinary projects. Mrs. Fontaine and Mr. Fortin found the MELS was not prompt in providing information, training and materials to the teachers in the schools, and so thus reduced their ability to appropriate the different innovations and elements of the educational reform. As a result, they believed it would take a considerable amount of time before the teachers would be more comfortable and confident with the changes the reform was making and so become willing to implement interdisciplinary teaching practices.

As was seen in the previous chapter, Mr. Voyer believed the MELS did not offer professional development seminars on interdisciplinarity. Because all the workshops were related to the new education programme and student evaluations, he felt there was no documentation or information on interdisciplinary teaching available for the teachers in his school.

Factors that facilitate efforts

Within the classroom

Mr. Fortin and Mr. Simard believed the type of student had no effect on teachers' abilities to implement interdisciplinary teaching. They thought all students, at all grades, whether they were core students or had behaviour or learning difficulties, were able to work well with interdisciplinary projects and benefited greatly from them. Mrs. Fontaine thought students who had good learning strategies, work methods, teamwork abilities, and interpersonal skills were likely to do well with interdisciplinary projects. This perception has also been reported in a few other studies (Roelofs & Terwel, 1999; Simplicio, 2004). She added that students who had started grade 1 with the educational reform had gained more experience working with the types of skills necessary to be able to work well in interdisciplinary projects, as they advanced from one grade to the next, and so it was easier to work with them in interdisciplinary projects. Mr. Voyer simply felt his school had students who were dynamic and interested in learning. He believed automatically, this type of student facilitated teachers' efforts to implement interdisciplinary teaching.

Within the school

There were three elements which all five school administrators believed facilitated the implementation of interdisciplinary teaching in their schools. These all related to the community members of the school activity system. They believed positive relations between teachers and teachers who were open to new ideas were more likely to collaborate with their colleagues on interdisciplinary projects. They also noted having teacher leaders in the school, who already implemented interdisciplinary teaching and encouraged other teachers to become involved as well, facilitated their efforts to promote interdisciplinary teaching in their schools. For example, Mr. Fortin had found having a certain number of teachers who had a positive impression of the educational change initiative had a positive effect on the other teachers. His "swing" theory has been described in other literature as an "innovation pendulum" (Cuban & Usdan, 2003; Datnow et al., 2002).

Mr. Fortin and Mr. Voyer saw the benefits of a general turn-over in staff where the larger cohort of older, more traditional teachers retired and the younger teachers who were more open to educational innovations were hired. For these two school administrators, as

well as for Mr. Bergeron, the hiring process in their schools was weighted so as to recruit teachers who were more open to interdisciplinarity. This was a very interesting attitude as, while a certain amount has been written regarding teacher turnover and the loss of intellectual capital as teachers leave the profession due to dissatisfaction or reasons other than retirement (Boyd, Lankford, Loeb, & Wyckoff, 2005; Grossman et al., 2001; Ingersoll, 2001; Loeb, Darling-Hammond, & Luczak, 2005), there has been very little writing on the subject that views large scale teacher turnover in a positive light. Additionally, Könings et al. (2007, p. 994) found younger teachers “were not more inclined” than more experienced teachers to implement innovative teaching practices. They explained their findings could be the result of a relatively rapid socialization process of the new teachers’ to the practices of their schools.

Other than teacher leaders, it was apparent the administrators felt their degree of support also had an effect on teachers’ openness to interdisciplinary teaching practices. Mr. Voyer and Mr. Simard found when they supported and encouraged interdisciplinary practices in their schools, the teachers were more open to trying interdisciplinary projects. They hoped their support and validation of interdisciplinary teaching would encourage other teachers to collaborate. Other researchers have also noted that when school principals take on the role of pedagogical leader, educational innovations are more likely to be adopted by the teachers in their schools (Dougherty, 1999; Hurley, 1999; Marks & Printy, 2003; Norton, 1998; Pounder, Ogawa, & Adams, 1995; Tipton, 1997).

Mr. Bergeron, Mr. Fortin, Mr. Voyer, and Mr. Simard believed that certain rules governing the operations of the school activity system also facilitated their efforts to promote interdisciplinary teaching in their schools. Mr. Bergeron and Mr. Voyer had noted that having a limited number of students in a specific grade level meant it was easier for teachers to collaborate on interdisciplinary teaching. Mr. Bergeron had instituted regular meetings with all the department heads in order to help them see how working together and knowing what the others were doing in their respective disciplines could be beneficial for the school. He also believed that having closed student groups greatly facilitated interdisciplinary teaching. Mr. Fortin was certain the school policy whereby teachers who asked to be and then were released from their classes in order to elaborate interdisciplinary projects greatly facilitated interdisciplinarity in the school. Finally, Mr. Simard tried, where

possible, to have back-to-back classes scheduled for those teachers who collaborated on interdisciplinary projects.

Mr. Fortin and Mr. Simard tried to provide as many tools as possible to the teachers to facilitate the implementation of interdisciplinary teaching. Most of the tools related to computer technologies, library services, departmental budgets, and funding for materials. Jennings (2006) and Tipton (1997) found the school principal's arrangement of necessary materials and resources were tangible means to support interdisciplinary teaching.

Within the school commission

Mr. Bergeron and Mr. Fortin thought training seminars and workshops on interdisciplinarity would greatly facilitate their efforts to promote interdisciplinary teaching in the school. They believed the more the teachers understood interdisciplinary teaching and the benefits it offered the students, the more inclined they might be to trying it. Certain researchers support this notion as they found workshops, documentation and information help teachers demystify educational innovation (Fullan & Hargreaves, 1992; Huberman & Miles, 1984; Joyce & Showers, 1988).

As was noted in the previous chapter, the school administrators in Mr. Fortin's school commission exchanged interdisciplinary projects that had been elaborated and implemented in their respective schools, thus creating a pool of interdisciplinary projects from which teachers could choose for implementation in their own classes. This opened more teachers to interdisciplinary teaching as they were relieved of some of the constraints and work required to elaborate interdisciplinary projects.

At the level of the MELS

Mr. Fortin and Mr. Simard found the new MELS education programme greatly facilitated efforts to promote interdisciplinarity in their schools because of its clear structure and the broad areas of learning and cross-curricular competencies. These meant teachers could always find some way to create links across subjects. This appears to support Fullan's (1991) premise that clear content and goals within curriculum guides assist teachers in their appropriation of the new material.

Mr. Bergeron and Mr. Simard believed that, as teachers came to see the sense and the philosophy of the educational reform, they would become more involved in interdisciplinary teaching. They both held the idea that interdisciplinarity would develop when teachers had a greater understanding of the reform.

Mr. Fortin and Mr. Voyer thought the MELS could facilitate interdisciplinarity by ensuring the new material being published for the educational reform contained common aspects across disciplines that would make it easier for teachers to find ways to link their subjects together. And both Mr. Voyer and Mr. Simard believed the MELS facilitated interdisciplinarity through the provision of ideas for interdisciplinary projects. Mr. Simard had found a page on the MELS website (n.d.) that contained projects teachers could adapt to fit their classroom situations. For the years 2006/2007 and 2007/2008, the programme *La culture à l'école* (Culture in the school) has offered examples of activities, including interdisciplinary projects, at both the primary and secondary levels. Mr. Voyer was unaware of these resources but believed support of this nature from the MELS would encourage teachers to try interdisciplinary teaching.

Table 6.4 Summary of how school administrators view interdisciplinary teaching within their respective schools and how the curriculum consultant views interdisciplinary teaching within the school commission

(* The curriculum consultant is included in this table for comparison purposes.)

	Mrs Fontaine (Luc)	Mr Bergeron (Renée & Benoît)	Mr Fortin (Louise)	Mr Voyer (Danielle)	Mr Simard (Pierre)	*Mr Rhodes
A. How do school administrators conceptualize interdisciplinary teaching?	Help students make links between subjects so their learning is more relevant	Help students make links between subjects so their learning is more relevant	Help students make links between subjects so their learning is more relevant	Help students make links between subjects so their learning is more relevant	Help students make links between subjects so their learning is more relevant	Help students make links between subjects so their learning is more relevant
			Two or more subjects unite in a project where the objectives are related to the respective subject programmes	Two or more subjects unite in a project where the objectives are related to the respective subject programmes		
		The development of common elements, knowledge, or competencies through different subjects				The development of elements, knowledge, or competencies through different subjects
	The exploitation and transfer of knowledge from one subject to other subjects				The exploitation and transfer of knowledge from one subject to other subjects where one final product has value in each of the subjects	
		A way to alter the established teachers' culture from teachers working alone to working together across disciplines				

	Activity system		Mrs Fontaine	Mr Bergeron	Mr Fortin	Mr Voyer	Mr Simard	*Mr Rhodes
B. How do school administrators view interdisciplinarity in the context of the current MELS' reform?	Within the school	Division of labour	Change her role to pedagogic supervisor			Change his role to pedagogic supervisor	Change his role to pedagogic supervisor	
				Change his role as administrator from autocratic to more democratic				
						Require more meetings and redistribution of teachers' tasks		
	Within the school commission	Tools	Can be used as promotional material and marketing tool					
C. In their particular context, what factors constrain the implementation of interdisciplinary teaching? (Continued next page)	Within the school	Rules	Difficulties creating master schedule for the school	Difficulties creating master schedule for the school	Difficulties creating master schedule for the school	Difficulties creating master schedule for the school	Difficulties creating master schedule for the school	
					Heavy teaching load	Heavy teaching load	Heavy teaching load	
				Open class groupings	Open class groupings			
		Community members	Teachers who are more traditional and recalcitrant	Teachers who are more traditional and recalcitrant	Teachers who are more traditional and recalcitrant	Teachers who are more traditional or insecure		Teachers who are more traditional or insecure
			The teachers' union does not support efforts to promote interdisciplinary teaching	The teachers' union does not support efforts to promote interdisciplinary teaching	The teachers' union does not support efforts to promote interdisciplinary teaching			The teachers' union does not support efforts to promote interdisciplinary teaching
				Teachers' misconceptions of interdisciplinarity	Teachers' misconceptions of interdisciplinarity	Teachers' misconceptions of interdisciplinarity		

	Activity system		Mrs Fontaine	Mr Bergeron	Mr Fortin	Mr Voyer	Mr Simard	*Mr Rhodes
C. In their particular context, what factors constrain the implementation of interdisciplinary teaching?	Within the school	Community members				Teachers who are forced or obligated to use interdisciplinary teaching		Teachers who feel forced or obligated to use interdisciplinary teaching
				Conflicting teaching philosophies				
								Teachers who model their teaching on the teacher-centred classes of their past learning experiences
							School administrators who are not pedagogical leaders, who resist the reform, or who do not facilitate teachers' access to curriculum consultants	
(Continued next page)		Tools	Lack of funding to release teachers from their task in order for them to plan projects	Lack of funding to release teachers from their task in order for them to plan projects				School administrators who misappropriate funds for training budgets
			Insufficient funds to reduce the number of part-time staff					

	Activity system		Mrs Fontaine	Mr Bergeron	Mr Fortin	Mr Voyer	Mr Simard	*Mr Rhodes	
C. In their particular context, what factors constrain the implementation of interdisciplinary teaching?	Within the school commission	Tools		Professional development is subject-specific; there is no professional development related to interdisciplinarity	Professional development is subject-specific; there is no professional development related to interdisciplinarity	Does not belong to a school commission	Does not belong to a school commission	Lack of documentation and information on interdisciplinary teaching	
		Community	Lack of qualified substitute teachers	Lack of qualified substitute teachers					
			Poor relations between the teachers and the curriculum consultant						
								Teacher trainers or others who provide wrong information	
	(Continued next page)	At the level of the MELS	Tools	MELS repeated changes to the reform	MELS repeated changes to the reform	MELS repeated changes to the reform		MELS repeated changes to the reform	MELS repeated changes to the reform
				Implementation of the new reform means teachers will need time to learn programme before they become involved in projects		Implementation of the new reform means teachers will need time to learn programme before they become involved in projects		Implementation of the new reform means teachers will need time to learn programme before they become involved in projects	
Long delay in providing programmes to the schools and teachers					Long delay in providing programmes to the schools and teachers	No professional development opportunities or materials on interdisciplinarity			

	Activity system		Mrs Fontaine	Mr Bergeron	Mr Fortin	Mr Voyer	Mr Simard	*Mr Rhodes
C. In their particular context, what factors facilitate the implementation of interdisciplinary teaching?	Within the classroom	Community members			All types of students can do interdisciplinary projects		All types of students can do interdisciplinary projects	All types of students can do interdisciplinary projects
			Students who have good learning strategies, work methods, and teamwork abilities					
			Students who have been schooled following the educational reform					
						Dynamic, interested students		
		Tools						Ability to pair English with any other subject
	Within the school	Community members	Positive relations between members of the school community	Positive relations between members of the school community	Positive relations between members of the school community	Positive relations between members of the school community	Positive relations between members of the school community	Positive relations between members of the school community
			Teachers who are more open to innovative practices	Teachers who are more open to innovative practices	Teachers who are more open to innovative practices	Teachers who are more open to innovative practices	Teachers who are more open to innovative practices	Teachers who are more open to innovative practices
			Teacher leaders who demonstrate and encourage interdisciplinarity in the school	Teacher leaders who demonstrate and encourage interdisciplinarity in the school	Teacher leaders who demonstrate and encourage interdisciplinarity in the school	Teacher leaders who demonstrate and encourage interdisciplinarity in the school	Teacher leaders who demonstrate and encourage interdisciplinarity in the school	
	(Continued next page)							

	Activity system		Mrs Fontaine	Mr Bergeron	Mr Fortin	Mr Voyer	Mr Simard	*Mr Rhodes	
C. In their particular context, what factors facilitate the implementation of interdisciplinary teaching?	Within the school	Community members		Teachers who are open to innovation	Younger teachers who are open to innovation	Younger teachers who are open to innovation		Younger teachers	
						Encouragement, assistance, and advice provided by school administration	Encouragement, assistance, and advice provided by school administration	Encouragement, assistance, and advice provided by school administration	
						Few teachers in the school makes meetings easier to organize			
		Rules		Limited numbers of students		Limited numbers of students			
				Regular meetings with all department heads					
				Closed class groupings in special programmes					
					Policy ensuring every teacher group who wish to elaborate interdisciplinary projects are freed from their task in order to do so				
								Efforts to schedule back-to-back classes	
									Planning periods to elaborate projects
									Teachers grouped in cycles

(Continued next page)

	Activity system		Mrs Fontaine	Mr Bergeron	Mr Fortin	Mr Voyer	Mr Simard	*Mr Rhodes
C. In their particular context, what factors facilitate the implementation of interdisciplinary teaching?	Within the school	Tools			Material resources		Material resources	Teachers' positive attitudes are more important than whatever tools may be provided
				Funding for planning and material for interdisciplinary teaching		Funding for material for interdisciplinary teaching		
	Within the school commission	Tools		Documentation, information, or professional development in interdisciplinarity	Documentation, information, or professional development in interdisciplinarity	Does not belong to a school commission	Does not belong to a school commission	Documentation, information, or professional development in interdisciplinarity
					Shared interdisciplinary projects between schools			
								Encourage interest and desire to participate in interdisciplinary teaching
	At the level of the MELS	Tools			New MELS programme		New MELS programme	New MELS programme
				Philosophy of the educational reform promotes interdisciplinarity			Philosophy of the educational reform promotes interdisciplinarity	
					New material that supports interdisciplinarity	New material that supports interdisciplinarity		
						Documentation, information, or professional development in interdisciplinarity	Documentation, information, or professional development in interdisciplinarity	

6.5 Research Question 5: How does the ESL curriculum consultant of the participating schools view interdisciplinary teaching within his school commission?

As for the school administrators, this question regarding the ESL curriculum consultant's view of interdisciplinary teaching is divided into three sections. The first component relates to the conceptualization of interdisciplinary teaching, the second component relates to the view of interdisciplinarity in the context of the educational reform, and the third relates to factors which constrain or facilitate the implementation of interdisciplinary teaching in the school commission. A summary of the information gathered from the interview with Mr. Rhodes can be found in Table 6.4 above, along with the information from the school administrators.

A How does the curriculum consultant conceptualize interdisciplinary teaching?

The curriculum consultant, Mr. Rhodes, believed that through interdisciplinary teaching, students would see how the different subjects were linked together and so have a better, more global vision of their learning. He saw interdisciplinarity as a way for teachers to collaborate in the development of a project in order to develop students' knowledge and competencies in such a way that their learning was more relevant and meaningful.

B How does the curriculum consultant view interdisciplinarity in the context of the current MELS' educational reform?

Within the classroom

Within the activity system of the classroom, Mr. Rhodes believed interdisciplinary teaching changed how students learned. Because interdisciplinary teaching enabled students to see how subjects were linked together, they were better able to contextualize their learning, thus increasing interest and motivation, and encouraging the development of autonomy, and learning and work strategies. He also indicated students' observations of teachers collaborating across disciplines helped them to better understand that information and ideas could be and should be linked with others.

Mr. Rhodes speculated that interdisciplinarity changed the teacher's role in the classroom. Like the school administrators, he felt it important the teachers transfer the responsibility of learning to the students while acting as resources to facilitate and aid their students and in doing so, encourage their students' reflection on the learning process.

Also within the classroom, Mr. Rhodes felt the teachers' use of interdisciplinary teaching meant they were able to focus on the students' development of the MELS' subject-specific and

cross-curricular competencies through authentic and interesting problems and topics. This also necessitated the teachers' learning of new forms and ways to evaluate their students.

Within the activity system of the school, Mr. Rhodes believed interdisciplinarity engendered closer relationships between teachers who elaborated and implemented interdisciplinary projects. He thought this collaboration resulted in better academic and social relationships through their common vision of student learning.

Within the school commission, he felt he was able to also develop closer relations with the teachers through workshops and teacher development programmes. This enabled him to encourage them to try more innovative practices such as interdisciplinary teaching.

C In their particular context, what factors constrain or facilitate the implementation of interdisciplinary teaching?

As for the school administrators, this question is divided into two parts. The first relates to factors which constrain efforts to implement interdisciplinary teaching at the level of the schools, the school commission, and then the MELS. The second section presents factors that facilitate interdisciplinary teaching at the same three levels.

Factors that constrain efforts

Within the school

According to Mr. Rhodes, most of the factors which constrain interdisciplinary teaching within the school context relate to the community members. He believed teachers whose pedagogical beliefs were more traditional or who held misconceptions about the educational reform and interdisciplinarity were unlikely to collaborate on interdisciplinary projects and could use their influence to discourage other teachers from interdisciplinary efforts. This factor has been identified by other researchers examining interdisciplinary teaching in the United States (Meister, 1997; Miller, 2006; Murata, 1998; Norton, 1998; Pugh & Zhao, 2003).

As did the school administrators, Mr. Rhodes also found the teachers' union discouraged teachers from collaborating with others in the acceptance of the educational reform and the elaboration and implementation of interdisciplinary teaching projects. As a review of some of the documentation put forth by the teachers' union shows (Berthelot, 2005; Laporte & Beauregard, 2007; Le Conseil exécutif de la CSQ, 2004; Parent, 2006; Pierre, 2006; Rochefort, 2001), this opinion may not be entirely unjustified.

Teachers' misconceptions of interdisciplinarity meant they occasionally implemented

projects they claimed to be interdisciplinary which were not. He felt this constrained interdisciplinarity in the schools as well. Mr. Rhodes also believed that teachers who were forced to collaborate with other teachers on interdisciplinary projects would only give rise to conflict in the school.

An important area where Mr. Rhodes felt the school community members constrained interdisciplinary teaching was in the practices of new teachers who modelled their teaching on the type of instruction they had received as students. He felt these teachers implemented projects they believed to be interdisciplinary which were not.

Finally, he thought school administrators who resisted the educational reform, who did not act or were not perceived as pedagogical leaders in their schools, who did not facilitate the curriculum consultant's work with the teachers, or who used for other purposes funds that were allocated to the schools for professional development regarding elements of the reform constrained efforts to implement interdisciplinary teaching in the schools as well. The studies of Meister (1997), Norton (1998), and Thompson (1997) illustrated how a lack of pedagogical leadership on the part of the school administrators can constrain interdisciplinary teaching.

Within the school commission

At the level of the school commission, Mr. Rhodes believed a lack of documentation and information in interdisciplinarity constrained teachers' efforts to elaborate and implement interdisciplinary projects as they did not have information to help them to do so. However, he also identified other hindrances to interdisciplinary teaching which lay within the members of the community of the activity system he worked within. Curriculum consultants who disseminated erroneous information, who created resistance to the educational reform through a demonstration of a lack of empathy and understanding of teachers' realities, or who would not take the time to listen to the teachers' concerns regarding interdisciplinary teaching resulted in increased resistance to the educational reform and interdisciplinarity.

At the level of the MELS

As did the school administrators, Mr. Rhodes believed the MELS itself constrained interdisciplinarity in the schools. The ongoing changes to the education programme and elements of the educational reform, such as student evaluations, resulted in teachers' resistance to the educational reform and the ideas and practices put forth by the reform, such as interdisciplinarity. The more divergent the innovations were from teachers' usual pedagogical practices, the less

likely teachers were to adopt them when the MELS retracted and then reissued information and instructions regarding the educational reform. He thought it showed teachers that the MELS did not firmly believe in the educational reform. Further, as had been noted for certain of the school administrators, Mr. Rhodes believed the ongoing changes undermined his reputation and credibility with the school administrators and teachers and so reduced his abilities to encourage interdisciplinarity in the schools.

Factors that facilitate efforts

Within the classroom

Mr. Rhodes believed interdisciplinary teaching could be done with all students if the teachers were convinced of the value of interdisciplinarity. He thought all students could benefit from the learning opportunities offered through interdisciplinary projects. Also, as did some of the teachers participating in this study, Mr. Rhodes believed the subject matter of English facilitated English teachers' efforts to implement interdisciplinary teaching. He thought English could be paired with all the other subjects very easily, and that many resources, such as the Internet with its predominance of English web sites, made the involvement of English in any interdisciplinary project easier.

Within the school

As did many of the other actors in the study, Mr. Rhodes believed factors related to the community members in the school facilitated interdisciplinary teaching. As has been noted by other researchers (Conley et al., 2004; Golley, 1997; Howe, 2007), teachers who had good relationships with their colleagues and teachers who were involved in interdisciplinary teaching who encouraged other teachers to collaborate on interdisciplinary projects were important models to other teachers. Mr. Rhodes also considered the influx of young teachers and the retirement of older, more traditional teachers to be a very important factor that facilitated interdisciplinary teaching. He felt the younger teachers were more open to innovative ideas and so were much more likely to collaborate and become involved in interdisciplinary teaching than their older colleagues. He also thought school administrators could greatly facilitate the implementation of interdisciplinary teaching in their schools by providing assistance and encouraging teachers' efforts to elaborate and implement interdisciplinary projects.

Certain rules regarding the school organization also facilitated interdisciplinarity, specifically, those related to the school schedule. According to Mr. Rhodes, as has been noted in

literature on the subject (Crow & Pounder, 2000; Howe, 2007; Murata, 2002; National Middle School Association, 2005; Smith & Karr-Kidwell, 2000), common planning periods built into the teachers' schedules are an important element that facilitate interdisciplinary teaching. He also found the grouping of teachers in staff rooms in cycle divisions rather than in subject divisions promoted more discussion among the teachers, enabling them to better know and understand their colleagues' subjects and so see how links could be made between them.

Finally, while he thought the provision of tools such as library and computer resources facilitated interdisciplinary teaching, he felt they were not necessarily required. He speculated that if teachers believed in the value of interdisciplinary teaching, they would find ways to overcome difficulties that might arise from a lack of certain of these resources.

Within the school commission

At the level of the school commission, the Mr. Rhodes felt his duties were key to facilitating interdisciplinary teaching. As much research has indicated, the provision of professional development seminars, information, and follow-up services for teachers are crucial to supporting their efforts in innovative teaching practices (Arnold & Schell, 1999; Clinchy, 1997; Drake, 1993; Fullan & Hargreaves, 1992; Huberman & Miles, 1984; Hurley, 1999; Joyce & Showers, 1988; Norton, 1998). Mr. Rhodes believed that when these could be done with groups of teachers of one grade level at a school, they greatly facilitated interdisciplinary teaching in the school.

He also thought it was very helpful the school commission offered a forum where the teachers could come to share activities and projects. However, he felt it was important that the school commission create interest among teachers for interdisciplinary teaching through demonstrations of interdisciplinary teaching in practice. Once teachers saw how interdisciplinary projects could be carried out, then it became important to provide the means to facilitate their efforts.

At the level of the MELS

Mr. Rhodes believed the new MELS education programme greatly facilitated efforts to promote interdisciplinarity in schools. The emphasis on the broad areas of learning and cross-curricular competencies enabled teachers to easily find ways of creating links between different subjects (MELS, 2007a; MEQ, 2004b).

6.6 Research Question 6: How do students view interdisciplinary teaching within their classes?

The information presented in this section provides an overview of the students' attitude towards interdisciplinary teaching as relates to their learning of English. To present this information, the Likert-style items of the questionnaire are examined, followed by the three open-ended questions. Information from the individual interviews and classroom observations are followed by a discussion of the students' orientation to the interdisciplinary projects.

Questionnaires: Likert-style items

As was seen in the previous chapter, the Likert-style items of the questionnaire contain three main themes. These are transferability which includes the transfer of competencies, ideas, knowledge, and strategies either from other subjects to English, or from English to other subjects; benefits to learning English; and other considerations which includes interest and motivation, general appreciation, and differences. For this section of the chapter, the discussion is based on the information in Table 6.5 on the following page, which contains the average for the Likert-style items for each of the six groups, as well as the average of the six groups combined.

To help interpret the information, the following is a short list of the teacher and their respective interdisciplinary project(s):

Luc – science fair interdisciplinary project

Renée – *La ferme des animaux* interdisciplinary project

Benoit – *Identité* and action research interdisciplinary projects

Louise – web page interdisciplinary project

Danielle – book jacket interdisciplinary project

Pierre – bilingual pamphlet interdisciplinary project

Table 6.5: Questionnaires: Average for the Likert-style items for all student groups

Themes	Secondary themes	Items	Luc	Renée	Benoît	Louise	Danielle	Pierre	Means
Transferability	Transfer to English from other subjects	2. In my English class, I was able to re-use ideas which I first dealt with in my other subject area class(es).	4.14	3.44	3.53	3.38	4.15	3.44	3.68
		3. In my English class, I was able to extend my knowledge of the topic dealt with in my other subject area class(es).	4.43	3.59	3.47	3.63	3.70	3.22	3.67
		4. In my English class, I was able to re-use strategies/ skills which I used in my other subject area class(es).	3.71	3.13	3.24	3.53	3.55	3.06	3.37
		5. In my English class, I was able to learn the English equivalents of words/ expressions related to the topic dealt with in French.	4.39	3.63	3.47	4.00	3.60	3.44	3.76
		6. In my English class, I was able to re-use work methods dealt with in my other subject area class(es).	3.89	2.91	3.82	3.56	3.65	3.50	3.56
Transferability	Transfer to other subjects from English	7. In my other subject area class(es), I was able to re-use ideas which I first dealt with in my English class.	3.18	2.66	3.24	2.84	2.75	2.84	2.92
		8. In my other subject area class(es), I was able to extend my knowledge of the subject dealt with in my English class.	3.86	3.00	3.12	3.16	3.00	3.25	3.23
		9. In my other subject area class(es), I was able to re-use strategies/ skills first dealt with in my English class.	3.18	2.91	2.94	3.34	2.75	3.09	3.04
Benefits to learning English		10. This interdisciplinary project helped me to improve my English speaking skills.	4.39	3.88	3.06	3.66	3.65	2.75	3.57
		11. This interdisciplinary project helped me to improve my English listening skills.	3.32	3.31	3.41	4.00	3.35	2.69	3.35
		12. This interdisciplinary project helped me to improve my English writing skills.	2.82	3.47	3.47	3.38	4.35	3.59	3.51
		13. This interdisciplinary project helped me to improve my English reading skills.	3.11	2.84	3.41	3.50	3.70	3.09	3.28
		14. This interdisciplinary project helped me to improve my English vocabulary.	4.54	3.97	3.88	4.09	4.10	3.75	4.06
		18. I learn more English with interdisciplinary projects than in a regular English class.	2.79	2.75	3.18	3.47	3.30	1.69	2.86
Other considerations	Interest and motivation	15. I found this interdisciplinary project as interesting as me regular English classes.	3.39	3.22	3.53	4.13	3.85	2.28	3.40
		16. Interdisciplinary projects are more motivating for me to learn English than regular English classes.	3.18	3.44	4.18	4.41	4.00	2.28	3.58
	Differences	17. Interdisciplinary projects are different from regular English classes.	4.39	3.91	4.29	4.50	4.00	3.75	4.14

(Continued next page)

Themes	Secondary themes	Items	Luc	Renée	Benoît	Louise	Danielle	Pierre	Means
Other considerations	Appreciation	1. I liked the interdisciplinary project we recently finished.	4.00	2.84	4.06	3.94	4.40	3.22	3.74
		19. Interdisciplinary projects should be taught more often.	3.64	3.19	4.12	4.19	3.70	2.41	3.54
		20. I prefer interdisciplinary projects to regular teaching activities.	2.82	2.97	3.94	3.94	3.55	1.88	3.18

The following discussion explains the statistics presented above. The term disagreement is used to indicate any items the students rated below 3. Agreement is used to indicate a degree of agreement between 3 and 3.5. Moderate agreement is used for items between 3.51 and 4, and strong agreement is used for items rated over 4. Table 6.6 on the following page provides visual reference for this discussion.

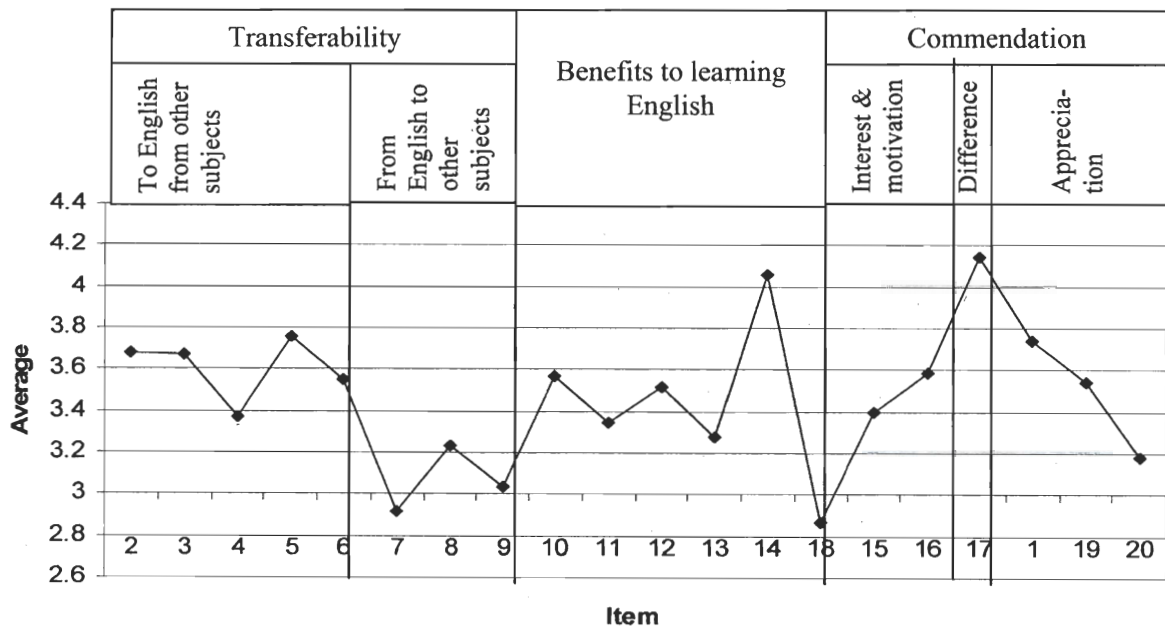
In general, the students indicated agreement to moderate agreement with the items related to the transfer to English of the ideas, knowledge, learning strategies and work methods first used or learnt in subjects given in French. However, as can be seen in Tables 6.5 and 6.6, their degree of agreement decreased a great deal with the items related to the reinvestment in subjects taught in French of knowledge and learning strategies first learned in their English class. In this category, the students indicated agreement with Item 8, regarding increased knowledge in French classes of concepts learned in their English class; however, the other two items regarding the reinvestment and transfer of ideas (Item 7, $M = 2.92$) and strategies/competencies (Item 9, $M = 3.04$) first learned in English to classes given in French were two of the three items to which students agreed the least.

There was moderate agreement that the interdisciplinary projects helped the students improve their English speaking and writing skills, with slightly less agreement regarding improvement in listening and reading skills. Additionally, the students indicated relatively strong agreement with the item that posited the interdisciplinary projects had helped them improve their vocabulary in English (Item 14, $M = 4.06$). However, in contrast, the item to which the students indicated the most disagreement, Item 18 ($M = 2.86$), showed the students did not believe they learned more English with interdisciplinary

projects than in their regular English classes. As the presentation of the findings in the previous chapter indicated, there were a variety of reasons for this.

Under the theme of other considerations, the students indicated agreement the interdisciplinary projects were more interesting than their regular English class and moderate agreement the interdisciplinary projects were more motivating than their regular English classes. The highest rated item of the questionnaire, Item 17 (M = 4.14), showed the groups of students strongly agreed the interdisciplinary projects were different from their regular English classes. However, the agreement dropped off fairly steadily for the last three items of this theme. The students agreed moderately they had enjoyed the interdisciplinary projects. There was less agreement still with the item positing interdisciplinary projects should be taught more often. Finally, there was only slight agreement with the item positing the students preferred interdisciplinary projects to their regular English classes.

Table 6.6: Average degree of agreement for the Likert-style items of the questionnaire



However, there are several very important distinctions that are hidden within these averages. For example, for Item 20 (I prefer interdisciplinary projects to other activities in my English class), three of the groups had more positive responses and three of the groups had more negative responses, leading to this more neutral average. As a result, it was important to determine if there were statistically significant differences between the six

groups of students. Initially an analysis of variance was conducted to obtain a global picture of the data. The analysis of variance results ($p < 0.0001$) (Table 6.7) indicated a statistically significant difference to a degree of 5% for the 20 Likert-style items on the questionnaire.

Table 6.7: Analysis of variance for the 20 Likert-style items on the questionnaire

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	13.73633468	2.74726694	12.28	<.0001
Error	155	34.66931749	0.22367302		
Corrected Total	160	48.40565217			

Therefore, further analysis was conducted with multiple comparisons of the six groups. The results presented in Table 6.8 show the responses from the students in Pierre's class were significantly different from those of Louise, Luc, and Danielle. This is not particularly surprising as the students of these latter three teachers had the highest overall rate of agreement with the items in the questionnaire and through the interviews indicated the most satisfaction with their interdisciplinary projects. On the other hand, the students in Pierre's class were those with the lowest overall impression and least appreciation of the interdisciplinary project.

Table 6.8: Multiple comparisons analysis for the 20 Likert-style items on the questionnaire

Adjustment for Multiple Comparisons: Tukey-Kramer						
	Mean	N	Group			
	3.7313	32	Louise			
	3.6589	28	Luc			
	3.6550	20	Danielle			
	3.5676	17	Benoît			
	3.2516	32	Renée			
	2.9609	32	Pierre			
Least Squares Means for effect groupe						
Pr > t for H0: LSMean(i)=LSMean(j)						
i/j	Renée	Luc	Benoît	Louise	Danielle	Pierre
Renée		0.0137	0.2315	0.0011	0.0372	0.1433
Luc	0.0137		0.9888	0.9915	1.0000	<.0001
Benoît	0.2315	0.9888		0.8583	0.9934	0.0005
Louise	0.0011	0.9915	0.8583		0.9931	<.0001
Danielle	0.0372	1.0000	0.9934	0.9931		<.0001
Pierre	0.1433	<.0001	0.0005	<.0001	<.0001	

In order to obtain a slightly more detailed analysis of the questionnaire, an analysis of variance was conducted regarding just the items of the questionnaire related to transferability. The results ($p < 0.0002$) (Table 6.9) indicated a statistically significant difference, to a degree of 5%, for the eight Likert-style items on the questionnaire dealing with the transferability of ideas, knowledge, and work and learning strategies.

Table 6.9: Analysis of variance for the eight Likert-style items on transferability

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	8.51005353	1.70201071	5.17	0.0002
Error	155	51.05982225	0.32941821		
Corrected Total	160	59.56987578			

Further analysis was conducted with multiple comparisons of the six groups for the eight items related to transferability. These included the items related to the transfer to English of ideas, knowledge, and work and learning strategies first covered in classes in French, and the transfer to French classes, ideas and learning and work strategies first dealt with in the English class. The results (Table 6.10 on the following page) show the responses from the students in Renée's and Pierre's classes were significantly different from those of Luc's students. Renée's students did not carry out the English component of the interdisciplinary project until several months after it had been completed by the teachers of the other subjects involved. This very likely had an effect on the students' perception of transferability both to and from English of knowledge and strategies. Pierre's students had translated a text written in French as the English component of the bilingual pamphlet interdisciplinary project. Other than perhaps a certain amount of vocabulary, the students claimed to have not learned very much English through the interdisciplinary project. On the other hand, Luc shared teaching time in the class with the biology teacher while the students worked on their science fair projects, dealing with subjects from biology, in the English class. This may be why they felt they were able to transfer knowledge and strategies back and forth between the two subjects.

Table 6.10: Multiple comparisons analysis for the eight Likert-style items on transferability

Adjustment for Multiple Comparisons: Tukey-Kramer						
	Mean	N	Group			
	3.8482	28	Luc			
	3.4297	32	Louise			
	3.3938	20	Danielle			
	3.3529	17	Benoît			
	3.2305	32	Pierre			
	3.1563	32	Renée			

Least Squares Means for effect groupe						
Pr > t for H0: LSMean(i)=LSMean(j)						
i/j	Renée	Luc	Benoît	Louise	Danielle	Pierre
Renée		<.0001	0.8631	0.4026	0.6953	0.9954
Luc	<.0001		0.0617	0.0599	0.0801	0.0007
Benoît	0.8631	0.0617		0.9978	0.9999	0.9804
Louise	0.4026	0.0599	0.9978		0.9999	0.7339
Danielle	0.6953	0.0801	0.9999	0.9999		0.9180
Pierre	0.9954	0.0007	0.9804	0.7339	0.9180	

Subsequently, an analysis of variance was conducted regarding the six items of the questionnaire related to the perceived benefits the students obtained in their English language learning through the interdisciplinary projects offered. The results ($p < 0.0001$) (Table 6.11) indicated a statistically significant difference, to a degree of 5%, for the six Likert-style items on the questionnaire dealing with the benefits to learning English.

Table 6.11: Analysis of variance for the six Likert-style items on benefits to learning English

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	12.28171089	2.45634218	5.55	<.0001
Error	155	68.55817869	0.44231083		
Corrected Total	160	80.83988958			

Again, a multiple comparisons analysis, of the items related to benefits, was conducted for the six groups. The results presented in Table 6.12, on the following page, show the responses from the students in Pierre's class were significantly different from those of Danielle, Louise, and Luc. Pierre's students claimed during the interviews, that many of them had not worked on the English component of the interdisciplinary project at all. Those who had the best English were the ones who did the English translation of the project and the most the students felt they had learned was a certain amount of vocabulary. On the other hand, Danielle's students had written completely new texts for the English

component of the book jacket project and had used the writing process to do so. Louise's students also used the writing process as they composed book reports, personal response pieces, character analyses, etc. for their web page project. Luc's students indicated they had improved their vocabulary through the interdisciplinary project as they had had to find the English equivalent for terms in French for their bilingual posters and presentations. Additionally, as they had to be able to give a presentation in English during the science fair, this may account for their belief the interdisciplinary project had offered benefits to their oral skills in English.

Table 6.12: Multiple comparisons analysis for the six Likert-style items on benefits to learning English

Adjustment for Multiple Comparisons: Tukey-Kramer						
	Mean	N	Group			
	3.7417	20	Danielle			
	3.6823	32	Louise			
	3.4940	28	Luc			
	3.4020	17	Benoît			
	3.3698	32	Renée			
	2.9271	32	Pierre			

Least Squares Means for effect groupe Pr > t for H0: LSMean(i)=LSMean(j)						
i/j	Renée	Luc	Benoît	Louise	Danielle	Pierre
Renée		0.9790	1.0000	0.4187	0.3692	0.0889
Luc	0.9790		0.9976	0.8832	0.7999	0.0152
Benoît	1.0000	0.9976		0.7243	0.6336	0.1701
Louise	0.4187	0.8832	0.7243		0.9996	0.0002
Danielle	0.3692	0.7999	0.6336	0.9996		0.0004
Pierre	0.0889	0.0152	0.1701	0.0002	0.0004	

Finally, an analysis of variance was conducted regarding just the items of the questionnaire related to other considerations. The results ($p < 0.0001$) (Table 6.13) indicated a statistically significant difference, to a degree of 5%, for these six Likert-style items.

Table 6.13: Analysis of variance for the six Likert-style items on other considerations

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	48.6591466	9.7318293	20.62	<0001
Error	155	73.1414055	0.4718800		
Corrected Total	160	121.8005521			

As for the previous sections of the questionnaire, a multiple comparisons analysis was conducted with the six groups on the items related to other considerations. The results (Table 6.14 on the following page) showed the responses from the students in Pierre’s class were significantly different from those of Louise, Benoît, and Danielle. Again, as was seen previously, Pierre’s students claimed to have a rather negative impression of the bilingual pamphlet interdisciplinary project. Given the particularities of the English component of the project, it is easy to understand why this was so. On the other hand, Louise’s students had claimed to have enjoyed very much the web page interdisciplinary project. For Benoît’s students, the action-research project had required them to go “fact finding” and so some had roamed over the school, interviewing pertinent people in the school for their projects. They found the quest for a viable solution to a real problem issue made the interdisciplinary project relevant. Danielle’s students had enjoyed the interdisciplinary project a great deal as well. They had particularly enjoyed writing summaries and blurbs for the stories they had written in French and a few claimed during the interviews that it was for that particular reason they had enjoyed the project. If they had been obliged to write summaries for books they had read, they believed the interdisciplinary project would not have been interesting at all.

Table 6.14: Multiple comparisons analysis for the six Likert-style items on other considerations

Adjustment for Multiple Comparisons: Tukey-Kramer						
	Mean	N	Group			
	4.1823	32	Louise			
	4.0196	17	Benoît			
	3.9167	20	Danielle			
	3.5714	28	Luc			
	3.2604	32	Renée			
	2.6354	32	Pierre			

Least Squares Means for effect groupe						
Pr > t for H0: LSMean(i)=LSMean(j)						
i/j	Renée	Luc	Benoît	Louise	Danielle	Pierre
Renée		0.5014	0.0042	<.0001	0.0127	0.0049
Luc	0.5014		0.2815	0.0097	0.5230	<.0001
Benoît	0.0042	0.2815		0.9690	0.9975	<.0001
Louise	<.0001	0.0097	0.9690		0.7527	<.0001
Danielle	0.0127	0.5230	0.9975	0.7527		<.0001
Pierre	0.0049	<.0001	<.0001	<.0001	<.0001	

The results of these analyses have indicated there were statistically significant differences between the six groups. The group of students most often implicated was that of Pierre, and there appeared to be little difference between the groups of Pierre and Renée. It is of note these were the two groups who most often claimed, during the interviews, to have not enjoyed nor learned very much through the interdisciplinary projects. Conversely, the students from Louise's class, the group that most often had a statistically significant difference from Pierre's students, had an overall very positive view of their interdisciplinary projects. The students from Luc's class were the other group often at the other end of the spectrum. These were the two classes where both the ESL teacher and their partner in the interdisciplinary project shared teaching time when the students were working on the projects. It seems rather evident that this formula was more popular with the students who felt they learned more in these interdisciplinary projects. At this point, the analysis turns to examine the responses of the three open questions of the questionnaire.

Questionnaires: Open questions

As was seen in the previous chapter, there were three open questions on the questionnaire. These asked the students to indicate what they liked most about the interdisciplinary project, what they liked least, and in what manner the interdisciplinary project was different from their regular English classes. The information from the first question is presented in Table 6.15 on page 346. In this table, as in the tables for the other two open questions, the factors in bold indicate responses by more than one group of students. The information in the tables is presented in order from the most common responses to the least.

In response to the first question, there was only one thing students from each of the six groups indicated they liked most about the interdisciplinary projects; this was the opportunity the interdisciplinary project offered them to work in teams. Closely following were three factors to which students in five groups indicated appreciation. These were the links the interdisciplinary projects made between the participants, the opportunity the interdisciplinary projects offered the students to put what they learned into practice or to share what they learned with others, and the increased motivation or interest the projects aroused. Notably, only students in Renée's class made no mention of the first of these three

items, the links between the different subjects. To a much lesser degree, certain students in five of the groups enjoyed the opportunities to improve their English skills in the project and the increased autonomy in the learning process that the projects afforded them. There were five other elements that students liked. In decreasing order of importance, these were the opportunity to learn things not normally seen in English, the ability to receive assistance from more than one teacher in the interdisciplinary project, the opportunity the project offered for work in the computer labs, the ability to work on the project during class time in all the subjects participating in the interdisciplinary project, and that the interdisciplinary project was different from their regular English class. There were four other elements indicated as appreciated by the students; however, each of these were respectively identified by individual groups and were generally more specific to the individual interdisciplinary projects they completed.

Table 6.15: Open Question 1: The elements the students like most about interdisciplinary projects

Responses	Luc	Renée	Benoît	Louise	Danielle	Pierre	Total
The opportunities for team work	3	13	5	4	7	7	39
The links the project made between the different subjects	9	--	2	1	10	17	39
The opportunity to put knowledge into practice/share new knowledge	13	18	--	3	1	3	38
The project was motivating/interesting	6	--	6	12	4	2	30
The opportunity to improve English in the project	--	2	1	8	1	3	15
The increased autonomy in studying/learning	4	2	3	4	1	--	14
The opportunity to learn things not normally seen in English	6	3	--	--	--	2	11
The ability to receive assistance from more than one teacher	1	--	1	1	--	4	7
The opportunity to work at the computer lab	1	--	--	5	--	--	6
The opportunity to learn while enjoying oneself	--	--	--	5	--	--	5
The opportunity to create a web page	--	--	--	4	--	--	4
The utilisation of one large project rather than several small ones	--	4	--	--	--	--	4
The chance to work on the project during class in all subjects	--	--	2	--	--	1	3
The project was different from the regular English class	--	--	--	1	2	--	3
The chance to practice translation	--	--	--	--	2	--	2

The second open question, which asked the students what they liked least about interdisciplinary projects, elicited as many responses as the first question; however, half of these were focused in two elements, as can be seen in Table 6.16 on the following page. Certain students in all six groups found the interdisciplinary project lasted for too long a period of time and the amount of work required to complete the project was too onerous. To a much lesser degree, some of the students in five of the groups found the subject of the interdisciplinary project was not interesting. Students in five groups also believed the interdisciplinary project did not offer them opportunities to use English or to learn anything new in English. Three of the groups had a few individuals who found they had difficulties working in teams or that the team itself did not function well. Students from three of the classes also felt the interdisciplinary projects required they translate information from French to English. There were five factors identified respectively by students in two of the classes. These were a lack of coherence or agreement between the teachers of the different subjects involved in the interdisciplinary project, the difficulty the students encountered in meeting the deadlines imposed in the projects, the amount of time that elapsed between when work was submitted and feedback given, the links the interdisciplinary project made between the different subjects, and the number of interdisciplinary projects assigned at one time. Seven other elements the students had liked least about the interdisciplinary projects were indicated by students in only one or another of the groups.

Table 6.16: Open Question 2: The elements the students like least about interdisciplinary projects

Responses	Luc	Renée	Benoît	Louise	Danielle	Pierre	Total
The project lasted too long	11	12	6	8	5	20	62
The amount of work/homework was too onerous	11	10	5	10	1	13	50
The subject was not interesting	--	4	3	4	--	7	18
The lack of opportunities to use/learn anything in English	--	--	8	3	3	3	17
The team did not function well/team work is difficult	1	--	--	--	7	1	9
The preparation for and the presentation at the science fair was stressful and tiring	9	--	--	--	--	--	9
The lack of coherence/agreement between teachers	--	7	--	1	--	--	8
The project required translation of French to English	3	--	1	--	--	1	5
The deadlines were difficult to meet	--	--	3	--	--	2	5
The time elapsed between work submitted and the corresponding feedback was too long	--	--	3	--	--	1	4
The project was too short	--	--	--	4	--	--	4
The project counts for end of term grade in French	4	--	--	--	--	--	4
The difficulties understanding/being understood	--	--	--	4	--	--	4
The links the project made between the different subjects	--	--	--	2	1	--	3
The grading system did not appear to be standardized	--	--	--	--	--	3	3
The number of projects assigned at the same time	--	--	1	1	--	--	2
The number of classes wasted because not enough structure	--	--	2	--	--	--	2
The lack of projects to do/not enough projects	--	--	--	2	--	--	2
The heavy emphasis on computer work	--	--	--	2	--	--	2

The third open question asked the students to indicate in what manner the interdisciplinary project differed from their regular English classes. The students responded in two ways. They either indicated information related to the interdisciplinary projects or else information related to their regular English classes, as can be seen in Table 6.17 on the following page.

Related to the interdisciplinary projects, there was only one response that was common for students in the six groups, and this was that interdisciplinary projects offered more autonomous learning than their regular English classes. Students in five of the groups indicated the interdisciplinary projects were more interesting and/or motivating than their regular classes. Certain individuals from four of the groups found interdisciplinary projects offered more opportunities to put what they learned into practice or were less theoretical than their regular English classes, meant more learning of vocabulary, allowed them to make links between the different subjects, and allowed richer learning than their regular English classes. Students from three of the groups found the interdisciplinary projects helped develop more competencies in team work, and individuals in two groups found interdisciplinary projects offered more opportunities for verbal interaction with their peers. Certain students in two other groups noted interdisciplinary projects required more translation than their regular English classes.

In the responses regarding the regular English classes, students from all six groups found regular English classes provided more general information regarding oral skills, grammar, and vocabulary. Certain individuals in five of the groups indicated regular English classes meant the teacher provided all the information they needed to know and so did not require research or effort on their part. Interestingly, some students in three of these groups found their regular English classes boring. Certain students in three groups also indicated they believed they learned more in their regular English classes than they did in the interdisciplinary projects. Unsurprisingly, given the results of the Likert-type items of the questionnaire, one of these three groups of students were those of Pierre's class.

Table 6.17: Open Question 3: The elements the students perceive make learning in interdisciplinary projects different from learning in their regular English classes

Responses	Luc	Renée	Benoît	Louise	Danielle	Pierre	Total
Interdisciplinary projects have more autonomous learning	3	16	2	2	6	9	38
Interdisciplinary projects are more interesting/motivating	4	6	5	12	8	--	35
Interdisciplinary projects provide more chances to put learning into practice/less theory	2	8	6	15	--	--	31
Interdisciplinary projects provide more learning of vocabulary	15	4	--	2	1	--	22
Interdisciplinary projects allow links to be made between the different subjects	1	--	--	2	1	8	12
Interdisciplinary projects allow richer learning	--	--	6	2	3	1	12
Interdisciplinary projects allow more interaction in English	--	2	--	10	--	--	12
Interdisciplinary projects develop competencies in team work	3	--	3	--	1	--	7
Interdisciplinary projects allow more freedom to choose topic	4	--	--	--	--	--	4
Interdisciplinary projects require more translation work	--	--	--	--	1	1	2
Interdisciplinary projects require more work	--	--	--	--	2	--	2
Regular classes are on general oral skills, vocabulary, and grammar							
Regular classes mean the teacher provides all information	14	7	8	7	1	2	39
Regular classes are boring	3	2	4	10	5	--	24
Regular classes are boring	--	--	6	9	1	--	16
Regular classes are more concrete/practical	--	--	--	--	--	9	9
Regular classes use only English	--	--	--	--	--	7	7
Regular classes teach us more	--	--	2	--	1	3	6
Regular classes offer more restricted information	--	--	2	--	--	--	2

Interviews

As interviews with Louise's students were not possible, information is missing for this group. Therefore, all discussion in this part of the text is based out of five and not six groups of students.

Students in the five groups claimed to have found the interdisciplinary projects were beneficial to their learning in general as the projects helped them put into practice some of the theoretical knowledge they learned in their classes and to make links between the different subjects. This helped them to better integrate the information and material they learned. As a result, some said they thought they had greater understanding and knowledge of the topics on which they worked. Some of Benoît's, Danielle's, and Pierre's students also claimed interdisciplinary projects meant their learning was better because of a greater understanding of the concepts seen from the different perspectives of the different subjects.

Many of the students interviewed thought the interdisciplinary projects helped them improve their learning and work strategies in some ways. Some students from the five groups found their teamwork skills increased through the interdisciplinary projects and they learned better how to work effectively with their peers. These findings correspond with those of Thompson (1997) and Pate, Homestead, and McGuinnis (1997). Additionally, there were students in each class who found interdisciplinary projects required increased independence and autonomy and so developed problem-solving and critical thinking skills. Some of Luc's and Benoît's students said they had become more resourceful through the completion of the interdisciplinary projects because they had had to look for sources on their own and find information pertinent to their topics. Better time management and organization skills were two other components that some of the students claimed they gained through interdisciplinary projects. The students had to learn to set and respect the different deadlines for aspects of the interdisciplinary projects, and to ensure the projects were completed for when they were due.

However, despite this apparent endorsement of the benefits interdisciplinary teaching offers to the use of learning and work strategies, the information on the questionnaires showed the students in Pierre's and Renée's classes did not find this to be the case. Only the students in Luc's class clearly indicated they found the interdisciplinary

project allowed them to transfer work and learning strategies in both directions between the two subjects.

In the interviews, there were students in each of the five classes who claimed interdisciplinary projects helped them to improve their learning of English. However, there were also students in Renée's, Benoît's, and Pierre's classes who said they did not use or did not learn anything in English and so did not believe interdisciplinary projects were a particularly useful tool in their quest to improve their English skills. Part of this could be explained by the number of students who claimed to have only translated texts from French to English for the project. Further, some students in Renée's and Pierre's classes said they did not work in English at all on the interdisciplinary project. They worked in groups and, as they divided the different tasks for the project amongst themselves, some of the students worked on the interdisciplinary project without having anything to do with those aspects of the project which were related to their English class. This information corroborates the findings from the questionnaires as the students in these classes indicated they did not perceive great benefits to their learning of English through the interdisciplinary projects. Additionally, certain students in each of the five groups interviewed declared they translated texts they wrote in French to complete the English part of the interdisciplinary project.

In all the groups, except that of Pierre, some students believed their interdisciplinary projects increased their motivation to learn English and their interest in the project. The students of the three classes who most appreciated the interdisciplinary projects were those of Louise, Benoît and Danielle. Most often this was because the topic of the project itself was interesting to the students as they had a certain degree of choice in the subject of their project. Louise's students chose their own books to read that they would use in their web page project. The English component of the interdisciplinary project in both Benoît's and Danielle's classes was built upon stories the students had written for their French teachers. Danielle's students said the project would not have been interesting to do if they had had to create book jackets for stories they had read. What had made the project appealing was that they had worked on stories they had written in their French class.

Although the interviews had been with three students from each class who had indicated the most appreciation and least appreciation of the interdisciplinary projects they

had completed, it became obvious through the interviews that this distinction was not so clear. There were several opinions that were common to the students in each group, whether they had appreciated the project or not. There tended to be a stronger sense that the interdisciplinary projects were considered useful for learning, in general, but held less benefits for the learning of English. It is likely some of the reasons for this opinion were due to the poor task design that resulted in somewhat limited exploitation of the interdisciplinary projects to develop the students' English skills and competencies.

Observations of the interdisciplinary projects

The following discussion of the in-class observations of the interdisciplinary projects draws on the most salient elements that were noted. As in-class observations during the interdisciplinary project were not possible with Louise, the information included herein is based on the one class I was able to observe where the students were not working on the web page interdisciplinary project. Also, the English component of the bilingual pamphlet project from Pierre's class was mostly completed as a homework assignment. Therefore, information regarding the project is sparse whereas that of regular class activities is more complete. Table 6:18 on page 358 provides a summary of the information included in this discussion.

The in-class observations allowed me to note that most of the teachers used only English in their regular classroom activities and when discussing or interacting with the students during the interdisciplinary projects. The exceptions were Pierre, who used a mix of English and French during his regular class activities, and Benoît, who used mostly French at all times. Only the students in Danielle's class used English for all interactions both in the interdisciplinary project and their regular class activities. The students in the other groups generally used English during the regular class activities; however, while working on the interdisciplinary projects, they used French in their interactions with each other and generally only used English for their interactions with their teachers. As was noted in the case study, Benoît's students used French for most of their interactions, both in the interdisciplinary project and their regular class activities, with each other and with Benoît. Pierre's students usually used English only to read and respond to questions in their

grammar book. Discussions of grammar points, questions, and other interactions were more often carried out in French.

The interdisciplinary projects were almost equally divided into those that were carried out simultaneously (3) and those that were carried out sequentially (4). The English components of these latter were always the last part to be completed in the interdisciplinary projects except the bilingual pamphlet where the multimedia component came last. The sequential components were implemented immediately following the completion of the other components except that of Renée's interdisciplinary project *La ferme des animaux*. In her case, the English component was implemented three months after the other components had been completed.

The teachers' use of authentic materials to support their students' use and learning of English in the interdisciplinary projects was minimal. Renée, Benoît, and Pierre offered no samples of the type of work they expected from the students nor did they offer English materials which would have helped the students see the pertinent vocabulary in use or the structure of the type of text required. In the science fair project the students used the Internet to gather information, but the vast majority of the sites they visited were French. Rarely were English sites used and when bilingual sites were available, the students chose the French option. On the other hand, in the web page interdisciplinary project, the students visited the English web sites of book publishers and used the information texts from these sites as well as those included in their English novels (synopsis, biography, reviews) for models of the types of texts they would include on their web site. They also visited pertinent web sites for samples of completed web pages. In the book jacket interdisciplinary project, Danielle provided samples of book jackets for the students to use as models.

The usage of resources from the other subject components of the interdisciplinary projects varied. The science fair interdisciplinary project was carried out with both Luc and Robert in the classroom at the same time, and as the project was based on information from Robert's science class, the students used material from Robert that was related to their topics while working on the interdisciplinary project. However, while Renée recommended the students use materials from their French and philosophy courses; only eight of the 32 students in the class brought teacher-made materials from the other subjects to the English

class to use in the development of their arguments for the debates on the values developed in the book *La ferme des animaux*. Benoît (action-research project), Danielle (book jacket project), and Pierre (bilingual pamphlet project) did not encourage or require the students use any teacher-made materials from their interdisciplinary partners in the completion of the English components of their projects.

There was, however, a great deal more usage of student-made resources in these five classes. For the science fair project, the students used material they gathered in their research on their particular topic in their presentations at the fair. In Renée's class, the same students who brought teacher-made material also brought material they had developed in the other classes for use in the development of their arguments. For the book jacket, the bilingual pamphlet, and the *Identité* (Benoît) interdisciplinary projects, the students based their work in English on texts they had written for their French class. In the case of both the teacher-made and student-made materials from the other subjects involved in the interdisciplinary projects, all materials were in French.

Although all projects were group projects, not all the students worked on all aspects of their projects. During the in-class observations, students were seen to work together (in some classes more than others) and exchange ideas on their topics. However, during the interviews, certain students in Pierre's class claimed they had divided the work between them with the students having the best skills in English taking over responsibility for certain parts of the English component of the interdisciplinary project. This meant there had been some students in the class who had done no work at all on the English component.

For the actual production of student work, while it was expected that there would be some written texts in English from all the classes, this did not turn out to be the case. The students did produce English texts for their prologue of the *Identité* project, the web page, the book jacket, and the bilingual pamphlet. Of these texts, only the texts from the book jacket and web page projects were composed using the writing process. From the interview with Louise, I know this process was used during the writing of the different texts the students used for their web pages. However, for the English texts for the bilingual pamphlet and *Identité* interdisciplinary projects, there was no use of the writing process. The students composed their texts, and in the former project, Pierre graded their papers, but the students were not required to correct their texts for his approval before incorporating them into the

pamphlets. In the latter case, Benoît corrected the students' errors and they subsequently recopied out the text. Also in Benoît's class, the English version of the action-research booklet was chosen with the idea the students would complete it in English, but this did not happen. An examination of the students' booklets showed they had completed all the activities in French.

For the science fair interdisciplinary project, although I expected to see written documents in English that the students would have used to prepare for the fair, none were ever presented in class. The students were not allowed to use cue cards or written texts during their presentations and so I was unable to obtain artifacts of this nature. In Renée's class, the students were allowed to use cue cards for their debates and some simply read the entire text they had prepared; however, due to the protracted period of time between the presentations, the questionnaire, and the interviews with these students, I was unable to obtain any samples of these cards. Similarly, I had expected there to be some authentic production of speech during the science fair and the debates, but there was none. In both cases, the students had memorized their texts and simply recited them. As was seen in the case studies, there was no authentic interaction in English between the students, nor between the students and their audience in either of these interdisciplinary projects.

Another element related to the students' writing and speaking in English was the use of translation. The in-class observations showed that students who used computers during class time resorted to on-line translation programmes. As was seen in the case study for Renée, certain students also arrived in class with documents that had clearly been created through this process. During the student interviews, individual students from the different classes claimed to have translated French texts into English for use in the English component of the interdisciplinary project. The result was that in all classes, except that of Louise for whom the information was unavailable, certain students used translated texts for either the written and/or oral component of the interdisciplinary projects.

Classroom management issues were also foregrounded through the in-class observations, and in certain cases, these issues were the result of the implementation of the interdisciplinary project. For both Luc and Renée, their classroom rule was that English was to be spoken at all times in the classroom, and during their regular class activities, this seemed to be the case. However, when Renée's students got into groups for the

development of their arguments for the debate, almost all interactions between the students were in French. Luc's students also switched from the use of English only in their classes to the use of French in their interactions with each other during the science fair project; however, in this situation, the demarcation between language usage was clearly the door of the classroom. In their regular classroom, the students spoke only English but, as they left the classroom for the computer lab, the language they used changed to French. For Benoît, it did not appear that the students' use of French was an issue. Nonetheless, the near absence of English in the English class was one of the most noticeable features of this group.

There was one other classroom management issue that emerged through the observations. While working on the interdisciplinary project, the students in Renée's class were frequently off topic and discussed subjects that were not related to their debate topics. Often the only time they actually worked on the project was when Renée approached or was seated at the tables of a group nearby. In Benoît's class, his proximity to the students seemed to have no relation to the work they did on the projects. It appeared to me that, for both Renée's and Benoît's classes, the change from a teacher-centred organization to student group work meant more time off task for the students. As was the case for the lack of respect shown to Benoît, this was an issue that was present in his regular classes but seemed to be exacerbated by the changes classroom organization brought about through the implementation of the interdisciplinary projects.

Table 6.18: Summary of information regarding in-class observations

Teacher		Luc	Renée	Benoît	Louise *	Danielle	Pierre **
Interdisciplinary project		Science fair	<i>La ferme des animaux</i>	Action-research <i>Identité</i>	Web page	Book jacket	Bilingual pamphlet
Language use: Teacher	During project	English	English		English	English	English
				French mostly			
Language use: Students	During project	French mostly	French mostly	French mostly			
						English	
Class organization	During project	Student-centred	Student-centred			Student-centred	
				Mix of student & teacher-centred			
Interdisciplinary project timing	Outside of project	English	English		English	English	French and English
				French mostly			
Use of authentic documents	During project	Student-centred	Student-centred			Student-centred	
				Mix of student & teacher-centred			
Use of resources from other subjects (French)	Outside of project	Mix of student & teacher-centred	Teacher-centred	Teacher-centred		Mix of student & teacher-centred	Teacher-centred
					Mix of student & teacher-centred	Mix of student & teacher-centred	
Task completion	During project	Simultaneous		Simultaneous (Action research)	Simultaneous		
			Sequential	Sequential (<i>Identité</i>)		Sequential	Sequential
Production of written texts	During project	Simultaneous		Simultaneous (Action research)	Simultaneous		
			No	No		Sequential	Sequential
Authentic speaking tasks	During project	Internet (mainly in French)			Web sites Novels in English	Samples of book jackets in English	
							No
Use of resources from other subjects (French)	Teacher-made			No		No	No
		Yes	8 students / 32				
Task completion	Student-made	Yes	8 students / 32	Yes		Yes	Yes
Production of written texts	During project	Shared work	Shared work	Shared work		Shared work	
							Divided tasks
Authentic speaking tasks	During project			Prologue (<i>Identité</i>)	Web page	Summary & blurbs	Information text
		No	No	No (Action-research)			
Authentic speaking tasks	During project	No	No				

Teacher		Luc	Renée	Benoît	Louise *	Danielle	Pierre **
Translation		Yes	Yes	Yes		Yes (interview)	Yes (interview)
Classroom management issues	During project	Language use	Language use	Language use			
			Students did not work	Students worked sporadically			
				Respect			
	Outside of project			Students worked sporadically			
				Respect			

Student orientation to the interdisciplinary projects

According to Galperin (1980), when learners have different orientations to a learning task, there will likely be different learning outcomes. In other words if two students complete the same language learning task, and one genuinely wishes to learn the second language but the other completes the activity in order to fulfill a course requirement, the learning outcomes will be different as the motive for the way they approach the task differs. Using a sociocultural framework, certain studies on second language learners' task orientation (Parks, 2000; Parks, Huot, Hamers, & H.-Lemonnier, 2005; Priego, 2007) have attempted to determine whether the students' motives had an effect on the way they approached the language learning tasks. They found positive orientation to both language learning and the assigned task meant the students approached the task as an opportunity to improve their second language. In these cases, the students invested more time and effort in the task than was minimally required. Students who approached the task as something to be completed as part of the requirements for the course demonstrated a more ambivalent orientation to the task and the language learning opportunities it offered. These students completed the tasks but did not necessarily respect the guidelines for the project. A negative orientation to the task, because the task was seen as offering little or no value for the students' learning of their second language, resulted in minimal engagement with tasks left incomplete.

These classifications can be applied to the students in this study. By examining the responses in the student questionnaires and taking into consideration the information from the interviews and the in-class observations, it is possible to draw certain conclusions regarding the students' orientation to the language learning task embedded within the interdisciplinary projects. The use of translation of texts from French to English, rather than the actual composition of English texts may be used as an indicator of an orientation of efficiency. The use of documents in French, rather than in English could be used as another. On the other hand, students who used the writing process to create their texts in English would likely have been more oriented towards using the interdisciplinary project as an opportunity to learn English, as would those students who chose to use English in their interactions with each other while completing the tasks of the projects.

As have other studies (DaSilva Iddings, 2005; DaSilva Iddings & Katz, 2007; Jones, 2006; Parks et al., 2005; Priego, 2007) using sociocultural theory to investigate second language learners' participation in classroom activities, triangulation, in the form of observations, interviews, field notes, and audiotaping of interviews was used in the data collection process of this study. The purpose for this was to enhance validity of the analysis (Patton, 1990). Therefore, information from these various data sources were used to determine the students' orientation to the interdisciplinary projects. Table 6.19, summarizing information from the following discussion, can be found on page 368.

Luc's students indicated a strong appreciation of the science fair interdisciplinary project. They felt a great deal of pride in their accomplishment at the science fair, in the position of being an expert on their subject, and in their ability to share the information they had with others, both from within the school and outside. This was reflected in their responses to Item 1 on the questionnaire (Appreciation of the interdisciplinary project). However, this appreciation of the interdisciplinary project did not necessarily mean they had a positive orientation to learning English or to the benefits the interdisciplinary project offered for this purpose. Item 16 on the questionnaire related to the students' perception of whether the interdisciplinary projects were more motivating for them to learn English than their regular class activities. For this item, the majority of the student responses were neutral, translating to an ambivalent orientation to the science fair project. The reasons for this were varied. In their regular classes, the students worked in projects most of the time, these projects were more short term and so involved a great deal less work. This was the main complaint the students made regarding the project. It was too much work for the final product. Finally, Item 18 asked whether the students thought they learned more English in the interdisciplinary project than in their regular class activities. Again, the response was mostly neutral, indicating an ambivalent orientation to the interdisciplinary project as a means of learning English. These conclusions are supported through the responses from the open questions of the questionnaire, the in-class observations, and the information the students provided during the interviews regarding their activities in the completion of the project. The students used French web sites where possible, online translation sites to translate texts from French to English, and use French in their interactions with each other.

The students' orientation was one of efficiency; they did not approach the project as an opportunity to learn English, but rather as a task that needed to be completed.

Renée's students responded to Item 1 on the questionnaire regarding appreciation in a more ambivalent manner. Two-thirds of the students indicated a neutral response which was likely due to the protracted nature of the implementation of the interdisciplinary project. The students claimed to have greatly enjoyed the team-work aspect of the project as it was so different from their regular class structure. Nonetheless, they decried having to deal with the book *La ferme des animaux* over such a long period of the school-year; they were tired of the subject. These two opposing points may explain the nature of their response to this item. The item on the questionnaire related to the students' perception of whether the interdisciplinary projects were more motivating for them to learn English than their regular class activities (Item 16), received a more positive response. Again, the team-work aspect of the project likely contributed to this positive orientation as did the students' positive view of the debates. However, this contrasts with a negative orientation to interdisciplinary project work as more beneficial for the learning of English than their regular classroom activities (Item 18). This orientation is likely due to the very different classroom structure of the interdisciplinary projects. The students exhibited an orientation of efficiency as they did not use English in their interactions with their peers, they did not make productive use of the class time, they did not have an authentic debate but rather, recited memorized texts, etc. In contrast, their regular English classroom was highly structured, the students participated in reading aloud activities, completed grammar activities and vocabulary development activities, and used English at all times.

The students in Benoît's class indicated they had a positive appreciation of the *Identité* and action-research interdisciplinary projects. A great deal of this may be due to the nature of the *Identité* project. During the interviews the students explained they had enjoyed the exploration of issues and conflicts, but mostly because the first person narrative they wrote on the topic of one of the conflicts was to be published in a book, they found the project to be particularly validating. It was the publication of their stories which generated their appreciation of the project. To a lesser extent, the action-research project had been perceived as positive because of the different class structure. They had enjoyed the selection of topics for research which were relevant to them and the opportunity for team

work within the project. Item 16 on the questionnaire received a slightly more positive response, and it was likely the same reasons that affected the students' motivation. However, based on the classroom observations, it did not appear that the orientation to learn English had increased. The students made little to no use of the opportunities the action-research project offered for them to interact in English and they did not use English to complete the project booklet. As was noted in the case study, the most noticeable feature of this group was the lack of English usage. This may have something to do with the two widely divergent groups of responses for the item related to orientation for learning English. The students either strongly agreed or strongly disagreed with the statement they learned more English with the interdisciplinary project than in their regular English class (Item 18). As the students did not use the writing process for the composition of their prologues, nor write or speak in English on their research projects, it is very difficult to understand how so many students found the projects beneficial for their learning of English, especially as during the interviews and in their responses to the open questions of the questionnaire, several students complained about the few opportunities offered in the projects to improve their English. Additionally, the students did very little productive work during class time when working on the action-research project, and this may have had some influence on the perception the students learned less English in the interdisciplinary project than they did in their regular class. It appeared the students' orientation to the interdisciplinary project was neither based on efficiency nor on taking advantage of the learning opportunities it offered.

Louise's students had, in general, the most positive orientation to their interdisciplinary project. The creation of the web page based on reviews, character analyses, and reactions to the books they had read offered them the opportunity to use English in a real world application. Responses to the first open question included references to learning while enjoying the activity and the pleasure the students had in creating a web page. These help explain the positive appreciation of the interdisciplinary project (Item 1), and also the students' positive orientation to interdisciplinary projects. Not only did the students strongly agree the interdisciplinary projects were more motivating to learn English than their regular English class (Item 16), the largest group of responses to the open question asking what they had liked most about the interdisciplinary project was that the

web page interdisciplinary project was motivating and/or interesting. Part of the reason for this may lie in the fact the students found regular classroom activities to be teacher-centred and, in some cases, boring. The students also indicated a positive orientation to the purpose of the interdisciplinary project. There was agreement with Item 18 (I learn more English with the interdisciplinary project than in my regular ESL class), and this might have been because of the use of the writing process to draft their texts and the on-line research carried out in the development of their web pages. The students used English exclusively in the classroom, and it is likely Louise ensured they also used only English web sites for their on-line research. It appears the students' orientation to the project was one of using it as an opportunity to learn English.

The most unequivocal response to whether the students appreciated the interdisciplinary project came from Danielle's students. All the students indicated either agreement or strong agreement to Item 1 of the questionnaire regarding their appreciation of the book jacket interdisciplinary project. As with the other groups of students, there were likely several reasons for this. The element which emerged the most often in the interviews was that the students had enjoyed creating a book jacket for the story they had written. Another reason could be due to the different class structure of the interdisciplinary project. During their regular English class, often the classes were very teacher-centred but while working on the book jackets, the students had worked in pairs, often with only minimal supervision, and while the student booklet had laid out what elements had to be included on the book jacket, the choice of content was left to the students. Item 16 on the questionnaire related to the students' perception of whether the interdisciplinary projects were more motivating for them to learn English than their regular class activities, and again, the students indicated a positive orientation to the interdisciplinary project. This was evidenced by the large amount of time spent on task, and the exclusive use of English by the students even though Danielle was largely occupied with students at her desk and not supervising the pair work going on in the class. The students' orientation to the book jacket project was also positive as it appeared they used the interdisciplinary project as an opportunity to improve their English. (Item 18 - Agreement with the idea they learn more English with the interdisciplinary project than in their regular ESL class.) In the project, the students used the writing process to develop their texts for the book jacket. Additionally, the editing from

Danielle mostly indicated where there were difficulties in the text; it was the students' responsibility to find what it was that was wrong and to correct it. Nonetheless, through the interviews it emerged that some of the texts had been either written in French or taken from the stories that were written in French, and then translated. For the development of oral skills, the students' interactions with their partners were carried out exclusively in English and the scope for authentic interaction was large as the students negotiated whose story would be chosen, the type and arrangement of the cover art, the contents of the blurbs, the writer's biography, etc.

Pierre's students indicated a neutral appreciation of the interdisciplinary project. The students had appreciated the links they were able to make between the different subjects involved in the bilingual pamphlet interdisciplinary project; however, their comments regarding the interdisciplinary project, and particularly the English component of the project were scathing. As such, it was not surprising their orientation to the interdisciplinary project was negative. The students indicated strong disagreement with Item 16. (Interdisciplinary projects are more motivating to learn ESL than regular classroom activities.) They had found there was an excessive amount of work and homework to do for the project, they had felt the project should have been condensed into a shorter time period, and they had resented the obligation to work on the project outside of class time, as they found they already had too much homework. This negative view of the interdisciplinary project was evidenced by the students' orientation of efficiency to the project. The students strongly disagreed with the item positing they learned more English through interdisciplinary projects than in their regular English class. During the interviews, the information emerged that certain students had divided up the tasks involved in the project based on the strengths of the different team members. The result was that those students who were weaker in English did not work on the English component of the interdisciplinary project. In the teams, often only one or two students did any of the work on the English translation of the text. In-class observations showed very teacher-centred classes where the students spent a great deal of time learning and practicing grammar. It was not surprising they believed they had learned less English through the interdisciplinary project than they did in their regular English class.

This discussion has shown that the students' orientation to the interdisciplinary projects varied a great deal. The interdisciplinary projects which were able, in some manner, to encourage a sense of pride in the students were those for which the students indicated a positive appreciation of the interdisciplinary project. This included developing a sense of accomplishment in the final product or through the use of student-made materials within the interdisciplinary projects.

Four of the groups of students exhibited a positive orientation to the usage of their particular interdisciplinary project in soliciting their motivation and engagement in the project as a means to learn English. These reactions were likely due to the changes in the classroom structure which resulted from the implementation of the interdisciplinary projects. In all cases, the interdisciplinary projects signalled a shift from a teacher-centred class to one of student team or group work. Of the two groups which did not exhibit this orientation, one involved a great deal of team project work in their regular class activities which would explain the students' neutral response. For the other group, the interdisciplinary project had been assigned as homework with virtually no class time provided for its completion; the students' negative orientation to the project was likely partially attributable to this.

There were only two groups of students who exhibited a positive orientation to the use of interdisciplinary projects as tools to improve English language learning. For both of these groups, the writing process was used in the production of written texts, and the use of English in the classroom at all times was standard classroom practice. For one of the other groups of students, the orientation was one of neutrality, but for the other three, there were students who exhibited an efficiency based orientation to the tasks of the interdisciplinary projects. It was in these classes where there were the most students who simply translated their written texts from French to English, or spent little time on task, and perhaps because it was seen as offering little or no value for the students' learning of their second language, resulted in minimal engagement. These results find support in other studies examining students' orientations towards certain language learning activities as a means to improve their English. For example, the study by Parks et al. (2005) found that students who appropriated the writing process and used it effectively had a more positive orientation towards writing tasks in English. Priego (2007) found students who did not believe an

email tandem learning project was valuable for their second language learning did not invest in the project or only minimally complied, demonstrating negative orientation.

Table 6.19: Comparison of student orientation to the interdisciplinary projects

Student group	Orientation *Orientation is determined by the majority of responses for the item (number in bold)	Information																																	
Luc	<ul style="list-style-type: none"> • Appreciation of the project: positive (Item 1 - Agreement with the idea they appreciated the interdisciplinary project.) • Orientation to interdisciplinary projects: ambivalent (Item 16 - Neutral towards the idea interdisciplinary projects are more motivating to learn ESL than regular classroom activities.) • Orientation to the project: ambivalent (Item 18 - Neutral towards the idea they learn more English with the interdisciplinary project than in their regular ESL class.) <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th rowspan="2">Item</th> <th colspan="5">Number of responses</th> <th rowspan="2">Mean</th> </tr> <tr> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0</td> <td>1</td> <td>5</td> <td>15</td> <td>7</td> <td>4.00</td> </tr> <tr> <td>16</td> <td>2</td> <td>3</td> <td>14</td> <td>6</td> <td>3</td> <td>3.18</td> </tr> <tr> <td>18</td> <td>3</td> <td>7</td> <td>14</td> <td>2</td> <td>2</td> <td>2.79</td> </tr> </tbody> </table>	Item	Number of responses					Mean	1	2	3	4	5	1	0	1	5	15	7	4.00	16	2	3	14	6	3	3.18	18	3	7	14	2	2	2.79	<p><u>Science fair interdisciplinary project</u></p> <ul style="list-style-type: none"> • Student-centred – group work • Students spoke French amongst themselves and in interactions with Robert / spoke English with Luc • Students used French for use of search engines, web sites, books, magazines, and material on their topics • Students used English and bilingual dictionaries for preparation of presentation posters and presentations • Students produced bilingual posters made up of translations of pertinent terms • Students translated texts from French to English for science fair presentation (open questions on questionnaire and interviews) • Students produced no written documents in English • Students engaged in no authentic oral interaction in English at science fair – presentations were memorized texts • Students spent all of class time working on their project • Students indicated enjoyment and satisfaction with the experience of being an expert on their subject at the science fair (open questions on questionnaire and interviews) • Students indicated unhappiness with the amount of work and homework required for the project (open questions on questionnaire and interviews) • Students indicated perception interdisciplinary projects help them learn more vocabulary than regular classroom activities (open questions on questionnaire and interviews) <p><u>Regular classroom activities</u></p> <ul style="list-style-type: none"> • Student-centred – group work • Students use English for all interactions • Students used to project-based teaching • Students regularly produce skits, plays, presentations, and written texts • Students indicated perception that regular classroom activities help them learn more general oral skills, vocabulary, and grammar than they do in the interdisciplinary project (open questions on questionnaire and interviews)
Item	Number of responses					Mean																													
	1	2	3	4	5																														
1	0	1	5	15	7	4.00																													
16	2	3	14	6	3	3.18																													
18	3	7	14	2	2	2.79																													

Student group	Orientation *Orientation is determined by the majority of responses for the item (number in bold)	Information																																	
Renée	<ul style="list-style-type: none"> • Appreciation of the project: ambivalent (Item 1 - Neutral towards the idea they appreciated the interdisciplinary project.) • Orientation to interdisciplinary projects: positive (Item 16 - Agreement with the idea interdisciplinary projects are more motivating to learn ESL than regular classroom activities.) • Orientation to the project: negative (Item 18 - Disagreement with the idea they learn more English with the interdisciplinary project than in their regular ESL class.) <table border="1"> <thead> <tr> <th rowspan="2">Item</th> <th colspan="5">Number of responses</th> <th rowspan="2">Mean</th> </tr> <tr> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>3</td> <td>7</td> <td>16</td> <td>5</td> <td>1</td> <td>2.84</td> </tr> <tr> <td>16</td> <td>2</td> <td>5</td> <td>8</td> <td>11</td> <td>6</td> <td>3.44</td> </tr> <tr> <td>18</td> <td>2</td> <td>13</td> <td>8</td> <td>9</td> <td>0</td> <td>2.75</td> </tr> </tbody> </table>	Item	Number of responses					Mean	1	2	3	4	5	1	3	7	16	5	1	2.84	16	2	5	8	11	6	3.44	18	2	13	8	9	0	2.75	<p><u>La ferme des animaux interdisciplinary project</u></p> <ul style="list-style-type: none"> • Presentation teacher-centred - Project work student-centred (group work) • Students spoke French amongst themselves but English in interactions with Renée • Students produced unedited, uncorrected cue cards in English for debates • Students used online translation tools (observations) • Students translated texts from French to English (interviews) • Students engaged in no authentic oral interaction during debates – presentations were memorized texts or read directly from cue cards • Students received no immediate feedback on topic nor presentation after debates • Students spent most of class time not working on project • Students indicated enjoyment of presentation of actual debate (open questions on questionnaire) but in interviews claimed to not enjoy giving such presentations • Students indicated enjoyment of the different class structure – team work (open questions on questionnaire and interviews) • Students indicated unhappiness with the amount of work and homework required for the project (open questions on questionnaire and interviews) • Students indicated unhappiness with the length of the project (open questions on questionnaire and interviews) <p><u>Regular classroom activities</u></p> <ul style="list-style-type: none"> • Teacher-centred / individual work • Teacher-directed class - students kept closely on task • Students speak English at all times • Students have regular choral reading activities, vocabulary activities, grammar activities, comprehension activities related to reading exercises • Students spend most of class time working on assignments • Students indicated perception that regular classroom activities help them learn more general oral skills, vocabulary, and grammar than they do in the interdisciplinary project (open questions on questionnaire and interviews)
Item	Number of responses					Mean																													
	1	2	3	4	5																														
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Student group	Orientation *Orientation is determined by the majority of responses for the item (number in bold)	Information																																	
Benoît	<ul style="list-style-type: none"> • Appreciation of the project: positive (Item 1 – Agreement with the idea they appreciated the interdisciplinary project.) • Orientation to interdisciplinary projects: positive (Item 16 – Strong agreement with the idea interdisciplinary projects are more motivating to learn ESL than regular classroom activities.) • Orientation to the project: either strongly positive or strongly negative towards the idea they learn more English with the interdisciplinary project than in their regular ESL class. (Item 18) <table border="1"> <thead> <tr> <th rowspan="2">Item</th> <th colspan="5">Number of responses</th> <th rowspan="2">Mean</th> </tr> <tr> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0</td> <td>1</td> <td>3</td> <td>7</td> <td>6</td> <td>4.06</td> </tr> <tr> <td>16</td> <td>1</td> <td>0</td> <td>2</td> <td>6</td> <td>8</td> <td>4.18</td> </tr> <tr> <td>18</td> <td>5</td> <td>2</td> <td>1</td> <td>3</td> <td>6</td> <td>3.18</td> </tr> </tbody> </table>	Item	Number of responses					Mean	1	2	3	4	5	1	0	1	3	7	6	4.06	16	1	0	2	6	8	4.18	18	5	2	1	3	6	3.18	<p><u><i>Identité</i> and action-research interdisciplinary project</u></p> <ul style="list-style-type: none"> • Mix of teacher-centred and student-centred • Students spoke French amongst themselves and usually in interactions with Benoît (Benoît spoke French and English) • Students produced one written document in English – no use of writing process or revision of errors (<i>Identité</i>) • Students produced no written documents in English (action-research) • Students regularly exhibited disregard for classroom protocol, rules, and respect for Benoît • Students spent most of class time not working on project • Students indicated strong enjoyment of working on their own stories for the <i>Identité</i> project (open questions on questionnaire and interviews) • Students indicated enjoyment of the different class structure – team work (open questions on questionnaire and interviews) • Students indicated unhappiness with the perception the interdisciplinary projects were not beneficial for their learning of English (open questions on questionnaire and interviews) <p><u>Regular classroom activities</u></p> <ul style="list-style-type: none"> • Teacher-centred • Students spoke French amongst themselves and usually in interactions with Benoît (Benoît spoke French and English) • Students took notes from lectures, completed comprehension and fill-in-the-blank exercises, completed short quizzes on information from lectures • Students regularly exhibited disregard for classroom protocol, rules, and respect for Benoît • Students spent much of class time not working on activities • Students indicated unhappiness with the perception they were not learning English (interviews) • Students indicated perception that regular classroom activities help them learn more general oral skills, vocabulary, and grammar than they do in the interdisciplinary project (open questions on questionnaire and interviews)
Item	Number of responses					Mean																													
	1	2	3	4	5																														
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16	1	0	2	6	8	4.18																													
18	5	2	1	3	6	3.18																													

Student group	Orientation *Orientation is determined by the majority of responses for the item (number in bold)	Information * No observations nor student interviews were possible during the interdisciplinary project																																	
Louise	<ul style="list-style-type: none"> • Appreciation of the project: positive (Item 1 - Agreement with the idea they appreciated the interdisciplinary project.) • Orientation to interdisciplinary projects: positive (Item 16 – Strong agreement with the idea interdisciplinary projects are more motivating to learn ESL than regular classroom activities.) • Orientation to the project: positive (Item 18 - Agreement with the idea they learn more English with the interdisciplinary project than in their regular ESL class.) <table border="1"> <thead> <tr> <th rowspan="2">Item</th> <th colspan="5">Number of responses</th> <th rowspan="2">Mean</th> </tr> <tr> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0</td> <td>2</td> <td>5</td> <td>17</td> <td>8</td> <td>3.94</td> </tr> <tr> <td>16</td> <td>1</td> <td>2</td> <td>1</td> <td>7</td> <td>21</td> <td>4.41</td> </tr> <tr> <td>18</td> <td>4</td> <td>5</td> <td>3</td> <td>11</td> <td>9</td> <td>3.47</td> </tr> </tbody> </table>	Item	Number of responses					Mean	1	2	3	4	5	1	0	2	5	17	8	3.94	16	1	2	1	7	21	4.41	18	4	5	3	11	9	3.47	<p><u>Web page interdisciplinary project</u></p> <ul style="list-style-type: none"> • Students used the writing process to develop their texts (interview with Louise) • Students used authentic samples of web sites, publishers sites, book reviews, etc. for scaffolding (interview with Louise) • Students indicated perception the web page project was motivating / interesting (open questions on questionnaire) • Students indicated perception of increased opportunities to learn English (open questions on questionnaire) • Students indicated enjoyment of the creation of the web page (open questions on questionnaire) • Students indicated unhappiness with the amount of work and homework required for the project (open questions on questionnaire) • Students indicated unhappiness with the length of the project (open questions on questionnaire) <p><u>Regular classroom activities</u> (only one period of observations)</p> <ul style="list-style-type: none"> • Mix of teacher-centred and student-centred • Students spoke English almost exclusively • Students spent half of the class time correcting answers and in teacher-led discussion of homework exercise • Students spent half of the class time on group work activity • Students indicated regular classroom activities were often teacher-centred (open questions on questionnaire) • Students indicated regular classroom activities were often boring (open questions on questionnaire) • Students indicated perception that regular classroom activities help them learn more general oral skills, vocabulary, and grammar than they do in the interdisciplinary project (open questions on questionnaire)
Item	Number of responses					Mean																													
	1	2	3	4	5																														
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Student group	Orientation *Orientation is determined by the majority of responses for the item (number in bold)	Information																																	
Danielle	<ul style="list-style-type: none"> • Appreciation of the project: positive (Item 1 - Agreement with the idea they appreciated the interdisciplinary project.) • Orientation to interdisciplinary projects: positive (Item 16 – Agreement with the idea interdisciplinary projects are more motivating to learn ESL than regular classroom activities.) • Orientation to the project: positive (Item 18 - Agreement with the idea they learn more English with the interdisciplinary project than in their regular ESL class.) <table border="1" style="margin: 10px auto;"> <thead> <tr> <th rowspan="2">Item</th> <th colspan="5">Number of responses</th> <th rowspan="2">Mean</th> </tr> <tr> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0</td> <td>0</td> <td>0</td> <td>12</td> <td>8</td> <td>4.40</td> </tr> <tr> <td>16</td> <td>0</td> <td>2</td> <td>4</td> <td>6</td> <td>8</td> <td>4.00</td> </tr> <tr> <td>18</td> <td>0</td> <td>4</td> <td>7</td> <td>8</td> <td>1</td> <td>3.30</td> </tr> </tbody> </table>	Item	Number of responses					Mean	1	2	3	4	5	1	0	0	0	12	8	4.40	16	0	2	4	6	8	4.00	18	0	4	7	8	1	3.30	<p><u>Book jacket interdisciplinary project</u></p> <ul style="list-style-type: none"> • Mix of teacher-centred and student-centred • Students spoke English at all times • Students produced written documents in English • Students used the writing process to develop their texts • Students used English-English and French-English bilingual dictionaries provided in the class during the writing process • Students translated texts from French to English (interviews) • Students engaged in authentic oral interaction in English with partners • Students used authentic samples of book jackets for scaffolding • Student presentations on the book jackets were cancelled due to time constraints • Students spent all of class time working on their projects • Students indicated enjoyment with creating a book jacket based on the stories they wrote in French (open questions on questionnaire and interviews) • Students indicated unhappiness with team work - partners did not respect engagements, unequal completion of tasks, disagreement over images and texts (open questions on questionnaire and interviews) • Students indicated perception that interdisciplinary projects were more motivating than regular classroom activities (open questions on questionnaire and interviews) <p><u>Regular classroom activities</u></p> <ul style="list-style-type: none"> • Teacher-centred • Students use English for all interactions • Students used to project-based teaching • Students regularly produce skits, plays, presentations, and written texts • Students indicated regular classroom activities are often teacher-centred (open questions on questionnaire and interviews)
Item	Number of responses					Mean																													
	1	2	3	4	5																														
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18	0	4	7	8	1	3.30																													

Student group	Orientation *Orientation is determined by the majority of responses for the item (number in bold)	Information																																	
Pierre	<ul style="list-style-type: none"> •Appreciation of the project: neutral (Item 1 - Neutral towards the idea they appreciated the interdisciplinary project.) •Orientation to interdisciplinary projects: negative (Item 16 – Strong disagreement with the idea interdisciplinary projects are more motivating to learn ESL than regular classroom activities.) •Orientation to the project: negative (Item 18 – Strong disagreement with the idea they learn more English with the interdisciplinary project than in their regular ESL class.) <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th rowspan="2">Item</th> <th colspan="5">Number of responses</th> <th rowspan="2">Mean</th> </tr> <tr> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0</td> <td>4</td> <td>18</td> <td>9</td> <td>1</td> <td>3.22</td> </tr> <tr> <td>16</td> <td>10</td> <td>9</td> <td>8</td> <td>4</td> <td>1</td> <td>2.28</td> </tr> <tr> <td>18</td> <td>16</td> <td>12</td> <td>3</td> <td>0</td> <td>1</td> <td>1.69</td> </tr> </tbody> </table>	Item	Number of responses					Mean	1	2	3	4	5	1	0	4	18	9	1	3.22	16	10	9	8	4	1	2.28	18	16	12	3	0	1	1.69	<p><u>Bilingual pamphlet interdisciplinary project</u> Project only referred to in three classes. Students were never actually seen working on project.</p> <ul style="list-style-type: none"> • Presentation teacher-centred and directed • Students worked on project outside of class time • Students translated texts from French to English (open questions on questionnaire and interviews) • Students indicated unhappiness with the requirement of translating texts from French to English (interviews) • Students divided tasks so not all students worked on English component (interviews) • Students indicated appreciation of seeing how it was possible to make links between the different subjects (open questions on questionnaire and interviews) • Students indicated unhappiness with the amount of work and homework required for the project (open questions on questionnaire and interviews) • Students indicated unhappiness with the length of the project (open questions on questionnaire and interviews) • Students indicated enjoyment of the autonomy offered in the interdisciplinary project (open questions on questionnaire and interviews) <p><u>Regular classroom activities</u></p> <ul style="list-style-type: none"> • Students speak French and English - English only used to read questions and provide answers (Pierre spoke French and English - grammar explanations usually in French) • Students spend 15 minutes each class in silent reading • Students spend half the class on explanations of grammar and correction of grammar homework • Students spend half the class doing individual seat work – usually related to grammar assignments • Students indicated perception regular classroom activities offer more practical information and applications of English (open questions on questionnaire and interviews)
Item	Number of responses					Mean																													
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18	16	12	3	0	1	1.69																													

6.7 Summary of research questions

This section of the chapter presents a summary of the findings for each research questions. The questions are presented in turn with a short review of the main findings which have emerged from this study.

Research Question 1: How do teachers conceptualize interdisciplinary teaching?

The teachers' conceptualization of interdisciplinary teaching emerged from the information gathered through semi-formal and informal interviews. For the six teachers participating in the study, interdisciplinary teaching was a useful pedagogical tool which enabled them to integrate knowledge and information from different subjects to help their students see how these subjects were linked together. The teachers appeared to espouse the idea that students could improve their English language learning through the application of these projects linking different subjects. Despite these apparent benefits, there was a certain degree of sentiment interdisciplinary teaching was somewhat more labour intensive than were subject-specific projects.

Research Question 2: Why and to what degree do teachers value interdisciplinary teaching?

As this research question contains two different points, each of these is addressed in turn. The teachers initially became involved in interdisciplinary teaching mainly through individual agency but there were also influences from within the activity systems of their schools and from the MELS. As was noted in this study and in others (Conley et al., 2004; Cronin, 2007; Jang, 2006; Johnson, 2003; Murata, 1998), one of the determining factors prompting the teachers to become involved in interdisciplinary collaboration was collegial relations among the teaching staff. For certain teachers, interdisciplinarity was also encouraged by the implementation of new educational programmes. However, for other teachers, the introduction of new programmes, pressure experienced from colleagues, and the imposition of interdisciplinary teaching practices may conflict with their pedagogical beliefs.

The main reasons the teachers claimed to value interdisciplinary teaching were for the positive effect it had on their students' development of learning and work strategies, autonomy, and English language skills. Often, it appeared these were advantaged by the

types of changes interdisciplinary teaching brought to the activity system of the teachers' classrooms. Most of these related to the different materials the teachers used, the adaptations required in their classroom management, the different role they assumed in their class, and the alteration of their relations with their students. Within the wider school activity system, although interdisciplinary teaching usually engendered closer relations with their interdisciplinary partners, the opposite was true for Renée. Further, her resistance to interdisciplinary teaching resulted in a relationship with her department head which steadily deteriorated over the course of the study. In a similar vein, as has also been found in other studies on educational innovation (Meister, 1997; Norton, 1998; Pace, 1992), three of the participants found interdisciplinary teaching resulted in a certain degree of marginalization from the wider school community.

Research Question 3: What factors constrain or facilitate teachers' efforts to implement interdisciplinary teaching in their classes?

The teachers participating in this study found there were a variety of factors, from within the different activity systems of which they were members, which either constrained or facilitated their efforts to implement interdisciplinary teaching. With respect to the constraints, the factors identified pertained to the activity systems of the participants' classrooms and their interdisciplinary teams, as well as more broadly those of the school, the school commission, and to a lesser degree, the MELS. In the activity system of their classrooms, five of the six teachers claimed students in the core programme lacked the necessary work ethic and English skills for interdisciplinary projects. Within their interdisciplinary teams, one of the most important factors which five of the six participants identified pertained to the "high cost" (Doyle & Ponder, 1977; Sparks, 1983) of interdisciplinary teaching due to the inordinate amount of time and work required to elaborate and implement interdisciplinary projects with their partners. These latter findings are echoed in other studies (Corriero, 1996; Meister, 1997; Norton, 1998) regarding the implementation of interdisciplinary teaching practices where the teachers also found interdisciplinary collaboration to be very time and labour intensive.

However, the most important constraint to interdisciplinary teaching identified by five of the six teachers was that the problems and complications inherent in the creation of

their school's master schedule meant common planning times with interdisciplinary partners were not possible. The issue of the difficulties schools have in providing common planning times has surfaced in other writings regarding the implementation of interdisciplinary teaching (Conley et al., 2004; Corriero, 1996; Cronin, 2007; Howe, 2007; Jang, 2006; Leonard, 2002; Warren & Muth, 1995). The results of this study therefore add to the growing body of literature on this subject.

Related to the community members of the school, four participants found their colleagues' negative perception of interdisciplinary teaching and/or a lack of cooperation from these colleagues hindered their efforts to implement interdisciplinary teaching. Among the most important items identified within the wider activity systems of the school commission and the MELS, four of the teachers complained of having received no training regarding the elaboration or implementation of interdisciplinary projects from either organization. This complaint has also been found in other studies investigating teachers' efforts in interdisciplinary collaboration (Conley et al., 2004; Corriero, 1996; Cronin, 2007; Meister, 1997). Finally, two of the teachers believed the implementation of the new educational reform meant teachers would not be able to try to find links with other subjects for interdisciplinary projects until they had had time to learn and understand their new MELS programme.

The participants named fewer elements as facilitating their efforts to implement interdisciplinary teaching in their classes, but listed elements from within each of the activity systems of which they were members: that of their classrooms, their interdisciplinary teams, their schools, the school commission, and the MELS. Among the most important factors identified were those related to positive relations with the community members of the interdisciplinary team and those of the wider school activity system. Golley (1997), Conley et al. (2004), and Howe (2007) also found collegiality built on respect and positive relations facilitated teachers' interdisciplinary collaboration. Also within the activity system of the school, three teachers believed material resources such as computers and facilities were helpful, and three named the specific scheduling of classes to support interdisciplinary teaching as enabling factors. However, while only five teachers cited its lack as a constraint, all six of the teachers listed common planning periods to elaborate interdisciplinary projects as being one of the most important factors to facilitate

interdisciplinary teaching. This issue has returned at several points throughout this study, identified by the actors within the activity systems of the school and the school commission, as one of the most important factors related to teachers' ability to implement interdisciplinary teaching. At the level of the school commission, two teachers thought documentation, information, and professional development opportunities from the school commission would facilitate interdisciplinarity, and at the level of the MELS, five of the six teachers thought the new MELS programme made interdisciplinary teaching easier through the broad nature of the competencies in the English programme. There appears to be very little literature that examines ESL teachers' reactions to the new MELS programme within the context of the current educational reform; therefore, this is an area that merits further attention.

Research Question 4: How do school administrators view their role in the implementation of interdisciplinary teaching within their respective schools?

The school administrators viewed the many changes the implementation of interdisciplinary teaching made on the activity system of the teachers' classrooms as having a positive effect on the students' competencies, learning and work strategies, motivation, and work ethics. Three of the school administrators claimed it was their role to promote interdisciplinarity; however, while two believed interdisciplinary teaching engendered closer relationships within the community members of the school activity system, two others, as had certain school administrators in Jennings's (2006) study, found its introduction had resulted in a division of the teachers into two camps with opposing pedagogical beliefs. One of these camps was made up of teachers who were more traditional and recalcitrant when faced with educational innovation, and who were supported by the teachers' union which seemed to share these attitudes. However, the most crucial factor named by all five administrators was that the extreme complexities of the development of the master schedule for the school made it virtually impossible to schedule common planning or teaching times for teachers wanting to implement interdisciplinary projects.

From within the activity systems of the school commission and the MELS, three of the administrators decried a lack of professional development seminars related to

interdisciplinary teaching. This complaint finds support in other writing on the implementation of interdisciplinary teaching which also makes mention of inadequate training opportunities (Conley et al., 2004; Corriero, 1996; Cronin, 2007; Meister, 1997). Nonetheless, four school administrators believed the MELS itself hindered interdisciplinarity through the slowness with which they provided the new programmes to the schools and teachers and the ongoing changes made to the educational reform. It is notable that Pelletier (2005), examining the implementation of the educational reform, also wrote that these changes in policy were likely to have negative repercussions on certain actors within the education system.

As relates to factors identified by the school administrators as facilitating interdisciplinary teaching, the most important were found within the activity system of the school. All five administrators believed interdisciplinary teaching was facilitated through positive relations between teachers, teachers who were more open to innovative teaching practices, and through teacher leaders who modeled interdisciplinarity and encouraged and helped their colleagues to implement interdisciplinary teaching. Besides these factors, it is important to note that in one school commission, the school administrators shared interdisciplinary projects developed in their respective schools in order to widen the selection of available interdisciplinary projects for the teachers.

Research Question 5: How does the ESL curriculum consultant of the participating schools view interdisciplinary teaching within his school commission?

In many ways, the curriculum consultant's view of interdisciplinary teaching matched that of the school administrators. The curriculum consultant viewed interdisciplinary teaching as a very useful tool to promote student learning as it increased motivation, autonomy, resourcefulness, and the pertinence and value of what the students learned. He believed many of teachers' classroom practices were changed with the implementation of interdisciplinary teaching as it altered the role of the teacher, classroom planning, the choice of materials, and the manner and type of student evaluations. Interdisciplinarity also resulted in more positive relationships for interdisciplinary partners. Through the interview, it emerged he considered the deciding factor in teachers' ability to implement interdisciplinary teaching lay in their positive attitude towards this pedagogical

practice; if teachers believed in the value of interdisciplinary teaching, they would make efforts to implement it, regardless of the constraints. Nonetheless, he listed several elements, mostly centred within the school activity system, which could constrain teachers' efforts. These included community members who did not support nor see the value of interdisciplinary teaching, and importantly, young teachers who modeled their teaching on what they had seen and experienced as students. A lack of available documentation and information on interdisciplinary teaching at the level of the school commission was identified as a constraint, as was the MELS ongoing changes to the education reform which made it more difficult for him to encourage interdisciplinarity in his school commission. With reference to factors which facilitated interdisciplinary teaching, he believed positive and encouraging relations among the members of the school community were important. However, the factor the curriculum consultant saw as most facilitating came from the activity system of the MELS. He believed the new education programme greatly facilitated interdisciplinary teaching. He thought the first sections of the programme on the broad areas of learning and the cross-curricular competencies, and the broad evaluation criteria for the English programme meant it was easy for teachers to find ways to link their subjects to others through interdisciplinary projects, and to evaluate their students' work within these projects.

Research Question 6: How do students view interdisciplinary teaching within their classes?

In order to determine how students viewed interdisciplinary teaching within their classes, data from questionnaires and interviews (with selected students) were analyzed. In addition, analysis of data obtained from in-class observations were also used in order to better gauge how the projects were carried out. First, analysis of the questionnaires and interviews suggested that while students were generally in favour of interdisciplinary projects, they varied in terms of the degree to which they perceived these projects as relevant to their actually learning of English. This particular conclusion is supported notably by the negative manner in which the students responded to Item 18 of the questionnaire (I learn more English in interdisciplinary projects than in my regular English class). The use of triangulation in the collection of data also allowed a more accurate understanding of the students' point of view than the questionnaire or observations alone

could have offered. The statistical analyses enabled comparisons between classes, and analysis of the observation data and interviews provided insight as to why, in certain classes, students perceived the projects as being more or less relevant as a tool for learning English. The interdisciplinary project which had the worst ranking required the students to translate a text written for another subject teacher. The students were left to organize how they would carry out the task and in the end, the students who had the best English skills did the work while their team mates worked on other parts of the interdisciplinary project. The result was that certain of the students did no work at all on the English component of the project. Conversely, the project which had the highest overall ranking involved individual students using the writing process in the development of texts in English. The requirement the students use English at all times, the ongoing support of both subject teachers, and the real world application of the task increased the motivation of the students and allowed them to see the value of the project to their learning of English.

6.8 Conclusion

This chapter has provided a composite overview of the findings for the five case studies in function of the research questions. It was divided into seven main parts, one for each of the six research questions, and a final section which presented a summary of the main findings for each question.

Most of the actors in this study shared a similar conceptualization of interdisciplinary teaching. They saw it as a pedagogical tool which enabled teachers to integrate knowledge and information from different subjects to help their students improve their English skills while gaining a more global perspective of their learning. However, although the students generally believed interdisciplinary projects were useful for learning, for a variety of reasons there were differing opinions on the benefits these projects offered to their actually learning of English.

Most of the teachers chose to become involved in interdisciplinary teaching through individual agency, but for all six, the implementation of interdisciplinary practices resulted in a certain number of changes to the activity system of their classroom. According to the teachers, school administrators and pedagogic advisor, these changes offered increased benefits for the students' learning.

However, one important factor which has emerged from this examination of the different case studies is that the elements identified by actors in one activity system as constraining or facilitating interdisciplinary teaching, are often echoed by actors in others. The teachers, the school administrators, and the pedagogic advisor often identified the same or similar factors across the activity systems of the schools, the school commissions, and the MELS as having an effect on teachers' implementation of interdisciplinary teaching in their classes. Some of the most important constraining elements identified within the activity system of the school were divisions between members of the school community due to differing pedagogical beliefs, a negative perception of interdisciplinarity among the members of the school community, the great time and work demands interdisciplinary teaching imposed on the teachers, and most importantly, the impossibility of scheduling common planning periods with interdisciplinary partners. At the levels of the school commission and the MELS, the teachers, school administrators, and the curriculum consultant identified a lack of professional development workshops and seminars on interdisciplinary teaching. The pedagogic advisor and four of the school administrators also believed the MELS itself hindered interdisciplinarity through the ongoing changes made to the educational reform, and the slowness with which they provided the new programmes to the schools and teachers.

As regards the factors which facilitated interdisciplinary teaching, the most important element identified by the teachers was the scheduling of common planning periods with their partners to elaborate interdisciplinary projects. Other important factors the teachers, administrators, and curriculum consultant named as facilitating interdisciplinary teaching included: positive and supportive relations between the community members of the school activity system, and the new MELS education programme because of the nature of the broad areas of learning, the cross-curricular competencies, and the broad subject competencies in the English programme.

This discussion of the different actors' perspectives of the constraints to interdisciplinary teaching show there is a certain degree of overlap in the constraints identified by the different actors. And while teachers can resolve some contradictions at levels within their classroom, other contradictions are bigger and require action from other members of the interacting activity systems as well. For example, the scheduling of

common planning periods discussed above would require the actors at the level of the MELS, the school commission, the school administration, the teachers' union, and the other teachers in the school understand how the constraint of a lack of common planning periods limits teachers' efforts to collaborate. Further, they would also have to exhibit a degree of willingness to change in order to resolve this contradiction; it is not one that can be resolved by a teacher working alone in their classroom.

The following chapter presents a discussion of how the use of Engeström's (2001b) model of expansive learning and activity theory (1987), as they relate to the examination of innovation in educational institutions, enabled an analysis of the contradictions that occur within and between the activity systems of which teachers are members. As was seen in the conceptual framework in Chapter 2, contradictions are "misfit[s]," "problems, ruptures, breakdowns, clashes" (Kuutti, 1996, p. 34) between different aspects of an activity system or between different activity systems.

The second part of the chapter focuses on the pedagogical implications of the implementation of interdisciplinary teaching based on the information from the five case studies. It then makes recommendations to help teachers ensure the task design of interdisciplinary projects is such that they are able to fulfill their potential for English language learning.

CHAPTER 7

DISCUSSION

7.0 Introduction

In Chapter 5, the case studies were presented, describing the participants, the interdisciplinary projects they implemented, and the school situations. In Chapter 6, a composite overview of the information from the findings examined the elements that were most salient in each of the case studies. This chapter is broken into two main sections. The first discusses how the usage of activity theory and Engeström's (2001b) model of expansive learning in the examination of innovation in educational institutions has facilitated the analysis of the contradictions that occur within and between the activity systems of which teachers are members. The discussion of contradictions the teachers experienced within the different activity systems of which they were members is used to illustrate how these contradictions bring about cycles of expansive learning. Recommendations are made for changes within the activity system of the school commission which would subsequently engender changes in the activity system of the school likely to facilitate teachers' efforts to implement interdisciplinary teaching in their classes.

The second part of this chapter subsequently focuses on the pedagogical implications of the implementation of interdisciplinary teaching based on the information presented in the previous two chapters. Specific issues raised in the case studies are examined and recommendations are made that may assist teachers in designing interdisciplinary projects that are better able to fulfill their potential for English language learning.

7.1 Engeström's four levels of contradictions

This section of the chapter discusses how Engeström's (1987) theory of activity was used in order to understand the process of pedagogical innovation in a school system. The point of particular relevance to this demonstration pertains to Engeström's notion of contradictions as the implementation of innovative teaching practices often results from and brings about changes in the belief systems of teachers (Combs, 1998; Earl & Katz, 2000). These changes are the result of contradictions teachers experience within the activity

systems of which they are members, and between interacting activity systems. These contradictions take place at four different levels. As was seen in the conceptual framework (Chapter 2), primary inner contradictions are those that are internal to the different components of the activity system, secondary contradictions arise between different components of the activity system, tertiary contradictions are the result of tensions between the object of the activity system and the object of a more advanced activity system and, quaternary contradictions occur between the activity system and the other activity systems with which it interacts (Engeström, 1987, 2001a). These contradictions led Engeström (1987, p. 11) to call an activity system “a virtual disturbance-and-innovation-producing machine.” As these contradictions drive the cycle of expansive learning, the process results in changes to the motive of the subject and to the object of the activity system as well (Kuutti, 1996).

As the process of expansive learning takes place over long periods, not all four levels of contradictions were found among all the participants during the course of the study. Further, all of the teachers except Renée had become involved in interdisciplinary teaching by choice and so some of the tensions and contradictions she experienced were not necessarily felt by the others in the same manner. Therefore, rather than examine the contradictions experienced by each of the different participants, this discussion will focus on the most salient contradictions that emerged at three levels: primary inner contradictions, secondary contradictions, and quaternary contradictions. Tertiary contradictions are not discussed in this section. As the object of the activity system of the teachers’ classrooms was improved student learning, for the purposes of this paper, this object is considered to not have been in conflict with the object of any more advanced activity system.

Engeström’s (2001b) theory of the cycle of expansive learning provides a model to explain why innovations may or may not become implemented. In the context of this study, the teachers were, for the most part, implementing interdisciplinary teaching for the first time. As these were grass roots efforts and none of the teachers had received any professional development training on interdisciplinarity, their learning was self-directed, and the interdisciplinary projects, as implemented, were part of this learning process. Within the theory of expansive learning, innovation and the contradictions it engenders can

lead to change. Thus, the following discussion of contradictions is used to demonstrate how these changes are or may be brought about.

7.1.1 Primary inner contradictions

Engeström (2000, p. 968) posited that the cycle of expansive learning begins with “the conflictual questioning of the existing standard practice” in an attempt to define and resolve primary inner contradictions. This had likely been true for most of the teachers in the study. Luc, for example, actively looked for ways to make learning English more interesting for his students. As he moved away from teacher-centred classes to cooperative learning and project-based teaching, interdisciplinary teaching practices became one way for him to solicit greater student interest and involvement in learning English.

However, this questioning of pedagogical practices was not the case for Renée. Instead, the onset of the expansive cycle of learning was much more sudden and much more dramatic as the impetus for change came from an external source. The PC department head, through the imposition of an interdisciplinary project, initiated the cycle of expansive learning process by creating a certain double bind. In this case, the voices of the community members of the activity system of the PC department were the cause of this double bind, experienced by Renée. When the mandate to implement an interdisciplinary project was forced upon Renée and her colleagues, Renée was compelled to choose between an action which went against her pedagogical beliefs or lose her position in the PC programme. This created a profound primary inner contradiction. She chose the former option and retained her place in the PC programme; however, this, in turn, engendered other contradictions.

7.1.2 Secondary contradictions in the activity system of the classroom

The implementation of interdisciplinary teaching resulted in secondary contradictions in the activity system of the teachers’ classrooms. Renée and Benoît clearly expressed their perception of these as elements requiring resolution. As Renée’s experience of the implementation of this innovative teaching practice was different from the other teachers, the following discussion begins with certain contradictions that developed as a result of the implementation of interdisciplinary teaching in her classroom activity system. The discussion then moves to contradictions experienced by Benoît and then his students.

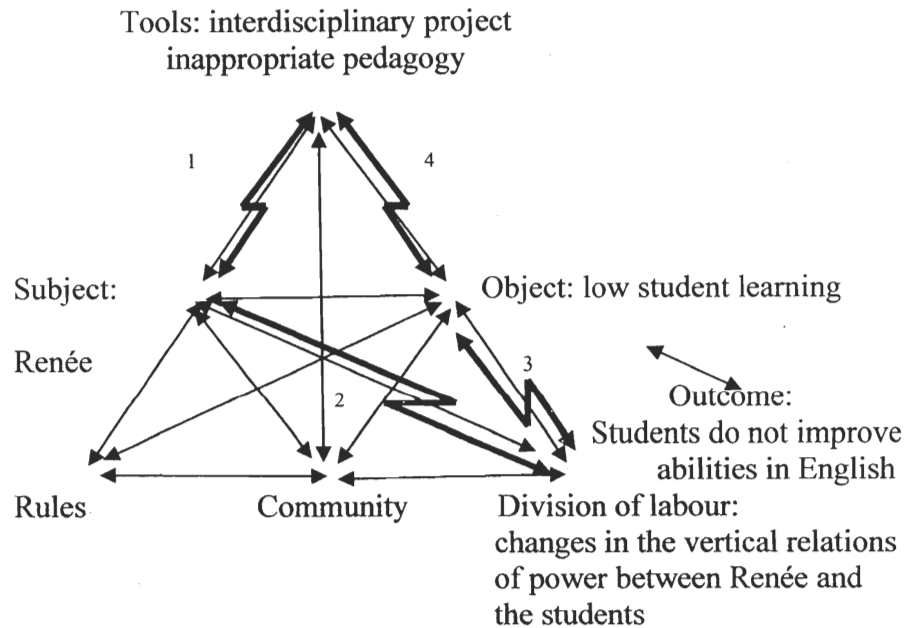
The information is supported, in each case, with a figure that illustrates the contradictions through the use of two-headed lightning-shaped arrows between the different elements.

Within the activity system of Renée's classroom, one contradiction arose because interdisciplinary teaching was at odds with Renée's perception of appropriate pedagogy (Figure 7.1, contradiction 1, on page 387). Renée claimed to be the only teacher in her department who taught grammar and felt the use of grammar books and drills to be important for her students' learning of English. She claimed she taught, "for the first two months, mostly, only grammar. That's how I usually, that's how I usually worked in the past and that's how my students succeeded." However, with the implementation of the interdisciplinary project, she gave almost no grammar instruction and so believed the project was not necessarily effective for student learning.

Other contradictions brought about through the use of interdisciplinary teaching as a tool used to promote student learning were changes to the division of labour. In her regular classroom practice, Renée was the source of knowledge; however, the interdisciplinary project meant she had to take on the role of a facilitator and so the balance of power changed as did the different tasks the actors carried out through the use of the new tool (Figure 7.1, contradiction 2). Renée had a great deal of difficulty with this as she believed the students were "not going to teach themselves anything. They might grab a little bit of vocabulary here and there, but they won't go anywhere. They won't go, they won't go far. They don't know where to look." It was very difficult for her to release control of the students' learning to the students as she felt this would have negative results on the object, the students learning of English (Figure 7.1, contradiction 3).

This actually was the result of another contradiction. Renée believed the innovative practice of interdisciplinary teaching was in conflict with the object of its usage (Figure 7.1, contradiction 4) which was the students' improvement in English. She thought the use of the interdisciplinary project as a tool would result in low levels of student learning. She said, "I don't think you can reinvent the way to teach English. I think there is a limit." She wanted to continue to use the practices she believed were most helpful for her students because she felt the students needed specific structured exercises leading to pre-established goals. Interdisciplinary teaching did not allow her to do this.

Figure 7.1: Secondary contradictions of Renée’s classroom activity system, based on Engeström’s (1987) model



Because Renée had not chosen to implement interdisciplinary teaching of her own accord, it is likely the contradictions brought through the implementation of the innovative teaching practice are also experienced by other teachers who have interdisciplinarity imposed on them by their school administration or peers. However, congruency between innovative teaching practices and a teacher’s philosophy of education are necessary for the successful implementation of the innovation (Brisco, 1991; Rich, 1990). If interdisciplinary teaching does not align with the teacher’s pedagogical beliefs, this innovative teaching practice is likely to cause these types of secondary contradictions.

These contradictions can lead to change, but each individual may deal with the contradictions differently. Some may decide to accept the contradictions and live with them, others may regress. Renée chose to try to resolve the contradictions as she was planning a new interdisciplinary project for the following year. In her case, the original interdisciplinary project had been decided by other people. Not satisfied with the status quo, she took the initiative to change her situation so that the English component of the new interdisciplinary project, based on the book *Tuesdays with Morrie*, would offer greater pedagogical value for her ESL students.

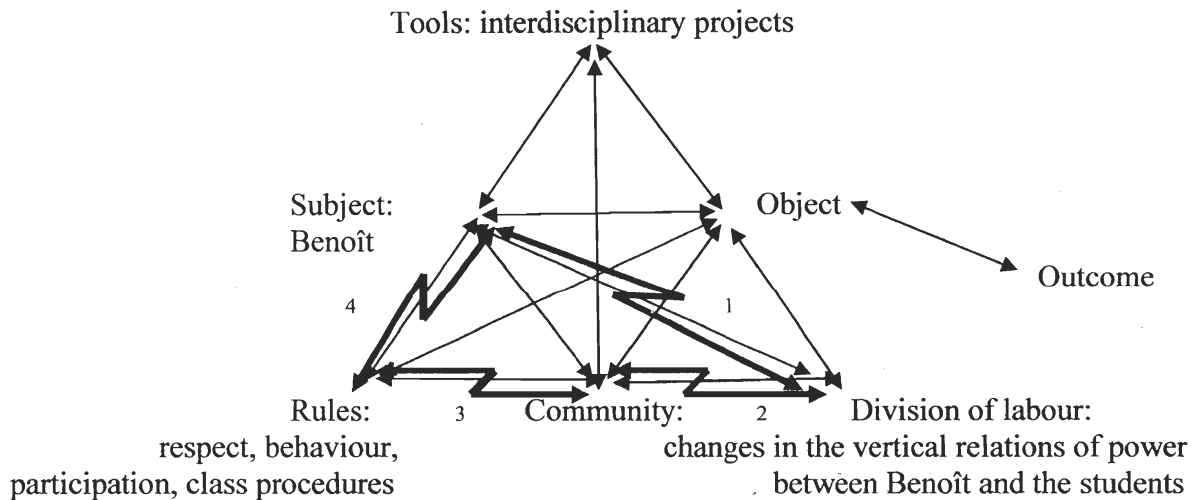
The following discussion turns to examine certain other secondary contradictions brought about through the use of interdisciplinary teaching. However, while the secondary contradictions that Renée experienced were intense, the following presents an examination of contradictions that occurred on a different level. Although the subject of the following discussion is Benoît and the classroom management issues he faced, it is prefaced by a short introduction regarding Luc's classroom. The purpose of this is to situate the contradiction and clarify the difference between a classroom management problem that was introduced because of the interdisciplinary project, and a classroom management problem that was exacerbated by the interdisciplinary project.

For Luc, the introduction and use of the interdisciplinary project as a tool to advance student learning created a classroom management problem. When his students changed rooms, from their regular classroom to the computer lab, the language used by the students also changed in that they no longer used only English for their interactions in the class. Luc did not appear to address the contradiction nor to resolve it. However, for Benoît, the introduction and use of the interdisciplinary project as a tool to advance student learning did not create a new problem, rather, it exacerbated the classroom management difficulties he had with his students. Further, he acknowledged this contradiction and tried to find ways to resolve it. The following discussion examines this situation in more detail with the contradictions illustrated through the use of two-headed lightning-shaped arrows between the different elements in Figure 7.2 on the following page.

Interdisciplinary teaching had an effect on the division of labour in Benoît's classroom as he had to take on the role of a facilitator rather than the source of information and knowledge (Figure 7.2, contradiction 1). He did not agree with the traditional power structure of the class and found the implementation of interdisciplinary teaching provided an opportunity for him to give up some of his authority to the students. However, as he allowed the community of students more control over their learning (Figure 7.2, contradiction 2), at times it appeared his authority was completely supplanted. In these instances, the students alternately abused Benoît or ignored his efforts to bring them to order or have them return to the task at hand (Figure 7.2, contradiction 3). While working on the interdisciplinary project, Benoît experienced difficulty in his efforts to obtain a more reasonable level of noise in the class, to have the students form into or return to their

groups, to follow standard classroom policies, or to carry out work on the projects (Figure 7.2, contradiction 4).

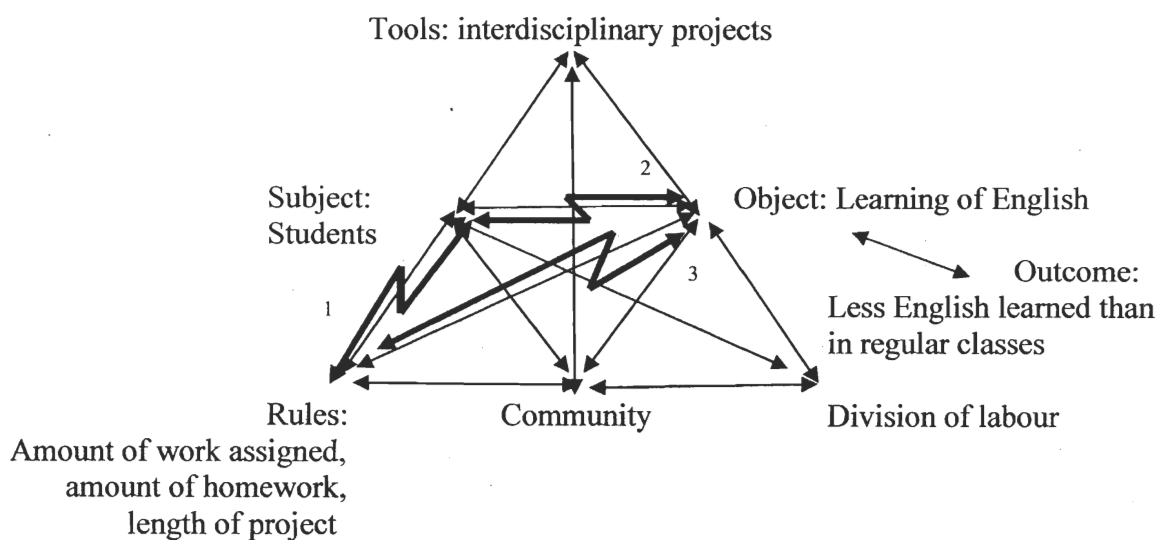
Figure 7.2: Secondary contradictions of Benoît's classroom activity system, based on Engeström's (1987) model



This concern over classroom management was raised by certain of the school administrators as well as they felt the introduction of interdisciplinary teaching would engender this type of problem for teachers with fewer or weaker classroom management skills. This concern is interesting as some research has indicated collaboration (Cooper et al., 2001) and interdisciplinary teaching (Jennings, 2006) help teachers improve classroom management strategies. The school administrators felt this contradiction would cause teachers to reject the use of interdisciplinary teaching in their classes. Huberman and Miles (1984, p. 72) wrote educational innovation is “painful” in that new classroom procedures and shifts in influence brought about as a result of changes in teaching practices result in confusion, self-doubt, and uncertainty for teachers. Classroom management problems related to ineffective discipline need to be resolved for teachers to gain a better perspective and understanding of an educational innovation they may be attempting to implement (Payne & Kaba, 2007; Pennington, 1995). However, difficulties resolving issues related to changes in division of labour or in the relationships between members of the classroom communities that are brought about because of the implementation of interdisciplinary teaching could have a negative effect on teachers’ willingness to continue using this innovative practice in their classes.

The implementation of interdisciplinary teaching also engendered secondary contradictions for the students as well as the teachers. As was seen in the case studies in Chapter 5 and the composite overview of the findings in Chapter 6, there were two complaints that were shared by all groups of students in the study. Both of these issues related to the rules regarding the completion of the interdisciplinary projects. The students found they were obliged to invest a great deal more time and homework in the interdisciplinary projects than they wanted or felt should have been necessary to complete the assignments (Figure 7.3, contradiction 1). Because, in general, they did not believe they learned more English with the interdisciplinary projects than they did in their regular classes (Figure 7.3, contradiction 2), they perceived the amount of the work and time it took to complete the interdisciplinary projects to be too great for the return (Figure 7.3, contradiction 3). These contradictions are illustrated in Figure 7.3 below, through the use of two-headed lightning-shaped arrows between the different elements.

Figure 7.3: Secondary contradictions for students, based on Engeström's (1987) model



The framework of Engeström's (1987; 2001a) model of activity systems has allowed us to shed some light on the interrelationships of the different actor's voices and to see how the introduction of change to one element of the activity system may be seen from the multiple perspectives of the different members of the activity system. These examples of the secondary contradictions experienced by Renée, Benoît, and the students provide an

illustration of multi-voicedness, in that individual or group actions only become clear when examined through a discussion of the different activity settings in which they take place. The implementation of interdisciplinary teaching created different secondary contradictions for the different actors within the same activity system.

7.1.3 Secondary contradictions within the school

Interdisciplinary teaching also caused secondary contradictions within the school activity systems. Some of these contradictions took place within the activity systems of the department to which the teachers belonged and others in the larger activity system of their schools. Certain contradictions at each of these two levels guide the following discussion.

In the activity system of the department

In the activity system of the special programmes, the implementation of interdisciplinary teaching was most constrained through two types of conflicts; those related to control of the interdisciplinary projects (division of labour), and those related to the community members of the department activity system. These two issues can be illustrated through the experiences of three different teachers, Renée, Benoît, and Louise.

Division of labour

The introduction of interdisciplinary teaching resulted in conflicts related to control of the interdisciplinary projects for both Louise and Renée with their respective colleagues. The web page interdisciplinary project was presented in the case study for Louise, but one of the other interdisciplinary projects she implemented that year involved collaboration with the cinema teacher. That interdisciplinary project required the students film a movie trailer they had created and for which they had written the script in their English class. For Louise, conflicts in the division of labour mostly related to the timing of the project. Because it was such a large interdisciplinary project, Louise had wanted to have the interdisciplinary project implemented in January; however, the cinema teacher insisted the project be implemented in May so weather would not be an issue in the students' filming of their trailers. Because there was so much involved in the project, the students only completed their filming at the end of the school-year. Louise was not able to even begin the

second half of the English component which involved the presentation of the trailers and subsequent writing of critiques and reviews. As a result, she regretted capitulating to the cinema teacher's demands regarding the scheduling of the project. Rather, she wished they had been able to reach a compromise on the start date.

For Renée as well, the innovative practice of interdisciplinary teaching created conflicts over control. As was seen in the case study, one of her interdisciplinary partners abdicated responsibility for the project and did not contribute much to its elaboration. Crow and Pounder (2000) found teachers who did not believe in the value of teacher teams, refused or were reluctant to take on responsibilities within their team, thus adding to the burden of the other team members. The other interdisciplinary partner of Renée assumed complete control of the project and left Renée feeling coerced into accepting what was developed. This particular situation and the contradictions it engendered offer an example of the type of contrived collegiality Hargreaves (1994b) warns against.

However, Renée chose to take action over this contradiction she had experienced because of her lack of control over the English component of the interdisciplinary project. During the first interview, Renée explained that she felt constrained within the interdisciplinary project because of the subject she taught. She said:

I tend to arrange what I am doing towards what the others are doing because, especially because I am working with the English language and English it's not, not many people on the team speak English, so I can't really say, "Okay, let's take an English novel" for example, and work, for example with this novel and... you know create something out of it. Because they won't even be able to read it.

However, because of the contradictions the interdisciplinary project engendered over the year of the study, Renée took action to resolve this particular contradiction. For the following year, she had negotiated and reached an agreement with her interdisciplinary partners in the PC department that the next book would be a novel in English: *Tuesdays with Morrie*. To implement an interdisciplinary project based on a novel in English required a certain degree of discussion and compromise with her partners. Therefore, it was necessary to involve and obtain cooperation with the other actors in the higher activity system of the department to resolve this contradiction.

Community members

Interdisciplinary teaching also created contradictions for the teachers who tried to maintain ties with their English departments as they continued to teach students in the MELS core programme. Both Hargreaves (1994b) and Maeroff (1993) explained how interdisciplinary teams can become isolated and negatively perceived by other teachers in schools. Renée, Benoît, and Louise had found it was better if they did not speak about interdisciplinary practices to their colleagues as the pedagogical beliefs of these other teachers did not necessarily support interdisciplinary teaching. However, these tensions were dealt with in very different ways. Examples from Louise and Benoît demonstrate differences in dealing with contradictions with colleagues outside the interdisciplinary teams.

As was seen in the conceptual framework (Chapter 2), Engeström posited that rather than resolve contradictions, certain actors would use “regressive and evasive attempts to deal with the problems” (Engeström, 2001a, p. 8). In the first instance, Louise chose not to take action to resolve the contradiction she faced regarding the reaction of her colleagues in the school to interdisciplinary teaching. She felt she had been forced to choose between silence regarding her pedagogical beliefs or to continue expressing them and become ostracised and marginalized by her colleagues. She chose the former and waited until changes in the teaching staff brought in new colleagues who shared her pedagogical beliefs regarding interdisciplinary teaching, thus allowing for more open discussion of the innovative practice. In this sense, she chose to accept the contradictions.

Benoît chose a different approach to overcome some of the resistance of teachers outside the PC programme. He recognized that certain teachers had a poor perception of interdisciplinary teaching and so, as he worked on developing a new interdisciplinary project for the following school-year, he solicited the aid of certain English teachers in the testing of the English component of the interdisciplinary project he was planning. He felt it necessary “to involve the whole school. We need to start off and speak about it so we can show the other teachers it’s possible.” By gaining the cooperation of certain of his colleagues in the English department regarding the elaboration and testing of the English component of the new project, he hoped to reduce some of the negative attitudes they had regarding interdisciplinary teaching. In this manner, he chose a proactive approach towards

resolving the tensions by trying explicitly to convince his colleagues of the merits of interdisciplinary practices. In order for the contradictions to lead to learning, different actors at the different levels need to see the problem and have the will to make the necessary changes.

In the larger activity system of the school

The implementation of interdisciplinary teaching resulted in several secondary contradictions at the level of the activity system of the school. The main examples of these contradictions related to the inability of the schools to schedule common planning time for the teachers involved in interdisciplinary teaching, and the heavy teaching loads imposed on the teachers. Principals and teachers alike expressed concerns regarding these elements and their complaints are supported by research which shows practical constraints such as time requirements and class size constrain the implementation of educational innovations (Fullan, 2001; Martineau & Pesseau, 2007; Salinitri, 1998; Sherry, 2002; Sleeter, 1992).

Interdisciplinary teaching also created contradictions when teachers held different pedagogical beliefs. Teachers, certain school administrators, and the curriculum consultant found interdisciplinary teaching was either accepted by teachers as sound pedagogical practice or rejected along with the educational reform. According to the participants in the study, it was often the older teachers who were more resistant to interdisciplinarity. There seemed to be a perception that teachers nearing retirement were those who offered the most resistance to the interdisciplinary teaching and the educational reform. Other researchers (Fullan & Hargreaves, 1996; Hargreaves & Goodson, 2006; Hurley, 2004; Sikes, 1992) have written about the importance of the school culture and climate on teachers' implementation of innovative teaching practices and found that teachers who are nearing the end of their careers may "disconnect from the process" (Hargreaves & Goodson, 2006, p. 17). Louise, certain school administrators, and the curriculum consultant noticed that as more of the recalcitrant teachers retired, attitudes in teaching staff changed with the hiring of younger teachers who were more open towards the educational reform and whose pedagogical beliefs led them to believe in the value of interdisciplinary teaching. In their study of impediments to educational change in schools in Chicago, Payne and Kaba (2007) found it was often the younger teachers, "fresh out of college where they have been

immersed in the language and theory of reform” (Payne & Kaba, 2007, p. 31) who were most open to educational innovation. This difference was most evidenced in the *École secondaire le Carrefour* where the school principal, Mr. Bergeron, made hiring choices for new teachers based on their openness to the current educational reform and interdisciplinary teaching.

7.1.4 Quaternary contradictions

According to Engeström (1987), quaternary contradictions exist between the activity system in question and those activity systems with which it interacts. In this study, quaternary contradictions occurred between the activity system of the school commission and the schools, and between that of the MELS and the schools.

Within the school commission

At this level, the interactions between the rules of the school commissions and the rules of the schools made the implementation of interdisciplinary teaching difficult, mainly because of the rigid structure of the school schedules and calendar. The nine-day cycle of four classes per day was identified as an element which made it difficult to encourage interdisciplinarity. Mr. Fortin had noted that one school in his school commission had been able to have the standard schedule changed in order to have one afternoon per cycle where the students worked on interdisciplinary and school-wide projects. However, he explained this school had taken extraordinary measures to be able to do so and therefore could not see the school commission agreeing to such a fundamental change in policy for the other schools under its management.

The implementation of interdisciplinary teaching was also constrained as the school commissions did not provide the schools tools such as documentation, information, and workshops regarding interdisciplinary teaching which would have assisted teachers' appropriation of this innovative practice. Almost all the teachers and school administrators decried this lack. When asked, the curriculum consultant admitted he “rarely” participated in training sessions where teachers of different subjects from one level were brought together to help them develop interdisciplinary links. This constraint has repercussions all the way through the different activity systems. A great deal of literature on educational

change efforts expresses the importance of professional development programmes (Bascia & Hargreaves, 2000b; Boucher & Jenkins, 2004; Joyce & Showers, 1988; Mathison, 1992). Specifically regarding the educational reform in Québec, Martineau and Presseau (2007) claim an ongoing cycle of training and practice is needed to consolidate and support changes in the teachers' classroom practices; however, although the MELS claims the use of interdisciplinary teaching and the training of teachers is a priority (Sauvé, 2007), many of the actors in this study claimed their school commissions were not providing training which would facilitate their efforts to implement interdisciplinary teaching.

At the level of the MELS

The MELS produces and creates both tools and rules that are to be implemented in the schools. The new MELS education programme is a tool they offer teachers as part of the ongoing educational reform; however, although interdisciplinary teaching is encouraged in this programme, the principals complained the teachers were not receiving their programmes until the end of the school-year before they were to start implementing them. Comments from teachers, principals, and even actors in schools contacted about participating in this study indicated teachers would not likely begin, or had put on hold, interdisciplinary projects until they were more familiar and comfortable with the new programme. Nonetheless, it is important to remember that out of the six teachers participating in this study, five teachers had become involved in interdisciplinary teaching at the grass-roots level; they were working in advance of the educational reform arriving at their grade level in the secondary school system. It would appear therefore that, while interdisciplinary teaching is promoted within the new educational programme, the presence or absence of the new programme does not necessarily have an effect on the teachers' ability to implement interdisciplinary teaching. As the curriculum consultant stated, it would appear it is the teacher's attitude towards interdisciplinary teaching which makes the difference.

The ongoing changes the MELS was making to elements of the educational reform also constrained interdisciplinarity. The school principals and the curriculum consultant complained the changes to the rules, and more specifically to the movement from percentages to letter grades and back to percentages for the reporting of student evaluations

caused them to lose credibility with teachers. Other complaints related to professional development seminars which were held for new elements of the programme which were subsequently cancelled before their implementation in the schools, the delay in implementing aspects of the curriculum for which teachers were prepared and ready, and reversals on policies regarding whether students would fail a year or a whole cycle of two to three years. Payne and Kaba (2007) pointed out an important impediment to educational change are political issues at the level of the school district or state. They found a tendency in these organizations to issue contradictory or apparently arbitrary directives. In the current study, these translated into one director's perception the MELS was sending the message that even the ministry did not necessarily believe in the educational reform. Another director pointed out the actions of the ministry were more politically than educationally oriented and so these ongoing changes were responses to pressure by different interest groups rather than in the interests of the students.

This brings us to turn our attention to one of these interest groups. The public school principals and the curriculum consultant criticised the teachers' union for undermining efforts to implement the educational reform and elements such as interdisciplinarity which were being proposed by the reform. The influence of the union was strongly felt in the public schools of this study, and the results of their efforts pervaded the different levels of the school activity systems. While Bascia (1998) and Lynch (1990) argue teachers' unions work to encourage and facilitate educational reform, other researchers (Cole, 2005; Fernandes, 1988; Martineau & Presseau, 2007; Samuel, 2002; Stritikus & Garcia, 2000) claim teachers' unions promote resistance to alternative pedagogical practices. It would appear the latter of these two theories is most pertinent for the situation in Québec as the teachers' union has been calling for a halt to the educational reform in its current guise (Berthelot, 2005; Laporte & Beauregard, 2007; Le Conseil exécutif de la CSQ, 2004; Parent, 2006; Pierre, 2006; Rochefort, 2001).

7.1.5 Multivoicedness

This discussion of contradictions that occur between the different activity systems to which teachers belong can be used to illustrate "multivoicedness" (Engeström, 2001a) and the effect of discourse that, coming from certain actors, may be divergent or even opposite

of discourse from others, or even from the same actors, themselves. For example, the school administrators complained, at times bitterly, about the MELS ongoing changes to aspects of the educational reform. One point the school administrators raised was that with the implementation of the educational reform, the MELS instituted a policy which required the teachers to use “descriptive report cards” instead of percentages for reporting student achievement but, at the end of the school-year of the study, in 2007, they reversed this decision. Between the implementation of the descriptive report cards and their retraction, there was, and continues to be, a certain amount of social discourse on the subject of report cards on the part of the MELS (Courchesne, 2007) and the teachers’ union (Perreault, Lemieux, & Lombard, 2007). In the popular press, opinions of journalists (Collard, 2008), parents (Ballivy, 2007), and the teachers themselves (Lavoie, 2007) are also expressed. This may cause problems for the actors in the schools as, while the MELS presents instructions on how teachers are to complete the report cards, the school administrators and teachers read newspaper articles and editorials decrying the policies of the type of report card in place at the time. The union further adds their input, and the teachers and administrators, amongst themselves discuss their opinions of the report cards. These voices all influence the choices the teachers make and when the voices are contradictory to the teachers’ beliefs, this may have an effect on their actions. This also causes the problem raised by the school administrators as one of the objects they work toward in their activity system is to have the teachers follow the MELS educational reform. To do so, they encourage the teachers to adopt the measures advocated by the MELS. When the MELS reverses their directives, the directors then feel they lose credibility.

Another example of multivoicedness relating these evaluations to interdisciplinary teaching is that of the difficulties encountered by Benoît in his efforts to evaluate the students. Although he had become involved in interdisciplinary teaching of his own accord, well in advance of the arrival of the new educational reform at his grade level, he was nonetheless aware of the philosophy of integrated skills development the MELS was advocating. This aligned with his belief that English could not be taught nor measured as discrete skills and so he found the introduction of descriptive report cards aligned with his beliefs. However, while the MELS advocated the development and evaluation of competencies as integrated skills at those grades where the educational reform was being

implemented, it still required discrete skills evaluations at those grades where the new programme had not yet been implemented. Benoît found this difficult as he believed he could not evaluate the interdisciplinary projects as discrete skills. He felt required to take the information from his evaluations and break it down into artificial categories in order to comply with policy directives.

7.1.6 Recommendations

This section of the chapter offers certain recommendations which take their form from two premises. The first is that changes introduced into one activity system have repercussions on the activity systems with which it interacts. The second is the belief that community members within and across interacting activity systems must perceive contradictions in the same manner and be willing to cooperate to resolve these contradictions in cases where actors within one activity system are powerless to effect certain changes. In the following examples, changes effected within the activity system of the school commission would have a positive effect on the activity system of the school, thereby increasing its ability to support teachers' efforts to implement interdisciplinary teaching in their classrooms. In this light, three recommendations for changes at the level of the school commission are herewith presented.

While a few researchers (Martineau & Presseau, 2007; Payne & Kaba, 2007) assert there is an absence of the ongoing support most teachers require for change, small-scale workshops and courses with ongoing follow-up incorporating support in the classroom may offer valuable assistance for teachers wishing to begin to implement interdisciplinary teaching. If small groups of teachers or interdisciplinary teams were able to have a curriculum consultant from their school commission offer workshops on interdisciplinary teaching, provide a certain degree of guidance in the elaboration of an interdisciplinary project, and then follow-up seminars where the teachers were able to reflect on the process, this would likely assist the teachers in their efforts. It would possibly help reduce some of the reticence teachers may feel towards interdisciplinary teaching and also help ensure pedagogical objectives would be supported through task design.

Another way in which the school commissions could help teachers become implicated in interdisciplinary teaching is through the sharing of interdisciplinary projects

developed within individual schools. The *École secondaire le Renommé* was situated in a school commission which did exactly that. Not only did this help share the work load in the elaboration of the interdisciplinary projects, but it may perhaps contribute to the legitimization of interdisciplinary teaching in that more teachers would see and/or hear of its use in more schools. Increased information, exposure and subsequent reduction of the innovative aspect of interdisciplinarity may encourage teachers who might otherwise have discounted it as marginal practice. By bringing interdisciplinary practices more into view, it may allow interdisciplinary teaching to move beyond a few isolated teachers implementing it as a grass roots effort to a more mainstream practice.

It is apparent the current structure and organization of the school system is not set up to accommodate team-teaching. Shared teaching time is virtually impossible, as was evidenced by the difficulties encountered by Luc and Robert, and Louise and the multimedia teacher, and in the inability of the other participants in this study to secure common planning periods with their interdisciplinary partners. Because of the logistics of always having a teacher with each group of students, it was very difficult for collaborating teachers of the same grade level to have planning periods at the same time and this was exacerbated when teaching loads expanded to include other grades and subjects. One way these difficulties could be resolved would be to follow the example of the middle school movement in the United States. Blocked scheduling of student groups with cohorts of teachers assigned to the groups would resolve most of these difficulties; however, under such conditions, interdisciplinary teaching is mandated and this in itself raises other problems. Nonetheless, a modified version of blocked scheduling might help avoid most of these difficulties while resolving some of the present ones. The vice-principal at the *École secondaire le Renommé* mentioned how one school in the school commission had succeeded in having the school commission alter the schedule of the four-period nine-day cycle by assigning one half-day per cycle to interdisciplinary or school-wide projects. During this half-day, student teams worked with teacher teams on these projects. This is a model which, again, might help to move interdisciplinary teaching from an innovative practice implemented by a few teachers, to a more mainstream practice within the school system.

7.1.7 Conclusion

The examination of contradictions at the three different levels in this discussion has enabled a better understanding of the nature of the problems teachers' face when attempting to implement innovative teaching practices such as interdisciplinary teaching. And while each actor within the activity system attempts to resolve the contradictions they face, it has become apparent that while teachers can act within the activity system of the classroom, and to a certain extent their school, they will not always be able to resolve these contradictions. Some contradictions require the cooperation of actors across the different activity systems. As the activity systems of teachers' classrooms are nested within the activity system of their interdisciplinary team, which is part of the larger activity system of the school, which in turn is nested within the school commission, Engeström's (2001b) model of expansive learning as it relates to innovation in educational institutions has been used to foreground the individual teacher within the activity systems within which they act. This has permitted an understanding of their efforts to integrate and resolve the contradictions they experience. Other studies have also used activity theory as a means to investigate contradictions between activity systems in education.

Yamagata-Lynch and Smaldino (2007) used activity theory in an examination of how communication processes could be improved by introducing and structuring discussion through the use of the activity system model. By providing a certain degree of training in activity theory perspectives, they were able to open dialogue between elementary and middle school teachers and university staff regarding school-university partnerships. They wanted to investigate whether these two groups could overcome tensions in their relationship to be able to communicate effectively in joint research and development of K-12 and university curriculum and found the activity systems framework helped the participants create strategies on resolving problematic situations rather than simply listing complaints. At the same time, the participants were able to use the activity system model to recognize contradictions in their work activities so as to be able to work towards finding a resolution. As a result of their study findings, the two authors planned to implement the same type of training and dialogue between teachers, their school principals, school commission superintendents, university faculty, etc in order to gain a better understanding of sources of partnership tensions and strategies to resolve these issues.

Blumenfeld et al. (2000) have also examined different issues in literature regarding educational reform in their article on the scaling up of inquiry, technology, and science innovations in middle schools. In their article, they identify how constraints at different levels of the education system affect the implementation of innovations in teaching, how school district practices constrained teachers' efforts to attend training, how principals in certain schools did not encourage or monitor teachers' efforts to practice pedagogical innovations, etc. They concluded it was necessary to study the different activity systems and the different components in activity systems because the "components work in concert, [and] challenges faced in one reverberate to affect others" (Blumenfeld et al., 2000, p. 161).

In another study investigating aspects of educational reform, Venkat and Adler (2008) investigated the introduction of system changes in mathematics education in two schools. Within one school, they found pre-existing organizational practices and differential access to power meant a clash between the reform curriculum and the new policy. The contradictions between activity systems meant one of the two teachers studied was able to only sporadically implement the innovative pedagogical policy. Conversely, the other teacher had fewer clashes with other teachers, worked with students who were more accepting of change, and worked in school with a culture of change. Venkat and Adler (2008) described the efforts of the two teachers to resolve issues related to contradictions between the professional development staff, department colleagues, students, and the teachers as "boundary crossing" and used activity theory to explain the contradictions experienced by the two teachers.

One point in common between these studies is that there are contradictions driving the forces of change for each of the different participants. The relations of the different activity settings means there are contradictions at the different levels that interact; changes or learning take place because of these contradictions and the changes that may be made at one level affect the others. Within this study, the use of Engeström's theoretical model aids understanding of how these factors and contradictions are situated within the various activity settings of the school, the school commission and the MELS by permitting an identification of the sources of some of these contradictions and then an evaluation of how the different components in the different activity systems had an effect on the contradictions experienced by the teachers. The implications for interdisciplinary teaching,

within the context of the educational reform, would involve implementing certain changes at the level of these interacting activity systems. The suggestions made above regarding changes to the activity system of the school commission, would help interdisciplinary teaching to become more integrated in the Québec school system, perhaps moving it from a grass roots effort to accepted pedagogical practice for a larger population of teachers. This would then allow it to assume the relative importance the MELS ascribes it in the new education programme.

7.2 Pedagogical implications

This section of the chapter will present a discussion of the pedagogical implications of the implementation of interdisciplinary teaching in the context of the current educational reform. Information regarding the six interdisciplinary projects presented in the case studies will be used to illustrate and provide examples for this discussion which will focus on three main issues. The first issue regards the types of interdisciplinary projects, whether they are implemented in a sequential or simultaneous manner. The second issue relates to language and includes the use of the students' first and second languages, and translation between these languages within the interdisciplinary projects. The third issue concerns task design and structure. A discussion of recommendations to resolve these problems in interdisciplinary projects concludes the section.

7.2.1 Types of interdisciplinary projects

The interdisciplinary projects implemented by the teachers participating in this study were either sequentially or simultaneously structured. In the former, the component of one subject involved in the interdisciplinary project was completed before the next subject teacher began their component. Examples of this type of interdisciplinary project were Renée's interdisciplinary project *La ferme des animaux*, Benoît's interdisciplinary project *Identité*, Danielle's book jacket interdisciplinary project and Pierre's bilingual pamphlet interdisciplinary project. Simultaneously constructed projects, where all subject components of the interdisciplinary projects took place at the same time are exemplified by Luc's science fair interdisciplinary project, Benoît's action-research interdisciplinary project, and Louise's web page interdisciplinary project.

It became apparent through the study there was a great deal of difference in the effectiveness of interdisciplinary projects when they were carried out sequentially rather than simultaneously. Apart from Danielle's book jacket project, the interdisciplinary projects that were the least appreciated were those done sequentially. The most notable of these was the interdisciplinary project *La ferme des animaux* implemented by Renée. In situations where interdisciplinary projects are carried out in this manner, the projects may experience a certain loss of pedagogical value. For example, the possible links the students can make between the subjects involved in the interdisciplinary project would conceivably decrease as the amount of time separating the different components increases. Additionally, as was evidenced by the students' responses to the questionnaire and in the interviews, the students in Renée's class found the drawing out of the interdisciplinary project to have had a largely negative effect on their appreciation of the project. Part of this may have been the result of the inconsistencies they perceived between information and project guidelines provided by the different subject teachers.

While literature on interdisciplinary teaching makes mention of simultaneous teaching of independent courses (Bargellini, 1999; Stochel & Maciejowska, 2000) or students learning difficult material simultaneously in different courses (Manogue et al., 2001) there is very little discussion on the timing of the implementation of the different components of interdisciplinary projects. Similarly, literature on content-based teaching presents information regarding integrated curricula; however, in these cases, the adjunct courses are always offered at the same time as the subject-based course. Neither of these situations are applicable within the interdisciplinary projects followed in this study. Therefore, although this issue has not been discussed elsewhere in the literature, the findings of this study demonstrate the importance of the timing of the different components of interdisciplinary projects.

7.2.2 Language use

Another of the pedagogical implications relates to language use. When classes are teacher-centred, the teacher controls to a great deal the language production of the students; the teacher generally uses the second language and restricts the students' language usage to the second language as well. However, group and team work configurations in the class

often change the degree of first and second language usage. As there is less direct supervision of the language production of the students, they may use their first language for interactions within their groups. In only two classes did the students use more English than French in their group interactions. Danielle taught students in the core programme and these students used English almost exclusively in the classroom for each of the days I spent observing her class. On the one day of observations possible with Louise, her students used virtually only English as well. At the extreme end of the spectrum, both Benoît and his students used French the vast majority of the time, on some days, almost exclusively.

Both Luc and Renée claimed their classroom rule was that only English was to be used in the class and this appeared to be respected by the students during regular class activities. For example, on the day I gave the presentation about the interdisciplinary project to Luc's students, they were working on a radio talk-show project. As the students worked in their groups, all the conversations were in English. Conversely, when they left their classroom to go to the computer lab to work on the science fair interdisciplinary project, this rule did not appear to be respected nor enforced. The students' interactions with their peers while working on the interdisciplinary project in the computer lab were almost all in French.

However, while the students in Luc's class spoke about their topics and the projects, many of the students in Renée's class used most of the class time available for the project to talk amongst themselves on a variety of topics not related to the project. These conversations were all in French, and only turned to English and the project if Renée approached the group. Further, while the students were to present an oral debate, because all members of each group were equally involved in the creation of the arguments both for and against the issue, there was no genuine dialogue in English during the presentations. As a result, the students' learning of spoken English was not necessarily facilitated through the projects as the students presumably used less English than they normally did in their regular classroom activities.

There has long been controversy over first language usage in ESL classrooms (Brown, 2000) but generally, the accepted position is that a judicious use of the first language is appropriate as a tool to aid in students' second language learning (Burden, 2000; Cook, 2001; Lee, 2006; Swain & Lapkin, 2000). However, too much reliance on the

first language “challenges the very purpose of the class” (Cole, 1998) as well as the English component of the interdisciplinary projects. In Québec, the MELS repeats in several places in the secondary first cycle programme that the students and teachers are to use English at “*all times*” (MEQ, 2004b, p. 173, italics added) in the core as well as the enriched ESL programme. In the secondary second cycle programme, the MELS indicates “interacts orally in English is the cornerstone of the core ESL programme” and directs the “students and the teacher [to] use English as the language of communication in the classroom for *all* personal, social, and task-related purposes” (MELS, 2007b, chpt. 5, p. 14, italics added). However, the use of English in the classrooms of most of the participating teachers of this study indicates this is not being realised, thus causing a loss in the pedagogical value of the interdisciplinary projects.

Another concern related to language use was certain students, in every class except that of Louise, claimed to have written their texts in French and then translated them to English for the interdisciplinary project. Observations of Luc’s, Renée’s, and Benoît’s students working in the computer labs or with computers in their classrooms showed regular usage of on-line translation programmes. The students wrote a text in French, had it translated, and then copied out the English translation they were given from the on-line tools. As was seen in the case study of Renée, at times this usage gave rather less than satisfactory results.

The usage of both French and English within the different subject components of the interdisciplinary projects is a result of the French language context in Québec, where both the broader school and social contexts are French, and therefore English language usage was restricted to that of the ESL class. Within content-based teaching, both the content and language courses are given in the same language (Benesch, 1988; Gibbons, 2003; Krueger & Ryan, 1993; Snow, 2001; Wesche & Skehan, 2002), with the language courses designed to assist students’ acquisition and understanding of the concepts and information from the content course. However, in the interdisciplinary projects implemented in this study, the languages of the different subjects involved were not the same. Although it has not received a great deal of attention in literature, the usage of English within the interdisciplinary projects has emerged as an important element that should be given further consideration.

7.2.3 Task design

Teachers' may become implicated in interdisciplinarity as part of a coherent and reflexive teaching practice or they may do so in response to pressures from school administration, colleagues, or society. Whatever the background reasons, the pedagogical implications of teaching a subject matter through the use of the students' second language requires teachers help their students develop the ability to convey and comprehend important information about the subject in that language. This is encouraged through the exploitation of opportunities to use the second language productively. However, as interdisciplinary teaching is a relatively recent innovation in Québec secondary schools, teachers may lack experience and, at times, theoretical knowledge to support their endeavours. This can be problematic, as was evidenced in certain shortcomings of the interdisciplinary projects implemented by the teachers participating in this study. In most cases, the English components of the projects were not necessarily well defined and steps to ensure the development of English skills and competencies were not built into the design.

One example where the structure of the interdisciplinary project did not support English usage and learning was the bilingual pamphlet project in Pierre's class. An important concern was that certain students in this class had not worked on the English component of the interdisciplinary project at all. In their groups, the student who had the strongest skills in English worked on the English component of the project while the other students worked on the components of the project related to the other subjects. Although Riente (2003) did not deal with the question of second language learning, this sharing of work and delegation of tasks is part of the explanation why he found Québec secondary school teachers claimed students were earning grades without developing knowledge or understanding of the material in interdisciplinary projects.

Another important problem in the implementation of the interdisciplinary projects was a lack of emphasis or drawing on of the resources and information from the other subjects involved in the projects. For example, in Renée's interdisciplinary project *La ferme des animaux*, most of the students did not use any of the handouts or work done in the French or philosophy classes in the building of their arguments for their debates. The students chose topical issues, but only two groups brought the materials from their other subjects and made specific mention of either the characters in the book or concepts covered

in the other subjects while presenting their debates. This perhaps could be explained by the great length of time separating the components of the other two subjects to that of English; however, the design of the English component of the interdisciplinary project did not require the students to utilize more of the information learned in the other classes than just the choice of an issue raised in the book.

Another way in which the interdisciplinary projects did not support the students learning of English was that Renée, Benoît, and Pierre did not make available in their classes authentic materials or resources in English for the students to use. And while the students in Luc's class used the Internet to find much of their material for their science fair projects, they did not appear to be encouraged to use the vast resources and materials available in English. This is an important issue as the use of authentic materials in the classroom has long been shown to be beneficial in the language learning process (Bacon & Finnemann, 1990; Guariento & Morley, 2001; Swaffar, 1985).

7.2.4 Recommendations

In order to resolve some of these issues, there are certain measures which would help teachers increase the pedagogical value of interdisciplinary projects. The first of these is that teachers should try to ensure the different components of the projects take place within a limited amount of time. The simultaneous implementation of the components of the different subjects appears to offer the most benefits. If this is not possible, sequential-type interdisciplinary projects might offer similar pedagogical value if they have the different components implemented in close succession. This would help the students make the links between the different components and so obtain many of the benefits offered in interdisciplinary projects which are simultaneously implemented in each of the participating subjects.

Another recommendation would be to increase the amount of English being used by the students. Teachers need to ensure the classroom rules regarding the use of English are enforced, and they need to incorporate into the interdisciplinary project opportunities for the students to use the second language in an authentic exchange of ideas and information. Within the project, this can be arranged through the requirement of some form of joint decision making and sharing of ideas on the topics.

One way to do this would be the incorporation of aspects of cooperative learning (Johnson & Johnson, 1994) in the English component of the project. Cooperative learning would also help resolve the issue of task design where not all the students are implicated in the completion of the task. While it is normal there is a certain division of labour among the students, the use of cooperative learning would ensure more equal participation in all components of the projects so students who are weaker in second language skills may also be likely to receive the benefits accrued through the different components of the interdisciplinary projects.

This could be accomplished by requiring positive interdependence whereby each group member makes a unique contribution to the effort of the team through sole responsibility for certain tasks, information, resources, etc, thus ensuring all members of the group contribute if the group is to successfully complete the interdisciplinary project. Building individual and group accountability into the interdisciplinary project helps make each individual in the group responsible for the group's success (Slavin, 1992) and could be done by basing the final grade of the English component of the interdisciplinary project on the total of the students' individual grades within the project. Building individual and group accountability into the design of the tasks is one way to ensure it is not only the students who are strongest in English who do the work; all the students in the group must share and understand all the components of the project (Johnson, Johnson, & Holubec, 1994). This helps to ascertain that the students approach the tasks in order to learn, and not simply to accomplish the task as quickly and easily as possible. And although the studies by Parks (2000) and Priego (2007) demonstrated that students who had a negative orientation to an assigned project were still able to minimally complete the assignment without necessarily respecting the guidelines, requiring positive interdependence would help ensure the task offered language learning benefits to more of the students than just those who were strong in English.

The interdisciplinary project should also have some form of group processing on language use built into it so as to ensure the students are conscious of their usage of English while working on the project. Johnson and Johnson (1995) claim effective group processing reminds members of the group norms. Therefore, by bringing to the foreground their awareness of language use, the students may make more effort to ensure interactions within

their teams take place in English. As above, this factor can be aided by changing the students' orientation to the activities from one of efficiency to one of effective learning.

In order to reduce students' reliance on translation from French to English, there are a few measures that may prove helpful. In the five classes where the students used translation from French in order to write their texts in English, it was notable there were no authentic materials or resources made available to the students to support their efforts. The provision of authentic texts for the students to read, similar to the ones the students are to produce, provides them with examples of both form and content. This offers scaffolding to support the students' efforts to write in their second language. Additionally, the use of criterion based evaluations would help raise students' awareness of items they should be trying to incorporate in their final products. This would aid them in their examination of the authentic materials used, in order to identify how certain elements are used or presented. The use of the writing process with an emphasis on different draft versions and revisions would provide further scaffolding to support their efforts.

Another recommendation to improve the pedagogical value of interdisciplinary projects relates to the teaching of learning and work strategies. Certain students remarked they did not have appropriate strategies which would have assisted them in carrying out the English component of their interdisciplinary project. Instruction in the use of strategies such as brainstorming, note taking, organizing and structuring ideas, writing and preparing arguments is important (Butler, 2002; Butler & Cartier, 2004; Harris & Alexander, 1998; Lee, 2002) to enable students to develop some of these skills. The provision of deadlines for the different parts of the English component of the interdisciplinary project would also help the students to better structure the time and work requirements.

Another recommendation, while it may seem redundant, is that teachers need to require the utilisation of information, material, and/or knowledge from the other participating subjects, and ensure they build these requirements into the structure of the interdisciplinary project. It is this incorporation of work, information, or material from the other subjects which shows the students the relationships between the disciplines and encourages the transfer of knowledge from one discipline to another.

If teachers are to implement interdisciplinary projects with students working in groups, their work would be facilitated through the understanding of the concepts behind

cooperative learning. Renée did not believe group work had any pedagogical value for the students. Benoît did not seem to have any knowledge or understanding of the precepts behind cooperative learning, nor the classroom management skills to ensure successful implementation of group work. These are two very different problems but in both cases, the teachers required more information and support from their colleagues and the curriculum consultant than was forthcoming. It is very easy to say pedagogical development programmes would resolve these issues, but while they might benefit Benoît in improving his classroom management skills, their outcome would be less predictable for Renée. Research has shown that workshops and seminars offer little hope for changing teachers' pedagogical beliefs (Arends, 1999; Ediger, 2003; Fullan & Hargreaves, 1992; Goldenberg & Gallimore, 1991).

Another issue related to teachers is their ability to negotiate with their colleagues when faced with pressure over the interdisciplinary projects. It has been shown that teachers' self-determination and motivation are negatively influenced by pressure from their school administrators and colleagues (Pelletier, Séguin-Lévesque, & Legault, 2002). Renée felt she was forced to implement the interdisciplinary project as elaborated by her colleague. She had resisted until she felt it was no longer worth the effort and so, in the end, she accepted his plan for what she would do in her English class; however, this could have had a deleterious effect on her involvement in the interdisciplinary project as well as her attitude towards interdisciplinarity. While teachers of other subjects may have opinions regarding teaching, English language teaching, and the components of the interdisciplinary project, teachers of English need to be able to make the decisions regarding the English component of the project in function of the English competencies and skills they wish their students to develop through the interdisciplinary project. It is important for English teachers to be able to control the development of the English component of the interdisciplinary project in order to ensure it will have positive pedagogical value for the students.

7.2.5 Conclusion

Although most of the teachers in this study appeared to value interdisciplinary teaching for the benefits it provided as a tool to improve student learning, it was not always used to good effect in all the interdisciplinary projects. If the design of the interdisciplinary

project is such that it cannot be implemented simultaneously in the different subjects, the different components should be implemented within a very short time of each other if the project is to retain certain aspects of its pedagogical value. Teachers should also try to ensure the students are reading, writing, and speaking in English or the interdisciplinary projects may have less value as relates to ESL learning. Students need to use the time they spend in their English class in a manner that will advance their English language skills. In order to do so, it is important the design and structure of the activities take into account the dynamics of effective group work. Further, these tasks should be designed so as to orient the students to learning and improving their English, rather than simply completing the task as quickly as possible. Finally, a certain amount of attention needs to be directed towards teachers' pedagogical skills. They may need support in order to be confident in their pedagogical abilities with cooperative learning and classroom management with students working in groups.

7.3 Summary

In this chapter, two points were discussed. The first presented how the use of activity theory and the model of expansive learning (Engeström, 2001b) was used in order to understand the process of pedagogical innovation in educational institutions. The second section of the chapter focused on the pedagogical implications of the implementation of interdisciplinary teaching. Each of these is addressed in turn.

Engeström's (2001b) model of expansive learning was used to show how the relations between the different activity settings of teachers interact. The changes in the activity systems of the teachers, brought about through their efforts to implement interdisciplinary teaching, resulted in different levels of contradictions. As the introduction of new elements introduces conflicts leading to change, suggestions were made regarding introducing changes into the activity system of the school commission which may facilitate the implementation of interdisciplinary practices within the activity systems of the teachers.

The discussion of the pedagogical implications of interdisciplinary teaching was used to show how three main issues affected the pedagogical value of the interdisciplinary projects implemented during this study. These issues were: the timing of the implementation of the interdisciplinary projects; language use, including usage of English

and French, and the usage of translation within the interdisciplinary project; and task design where the design of the activities is structured to support English language learning and students' orientation to the activities as language learning opportunities. Recommendations offered in order to address these problems included favouring the usage of simultaneous implementation of the different subject components of the interdisciplinary projects, the use authentic materials in English and the introduction of cooperative learning to increase English language usage and ensure the task design of the interdisciplinary projects would better enable them to fulfill their pedagogic potential.

The next chapter presents the conclusion of this thesis. It begins with a review of the significant findings of the study. This is followed by an examination of the limitations of the study and suggestions for areas of research that further explore the issue of interdisciplinary teaching in ESL classes at the secondary level in Québec.

CHAPTER 8

CONCLUSION

8.0 Introduction

This final chapter presents a conclusion for the thesis. It begins with a synthesis of the most important findings of the study, then examines the originality of the study and explains how this study has contributed to research in this area. Subsequently, limitations to the present study are considered and directions for further research are advanced.

8.1 Synthesis of findings

This section of the chapter presents a summary of the main findings of the study. As this exploratory study sought to develop a comprehensive understanding of teachers' conceptualization and implementation of interdisciplinary teaching, a qualitative research design was most appropriate. Triangulation through the use of multiple sources and data collection methods allowed the comparison and verification of data from one source with another as well as between different types of sources. This allowed conclusions to emerge and permitted a greater understanding of the actions and reactions of the participants in the study. Through this process, four main findings, situated at different levels, emerged from the data:

- 1) The findings showed the teachers' conceptualization of interdisciplinary teaching as a pedagogical tool that enabled them to integrate knowledge and information from the different subjects to promote student learning was at odds with what was actually done within the projects. The reasons for this discrepancy can be found within three issues: the timing of the interdisciplinary projects, the use of English in the disciplinary projects, and the task design of the English components of the interdisciplinary projects.

The findings indicated that interdisciplinary projects which were implemented simultaneously in each of the subject components appeared to offer greater pedagogical value than projects implemented in a sequential fashion. Some of the reasons for this lay in more easily drawn links between the different subjects and greater coherence in information and guidelines provided to the students. Additionally, the simultaneous implementation of the different subject components in an interdisciplinary project may encourage greater student involvement. Within the bulk of literature on interdisciplinary teaching in the

United States, courses are generally taught in block schedules with teachers associated with specific interdisciplinary teams (Corriero, 1996; Golley, 1997; Howe, 2007; Kruse & Louis, 1997; Lounsbury, 1992; Meister & Nolan, 2001; Norton, 1998). Also in literature on content-based teaching, whether sheltered or adjunct classes, the second language component is generally taught at the same time as the subject matter component (Gee, 1992; Short, 1993; Snow, 2001; Wesche, 1988; Wesche & Skehan, 2002). There appears to be no previous research on the implementation of interdisciplinary teaching that addresses the issue of sequential versus simultaneous implementation of different components of interdisciplinary projects. As a result, the findings of this study offer a perspective of this aspect of interdisciplinary teaching not yet addressed in literature.

The findings indicated that, in some cases, the introduction of the interdisciplinary project was related to a decrease in the amount of English language usage in the class, and at other times it exacerbated an existing condition where English was not used in a manner that offered pedagogical value for the students' learning. While the MELS recommends teachers ensure they and their students use English for all classroom interactions (MELS, 2007a; MEQ, 2004b) current literature on the topic suggests a certain degree of first language use is appropriate in second language classrooms (Burden, 2000; Cook, 2001; Lee, 2006; Swain & Lapkin, 2000). However, as there have been no other studies, to my knowledge, investigating the effect of the implementation of interdisciplinary teaching on second language usage of students, this study appears to be the first to address this issue.

As was seen in the case studies and discussion, most of the English components of the interdisciplinary projects were not well defined as the development and exploitation of opportunities to use English skills and competencies were not built into the design of the projects. One issue related to task design was the lack of authentic English materials or resources for the students to use even though they have been shown to be beneficial in the language learning process (Bacon & Finnemann, 1990; Guariento & Morley, 2001; Swaffar, 1985). Another issue related to a lack of group language processing requirements which has been shown to help raise students' consciousness of their language use (Johnson & Johnson, 1995). A lack of individual and group accountability (Johnson, Johnson, & Holubec, 1994) contributed to the students' poor efforts to ensure usage of their second language. Research on the benefits of cooperative language learning (Jacob, Rottenberg,

Patrick, & Wheeler, 1996; Johnson, 1992; Kagan, 1992; Oxford, 1997; Oxford & Shearin, 1994; Sharan & Sharan, 1992; Slavin, 1996) offers a great deal of information which could be used towards ensuring the task design of interdisciplinary projects makes use of and develops ESL competencies and skills.

2) One of the main findings of this study was the information related to the main factors which constrain or facilitate Québec ESL secondary school teachers' ability to implement interdisciplinary teaching. Of the two main constraining factors, the first was situated within the activity system of the school and related to the lack of common planning times with their interdisciplinary partners. While many researchers in the United States consider scheduled planning periods with partners to be the key element in the success of interdisciplinary team organization (Conley et al., 2004; Corriero, 1996; Crow & Pounder, 2000; Epstein & MacIver, 1990; Howe, 2007; Jang, 2006; Kruse & Louis, 1997; Meister & Nolan, 2001; Murata, 1998; National Middle School Association, 2005; Tipton, 1997) they also note that this time is not always included in teachers' schedules, or when it is, it is insufficient for their teaching task. The second main constraint to interdisciplinary teaching identified by the teachers in this study was a near total absence of information, material, and professional development opportunities related to interdisciplinary teaching coming from the activity system of the school commission or the MELS. Again, sources regarding interdisciplinary teaching in the United States also claim inadequate professional development on interdisciplinary teaming can hinder teachers' abilities to effectively collaborate (Conley et al., 2004; Corriero, 1996; Cronin, 2007; Meister, 1997).

The factors the teachers claimed most facilitated interdisciplinary teaching were common planning periods to elaborate interdisciplinary projects, positive relations with members of the school community, and the new MELS education programme. For the first of these three factors, the six teachers claimed common planning periods to be the most important factor that would facilitate their efforts to implement interdisciplinary teaching. These findings find support in other research from the United States which indicates teachers participating in interdisciplinary teams also consider common planning periods with colleagues to be necessary for the successful implementation of interdisciplinary teaching (Crow & Pounder, 2000; Howe, 2007; Murata, 2002; National Middle School

Association, 2005; Smith & Karr-Kidwell, 2000). Also within the activity system of the school, the teachers found positive relations with members of the school community facilitated their efforts to implement interdisciplinary teaching. These relations included both their interdisciplinary partners as well as the larger school community. These findings seem to be supported in current literature on the subject of collegiality (Ball & Rundquist, 1993; Conley et al., 2004; Cooper, Iorio, & Poster, 2001; Erb, 1995; Maeroff, 1993; Pounder, 1999) as well as within the studies regarding teachers' relations in the implementation of interdisciplinary teaching (Howe, 2007; Miller, 2006; Tipton, 1997). For the third element, there appears to be little literature on the subject. The implementation of the new MELS education programme was only in its second year at the time of the study, and one year later, at the time of this writing, had only been implemented at the level of Secondary 3. As yet, I have been unable to find information regarding ESL teachers' view of this new tool so this study is, to my knowledge, the first which addresses teachers' positive perception of the new ESL programme at the secondary level as a pedagogical tool which facilitates the implementation of interdisciplinary teaching.

3) Another of the important findings of this study was the type and number of contradictions teachers face in their attempts to implement an innovative teaching practice. The use of sociocultural theory, specifically Engeström's activity theory (1987) and cycle of expansive learning (2001b), in the examination of innovation in educational institutions in Québec facilitated the analysis of the contradictions that occur within and between the activity systems of which teachers are members. Some studies have examined the use of sociocultural theory to investigate students' language learning through the perspective of communities of practice (Donato & McCormick, 1994; Hall, 1993; Lantolf, 1994), and the effect of activity systems on secondary level second language students' investment in tandem learning projects (Priego, 2007). However, this study appears to be the first which uses Engeström's (1987, 2001b) theory of the cycle of expansive learning and model of an activity system to investigate the activity systems within which ESL teachers act and the effect of these systems on their pedagogical practice. The use of this framework has shown how the information regarding the constraints teachers experienced in their efforts to implement interdisciplinary teaching cut across the different activity systems and were

often perceived by the actors of the different systems in similar light. Further, what became clear through the study was that often the teachers themselves were unable to effect the necessary changes that would facilitate interdisciplinary teaching. For example, the teachers identified a lack of common planning periods as an important factor which constrained their abilities to implement interdisciplinary teaching. In the larger activity system of the school, the administrators claimed the complexity of the development of the school's master schedule made it very difficult to provide teachers with these periods because of the restrictions imposed by the four-period, nine-day cycle of the activity system of the school commission. Collaboration across the different activity systems will be necessary if substantive change is to take place. The study then has shown how the smaller activity systems of the teachers' classrooms, set within that of their school, their school commission, and the MELS are somewhat dependent on these larger activity systems in order to effect change that arises as a result of contradictions between these activity systems. When a contradiction to the teachers' desired pedagogical practice is introduced by a larger activity system, it may be that the teacher may not be able to resolve the contradiction within their classroom activity system as they desire unless the community members of the activity systems concerned share a vision of the contradiction and a willingness to cooperate to resolve the contradiction. Without the cooperation of the actors within these interacting activity systems, change, in the form of the widespread implementation and use of interdisciplinarity will not likely occur.

4) Finally, the findings have allowed a better understanding of the effect of the interdisciplinary projects on the students' orientation to them. While the students might have generally had a positive appreciation of the different interdisciplinary projects, this did not necessarily lead to a positive orientation to the implementation of interdisciplinary projects as a means to improve their English. Often, the students' orientation to the interdisciplinary projects as an opportunity to improve their English was the same as their orientation to interdisciplinary projects as learning opportunities. When the students were motivated by the interdisciplinary projects, they often also had a positive orientation to interdisciplinary projects as an opportunity to improve their English. One element that has emerged is that poor task design of the interdisciplinary projects appears to encourage an

efficiency approach to the completion of the tasks within the interdisciplinary projects. The information from this study then contributes to that gathered in other recent studies (Parks et al., 2005; Priego, 2007) that have shown the effect of students' orientation on their investment in second language learning tasks.

8.2 Originality of the study

Several studies have been conducted regarding administratively imposed interdisciplinary teaching in middle schools (Corriero, 1996; Cronin, 2007; Crow & Pounder, 2000; Hackman et al., 2002; Howe, 2007; National Middle School Association, 2005; Pounder, 1999; Thompson, 1997) and high schools (Golley, 1997; Gunn & King, 2003; Meister, 1997; Miller, 2006; Murata, 2002; Norton, 1998) in the United States. However, there has been very little research concerning interdisciplinary teaching in Canada, and much of this has focused on interdisciplinary teaching in Québec primary schools (Larose & Lenoir, 1995; Lenoir, 1992; Lenoir et al., 2000). To date, this is the first study which examines the use of interdisciplinary teaching by ESL teachers in Québec secondary schools. The specific findings that show the pedagogical value of interdisciplinary projects implemented by these teachers can be increased when three main issues are addressed. The design of the interdisciplinary project should be such that the components of the different subjects are implemented simultaneously; the design should ensure the students are reading, writing, and speaking in English in order to develop their second language competencies; and the design and structure of the tasks within the English component of the interdisciplinary project take into account the dynamics of effective group work designed so as to orient the students to completing the tasks with the goal of improving their English skills.

The study also identifies those factors which the participants claimed most constrained or facilitated their efforts to implement interdisciplinary teaching. These factors, identified by the teachers, the school directors, and the curriculum consultant have also been identified in studies in the United States regarding the implementation of interdisciplinary teaching, especially as relates to the question of scheduled common planning periods with interdisciplinary partners (Conley et al., 2004; Corriero, 1996; Crow & Pounder, 2000; Epstein & MacIver, 1990; Howe, 2007; Jang, 2006; Kruse & Louis,

1997; Meister & Nolan, 2001; Murata, 1998; National Middle School Association, 2005; Tipton, 1997), the need for professional development opportunities and information on interdisciplinary teaching (Conley et al., 2004; Corriero, 1996; Cronin, 2007; Meister, 1997), and the need for positive relations within the school community and interdisciplinary team (Howe, 2007; Miller, 2006; Tipton, 1997).

Finally, the study also offers insight into why interdisciplinary teaching by Canadian ESL teachers may have more difficulty moving from a grass roots effort to a more mainstream pedagogical practice. The use of Engeström's (1987, 2001b) models of the cycle of expansive learning and activity theory in the examination of innovation in educational institutions has allowed a greater understanding of the interactions between the different activity systems of which teachers are members, and how these interactions and contradictions affect the actions of the teachers. The use of this conceptual framework has shown that change, in the form of a more widespread use of interdisciplinary teaching in the schools, is dependent on the different actors within the activity systems of teachers' schools, the school commission and the MELS sharing the same vision of interdisciplinarity and being willing to engage in cooperation across the boundaries of these systems to resolve contradictions which, at the present time, restrict interdisciplinary teaching to certain teachers at the grass roots level.

8.3 Limitations

As an exploratory study of the conceptualization and implementation of interdisciplinary teaching by Québec high school ESL teachers, the study focused on the interdisciplinary practices of several teachers. It was the first to examine the use of interdisciplinary teaching in the ESL class at the secondary level, and so a general understanding of the pedagogical practice was one of the goals. Therefore, because interdisciplinary teaching at the secondary level appears to be a relatively recent phenomenon in Québec, especially as relates to ESL teachers, it was important to obtain information from several teachers in order to provide insight into this pedagogical practice. As a result, six teachers from five schools were recruited to participate in the study. This has afforded a thick description of these teachers' conceptualization of interdisciplinary teaching and the different ways they implement interdisciplinary practices. Information

from the teachers of other subjects involved in the interdisciplinary projects would have enabled a greater variety of perspectives of interdisciplinary teaching in the school, as opposed to a view of interdisciplinary teaching as relates specifically to ESL teachers.

8.4 Implications for further research

In order to broaden the knowledge base and improve understanding, additional research is required regarding the use of interdisciplinary teaching at the level of secondary schools in Québec. While certain information has been provided, there is still much to learn.

One valuable area for further research would be an examination the effect of school culture on interdisciplinary teaching. At the *École secondaire le Carrefour*, the efforts of the school principal to promote interdisciplinary teaching were mitigated by the division of teachers into two camps of opposing philosophies and the strong union presence; however, he was determined to promote changes in the school culture through his hiring practices and teaching assignments. A long-term ethnographic study would enable greater understanding of how changes in the school culture affect teachers' conceptualization of interdisciplinary teaching, in what manner these changes are reflected in teachers' efforts to implement interdisciplinary teaching practices, and how these efforts themselves influence changes in the school culture.

Another important area for further research would involve returning in two, three, or five years to the ESL teachers who participated in this present study. An important part of Engeström's (2001b) theory of expansive learning is historicity. He makes the distinction between "short-lived goal-directed action and durable, object-oriented activity" (2000, p. 964) as the interactions between an the activity system with other activity systems results in the evolution and transformation of the activity systems over time. Pettigrew (1990, in Engeström, Kerosuo, & Kajamaa, 2007, pp. 319-320) asserted that longitudinal studies that last several years are not often common. Two of the exeptions include Engeström's (2000) 15-year examination of organizational change in Finnish health care organizations, and Parks et al. (2005) who examined students appropriation of the writing process over a 4-year period. It would be valuable to examine the process of the teachers' appropriation of interdisciplinary projects through a series of studies over a period of several years to see

whether the teachers were still implementing interdisciplinary teaching; whether the interdisciplinary projects discussed in this study were still in place and what, if any, changes had been made to them; whether new interdisciplinary projects were being implemented in the schools; and if other teachers in the schools had also begun to implement interdisciplinary teaching. According to Rudduck (1991, p. 8), it “takes fifty years for new social practice to become widely established”; however, the current educational reform in Québec is only in the third year of implementation at the secondary level, far from becoming an “institutionalized and regularized part of ... ongoing operations” (Rogers, 1995, p. 173). It will take several more years to see if innovative educational practices such as interdisciplinary teaching move beyond a few isolated teachers to become more accepted and established in the Québec secondary school system.

8.5 Conclusion

The goal of this exploratory study was to examine six Québec secondary school ESL teachers’ conceptualization and implementation of interdisciplinary teaching. The framework of this qualitative study was based on sociocultural theory and so in order to understand how the activity systems within which the teachers acted affected their efforts to implement interdisciplinary teaching, information was also gathered from actors within the activity systems of the teachers’ classrooms, schools, school commission, and the MELS. The findings showed there were three main issues related to the design of the interdisciplinary projects including (a) sequential versus simultaneous implementation of the different components of the interdisciplinary projects, (b) the amount of English language usage in the class, and (c) the task design of the English component of the interdisciplinary projects. The findings also showed the effect of student orientation to the learning task may be related to the task design of the interdisciplinary projects. The main constraints teachers face when attempting to implement interdisciplinary teaching were identified and through the use of the Engeström’s (2001b) model of expansive learning in the examination of innovation in educational institutions, it was shown how these factors are present within the different activity systems of the study. The multivoiced nature of the interacting activity systems will require the development of a common vision of these constraints, and a willingness to cooperate across the systems in order to find ways to

resolve the contradictions. It will only be through this joint effort that change, in the form of a broader use of interdisciplinary teaching within the school system, will take place.

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Appendix A: Official authorization for data collection in the school

Titre du projet de recherche: Québec ESL High School Teachers' Conceptualization and Implementation of Interdisciplinary Teaching Practices: A Sociocultural Perspective

Ceci est une lettre d'autorisation officielle, donnant droit à Diane Brochu, étudiante au doctorat à l'Université Laval d'effectuer la collecte des données pour sa recherche sur l'interdisciplinarité à l'école : _____.

L'école s'engage à:

- 1) Permettre à Diane Brochu de recruter des enseignants participants dans cet établissement scolaire.
- 2) Permettre à Diane Brochu d'assister à des cours d'anglais, langue seconde, de ces enseignants participants afin d'observer et noter le déroulement des classes et les pratiques pédagogiques des projets interdisciplinaires.
- 3) Permettre à Diane Brochu de distribuer un court questionnaire destiné à certains élèves de ces classes dans le but de recueillir leur opinion sur les projets interdisciplinaires.
- 4) Permettre à Diane Brochu d'interviewer six élèves de ces classes dans le but d'approfondir les connaissances acquises lors des questionnaires.
- 5) Mettre un local à la disposition de Diane Brochu pour les entrevues.

Je soussigné(e) _____ autorise Diane Brochu à effectuer les collectes de données mentionnées ci-dessus, pour des fins de son projet intitulé « Québec ESL High School Teachers' Conceptualization and Implementation of Interdisciplinary Teaching Practices: A Sociocultural Perspective ». Cette recherche s'effectue dans le cadre d'un projet de doctorat sous la direction de Mme Susan Parks, Département de langues, linguistique et traduction, Université Laval.

Signature du (de la) administrateur(e)

Date

Nom du (de la) administrateur(e) en lettres capitales

Signature de la chercheure

Date

Toute question concernant mon étude de doctorat pourra être adressée à :

Diane Brochu
Étudiante du doctorat en linguistique
Université Laval
Tél. XXX XXX XXXX
Courriel : XXXXXXXXXXXXXXXX

Susan Parks, PhD
Directrice de recherche
Département de langues, linguistique
et traduction
Université Laval
Québec, Canada, G1K 7P4
Téléphone : XXX XXX XXXX
Télécopieur : XXX XXX XXXX
Courriel : XXXXXXXXXXXXXXXX

Numéro d'approbation du Comité d'éthique de la recherche de l'Université Laval: 2006-200

Date d'approbation : 21 novembre, 2006

Toute plainte ou critique pourra être adressée au Bureau de l'ombudsman de l'Université Laval : Pavillon Alphonse-Desjardins, Bureau 3320
Renseignements – Secrétariat : (418) 656-3081 télécopieur : (418) 656-3846
Courriel : ombuds@ombuds.ulaval.ca

Appendix B: Teacher letter of agreement

Titre du projet de recherche: Québec ESL High School Teachers' Conceptualization and Implementation of Interdisciplinary Teaching Practices: A Sociocultural Perspective

Diane Brochu, étudiante au doctorat

La nature et les procédures de la recherche se définissent comme suit :

1. La recherche a pour but de :
 - a. déterminer la façon dont les enseignants d'anglais, langue seconde conçoivent et mettent en œuvre des activités interdisciplinaires et comment ils les intègrent à leur cours;
 - b. déterminer comment divers facteurs d'ordre contextuel peuvent influencer ces pratiques pédagogiques;
 - c. déterminer comment les élèves perçoivent ces activités.
2. L'étude prend la forme de :
 - a. deux entrevues enregistrées d'environ une heure chacune;
 - b. l'observation de quelques cours d'anglais en lien avec des activités ou un projet interdisciplinaire pour la prise de notes par la chercheuse afin de documenter la démarche pédagogique;
 - c. des entrevues informelles après les sessions d'observation;
 - d. l'observation des rencontres de planification interdisciplinaire, lorsque possible.
3. Les entrevues comprendront les éléments suivants :
 - a. la discussion de la nature des activités interdisciplinaires déjà essayées ou en cours;
 - b. les expériences qui ont amené l'enseignant à s'orienter vers ce type d'enseignement;
 - c. les facteurs qui influencent la mise en application de ces activités.
4. Chaque participant pourra se retirer de cette recherche en tout temps, sans explication et ne subira aucun préjudice.
5. Parvenus à la fin de cette recherche, la participation fournira aux participants:
 - a. l'occasion de réfléchir sur leurs pratiques pédagogiques et de participer de façon concrète à un domaine de recherche novateur, ce qui pourrait être perçu comme une démarche professionnelle valorisante;
 - b. Si le désir est manifesté, les participants pourront avoir accès à un résumé des résultats de l'étude.
 - c. Les participants seront invités à assister à la soutenance de thèse de la chercheuse.
6. Il n'y a aucun risque connu lié à la participation à la recherche, d'autant plus que la confidentialité des réponses est assurée.

7. En ce qui concerne le caractère confidentiel des renseignements fournis par les participants, les mesures suivantes sont :
 - a. le nom des participants, des écoles ou de tout autre intervenant évoqué dans les entrevues ou les travaux ne paraîtront dans aucun rapport;
 - b. un code sera utilisé sur les divers documents de la recherche. Seule la chercheuse aura accès à la liste des codes;
 - c. en aucun cas, les résultats individuels des participants ne seront communiqués à qui que ce soit;
 - d. les données incluant les enregistrements seront conservées jusqu'à la fin des études doctorales, puis détruites.
8. La recherche fera l'objet de publications dans des revues scientifiques, sans qu'aucun participant ne puisse être identifié.
9. Chaque enseignant participant recevra la somme de 200 \$, qui servira pour la réalisation d'activités en anglais avec leurs élèves.

Toute question concernant mon étude de doctorat pourra être adressée à l'une ou l'autre de ces personnes :

Diane Brochu
Étudiante au doctorat en linguistique
Université Laval
Tél. XXX XXX XXXX
Courriel : XXXXXXXXXXXXXXXX

Susan Parks, PhD
Directrice de recherche
Département de langues, linguistique et traduction
Université Laval
Québec, Canada, G1K 7P4
Téléphone : XXX XXX XXXX
Télécopieur : XXX XXX XXXX
Courriel : XXXXXXXXXXXXXXXX

Numéro d'approbation du Comité d'éthique de la recherche de l'Université Laval : 2006-200

Date d'approbation : 21 novembre 2006

Je soussigné(e) _____

(prénom)

(nom)

consens librement au projet de recherche de Diane Brochu intitulé : « *La conceptualisation et la mise sur pied de pratiques d'enseignement interdisciplinaires par des enseignants d'anglais, langue seconde : Une perspective socioculturelle* » lequel s'effectue dans le cadre d'un doctorat sous la direction de Mme Susan Parks au Département de langues, linguistique et traduction à l'Université Laval.

Signature du (de la) participant(e)

Date

Nom en lettres majuscules

Diane Brochu
Étudiante au doctorat en linguistique

Date

Toute plainte ou critique pourra être adressée au Bureau de l'ombudsman de l'Université Laval :

Pavillon Alphonse-Desjardins, Bureau 3320

Renseignements – Secrétariat : (418) 656-3081 télécopieur : (418) 656-3846

Courriel : ombuds@ombuds.ulaval.ca

Appendix C: Student letter of agreement

Québec, le _____, 2007

Bonjour,

Mon nom est Diane Brochu et je suis étudiante au doctorat en linguistique à l'Université Laval. Je fais présentement une recherche pour mieux comprendre comment les enseignants d'anglais langue seconde mettent sur pied les activités et/ou projets faits en collaboration avec un collègue d'une autre matière (activités ou projets interdisciplinaires).

Pour effectuer ma recherche, j'ai besoin de ta collaboration. J'ai besoin d'observer quelques cours d'anglais, langue seconde pour prendre des notes sur les démarches qu'adopte l'enseignant. À la fin des activités ou projets que j'aurai observés, je vais te demander de compléter un court questionnaire, d'environ 15 minutes, pour savoir comment tu vois ces types d'activités ou projets. Suite à ce questionnaire je demanderai à six élèves d'échanger sur leurs réponses pour mieux comprendre leur point de vue. Cette entrevue sera enregistrée. Dans le cas des six étudiants interviewés, j'aimerais aussi avoir des copies du travail effectué dans le cadre des activités ou du projet observés.

Tu n'es pas obligé de participer. Tu peux refuser de compléter le questionnaire ou de participer à l'entrevue, même si tu signes l'autorisation ci-jointe. Tu peux également te retirer du projet de recherche en tout temps sans avoir à justifier ta décision.

Toutes les informations recueillies durant ce projet seront gardées confidentielles. Les documents recueillis pour des fins de ma recherche ne seront jamais utilisés à des fins d'évaluation scolaire.

Si tu acceptes de participer à cette recherche, il est important de signer le formulaire d'consentement ci-joint et de le remettre à ton enseignant d'anglais, langue seconde. Je serais très heureuse de répondre à toute question que tu pourrais avoir sur mon projet.

Je te remercie à l'avance de ta collaboration.

Toute question concernant mon étude de doctorat pourra être adressée à l'une ou l'autre de ces personnes:

Diane Brochu
Étudiante au doctorat en linguistique
Université Laval
Tél. XXX XXX XXXX
Courriel : XXXXXXXXXXXX

Susan Parks, PhD
Directrice de recherche
Département de langues, linguistique et traduction
Université Laval
Québec, Canada, G1K 7P4
Téléphone : (XXX XXX XXXX)
Télécopieur : XXX XXX XXXX
Courriel : XXXXXXXXXXXX

1/2

Numéro d'approbation du Comité d'éthique de la recherche de l'Université Laval: 2006-200

Date d'approbation : 21 novembre, 2006

Je soussigné(e) consens librement au projet de recherche de Diane Brochu intitulé : « *La conceptualisation et la mise sur pied de pratiques d'enseignement interdisciplinaires par des enseignants d'anglais, langue seconde : Une perspective socioculturelle* » lequel s'effectue dans le cadre d'un doctorat sous la direction de Mme Susan Parks au Département de langues, linguistique et traduction à l'Université Laval.

Signature du (de la) participant(e)

Date

Nom en lettres majuscules

Diane Brochu
Étudiante au doctorat en linguistique

Date

Toute plainte ou critique pourra être adressée au Bureau de l'ombudsman de l'Université Laval : Pavillon Alphonse-Desjardins, Bureau 3320
Renseignements – Secrétariat : (418) 656-3081 télécopieur : (418) 656-3846
Courriel : ombuds@ombuds.ulaval.ca

Appendix D: Parental consent letter

Québec, le 2 avril, 2007

Madame, Monsieur,

Mon nom est Diane Brochu et je suis étudiante au doctorat en linguistique à l'Université Laval, sous la supervision de Mme Susan Parks. Je poursuis présentement une recherche pour mieux comprendre comment les enseignants d'anglais langue seconde réalisent des activités et projets faits en collaboration avec un collègue d'une autre matière (activités et projets interdisciplinaires).

Dans le cadre de ma recherche, j'ai besoin de votre collaboration et celle de votre enfant, et je vous demande par la présente votre autorisation à cet effet. Aux fins de ma recherche, j'aurais besoin d'observer quelques cours d'anglais, langue seconde; ma présence se limitera alors à la prise de notes sur les démarches pédagogiques qu'adopte l'enseignant. À la fin des activités ou projets que j'aurai observés, je demanderai à votre enfant de compléter un court questionnaire, d'environ 15 minutes, pour savoir comment il voit ces types d'activités ou projets. Suite à ce questionnaire, je demanderai à six élèves d'échanger sur leurs réponses au questionnaire pour mieux comprendre leur point de vue. Cette entrevue sera enregistrée. Dans le cas des six étudiants interviewés, nous aimerions également avoir des copies du travail effectué dans le cadre des activités ou du projet observés.

Il va de soi que votre enfant peut refuser de compléter le questionnaire ou de participer à l'entrevue, même si vous signez l'autorisation ci-jointe. Votre enfant peut également se retirer du projet de recherche en tout temps sans avoir à justifier sa décision, ni à subir de préjudice quelconque.

Je m'engage à ce que les informations recueillies durant ce projet par l'intermédiaire des observations, des questionnaires ou des entrevues soient gardées confidentielles (données identifiées au moyen de pseudonymes, conservées dans des classeurs verrouillés jusqu'à la fin de leur traitement, puis détruites) et utilisées uniquement pour la recherche (rédaction de la thèse de doctorat et travaux de publications scientifiques). Enfin, les documents recueillis pour des fins de ma recherche ne seront jamais utilisés à des fins d'évaluation ou de notation des élèves.

Si vous acceptez que votre enfant participe à cette recherche, il est important que vous signiez le formulaire de consentement ci-joint et que vous le fassiez parvenir à l'école par l'intermédiaire de votre enfant. Je demeure à votre disposition pour toute précision complémentaire ou, si vous le désirez, pour discuter d'un aspect particulier de cette recherche.

Je vous remercie à l'avance de votre précieuse collaboration et je vous prie d'agréer l'assurance de mes meilleurs sentiments.

Toute question concernant mon étude de doctorat pourra être adressée à l'une ou l'autre de ces personnes :

Diane Brochu
Étudiante au doctorat en linguistique
Université Laval
Tél. XXX XXX XXXX
Courriel : XXXXXXXXXXXX

Susan Parks, PhD
Directrice de recherche
Département de langues, linguistique et traduction
Université Laval
Québec, Canada, G1K 7P4
Téléphone : XXX XXX XXXX
Télécopieur : XXX XXX XXXX
Courriel : XXXXXXXXXXXX

Numéro d'approbation du Comité d'éthique de la recherche de l'Université Laval: 2006-200

Date d'approbation : 21 novembre 2006

Je consens librement à la participation de mon (mes) enfant(s)

(prénom)

(nom)

au projet de recherche de Diane Brochu intitulé : « *La conceptualisation et la mise sur pied de pratiques d'enseignement interdisciplinaires par des enseignants d'anglais, langue seconde : Une perspective socioculturelle* » lequel s'effectue dans le cadre d'un doctorat sous la direction de Mme Susan Parks au Département de langues, linguistique et traduction à l'Université Laval.

Signature du (de la) parent(e)

Date

Nom en lettres majuscules

Diane Brochu
Étudiante au doctorat en linguistique

Date

Toute plainte ou critique pourra être adressée au Bureau de l'ombudsman de l'Université Laval : Pavillon Alphonse-Desjardins, Bureau 3320
Renseignements – Secrétariat : 656-3081 télécopieur : 656-3846
Courriel : ombuds@ombuds.ulaval.ca

Appendix E: School administrator letter of agreement

Titre du projet de recherche: Québec ESL High School Teachers' Conceptualization and Implementation of Interdisciplinary Teaching Practices: A Sociocultural Perspective

Responsable: Diane Brochu

La nature et les procédures de la recherche se définissent comme suit :

1. La recherche a pour but de:
 - a. déterminer la façon dont les enseignants d'anglais, langue seconde conçoivent et mettent en œuvre des activités interdisciplinaires et les intègrent à leur cours;
 - b. déterminer comment divers facteurs d'ordre contextuel peuvent influencer ces pratiques pédagogiques;
 - c. déterminer comment les élèves perçoivent ces activités.
2. L'étude prend la forme d'une seule entrevue enregistrée d'environ 30 minutes.
3. L'entrevue aura pour but de discuter:
 - a. comment le participant conçoit l'enseignement interdisciplinaire dans le cadre du renouvellement pédagogique du MELS.
 - b. comment il voit son rôle à ce sujet auprès des enseignants d'anglais, langue seconde.
4. Chaque participant pourra se retirer de cette recherche en tout temps, sans avoir à fournir de raison ni à subir de préjudice quelconque.
5. À la fin de cette recherche, la collaboration à cette recherche fournira aux participants:
 - a. l'occasion de contribuer de façon concrète à un domaine de recherche novateur, ce qui pourrait être perçu comme une démarche professionnelle valorisante.
 - b. Si le désir est manifesté, les participants pourront avoir accès à un résumé des résultats de l'étude.
 - c. Les participants seront invités à assister à la soutenance de thèse de la chercheuse.
6. Il n'y a aucun risque connu lié à la participation à la recherche, d'autant plus que la confidentialité des réponses est assurée.
7. En ce qui concerne le caractère confidentiel des renseignements fournis par les participants, les mesures suivantes sont :
 - a. le nom des participants, des écoles ou de tout autre intervenant évoqué dans les entrevues ou les travaux ne paraîtront dans aucun rapport;
 - b. un code sera utilisé sur les divers documents de la recherche. Seule la chercheuse aura accès à la liste des codes;
 - c. en aucun cas, les résultats individuels des participants ne seront communiqués à qui que ce soit;
 - d. les données, incluant les enregistrements seront conservées jusqu'à la fin des études doctorales, puis détruites.

8. La recherche fera l'objet de publications dans des revues scientifiques, sans qu'aucun participant ne puisse être identifié.

Toute question concernant mon étude de doctorat pourra être adressée à l'une ou l'autre de ces personnes:

Diane Brochu
Étudiante au doctorat en linguistique
Université Laval
Tél. XXX XXX XXXX
Courriel : XXXXXXXXXXXX

Susan Parks, PhD
Directrice de recherche
Département de langues, linguistique et traduction
Université Laval
Québec, Canada, G1K 7P4
Téléphone : XXX XXX XXXX
Télécopieur : XXX XXX XXXX
Courriel : XXXXXXXXXXXX

Numéro d'approbation du Comité d'éthique de la recherche de l'Université Laval: 2006-200

Date d'approbation : 21 novembre 2006

Je soussigné(e) _____
(prénom) (nom)

consens librement au projet de recherche de Diane Brochu intitulé : « *La conceptualisation et la mise sur pied de pratiques d'enseignement interdisciplinaires par des enseignants d'anglais, langue seconde : Une perspective socioculturelle* » lequel s'effectue dans le cadre d'un doctorat sous la direction de Mme Susan Parks au Département de langues, linguistique et traduction à l'Université Laval.

Signature du (de la) participant(e)

Date

Nom en lettres capitales

Diane Brochu
Étudiante au doctorat en linguistique

Date

Toute plainte ou critique pourra être adressée au Bureau de l'ombudsman de l'Université Laval :

Pavillon Alphonse-Desjardins, Bureau 3320

Renseignements – Secrétariat : (418) 656-3081 télécopieur : (418) 656-3846

Courriel : ombuds@ombuds.ulaval.ca

Appendix F: Curriculum consultant letter of agreement

Titre du projet de recherche: Québec ESL High School Teachers' Conceptualization and Implementation of Interdisciplinary Teaching Practices: A Sociocultural Perspective

Responsable : Diane Brochu, étudiante au doctorat

La nature et les procédures de la recherche se définissent comme suit :

1. La recherche a pour but de:
 - a. déterminer la façon dont les enseignants d'anglais, langue seconde conçoivent et mettent en œuvre des activités interdisciplinaires et les intègrent à leur cours;
 - b. déterminer comment divers facteurs d'ordre contextuel peuvent influencer ces pratiques pédagogiques;
 - c. déterminer comment les élèves perçoivent ces activités.
2. L'étude prend la forme d'une seule entrevue enregistrée d'environ une heure et demi.
3. L'entrevue comprend les éléments suivants :
 - a. comment le participant conçoit l'enseignement interdisciplinaire dans le cadre du renouveau pédagogique du MELS;
 - b. comment il voit son rôle à ce sujet auprès des enseignants d'anglais, langue seconde.
4. Chaque participant pourra se retirer de cette recherche en tout temps, sans avoir à fournir de raison ni à subir de préjudice quelconque.
5. À la fin de cette recherche, la participation fournira aux participants:
 - a. l'occasion de participer de façon concrète dans un domaine de recherche novateur, ce qui pourrait être perçu comme une démarche professionnelle valorisante.
 - b. De plus, si le désir est manifesté, les participants pourront avoir accès à un résumé des résultats de l'étude.
 - c. Les participants seront invités à assister à la soutenance de thèse de la chercheure.
6. Il n'y a aucun risque connu lié à la participation à la recherche, d'autant plus que la confidentialité des réponses est assurée.
7. En ce qui concerne le caractère confidentiel des renseignements fournis par les participants, les mesures suivantes seront prises :
 - a. le nom des participants, des écoles ou de tout autre intervenant évoqué dans les entrevues ou les travaux ne paraîtront dans aucun rapport;
 - b. un code sera utilisé sur les divers documents de la recherche. Seule la chercheure aura accès à la liste des codes;
 - c. en aucun cas, les résultats individuels des participants ne seront communiqués à qui que ce soit;
 - d. les données incluant les enregistrements seront conservées jusqu'à la fin des études doctorales, puis détruites.

8. La recherche fera l'objet de publications dans des revues scientifiques, sans qu'aucun participant ne puisse être identifié.

Toute question concernant mon étude de doctorat pourra être adressée à l'une ou l'autre de ces personnes:

Diane Brochu
Étudiante au doctorat en linguistique
Université Laval
Tél. XXX XXX XXXX
Courriel : XXXXXXXXXXXX

Susan Parks, PhD
Directrice de recherche
Département de langues, linguistique et traduction
Université Laval
Québec, Canada, G1K 7P4
Téléphone : XXX XXX XXXX
Télécopieur : XXX XXX XXXX
Courriel : XXXXXXXXXXXX

Numéro d'approbation du Comité d'éthique de la recherche de l'Université Laval: 2006-200

Date d'approbation : 21 novembre 2006

Je soussigné(e) _____
(prénom) (nom)

consens librement au projet de recherche de Diane Brochu intitulé : « *La et la mise sur pied de pratiques d'enseignement interdisciplinaires par des enseignants d'anglais, langue seconde : Une perspective socioculturelle* » lequel s'effectue dans le cadre d'un doctorat sous la direction de Mme Susan Parks au Département de langues, linguistique et traduction à l'Université Laval.

Signature du (de la) participant(e)

Date

Nom en lettres capitales

Diane Brochu
Étudiante au doctorat en linguistique

Date

Toute plainte ou critique pourra être adressée au Bureau de l'ombudsman de l'Université Laval : Pavillon Alphonse-Desjardins, Bureau 3320
Renseignements – Secrétariat : (418) 656-3081 télécopieur : (418) 656-3846
Courriel : ombuds@ombuds.ulaval.ca

Appendix G: Teacher interview questions for first interview

Research question 1: How do teachers conceptualize interdisciplinary teaching?

A. How would you define interdisciplinary teaching?

- What is an interdisciplinary activity?
- Could you please give some examples from your past and present teaching?
 - What do you do this year? # of teachers? who? subjects involved?
 - What did you do last year? how long was the project?
 - The year before? how was it carried out?
 - how was it carried out?
 - what in the project specifically dealt with Eng?
 - what did the kids do?

B. What were the factors that prompted you to become involved in interdisciplinary teaching practices?

Historical aspect – how did you get into this?

- training at university
- professional development programs/workshops (SPEAQ)
- colleagues – who? how?
- MEQ/MELS curriculum?
- current literature (readings, research,...)
- second/foreign language learning experiences (examples)
 - Want to see both individual and school history...
 - How did IDPs get off the ground?
 - How were you involved as an ESL teacher?

C. Has your conceptualization of interdisciplinary teaching changed over time? If yes, how?

Research question 2: Why and to what degree do teachers value interdisciplinary teaching?

A. To what degree do you value interdisciplinary teaching? Why?

B. How do interdisciplinary projects impact your teaching?

- How different would your ESL teaching be if you were not doing IDPs?
 - What
- In terms of: what would be changed?
 - your current curriculum? ESL programme?
 - your role as a teacher? How do you see teaching? How do IDPs impact on this?
 - your relationship with students? colleagues? administrators? nature or relations? degree of collab?
- In terms of your actual teaching, how do IDPs have an impact?
 - the way you use the curriculum?
 - the way you teach the material?
 - the choice of materials? / use of textbooks?
 - the planning and preparation of ESL activities? / types of activities?
 - the approach to evaluation?
 - the students' learning of ESL? Do you think IDPs have an impact on sts learning?
 - what they learn? What aspect of what the sts learn is most effective?
 - 4 skills? / integration of 4 skills vocab? speaking? reading? listening?

- students use of strategies? work methods? How are IDPs relevant for ESL sts learning?
- students motivation? interest in English?
- classroom management?

C. To what degree do you use interdisciplinary teaching? % of total teaching activities over a year? only in IDP classes? in different IDP classes? if they are different, why?

Research question 3: What factors constrain or facilitate teachers' efforts to implement interdisciplinary teaching in their classes?

What factors facilitate or constrain your efforts to implement interdisciplinary teaching in your ESL classes?

A. within your school

- school policies scheduling of classes, time, teaching task allocation, time for planning with colleagues, substitute teachers,...
- resources computers, material, type of classrooms, ...
- colleagues in ESL department
- colleagues in other departments
- type of students core, enriched, special programme

What are some of the aspects of interdisciplinary teaching that are easier to implement?

What problems or barriers have you encountered?

What are things you would like to do but are unable to? Why?

B. at the level of the school commission

- support from academic advisor in implementing interdisciplinary teaching information? workshops?
- funding
- other Do you believe the school commission or the academic advisor actually help? To what degree? Do you see the role of the school commission or academic advisor as relevant to IDPs, in terms of? constraining? or do they not have an impact?
Do you believe the school commission or academic advisor should be doing more to help implement IDPs?

C. at the level of the MELS

- MELS programme (old programme/new programme)
- In the present curriculum, is there anything that lends itself to IDPs or is it problematic? How? Why?
- How about the new programme that is coming? Do you know anything about it? What?

How? Will it facilitate interdisciplinary teaching?

Appendix H: Teacher interview questions for second interview

Research question 1: How do teachers conceptualize interdisciplinary teaching?

How does the project you just completed fulfill your criteria for interdisciplinary projects?

Research question 2: Why and to what degree do teachers value interdisciplinary teaching?

In terms of your teaching, what were aspects of this interdisciplinary project that made it different from regular ESL classes?

What specific benefits do you think students got from doing this interdisciplinary project?

ESL? Vocab? OP? OC? WP? WC?

Were these what you had planned for?

What was the learning goal you had in mind when setting up this interdisciplinary project?

Do you think it was attained?

What types of activities did you prioritize for students to successfully complete this interdisciplinary project?

Are these different from other activities you do in your class? More complete? More focussed? (broader/narrower goals)

How does this particular interdisciplinary project fit in with the MELS ESL competencies? the cross curricular competencies? the BALs?

Have you been approached by other teachers in the school who ask for information about or help in setting up or starting an interdisciplinary project in their classes?

Research question 3: What factors constrain or facilitate teachers' efforts to implement interdisciplinary teaching in their classes?

What aspects of this project were easier to put into action? Why?

Which ones were more difficult? Why?

What were things that you would have liked to have done or explored with this interdisciplinary project but didn't or couldn't? Why?

How did your colleagues you worked with on this interdisciplinary project affect its implementation?

How did your other colleagues in the school affect its implementation?

Also questions to complete missing information from first interview

Appendix I: Student interview questions

Can you tell me what is an interdisciplinary activity?

- Could you please give some examples to explain what you mean?

What kind of projects have you done this year?

What kind of projects did you do last year?

The year before?

What effect do interdisciplinary activities and projects have on your learning compared to if teachers were not using them at all?

What effect do interdisciplinary activities and projects have on your learning English compared to if teachers were not using them at all?

How do you feel about combining two or more subjects in an interdisciplinary project?

Why?

Do you think interdisciplinary projects are a good way to learn?

How do interdisciplinary projects compare to "English only" projects?

How useful do you feel interdisciplinary projects are in your English language learning?

How different would your English class be if you were not doing interdisciplinary projects?

- In terms of:

- the teachers job?

- your relationship with your teacher? other students? other teachers?

- on your learning of ESL?

- on what you learn?

- on your motivation to learn English?

- on your interest in English?

- on classroom management?

How many interdisciplinary projects do you do in your English class in a school year? % of total teaching activities over a year?

How many years have you been doing interdisciplinary activities or projects?

What is it you like the most about interdisciplinary activities or projects?

What is it you like the least about interdisciplinary activities or projects?

Appendix J: School administrator interview questions

A. How do school administrators conceptualize interdisciplinary teaching?

How would you define interdisciplinary teaching?

- What is an interdisciplinary activity?
- Could you please give some examples from past and present teaching in this school?
 - What is being done this year?
 - What was done last year?
 - The year before?

What were the factors that prompted you to become involved in interdisciplinary teaching practices in your school?

- training at university
- professional development programs/workshops (SPEAQ)
- colleagues
- MEQ/MELS curriculum?
- current literature
- second/foreign language learning experiences (examples)

Has your conceptualization of interdisciplinary teaching changed over time? If yes, how?

B. How do school administrators view interdisciplinarity in the context of the current MELS' education reform?

To what degree do you value interdisciplinary teaching? Why?

How do interdisciplinary projects impact the teachers in your school?

- How different would ESL teaching be if teachers were not doing interdisciplinary projects?
- In terms of:
 - the current curriculum? ESL programme?
 - their role as a teacher?
 - their relationship with students? colleagues? academic advisors? you?
- In terms of teaching, how do interdisciplinary projects have an impact?
 - on the curriculum?
 - on the material?
 - on the choice of materials? / use of textbooks?
 - on the approach to evaluation?
 - on the students' learning of ESL?
 - what they learn?
 - on students motivation? interest in English?
 - on classroom management?
- In terms of your role?

To what degree does interdisciplinary teaching happen in your school? % of total teaching activities over a year?

C. In their particular context, what factors constrain or facilitate the implementation of interdisciplinary teaching?

What factors facilitate or constrain your efforts to implement interdisciplinary teaching in your school?

- within your school
 - school policies
 - resources
 - teachers in ESL department
 - teachers in other departments
 - type of students

What are some of the aspects of interdisciplinary teaching that are easier to implement?

What problems or barriers have you encountered as regards the implementation of interdisciplinary teaching in your school?

What are things you would like to do but are unable to? Why?

- at the level of the schools commission
 - support from academic advisors in implementing interdisciplinary teaching
 - funding
 - other
- at the level of the MELS
 - MELS programme (old programme/new programme)
 - In the present curriculum, is there anything that lends itself to interdisciplinary projects or is it problematic? How? Why?
 - How about the new programme that is coming?

Appendix K: Curriculum consultant interview questions

A. How do curriculum consultants conceptualize interdisciplinary teaching?

How would you define interdisciplinary teaching?

- What is an interdisciplinary activity?
- Could you please give some examples from past and present teaching in this school commission?
 - What is being done this year?
 - What was done last year?
 - The year before?

What were the factors that prompted you to become involved in interdisciplinary teaching practices in your school commission?

- training at university
- professional development programs/workshops (SPEAQ)
- colleagues
- MEQ/MELS curriculum?
- current literature
- second/foreign language learning experiences (examples)

Has your conceptualization of interdisciplinary teaching changed over time? If yes, how?

B. How do curriculum consultants view interdisciplinarity in the context of the current MELS' education reform?

How do interdisciplinary projects impact the teachers in your school commission?

- How different would ESL teaching be if teachers were not doing interdisciplinary projects?
- In terms of:
 - the current curriculum? ESL programme?
 - their role as a teacher?
 - their relationship with students? colleagues? school administrators? you?
- In terms of teaching, how do interdisciplinary projects have an impact?
 - on the curriculum?
 - on the material?
 - on the choice of materials? / use of textbooks?
 - on the approach to evaluation?
 - on the students' learning of ESL?
 - what they learn?
 - on students motivation? interest in English?
 - on classroom management?

To what degree does interdisciplinary teaching happen in your school commission? % of total teaching activities over a year?

C. In their particular context, what factors constrain or facilitate the implementation of interdisciplinary teaching?

-at the level of the schools

- support from school administrators
- support from teachers
- resources
- policies
- other

-within your school commission

- school commission policies
- resources
- other

What are some of the aspects of interdisciplinary teaching that are easier to implement?

What problems or barriers have you encountered as regards the implementation of interdisciplinary teaching in your school commission?

What are things you would like to do but are unable to? Why?

-at the level of the MELS

- MELS programme (old programme/new programme)
- In the present curriculum, is there anything that lends itself to interdisciplinary projects or is it problematic? How? Why?
- How about the new programme that is coming?

Appendix L: Sample of interview transcripts

Date: 20/02/07 First interview
School: École secondaire le Carrefour Project: La ferme des animaux
Teacher: Renée Time: 15:10 – 16:00
Grade: Sec 4

Note: Renée has been substituted for actual name of participant
PC programme has been substituted for actual programme name
JP is the French teacher
NB is the ethics/philosophy teacher
JA is the history teacher
Commentaire 1 in this sample is actually commentaire 7 in the transcripts

.....
DB: OK. What have you, have you done any other interdisciplinary projects this year?
RENÉE: Nope. Not yet.
DB: This is the only one this year.
RENÉE: Yes, this is the only one. We have an upcoming one... ah... probably in May, so actually March, after the Spring break.
DB: OK. What will that one cover?
RENÉE: Ah... that one will be more on... It's going to be on another novel, actually, the reading of the *Décéder des hommes* ((???)).
DB: mmhm
RENÉE: But, it's going to be different. It's ah.... This one will be... The main topic will be death. You know, like not just people dying, but what is death really? It could be the death of your spirit, it could be... ah, you can die from many, not just die physically but die mentally and also, ah...
DB: Give up?
RENÉE: Yes, yes, give up, but also different types of death, like abortion, suicide, or many... But we are gonna identify different.... But we don't wanna put too much emphasis on the dying factor. Ah... we wanna see, we wanna work with the students to see how could different characters in either the book or they are gonna watch a movie also in History class...
DB: mmhm
RENÉE: ... and they will have a theatre play to read. And they are going to have to identify different ah... factors uhm... where they could have, the story could have been different; turned into positive and ah...
DB: OK
RENÉE: That's what they're gonna do with me actually. They're gonna reuse, for example, a scene from the book...
DB: mmhm
RENÉE: ... well a chapter of the book, or a scene of the theatre play, and they will have to replay it differently.
DB: To change the ending?
RENÉE: To change the ending...
Anyways... So, yeah... morals, *Animal Farm*
DB: *Animal Farm*...

Commentaire [DB1] : I am not sure of the title. I need to ask this again.

Commentaire [DB2] : I would like to know a bit more about this upcoming project. Who's idea was it? How did it get off the ground? Who approached who about it? How were the roles divided and the organization of tasks decided?

RENÉE: To change the ending...
 Anyways... So, yeah... morals, *Animal Farm*

DB: *Animal Farm*...

RENÉE: *Animal Farm* we have morals, we have well, actually it was ethics class.

DB: OK

RENÉE: French...

DB: In French they read the book?

RENÉE: They read the book.

DB: Who is the teacher?

RENÉE: JP. You saw him, I think, just coming in.

DB: OK, and in ethics?

RENÉE: Ethics is NB.

DB: OK, I met him the other day.

RENÉE: He evaluated the norms and values and did the grid. You know, the grid that you saw.

DB: mmhm

RENÉE: But I didn't really use a lot of the content of French and Ethics because the students...
 ...

DB: So you took the ideas that they developed but not...

RENÉE: I didn't, I didn't really use it. I didn't want to drag on and on about norms and values and norms and values. And I wanted them to apply it to something else because when I presented my part of the project, I was the third one to do it and they were already bored of it.

DB: mmhm

RENÉE: So I... at first I was gonna do it differently and then I changed the way I was gonna do it because I didn't want them to be... to be fed up with it so I changed it.

DB: So then, first one person worked on it, then when they finished, the other worked on it and then when they finished you started it so it was not running concurrently...

RENÉE: Well, actually French and ethics were mostly, they were doing it...

DB: More or less...

RENÉE: ... more or less at the same time. But for me, I had to wait until... Ethics actually was more like the second part. In French they started...

DB: With reading the book...

RENÉE: Reading the book... Yeah, so it was first. And also evaluating and talking a little bit about the characters and what was going on. And ethics, they had to ah... They were maybe half-way through the novel, or maybe I don't know, two-thirds and they started taking out the norms and values...

DB: mmhm

RENÉE: And then I had to wait until everybody was finished. I was supposed to do it actually, before Christmas and ah... I was too short on time so I thought I'll start it over, not over, I'll start it after Christmas, in January, so that's what I did.

DB: OK, and the next project you are gonna start, who's involved in that one?

RENÉE: Again, it's the same people plus history.

DB: OK, plus history.

RENÉE: Yeah... history is... uhm... JA. 'Cause he says that it is pertinent to his subject.

Commentaire [DB2] : I would like to know a bit more about this upcoming project. Who's idea was it? How did it get off the ground? Who approached who about it? How were the roles divided and the organization of tasks decided?

Commentaire [DB3] : I would like to know what it was that was planned to do.

DB: OK

RENÉE: ah... 'Cause like he says, "There are a lot of deaths in history".

DB: ((laughs))

RENÉE: ((laughs)) He says, "We have a lot of dead people in history." So he, you know, he thinks he can connect to...who is... He is the one actually who will bring in ((laughing, incomprehensible – ??dead people??))... into it.

DB: mmhm

RENÉE: And I can't remember. I would have to check my notes to tell you in detail what it is 'cause we are starting to brain storm and set it up.

DB: Do you have time together to work to develop it?

RENÉE: We do have half a day, we have half a day every maybe, every term for projects.

DB: Every term, is that like every 9 days or...

RENÉE: No. It's a term. We have 4 terms in a year.

DB: OK

RENÉE: OK so that's the, from the school. The rest of it we are doing it on our own time. It's...

DB: mmhm

RENÉE: It's very difficult to meet.

DB: Do you have a period in your cycle where all four of you actually have a period...

RENÉE: We have a...

DB: ... all at the same time?

RENÉE: We don't have a period where all four... I think we have a period where we are three ah... teachers who can meet.

DB: OK

RENÉE: But again, there is always something else where... We're involved in trips and in this and in that and so it's always... That's the hard part. And that's where you see a little bit, where it's difficult.

DB: Setting up... For the Animal Farm project, did you work all three together setting it up?

RENÉE: Yes

DB: OK, and then...

RENÉE: Well, there is, there's your personal part where you're not really... ah...

DB: You're not really what?

...

You set up what you will do in your own classes, separate from them?

RENÉE: Yeah, yeah.

DB: But did you use like one of these half days, planning days to set this up and organize it?

RENÉE: We did, yes.

DB: OK

RENÉE: We did.

DB: Then...

RENÉE: But we also took extra time.

DB: Who approached who to be involved in that?

RENÉE: Well, it was strongly... We talked about this if you remember. It was... it was strongly recommended by... the principals at the school. I should say more, our principal in PC.

DB: mmhm

Commentaire [DB4] : What is it he brings in? I know we were laughing about the dead people in history. Was that what he is contributing?

Commentaire [DB5] : What would make this easier?

Commentaire [DB6] : What does she mean by extra time? How much time? Was this all of them together? Did they get substitute teachers to cover for them for planning meetings? How was this time organized?

RENÉE: That we had to do multidisciplinary projects, so uhm... The team in Sec 5 started... started doing them, I would say, more easily. So we were kind of pointed at, pointed out that we had to uhm... do it ourselves, too.

DB: OK

RENÉE: The Sec 4 team. The Sec 4 team, we have more maybe... I'm not saying we don't get along but it's a bit more difficult to uhm... I guess maybe we are a bit more individuals, you know, like we... we... are more... we like to work individually a little bit more.

DB: mmhm

RENÉE: So it was harder to uhm... start doing it. But... it was recommended. And ah...

DB: Recommended? Or recommended... forcefully?

RENÉE: It was... it was, if you want to stay in PC actually, you have to show that you are interested in doing this because it's part of our philosophy.

Appendix M: A sample of the transcripts from the in-class observations

Date: 08/02/07

School: École secondaire le Carrefour

Teacher: Benoît (JF)

Grade: Sec 5

Observation: 3

Lesson: Action-research project

Time: 13:30 – 14:40 (70 minutes)

Note: SY is the philosophy teacher

13:25 The students are standing around and talking. Some are sitting at their places but most are standing around. There are only 22 students in the classroom; that means at least six are absent, but so is JF.

13:30 JF arrives. He tells the students that last class, they did not see all the videos from the 1970s, and did not hear all the songs he wanted to play for them. He tells them today they will listen to "Cat in the Cradle", because there is a message at the end of the song that he wants them to find. He then takes attendance, which takes a long time, because there are so many students absent. He tries to find out why each one is not there.

13:38 JF says, "Okay. Are you gonna take some notes?" Some students answer yes and other students answer no. JF laughs and starts to hand out the log book for the community action-research problem solving project. As he walks around handing out the booklets, the students are laughing and talking amongst themselves. All I hear is in French. As he walks around, JF says, "On the first page. I want you guys to immediately write your name, before your log book disappears." Lots of the students are talking and JF shushes them until they become quiet. I see a few students writing their names in the books, but the rest are flipping through the pages.

13:41 JF sits down at the front of the class in his chair and tips it back onto its back legs. He says, "I'll be working hand in hand with SY. This is a project called action-research community problem-solving. What do you think it means?" Different students offer different suggestions and ideas. All their ideas are given in French with several students speaking at once. JF says, "Your immediate environment. I want you to think about things that you can change in your environment. I'm going to work with SY on this, so if you have questions, you can always ask him, too. So I'll be working with SY on this, so you're log book is in English, but you will be working with SY in French for some of the project. Don't lose this book because if you do, we will slice you into little pieces and throw you into the garbage cans." Some of the students laugh at this, and one threatens him back.

13:40 JF begins to give the students instructions for the first activity in the booklet on page 2. He says, "I want you to think of five words for your environment. They can be physical, psychological or social." The students start to write down their ideas in their log book. As I walk around looking at their ideas, I see all are writing them in French.

The classroom is still quite noisy as the students share ideas with the people at their tables. All conversations I hear are in French. The students are either discussing and writing their ideas down in their booklet, looking through their booklet, or doing stuff not related to the project. For example, the girl next to me is sorting papers in her binder; she has not yet

touched the action-research booklet. While they do this, JF is also walking around looking at what they are doing. As I glance over at him, I see one of the boys stick out his foot to trip JF as he goes by. JF goes around him. Two students at that table have their feet up on chairs; another is rocking back on the back two legs of his chair. None are working in the booklet.

13:42 JF asks, "So, now you written in five in your own words right?" He then asks the students to raise their hands and give one of their ideas. Different students raise their hands, and as he chooses them and as they give their idea he sends them to the board to write them down. After the first student goes to the board to write them down many more hands are raised. It appears the students like to go to the board to write down their ideas but not all of the ideas are serious. Couche d'ozone, pluies acides, SUV réchauffement climatique, pollution, water pollution, and other words like that are written on the board. So is the word fart and a drawing of a strange face with the name JF under it.

TN: I do not necessarily see the pedagogical value of this. The interactions in the class are all in French, the students' ideas have been written in French, and it looks like several are just sitting there and not participating. I see two students with I-pods. JF did not ask them to brainstorm in English, and that is probably why everything is being done in French.

He does not call the students to task over the drawing, nor for some of the inappropriate words on the board.

13:49 JF says, "OK, what does SUV mean?" He goes through the different ideas students have written on the board, using both English and French.

13:50 JF asks the students to think about different situations in their environment. There is some interaction, but then he goes on to talk about physical stuff, emotional problems, and he ties these in with their relationships with each other and other people. He talks about how their lives are going to change when they get to cégep and asks them how they will act and react in their new environment. He explains how people are also part of the environment. He explains how the social environment is also important in people's lives; sometimes more important than the physical environment. A large part of this discussion is done in French. He then goes on to say, "Next class, we have third period. We are going to go down to the cafeteria. You need to see how they clean up the trash in the cafeteria." He explains how the trash is cleaned up in the cafeteria, after all the students have finished their lunch. He tells the students that they're going to go look at that and he asks why the cafeteria is always so terribly dirty. He asked the students to give reasons why they don't clean up their mess in the cafeteria. Some of the responses are because they are lazy, they have no conscience, they don't care, etc. All the responses are in French. One student works at a lunchroom on Mondays and explains to the class, in French, how bad it is in the lunchroom, and how the students don't listen to her when she talks to them about the garbage on the floor. It takes her about four minutes to give her story and for JF and the other students to ask her questions and provide commentary. These interactions are carried out in French.

14:00 JF talks about the social aspect of how the students should respect people who are

different. He uses the example of people who are gay, and how all the students need to learn tolerance and acceptance. He then returns to his example of the cafeteria and asks them how they can tell each other to pick up trash and maybe it will have a snowball effect on the other students in the school. He explains how the students could get together to organize that the recycling bin in the classroom is emptied every week. He explains how that could be a project for the community action research project they are beginning.

14:05 JF tells the students that they all have a brain, and they all should use it. He tells them about the garbage on the floor all over the school and asks them why they do not think about that. He talks about the janitors and the students attitudes of "I don't care".

14:10 JF then goes on to explain how this attitude of 'I don't care' carries on through the school, the city, the province and the country. He then asks the students to do the second part of the exercise on page 2 in the booklet. He tells the students to classify their ideas together as groups at each table. They have to work together in their groups to complete the table, which group the different problems on the environment into different categories, social, global, environmental, etc. Some of the students work together in their groups, but others work individually in their own books at their table.

14:17 JF says, "OK page 4". He reads page 4 out loud. It is the contract between the students and the teacher for the project. JF explains to the students how they will have to evaluate themselves several times over the project. He then continues on with the contract. He tells the students to write "SY and JF," in the section where it says my teacher. He says, "Don't forget SY. He is the guru of this project." He then instructs the students to sign their name. Some of the students sign in their booklet. Others leave it blank. JF then explains step three. He tells them that completing the step 3 is their homework for the next two weeks. The part about two weeks raises questions and comments from the students (mostly in French but I hear a "what?"). JF explains how the students are complete step three. He explains that the students will have to complete their log book by looking at social, environment, community, school, home, anything and everywhere. They are to write down their positive observations and negative observations on things in their environment. He tells them to write whatever problems they see and then provides them with several examples. He tells the students to write down everything they find, like those examples. He tells the students that he will tell them when they will work on the project again, because they will not be working on the project every day, but will be working on it until June. He tells the students that the next time they will talk about the project is February 28. He tells the students they need to write down at least 20 things that need to be changed. They must have their list of 20 things ready on February 28 for the next time they work on the project.

14:30 Some students start to gather their belongings: their books, their binders, and their pencil cases. JF stands up and starts to hand out a paper. This paper contains the lyrics for the song "Cat in the Cradle by Harry Chapin with blanks for some missing words. After he hands out the papers he sets up the CD player.

14:32 JF starts the song on the player, and the students start to be quiet as the song lyrics start. Once the song is underway, the students become quiet as they start to write their

answers in the blank spaces.

14:35 JF asks the students a question about what the story is about. One student answers that "A man talks about his son." JF says, "Yes that's right, but kind of relationship do they have?" Another student answers, "The son wants to be like him." JF begins to explain the song and relate it to the students and their age and their life such as being the teenager and wanting to borrow their parents' car. He then tells the students how he sometimes wishes his little son would get older so he did not have to wear diapers. He then explains that he regrets saying that, because his son will get older too quickly.

14:39 JF asks the students who are going on the Florida to stay after the class. The other students gather in their belongings together and go to stand near the door.

14:40 The bell rings and most of the students leave. JF goes to sit down at a table with some students and the remainder move over there.

TN: I can really see today the distribution of speech acts in the class. JF does the vast majority of the talking. Only a few students really seem to participate in what he is doing, but even so, all their comments, questions, and interjections are in French. The percentage of French used in today's class was really high. Although JF used more English than usual, again, most of the students' interactions with him and their peers were in French.

Appendix N: Student questionnaire

Nom : _____

Date : _____

Enquête sur les projets interdisciplinaires

Bonjour,

Mon nom est Diane Brochu et je fais une étude sur les projets interdisciplinaires (ceux qui joignent ton cours d'anglais langue seconde avec tes cours donnés en français). Tu peux m'aider beaucoup en prenant quelques minutes pour me donner ta perception du projet interdisciplinaire que tu viens de terminer.

Des énoncés

Lis chaque énoncé attentivement, ensuite encercle le chiffre qui indique le degré que tu es d'accord avec l'énoncé. Tes réponses seront interprétées de la façon suivante :

1 = Je ne suis pas du tout en accord

2 = Je ne suis pas en accord

3 = Cela m'est égal

4 = Je suis en accord

5 = Je suis complètement en accord

1. J'ai apprécié le projet interdisciplinaire que je viens de terminer. 1 2 3 4 5

2. Dans le projet interdisciplinaire, j'ai réinvesti en anglais des idées présentées dans mes autres cours donnés en français. 1 2 3 4 5

3. Dans le projet interdisciplinaire, j'ai été capable d'élargir mes connaissances en anglais du sujet appris dans mes autres cours donnés en français. 1 2 3 4 5

4. Dans le projet interdisciplinaire, j'ai réinvesti en anglais des stratégies/compétences apprises dans mes autres cours donnés en français. 1 2 3 4 5

5. Dans le projet interdisciplinaire, j'ai appris des termes anglais équivalents à des expressions et mots relatifs au sujet appris dans mes autres cours donnés en français. 1 2 3 4 5

6. Dans le projet interdisciplinaire, j'ai été capable d'utiliser des méthodes de travail apprises dans mes autres cours donnés en français. 1 2 3 4 5

7. Dans mes autres cours donnés en français, je réinvestis des idées présentées dans mon cours d'anglais. 1 2 3 4 5

8. Dans mes autres cours donnés en français, je suis capable d'élargir mes connaissances sur le sujet appris dans mon cours d'anglais. 1 2 3 4 5

9. Dans mes autres cours donnés en français, je réinvestis des stratégies/compétences apprises dans mon cours d'anglais. 1 2 3 4 5

10. Ce projet interdisciplinaire m'a aidé à améliorer mes compétences en production orale en anglais. 1 2 3 4 5

Appendix O: Codes and definitions

TEACHERS

<i>Conceptualization- CON-</i>	<i>How the teachers conceive and understand interdisciplinary projects (IDPs).</i>
CON-TEA/DEF	Reference to the teacher's definition of IDPs. What an IDP is.
CON-TEA/DEF:pr	Reference to what the teacher believes an IDP is in their current practice.
CON-TEA/DEF:pa	Reference to what the teacher believes was IDP in their past practice.
CON-TEA/EXA:pr	An example of IDPs in the teacher's current classes.
CON-TEA/EXA:pa	An example of what the teacher did in the past for IDPs.
CON-TEA/EXA:fut	An example of what the teacher plans in the future for IDPs.
CON-TEA/CON:multi	References to situations where teachers may be doing multidisciplinary projects, confusing them with interdisciplinary. OR reference to use of multi-disciplinary activities.
CON-TEA/INF	What things, people, etc. have influenced the teacher's conceptualization of IDPs.
CON-TEA/INF:uni	Reference to the influence of university training on the teacher's conceptualization of IDPs.
CON-TEA/INF:pro	Reference to the influence of professional development programmes on the teacher's conceptualization of IDPs.
CON-TEA/INF:coe	Reference to the influence of colleagues in the English department on the teacher's conceptualization of IDPs.
CON-TEA/INF:coo	Reference to the influence of colleagues in other departments on the teacher's conceptualization of IDPs.
CON-TEA/INF:MEQ	Reference to the influence of the MELS programme on the teacher's conceptualization of IDPs.
CON-TEA/INF:lit	Reference to the influence of the current literature on the teacher's conceptualization of IDPs.
CON-TEA/INF:lle	Reference to the influence of the teacher's L2 learning experiences on their conceptualization of IDPs.
CON-TEA/CHA	Reference to how the teacher's conceptualization of IDPs has changed over time.
CON-TEA/IDP:time	Reference to how long or how much experience the teacher has with IDPs.
<i>Value VAL</i>	<i>The degree that the teachers esteem or ascribe importance to IDPs.</i>
VAL-TEA/DIF	Reference to the differences between IDPs and regular classroom instruction on the teacher's teaching practices.

VAL-TEA/PR	Reference to how the teacher gauges the importance of IDPs in their current teaching practice.
VAL-TEA/PA	Reference to how the teacher gauged the importance of IDPs in their past teaching practice.
VAL-TEA/ESL	Reference to how the teacher perceives the value of IDPs in the ESL class as compared to regular classes where IDPs are not used.
VAL-TEA/ESL:cur	Reference to how the IDPs have an impact on how the teacher uses the ESL curriculum, as compared to a regular class.
VAL-TEA/ESL:mat	Reference to how the IDPs have an impact on how the teacher teaches material in the ESL class, as compared to a regular class.
VAL-TEA/ESL:cho	Reference to how the IDPs have an impact on how the teacher chooses material to be used, as compared to a regular class.
VAL-TEA/ESL:pla	Reference to how the IDPs have an impact on how the teacher plans and prepares ESL activities and the types of activities chosen, as compared to a regular class.
VAL-TEA/ESL:eva	Reference to how the IDPs have an impact on how the teacher evaluates the students, as compared to a regular class.
VAL-TEA/ESL:stl	Reference to how the IDPs have an impact on the students' learning of ESL; what they learn and how they use different skills, either discrete or integrated, as compared to a regular class
VAL-TEA/ESL:stm	Reference to how the IDPs have an impact on how the students' motivation to learn ESL, as compared to a regular class.
VAL-TEA/ESL:sts	Reference to how the IDPs have an impact on how the students' use of strategies and work methods in learning ESL, as compared to a regular class.
VAL-TEA/ESL:cm	Reference to how the IDPs have an impact on how classroom management, as compared to a regular class.
VAL-TEA/ROL:tea	Reference to how the teacher perceives their teaching role in IDPs as compared to a regular class, and how IDPs impact their role.
VAL-TEA/ROL:adm	Reference to how the teacher perceives the school administrators as having a role in the implementation or use of IDPs in ESL classes.
VAL-TEA/ROL:adv	Reference to how the teacher perceives the academic advisor as having a role in the implementation or use of IDPs in ESL classes.
VAL-TEA/REL:sts	Reference to how the teacher perceives IDPs having an impact on their relationship with their students, as compared to a regular class.

VAL-TEA/REL:coe	Reference to how the teacher perceives IDPs having an impact on their relationship with their colleagues in the ESL department.
VAL-TEA/REL:coo	Reference to how the teacher perceives IDPs having an impact on their relationship with their colleagues in other departments.
VAL-TEA/REL:adm	Reference to how the teacher perceives IDPs having an impact on their relationship with the school administrators.
VAL-TEA/REL:adv	Reference to how the teacher perceives IDPs having an impact on their relationship with their academic advisor.
VAL-TEA/DEG:own	Reference to the percentage of use of IDPs in the teacher's ESL classes, over the school year.
VAL-TEA/DEG:sch	Reference to the estimate of percentage of use of IDPs in the school, over the school year.
VAL-TEA/OTH:tea	Reference of the ESL teacher to the teacher(s) from other classes who are participating in the project.
VAL-TEA/OTH:wrk	Reference of the ESL teacher to the work done in the other classes relating to the project.
VAL-TEA/OTH:use	Reference of the ESL teacher to the usage of materials from other classes.
VAL-TEA/OTH:stma	Reference of the ESL teacher to the usage of student made materials from other classes.
VAL-TEA/PROJ:con	Reference to the time line of the project, when it is run concurrently in all classes.
VAL-TEA/PROJ:seq	Reference to the time line of the project, when it is run sequentially in the different classes.
VAL-TEA/PROJ:app	Reference to who was initially approached by whom to set up the IDP.
<i>IMP+or -</i>	<i>Reference to factors that facilitate or constrain the use of IDPs according to the teachers.</i>
IMP+-TEA	Reference to factors that facilitate or constrain the implementation or use of IDPs, according to the teacher.
IMP+-TEA/SCH	Reference to factors that facilitate or constrain the teacher's implementation or use of IDPs at the level of the school.
IMP+-TEA/SCH:pol	Reference to how school policies facilitate or constrain the teacher's implementation or use of IDPs, including scheduling, teaching task allocations, time for planning with colleagues, substitute teachers...
IMP+-TEA/SCH:res	Reference to how resources within the school facilitate or constrain the teacher's implementation or use of IDPs, including computers, material, type of classrooms, funding within the school...

IMP+-TEA/SCH:adm	Reference to how the school administrator facilitates or constrains the teacher's implementation or use of IDPs.
IMP+-TEA/SCH:coe	Reference to how colleagues within the ESL department facilitate or constrain the teacher's implementation or use of IDPs.
IMP+-TEA/SCH:coo	Reference to how colleagues in other departments facilitate or constrain the teacher's implementation or use of IDPs.
IMP+-TEA/SCH:stu	Reference to how the type of students in the classes facilitate or constrain the teacher's implementation or use of IDPs, in reference to special groups versus regular classes.
IMP+-TEA/SCH:oth	Reference to how any other factors as named by the teacher facilitate or constrain their implementation or use of IDPs.
IMP+-TEA/SCO	Reference to factors that facilitate or constrain the teacher's implementation or use of IDPs at the level of the school commission, according to the teacher.
IMP+-TEA/SCO:cp	Reference to how the teacher perceives the academic advisor as facilitating or constraining the teacher's implementation or use of IDPs.
IMP+-TEA/SCO:fund	Reference to how the teacher perceives funding from the school commission as facilitating or constraining their implementation or use of IDPs.
IMP+-TEA/SCO:oth	Reference to how the teacher perceives any other factors from the school commission, as named by the teacher, as facilitating or constraining their implementation or use of IDPs.
IMP+-TEA/MEQ	Reference to factors that facilitate or constrain teachers' implementation or use of IDPs at the level of the MELS, according to the teacher.
IMP+-TEA/MEQ:opr	Reference to how the old curriculum of the MEQ facilitates/ed or constrains/ed the teacher's implementation or use of IDPs.
IMP+-TEA/MEQ:npr	Reference to how the new curriculum of the MELS facilitates or constrains the teacher's implementation or use of IDPs.
IMP+-TEA/MEQ:kno	Reference to how the teacher's knowledge of the MELS new and how this knowledge facilitates or constrains the teacher's implementation or use of IDPs.
IMP+-TEA/MEQ:oth	Reference to how the teacher perceives any other factors from the MELS, as named by the teacher, as facilitating or constraining their implementation or use of IDPs.

Free codes

BAL-TEA

Reference to the teacher's perception as to how there must be a balance between IDPs and regular class activities.

TRASH-TEA

Reference to actor's expression of how they do not want to denigrate or dismiss the activities, beliefs, practices of another but... as relates to IDPs.

WORK-TEA	Reference to how IDPs are more work to elaborate or implement than regular class activities.
OBLIGE-TEA	Reference to forcing or constraining teachers to implement IDPs
PARENT-TEA	Reference to parents' perceptions of IDPs
CULTURE-TEA	Reference to existing or desired characteristics of teachers' culture
UNION- TEA	Reference to the effect of the teachers' union on IDPs

SCHOOL ADMINISTRATORS

<i>Conceptualization- CON-</i>	<i>How the school administrators conceive and understand interdisciplinary projects (IDPs).</i>
CON-DIR/DEF	Reference to the director's definition of IDPs. What an IDP is.
CON-DIR/DEF:pr	Reference to what the director believes an IDP is currently.
CON-DIR/DEF:pa	Reference to what the director believed was IDP in the past.
CON-DIR/EXA:pr	An example of IDPs in the school year.
CON-DIR/EXA:pa	An example IDPs from past years.
CON-DIR/EXE:fut	An example of IDPs planned for future
CON-DIR/CON:multi	References to situations where teachers may be doing multidisciplinary projects, confusing them with interdisciplinary. OR reference to use of multi-disciplinary activities.
CON-DIR/INF	What things, people, etc. have influenced the director's conceptualization of IDPs.
CON-DIR/INF:uni	Reference to the influence of university training on the director's conceptualization of IDPs.
CON-DIR/INF:pro	Reference to the influence of professional development programmes on the director's conceptualization of IDPs.
CON-DIR/INF:co	Reference to the influence of colleagues on the director's conceptualization of IDPs.
CON-DIR/INF:MEQ	Reference to the influence of the MELS programme on the director's conceptualization of IDPs.
CON-DIR/INF:lit	Reference to the influence of the current literature on the director's conceptualization of IDPs.
CON-DIR/INF:lle	Reference to the influence of the director's L2 learning experiences on their conceptualization of IDPs.
CON-DIR/CHA	Reference to how the director's conceptualization of IDPs has changed over time.
CON-DIR/IDP:time	Reference to how long or how much experience the director has with IDPs.
CON-DIR/IDP:sch	Reference to how long or how much experience the school has been implementing IDPs.

<i>Value</i>	<i>The degree that the school administrators esteem or ascribe importance to IDPs.</i>
VAL	
VAL-DIR/DIF	Reference to the differences between IDPs and regular classroom instruction on the teacher's teaching practices.
VAL-DIR/PR	Reference to how the director gauges the importance of IDPs in the school.
VAL-DIR/PA	Reference to how the director gauged the importance of IDPs in the past.
VAL-DIR/ESL	Reference to how the director perceives the value of IDPs in the ESL class as compared to regular classes where IDPs are not used.
VAL-DIR/ESL:cur	Reference to how the IDPs have an impact on how the the ESL curriculum is used, as compared to a regular class.
VAL-DIR/ESL:mat	Reference to how the IDPs have an impact on how the teacher teaches material in the ESL class, as compared to a regular class.
VAL-DIR/ESL:cho	Reference to how the IDPs have an impact on how the teacher chooses material to be used, as compared to a regular class.
VAL-DIR/ESL:pla	Reference to how the IDPs have an impact on how the teacher plans and prepares ESL activities and the types of activities chosen, as compared to a regular class.
VAL-DIR/ESL:eva	Reference to how the IDPs have an impact on how the teacher evaluates the students, as compared to a regular class.
VAL-DIR/ESL:stl	Reference to how the IDPs have an impact on the students' learning of ESL; what they learn and how they use different skills, either discrete or integrated, as compared to a regular class
VAL-DIR/ESL:stm	Reference to how the IDPs have an impact on how the students' motivation to learn ESL, as compared to a regular class.
VAL-DIR/ESL:sts	Reference to how the IDPs have an impact on how the students' use of strategies and work methods in learning ESL, as compared to a regular class.
VAL-DIR/ESL:cm	Reference to how the IDPs have an impact on how classroom management, as compared to a regular class.
VAL-DIR/ROL	Reference to how the director perceives their role regarding the implementation of IDPs in the school.
VAL-DIR/ROL:adm	Reference to how the director perceives their role in the implementation or use of IDPs in the school.
VAL-DIR/ROL:cp	Reference to how the director perceives the academic advisor as having a role in the implementation or use of IDPs in the school.

VAL-DIR/REL:sts	Reference to how the director perceives IDPs having an impact on their relationship between teachers and their students, as compared to a regular class.
VAL-DIR/REL:coe	Reference to how the director perceives IDPs having an impact on teachers' relationships with their colleagues in the ESL department.
VAL-DIR/REL:coo	Reference to how the director perceives IDPs having an impact on teachers' relationships with their colleagues in other departments.
VAL-DIR/REL:adm	Reference to how the director perceives IDPs having an impact on teachers' relationships with the school administrators.
VAL-DIR/REL:cp	Reference to how the director perceives IDPs having an impact on teachers' relationship with the curriculum consultant.
VAL-DIR/DEG	Reference to the percentage of use of IDPs in the school over one year.
VAL-DIR/PROJ:con	Reference to the time line of the IDPs, when they are run concurrently in all classes.
VAL-DIR/PROJ:seq	Reference to the time line of the IDPs, when they are run sequentially in the different classes.
<i>IMP+or -</i>	<i>Reference to factors that facilitate or constrain the use of IDPs according to the school administrators.</i>
IMP+-DIR	Reference to factors that facilitate or constrain the implementation or use of IDPs, according to the director.
IMP+-DIR/SCH	Reference to factors that facilitate or constrain the director's efforts to promote the implementation or use of IDPs at the level of the school.
IMP+-DIR/SCH:pol	Reference to how school policies facilitate or constrain the director's efforts to promote the implementation or use of IDPs, including scheduling, teaching task allocations, time for planning with colleagues, substitute teachers...
IMP+-DIR/SCH:res	Reference to how resources within the school facilitate or constrain the director's efforts to promote the implementation or use of IDPs, including computers, material, type of classrooms, funding...
IMP+-DIR/SCH:coe	Reference to how teachers within the ESL department facilitate or constrain the director's efforts to promote the implementation or use of IDPs.
IMP+-DIR/SCH:coo	Reference to how teachers in other departments facilitate or constrain the director's efforts to promote the implementation or use of IDPs.

IMP+-DIR/SCH:stu	Reference to how the type of students in the school facilitate or constrain the director's efforts to promote the implementation or use of IDPs.
IMP+-DIR/SCH:oth	Reference to how any other factors as named by the director facilitate or constrain their efforts to promote the implementation or use of IDPs.
IMP+-DIR/SCO	Reference to factors that facilitate or constrain the director's efforts to promote the implementation or use of IDPs at the level of the school commission, according to the director.
IMP+-DIR/SCO:adv	Reference to how the director perceives the academic advisor as facilitating or constraining the director's efforts to promote the implementation or use of IDPs.
IMP+-DIR/SCO:fund	Reference to how the director perceives funding from the school commission as facilitating or constraining their efforts to promote the implementation or use of IDPs.
IMP+-DIR/SCO:oth	Reference to how the director perceives any other factors from the school commission, as named by the director, as facilitating or constraining their efforts to promote the implementation or use of IDPs.
IMP+-DIR/MEQ	Reference to factors that facilitate or constrain directors' efforts to promote the implementation or use of IDPs at the level of the MELS, according to the director.
IMP+-DIR/MEQ:opr	Reference to how the old curriculum of the MEQ facilitates/ed or constrains/ed the implementation or use of IDPs.
IMP+-DIR/MEQ:npr	Reference to how the new curriculum of the MELS facilitates or constrains the implementation or use of IDPs.
IMP+-DIR/MEQ:kno	Reference to how the director's knowledge of the MELS new and how this knowledge facilitates or constrains the director's efforts to promote the implementation or use of IDPs.
IMP+-DIR/MEQ:oth	Reference to how the director perceives any other factors from the MELS, as named by the director, as facilitating or constraining their efforts to promote the implementation or use of IDPs.
<i>Free codes</i>	
BAL-DIR	Reference to the director's perception as to how there must be a balance between IDPs and regular class activities.
TRASH-DIR	Reference to actor's expression of how they do not want to denigrate or dismiss the activities, beliefs, practices of another but... as relates to IDPs.
WORK-DIR	Reference to how IDPs are more work to elaborate or implement than regular class activities.
OBLIGE-DIR	Reference to forcing or constraining teachers to implement IDPs
PARENT-DIR	Reference to parents' perceptions of IDPs

CULTURE-DIR	Reference to existing or desired characteristics of teachers' culture
UNION- DIR	Reference to the effect of the teachers' union on IDPs
CURRICULUM CONSULTANT	
<i>Conceptualization-</i>	<i>How the curriculum consultant conceives and understands interdisciplinary projects (IDPs).</i>
CON-	
CON-CP/DEF	Reference to the curriculum consultant's definition of IDPs.
CON-CP/DEF:pr	Reference to what the curriculum consultant believes an IDP is currently.
CON-CP/DEF:pa	Reference to what the curriculum consultant believed was IDP in the past.
CON-CP/EXA:pr	An example of IDPs implemented in schools in the school year.
CON-CP/EXA:pa	An example IDPs implemented in schools in the past.
CON-CP/INF	What things, people, etc. have influenced the curriculum consultant's conceptualization of IDPs.
CON-CP/INF:uni	Reference to the influence of university training on the curriculum consultant's conceptualization of IDPs.
CON-CP/INF:pro	Reference to the influence of professional development programmes on the curriculum consultant's conceptualization of IDPs.
CON-CP/INF:co	Reference to the influence of colleagues on the curriculum consultant's conceptualization of IDPs.
CON-CP/INF:MEQ	Reference to the influence of the MELS programme on the curriculum consultant's conceptualization of IDPs.
CON-CP/INF:lit	Reference to the influence of the current literature on the curriculum consultant's conceptualization of IDPs.
CON-CP/INF:lle	Reference to the influence of the curriculum consultant's L2 learning experiences on their conceptualization of IDPs.
CON-CP/CHA	Reference to how the curriculum consultant's conceptualization of IDPs has changed over time.
CON-CP/IDP:time	Reference to how long or how much experience the curriculum consultant has with IDPs.
<i>Value</i>	<i>The degree that the curriculum consultant esteems or ascribes</i>
<i>VAL</i>	<i>importance to IDPs.</i>
VAL-CP/DIF	Reference to the differences between IDPs and regular classroom instruction on the teacher's teaching practices.
VAL-CP/PR	Reference to how the curriculum consultant gauges the importance of IDPs in the school.
VAL-CP/PA	Reference to how the curriculum consultant gauged the importance of IDPs in the past.

VAL-CP/ESL	Reference to how the curriculum consultant perceives the value of IDPs in the ESL class as compared to regular classes where IDPs are not used.
VAL-CP/ESL:cur	Reference to how the IDPs have an impact on how the the ESL curriculum is used, as compared to a regular class.
VAL-CP/ESL:mat	Reference to how the IDPs have an impact on how the teacher teaches material in the ESL class, as compared to a regular class.
VAL-CP/ESL:cho	Reference to how the IDPs have an impact on how the teacher chooses material to be used, as compared to a regular class.
VAL-CP/ESL:pla	Reference to how the IDPs have an impact on how the teacher plans and prepares ESL activities and the types of activities chosen, as compared to a regular class.
VAL-CP/ESL:eva	Reference to how the IDPs have an impact on how the teacher evaluates the students, as compared to a regular class.
VAL-CP/ESL:stl	Reference to how the IDPs have an impact on the students' learning of ESL; what they learn and how they use different skills, either discrete or integrated, as compared to a regular class
VAL-CP/ESL:stm	Reference to how the IDPs have an impact on how the students' motivation to learn ESL, as compared to a regular class.
VAL-CP/ESL:sts	Reference to how the IDPs have an impact on how the students' use of strategies and work methods in learning ESL, as compared to a regular class.
VAL-CP/ESL:cm	Reference to how the IDPs have an impact on how classroom management, as compared to a regular class.
VAL-CP/ROL	Reference to how the curriculum consultant perceives their role regarding the implementation of IDPs in the school commission.
VAL-CP/ROL:adm	Reference to how the curriculum consultant perceives the school administrator's role in the implementation or use of IDPs in the school commission.
VAL-CP/REL:sts	Reference to how the curriculum consultant perceives IDPs having an impact on the relationship between teachers and their students, as compared to a regular class.
VAL-CP/REL:coe	Reference to how the curriculum consultant perceives IDPs having an impact on teachers' relationships with their colleagues in the ESL department.
VAL-CP/REL:coo	Reference to how the curriculum consultant perceives IDPs having an impact on teachers' relationships with their colleagues in other departments.

VAL-CP/REL:adm	Reference to how the curriculum consultant perceives IDPs having an impact on teachers' relationships with the school administrators.
VAL-CP/REL:cp	Reference to how the curriculum consultant perceives IDPs having an impact on their relationships with teachers.
VAL-CP/DEG	Reference to the percentage of use of IDPs in the school commission over one year.
VAL-CP/PROJ:con	Reference to the time line of the IDPs, when they are run concurrently in all classes.
VAL-CP/PROJ:seq	Reference to the time line of the IDPs, when they are run sequentially in the different classes.
<i>IMP+or -</i>	<i>Reference to factors that facilitate or constrain the use of IDPs according to the curriculum consultant.</i>
IMP+-CP	Reference to factors that facilitate or constrain the implementation or use of IDPs, according to the curriculum consultant.
IMP+-CP/SCH	Reference to factors that facilitate or constrain the curriculum consultant's efforts to promote the implementation or use of IDPs in the school commission.
IMP+-CP/SCH:pol	Reference to how school policies facilitate or constrain teachers' implementation or use of IDPs, including scheduling, teaching task allocations, time for planning with colleagues, substitute teachers...
IMP+-CP/SCH:res	Reference to how resources within the school facilitate or constrain the teachers' implementation or use of IDPs, including computers, material, type of classrooms, funding...
IMP+-CP/SCH:coe	Reference to how teachers within the ESL department facilitate or constrain the implementation or use of IDPs.
IMP+-CP/SCH:coo	Reference to how teachers in other departments facilitate or constrain the implementation or use of IDPs.
IMP+-CP/SCH:stu	Reference to how the type of students in the school facilitate or constrain the implementation or use of IDPs.
IMP+-CP/SCH:oth	Reference to how any other factors as named by the curriculum consultant facilitate or constrain their efforts to promote the implementation or use of IDPs in their school commission.
IMP+-CP/SCO	Reference to factors that facilitate or constrain the curriculum consultant's efforts to promote the implementation or use of IDPs at the level of the school commission, according to the curriculum consultant.
IMP+-CP/SCO:dir	Reference to how the curriculum consultant perceives school administrators as facilitating or constraining the curriculum consultant's efforts to promote the implementation or use of IDPs in the school commission.

IMP+-CP/SCO:fund	Reference to how the curriculum consultant perceives funding from the school commission as facilitating or constraining their efforts to promote the implementation or use of IDPs in the school commission.
IMP+-CP/SCO:oth	Reference to how the curriculum consultant perceives any other factors from the school commission, as named by the curriculum consultant, as facilitating or constraining their efforts to promote the implementation or use of IDPs in the school commission.
IMP+-CP/MEQ	Reference to factors that facilitate or constrain curriculum consultants' efforts to promote the implementation or use of IDPs at the level of the MELS, according to the curriculum consultant.
IMP+-CP/MEQ:opr	Reference to how the old curriculum of the MEQ facilitates/ed or constrains/ed the implementation or use of IDPs.
IMP+-CP/MEQ:npr	Reference to how the new curriculum of the MELS facilitates or constrains the implementation or use of IDPs.
IMP+-CP/MEQ:kno	Reference to how the curriculum consultant's knowledge of the MELS new and how this knowledge facilitates or constrains the curriculum consultant's efforts to promote the implementation or use of IDPs in the school commission.
IMP+-CP/MEQ:oth	Reference to how the curriculum consultant perceives any other factors from the MELS as facilitating or constraining their efforts to promote the implementation or use of IDPs in the school commission.
<i>Free codes</i>	
BAL-CP	Reference to curriculum consultant's perception as to how there must be a balance between IDPs and regular class activities.
TRASH-CP	Reference to actor's expression of how they do not want to denigrate or dismiss the activities, beliefs, practices of another but... as relates to IDPs.
WORK-CP	Reference to how IDPs are more work to elaborate or implement than regular class activities.
OBLIGE-CP	Reference to forcing or constraining teachers to implement IDPs
PARENT-CP	Reference to parents' perceptions of IDPs
CULTURE-CP	Reference to existing or desired characteristics of teachers' culture
UNION- CP	Reference to the effect of the teachers' union on IDPs
STUDENTS	
<i>Conceptualization-</i> CON-	<i>How the students conceive and understand interdisciplinary projects (IDPs).</i>

CON-STU/DEF	Reference to the student's definition of IDPs.
CON- STU/EXA:pr	An example of IDPs in current classes.
CON- STU/EXA:pa-esl	An example of IDPs that have been done in the past that involved ESL.
CON- STU/EXA:pa-oth	An example of IDPs that have been done in the past that involved courses where ESL was not a component.
CON-STU/EXPERT	Reference to the student's conception of teachers' expertise and division of labour and how it relates to IDPs.
CON-STU/INF=att	Reference to student's attitude towards IDPs
<i>Value</i>	<i>The degree that the student esteems or ascribes importance to IDPs.</i>
<i>VAL</i>	
VAL-STU/DIF	Reference to the differences between IDPs and regular classroom instruction.
VAL- STU/PR	Reference to how the student gauges the importance of IDPs.
VAL-STU/ESL	Reference to how the student perceives the value of IDPs in the ESL class as compared to regular classes where IDPs are not used.
VAL-STU/ESL:stl	Reference to how the IDPs have an impact on the students' learning of ESL; what they learn and how they use different skills, either discrete or integrated, as compared to a regular class
VAL-STU/ESL:stm	Reference to how the student perceives IDPs have an impact on their motivation to learn ESL, as compared to a regular class.
VAL-STU/ESL:sts	Reference to how the student perceives IDPs have an impact their use of strategies and work methods in learning ESL, as compared to a regular class.
VAL-STU/ESL:cm	Reference to how the student perceives IDPs have an impact on classroom management, as compared to a regular class.
VAL-STU/ESL:mat	Reference to how the student perceives IDPs have an impact on how the teacher teaches material in the ESL class, as compared to a regular class.
VAL-STU/ESL:cho	Reference to how the student perceives IDPs have an impact on how the teacher chooses material to be used, as compared to a regular class.
VAL-STU/ESL:eva	Reference to how the IDPs have an impact on how the teacher evaluates the students, as compared to a regular class.
VAL-STU/ESL:trans	Reference to how the student perceives IDPs require translation from or to English
VAL-STU/ESL:voc	Reference to how the student perceives the learning of vocabulary in the IDP.
VAL-STU/ESL:rd	Reference to how the student perceives improvement of reading skills in the IDP.

VAL-STU/ESL:wrt	Reference to how the student perceives improvement of writing skills in the IDP.
VAL-STU/ESL:spk	Reference to how the student perceives improvement of speaking skills in the IDP.
VAL-STU/ESL:lstn	Reference to how the student perceives improvement of listening skills in the IDP.
VAL-STU/AUT	Reference to how the student perceives autonomy required for the IDP.
VAL-STU/REL:sts	Reference to how the student perceives IDPs having an impact on their relationships with their peers.
VAL-STU/REL:coe	Reference to how the student perceives IDPs having an impact on their relationships with their ESL teacher.
VAL-STU/REL:coo	Reference to how the student perceives IDPs having an impact on their relationships with teachers in other departments.
VAL-STU/ROL:tea&no	Reference to how the student perceives IDPs do not change the role of the teacher in the class.
VAL-STU/ROL:tea&yes	Reference to how the student perceives IDPs change the role of the teacher in the class.
<i>APP+ or -</i>	<i>Reference to factors the students like or dislike about IDPs.</i>
APP+-STU/TM	Reference to how the student perceives the duration of the IDP.
APP+-STU/WK:cl	Reference to how the student perceives the amount of class work required for the IDP.
APP+-STU/WK:hm	Reference to how the student perceives the amount of homework required for the IDP.
APP+-STU/TWK	Reference to how the student perceives the team work component of the IDP.
APP+-STU/FUN	Reference to the student's perception of fun relating to the IDP.
APP+-STU/LNK	Reference to how the student perceives the links between the different classes involved in the IDP.
APP+-STU/OTH	Reference to other factors the student names as elements affecting their appreciation of the IDP.
<i>Free codes</i>	
BAL-STU	Reference to actor's perception as to how there must be a balance between IDPs and regular class activities.

Appendix P: Screen shot of coding process

Dissertation - NVivo

File Edit View Go Project Links Code Tools Window Help

Look for: Search In Tree Nodes Find Now Clear Options

Nodes

- Free Nodes
- Tree Nodes
- Cases
- Relationships
- Matrices
- Search Folders
- All Nodes

Sources

Nodes

- Sets
- Queries
- Models
- Links
- Classifications
- Folders

Tree Nodes

Name

- IMP~TEA(SCH=coe
- IMP~TEA(SCH=coo
- IMP~TEA(SCH=oth
- IMP~TEA(SCH=pol
- IMP~TEA(SCH=pol&cl
- IMP~TEA(SCH=pol&ti
- IMP~TEA(SCH=res
- IMP~TEA(SCH=stu
- IMP~TEA(SCO
- IMP~TEA(SCO=cp
- IMP~TEA(SCO=fun
- IMP~TEA(SCO=oth
- IMP+TEA
- IMP+TEA(MEQ
- IMP+TEA(MEQ=npr
- IMP+TEA(MEQ=opr
- IMP+TEA(MEQ=oth
- IMP+TEA(SCH
- IMP+TEA(SCH=adm
- IMP+TEA(SCH=coe
- IMP+TEA(SCH=coo
- IMP+TEA(SCH=oth
- IMP+TEA(OTH=oth&si
- IMP+TEA(SCH=oth&E

Renée 02-20

DB: I nen...

Renée: But we also took extra time.

DB: Who approached who to be involved in that?

Renée: Well, it was strongly.... We talked about this if you remember. It was... it was strongly recommended by... the principals at the school. I should say more, our principal in PC.

DB: mmhm

Renée: That we had to do multidisciplinary projects, so uhm... The team in Sec 5 started... started doing them, I would say, more easily. So we were kind of pointed at, pointed out that we had to uhm... do it ourselves, too.

DB: OK

Renée: The Sec 4 team. The Sec 4 team, we have more maybe... I'm not saying we don't get along but it's a bit more difficult to uhm... I guess maybe we are a bit more individuals, you know, like we... we... are more... we like to work individually a little bit more.

DB: mmhm

Renée: So it was harder to uhm... start doing it. But... it was recommended. And ah...

DB: Recommended? Or recommended... forcefully?

Renée: It was... it was, if you want to stay in PC actually, you have to... show that you are interested in doing this because it's part of our philosophy.

DB: OK

Renée: So we just did it. But it is great also to spend time, but maybe it was a little more... forced... upon us than it was in Sec 5.

DB: I see. OK, what about the project that you're gonna start... uhm... on death. Are you going to have a day or a half-day for...

Renée: We're supposed to have... Well the days that we... we have four half-days...

DB: mmhm

Time

Coding Density

IMP+TEA(SCH=pol&time

IMP+TEA(SCH=oh

IMP+TEA(SCH=ad&enforce

IMP+TEA(SCH=coo

CON+TEA(EXA=I

IMP+TEA

386 Items Nodes: 44 References: 87 Read-Only