CURRICULUM COHERENCE AND STUDENT SUCCESS

In 1999, the Quebec government challenged each CEGEP to develop a *Student Success Plan* designed to intentionally increase graduation rates and shorten the extended time some students need to complete a pre-university or professional DEC. At Champlain St-Lambert CEGEP, we chose to address this challenge by focusing on the assessment tasks that students were being asked to master within their respective classes. We wanted to determine the nature and complexity of the academic tasks (Doyle, 1983) at which students were being asked to succeed.

We began to answer this question by focusing on first-semester courses in which there were several sections taught by different teachers. In many departments, we noted a great deal of variation in the final distribution of students' grades across the sections. Although the Student Success Committee was able to produce data about this phenomenon and to deliver them to the individual departments, there was no formal process through which a department could investigate what was being taught and how student learning was being assessed. At that time, we applied for and were awarded a PAREA Grant to develop and test what has come to be known as the *Curriculum Review Cycle*. Our goal was to find a way to ensure that ministerial objectives were aligned with departmental standards, curricula, and assessments within a course, across multiple sections of the same course, and between courses within the same program. This would be achieved by collecting data on student performance and analyzing the assessment tasks used to measure their performance. The data were fed back to departments to inform curriculum decision-making aimed at redesigning assessment methods to make them more coherent with course and program objectives. It was posited that the achievement of an aligned or coherent curriculum at the course and departmental levels would increase student success because it would decrease inequities in assessment practices and increase opportunities for all students to learn. Eight academic departments participated in this experience which began in the Fall of 2003 and is still on-going.

CURRICULUM COHERENCE: A POSSIBLE SOLUTION TO A COMPLEX PROBLEM

The need for coherence among curriculum, instruction, and assessment is a fundamental principle of educational practice (Anderson, 2002; Biggs, 2001; Briggs, 2007). In a coherent curriculum, the intended learning outcomes (instructional objectives), instructional processes (teaching and learning activities) and assessments (formative and summative evaluations of student learning) are aligned or connected. At the course level this means that the instructional objectives, the learning activities and the assessments used to measure the achievement of the intended learning outcomes are intricately related and connected to each other (Cohen, 1987; Wiggins, 1993). At the departmental level, this means that when multiple sections of the same course are offered, there is a common understanding of what the instructional objectives mean in terms of student learning as well as how the achievement of those objectives will be measured (Walvoord & Anderson, 1998). When these conditions have been created, the learner finds it difficult to escape without learning (Biggs, 1999).

It has been reported that when assessments are aligned with instructional objectives, student learning (and success) can be increased by as much as two standard deviations (Cohen, 1987). The literature also suggests that faculty members who clearly understand the intricate connection between instructional goals and student assessment can both communicate their expectations to students and measure student learning in ways that foster student success without lowering standards (Crooks, 1988; Walvoord & Anderson, 1998; Wiggins, 1993). Creating a coherent curriculum appears to be a simple, straightforward solution to a complex problem; it should be easy to design and implement. It is also observed that curriculum alignment in higher education is not the norm (Biggs, 1999, 1996; Cohen, 1987; Ramsden, 1992). However, there is very little empirical research on how departments and programs develop coherence (Hammerness, 2007) and what elements and qualities sustain coherence in practice (Pellegrino, 2006).

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METHODOLOGY

In this action research project we used a combination of qualitative and quantitative methods to study the phenomena of curriculum coherence in the participating departments. The broad objective was to design a model of institutional development that is grounded scientifically by using research on student outcomes to drive curriculum and program development. Because disciplinary differences exist in how knowledge is acquired and measured (Donald, 2002; Taylor, 1994), this research sought to establish and to document discipline-specific curriculum validation processes that will become accepted as standard procedures; and, when followed, procedures that will inform curriculum decisions and will validate the grading practices being used across the college to measure student learning.

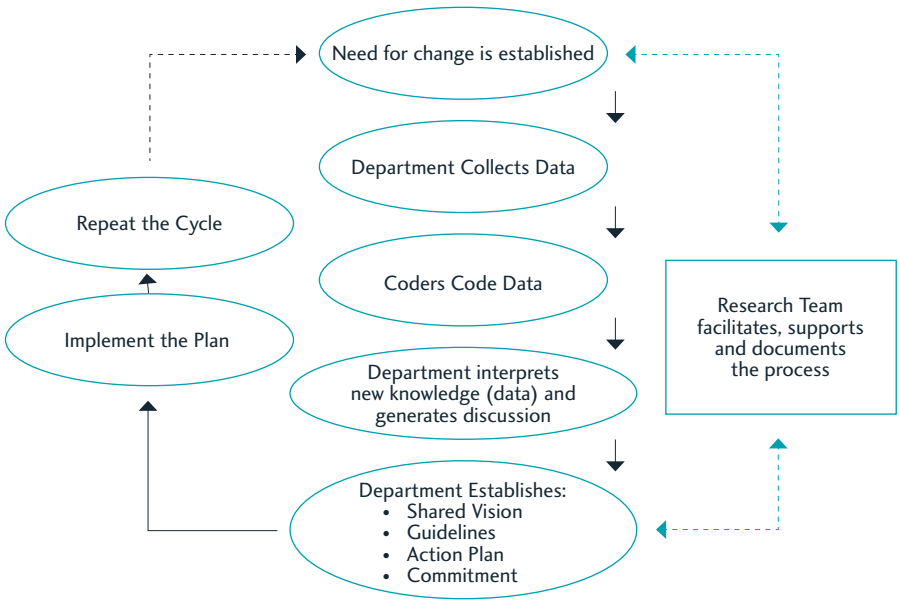
Inherent in this study's underlying objective are nine research projects, with two overarching methodologies. The eight participating departments served as single case studies as they learned how to determine the degree to which individual and multiple sections of a selected course were vertically and horizontally aligned. Approaching each department as a single case study allowed the research team to document the discipline-specific curriculum validation process that each department experienced. While leading and monitoring this process, the researchers simultaneously noted similarities and differences across the eight departments. An analysis of the consequences of the similarities and differences that were observed using a multi-site case study approach allowed for a scientifically grounded model for achieving curriculum coherence to emerge. Thus the over-all developmental process may be considered to be the ninth and primary research project. As such it prompted a paradigm shift in the way that successful departments made sense of their curriculum and the assessments they used to measure student learning.

In a coherent curriculum, the intended learning outcomes [...] instructional processes [...] and assessments [...] are aligned or connected.

"CURRICULUM REVIEW CYCLE"

The *Curriculum Review Cycle* provides a process for helping each department to determine whether or not there is a need for change by allowing them to create a discipline-specific vocabulary to analyze student results and also to design a framework for decision-making. Most importantly, it moves the process of decision-making from the individual teacher to the department as a whole, creating collective decision-making structures that work to achieve alignment, equity, fairness, and an increase in learning for our students as well as a corresponding increase in job satisfaction for our teachers.

FIGURE 1: *CURRICULUM REVIEW CYCLE*



ESTABLISHING A NEED FOR CHANGE

CEGEP teachers are seldom informed about how well their classes perform in relation to the classes of other teachers teaching the same course. This information may be given to department chairpersons, but it seldom trickles down to the individual teacher in a format that is simultaneously understandable and thought provoking. In the two years preceding the launching of this research project, the Student Success Committee began to bring student results to every department each semester. This information was presented in box-plots that provided a pictorial representation of student results across multiple sections of the same course thereby allowing teachers to see their own class results in relation to the overall results in their department.

When teachers were faced with a wide unevenness of outcomes, most felt compelled to understand and explain its origins. For example, Figure 2 illustrates how students performed across five different sections of course x at the end of the first term. The first common explanation of the variance in results is that some students stopped attending class before or after the official deadline for withdrawing, although they never officially withdrew. Consequently, they have to receive a grade for the course, a grade that often reduces the class average. To address this concern, all students who had a grade of less than 30% were deleted from a department's analysis. This step reduces the variance within each class but it does not affect the variance between the multiple sections of the course. Another explanation for low student achievement is that the class is populated with students who are not prepared to do college work; that is, the teacher believes that they had a weak group. This explanation might be affirmed or rejected by comparing the outcome grades with the students' overall high school averages (Figure 3). In other words, student results are compared to the high school average that was used by the college to admit those students. In this case, an explanation that students in Files[1] 60 and 61 were academically weak would be rejected.

FIGURE 2*: GRADE IN THE CEGEP COURSE

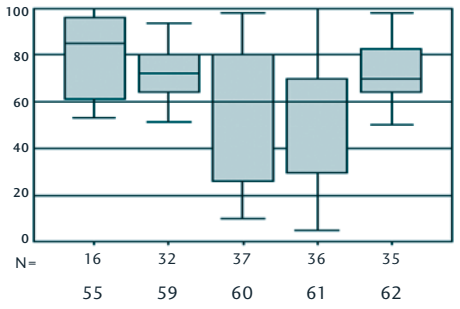


FIGURE 3*: INCOMING HIGHSCHOOL AVERAGES

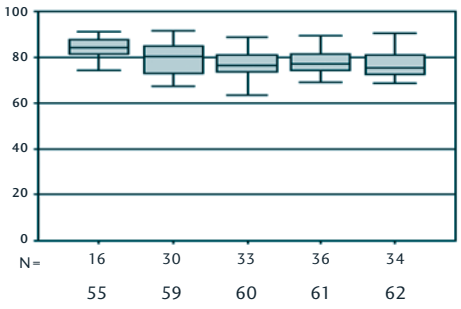
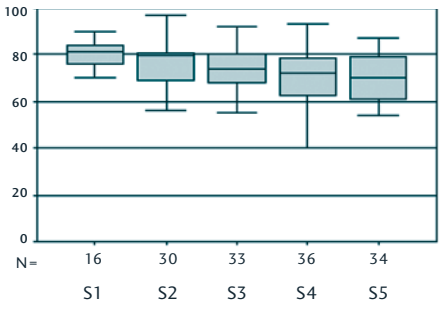


FIGURE 4*: GRADE IN ENGLISH 101



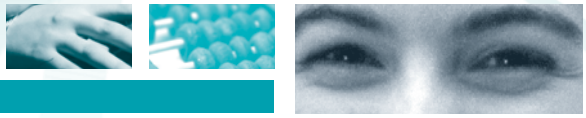
If the reliability of the high-school grade is questioned (which happens frequently), we make a second comparison with the grades achieved in our first English course, *Introduction to Literature and Composition* (Figure 4). This course focuses on reading, writing and thinking analytically at the college level. The English department has worked diligently for over 10 years to keep this course coherent across multiple sections that function at three different levels. All students, regardless of whether they are in level A (standard), B (needs extra help) or C (remedial) write a common final essay, worth 30%, that is marked 'blind' by members of the department. As a result, student outcomes in this course are known to be reliable and serve as a fairly reliable indicator of the students' abilities to quite successfully complete college-level work. Consequently the results presented in Figure 4 more closely resemble the distribution of incoming high-school averages seen in Figure 3 than those for course X. This validation of incoming high-school grades calls into question the assumption of any teacher of course X who argues that their class was weak. It leaves the department with a variance among sections to be examined and explained. In many ways this casts doubt on the validity of the grades that are being awarded and that infringes on each teacher's sense of moral purpose and integrity. This serves as a difficult but necessary step and prompts the process of curriculum realignment that follows.

* **Legend for Figures 2 to 4:**

Horizontally: number of subjects involved + codes (file numbers) for identifying different sections of the same course.

Vertically: Grades

[1] These File numbers are actually codes for different sections of the same course. .



THE ROLE OF PARTICIPATING DEPARTMENTS

Contemporary action research (Kemmis & McTaggert, 2000) requires the active involvement of the 'clients' themselves; in this case, they were the teachers in the eight participating departments. English, Humanities, Psychology and Chemistry joined the project in the Fall of 2003 and became known as the lead departments. In the Fall of 2004 they were joined by Biology, Physics, Mathematics and Social Science Methodology. Participation in the project was voluntary; but each department that became involved was asked to have the full endorsement of all their teachers.

As this research focused on first-semester courses, teachers from participating departments who taught a first-semester course in Fall 2003 or Fall 2004 submitted their course outlines, syllabi, assignments and assessments to the research team. Assessments included both traditional paper-and-pencil measures such as quizzes, class tests and exams, as well as performance-based tasks such as essays, oral presentations, group work and projects. Anything that contributed to the student's overall grade was collected. By June of 2006, the assessment tasks used across multiple sections of 13 courses had been analyzed. This consisted of 115 sections, representing the work of 67 teachers (Table 1). By the end of the third year of this study, a total of 6,192 assessment items had been analyzed (Table 2).

TABLE 1: DATA SOURCES FOR PAREA RESEARCH – F2003 TO W2006

Program/Department	Courses Studied	Sections	Teachers Involved
Social Science	*Intro to Psychology 102* – (F2003)	12	5
	Quantitative Methods – (W2005)	11	6
Science	*Chemistry NYA* – (F2003)	8	7
	Chemistry NYB – (W2004) + 1 (F2004)	7	7*
	Physics NYA – (F2004 + 1 (W2004)	6	6
	Biology NYA – (F2004)	4	3
CORE/English	*Literary Genres* (102) (F2003)	12	12
	Literary Themes (103) (F2003)	9	9 (16**)
CORE/Humanities	*Knowledge and Media* – 103 (F2003)	10	16
	Knowledge – All 103 titles (F2004)	25	11
Mathematics	*Calculus1 for Science*	7	4
	Calculus1 for Commerce	4	3
	Calculus 1 for IB	1	1 (7***)
TOTAL	13	115	67

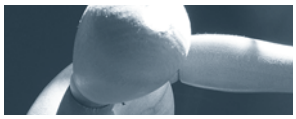
* Same seven teachers taught NYA & NYB; ** Five teachers taught both 102 & 103 in the Fall 2003 semester; *** One teacher taught both Cal 1 Science and Cal 1 Commerce.

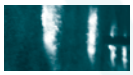
THE ROLE OF SUBJECT-MATTER EXPERTS (SMES OR CODERS)

Two members from each participating department were elected to collect, prepare and analyze the data, making them co-researchers in this complex project. They were considered to be partners of the principal research team and were given an equal voice in the innovative process. These two subject-matter experts (SMEs), who became known as the 'coders', agreed to be responsible for the *Curriculum Review Cycle* in their departments. This meant that they agreed to participate in training sessions, to collect course materials from their colleagues, to analyze all documents and ultimately to share their findings and curriculum recommendations with their respective departments. Under the direction of the research team they specifically agreed to conduct an in-depth analysis of the degree of alignment within each course and across multiple sections of the same course, between: (1) course objectives and the content being taught, (2) course objectives and the content being assessed, and (3) course objectives and the level of cognitive complexity of assignments and assessment tasks.

Previous research indicates that it is essential to have subject-matter experts (SMEs) analyze discipline-specific assessment tasks and items (Bateman, 1992). These experts have the responsibility of translating each assessment item into a type of knowledge. They also have to determine the level of thinking required by the learner in order to perform the assessment task successfully. Therefore, it is necessary that the SMEs have a deep understanding of the conceptual knowledge in their discipline, an understanding of the instructional goals of the course and how the course fits into a particular academic program. Ideally, they need to understand the difference between knowing a subject, teaching a subject and learning a subject. Equally important is the fact that the department is expected to consider the results seriously. Having people from within a department conduct the analysis, interpret the results and present the results to their respective departments increases internal commitment to the process itself thereby making it more likely that the changes emanating from the study are set in motion and sustained (Fullan, 200; Wenger, 1998).

Electing subject-matter experts from each department also reinforces a premise underlying this research: that each department owns the problem and has the power to create its own solution. The challenge is to create a safe environment in which the participants feel empowered and change can be considered (Srikanthan & Dalrymple, 2005).





THE ROLE OF THE PRINCIPAL INVESTIGATORS (PAREA RESEARCH TEAM)

The four principal investigators responsible for this project became known locally as the PAREA Research Team. Their challenge was to fulfill the core goal of action research: that is, to give participants increasing control over their own situation (Warrican, 2006). Therefore, at times they played the role of distant observers and at other times they were actively involved in the research process.

During the first phase of this project, the four members of the research team designed the training workshops and the tools that the subject-matter experts would use to record the data. Five instruments were designed:

1. the Survey of Learning Outcomes Form,
2. the Survey of Content Topic,
3. the Survey of Assessment Tasks Form,
4. the Assessment Task Analysis Codes,
5. Coding Form for Task Analysis. In all cases they had to be discipline-specific.

The tools made it possible to collect, visualize, analyze and interpret the information that was needed to improve the process of curriculum creation and revision. A review of the literature was also conducted to locate appropriate subject-matter taxonomies that described the kinds of knowledge and intellectual abilities inherent in the disciplines represented.

As the research progressed, the PAREA Research Team simultaneously designed, supported and documented the *Curriculum review process* that each of the eight participating departments experienced. They assisted directly with the collecting, coding, analysis and interpretation of the data, and turned them into trustworthy evidence that would serve as justification for systemic change and would inform curriculum decisions. As each department forged its own path through this process, it was guided by its own learning as the project progressed; and decisions had to be made about the direction that it should take as a department. These decisions were made through extensive discussions with the PAREA Research Team acting as facilitators while the SMEs worked to plan and design actions aimed at solving the department's unique curriculum alignment issues. Leading these discussions required educational insight, negotiating skill and good will. The visible role of the Research Team was crucial but secondary to the implicit leadership role it assumed which demanded that team members simultaneously manage and inspire their colleagues. Their personal commitment to the goals of this project helped them to maintain a sense of purpose and underscored their interactions with the SMEs, the department coordinators and the teachers whose work was being analyzed.

THE ROLE OF DEPARTMENT COORDINATORS

Given the importance of leadership in any change process and the important role that department coordinators would play in terms of implementing and sustaining curriculum changes that emerged, the PAREA Research Team made every effort to involve department coordinators in all aspects of this research project. All department co-ordinators participated in the training workshops and assisted the SMEs in data collection. Their involvement was also essential in the discussion of preliminary results that preceded the presentation of final results to the department.

Coordinators from five of the eight participating departments organized additional workshops and meetings to further their department's understanding of the process and to engage their department in the collective critical reflection that was needed to promote change. It was frequently observed and noted in discussions regarding the similarities and differences across departments that if the department coordinator understood and valued the curriculum analysis work that was being conducted by their SMEs, the chances that the *Curriculum Review Cycle* would have lasting effects on the department's curriculum were greatly enhanced. Their involvement made the academic work required in order for this project to succeed, a more enjoyable and productive experience for everyone.

Previous research indicates that it is essential to have subject-matter experts (SMEs) analyze discipline-specific assessment tasks and items.

PREPARING, CODING AND ANALYZING THE DATA

All assessment tasks and items on quizzes, tests and final exams were coded according to type and format of task, kind of knowledge and level of cognitive complexity. The primary instructional objective being measured, the "weight", or mark contribution to the student's overall grade and, in all disciplines except English, the main topic being addressed were also identified.

The first step in this process was for the SMEs to take each teacher's assessment documents and number every item that contributed to a student's overall grade. It included performance-based assessments such as essays, research papers, oral presentations and assignments, as

well as items on quizzes, class tests or final exams. In some cases it was necessary to assign more than one number to questions that contained sub-questions. The following example from Chemistry illustrates this point.

Sample question:

Although nitrogen dioxide is a stable compound, there is a tendency for two such molecules to combine to form dinitrogen tetroxide. Why? Draw four resonance structures showing the formal charges.

This question counts as three items. The first item identified is for the question, 'why'; the second item is for drawing the resonance structure; the third item is assigning the formal charges. Table 2 shows the number of items analyzed for each discipline in the initial stage of participation in the project.

TABLE 2: NUMBER OF ITEMS CODED IN EACH DISCIPLINE (BASELINE FIGURES)

English (n = 285)
Psychology (n = 948)
Chemistry (n = 728)
Humanities (n = 1025)
Physics (n = 672)
Methodology (n = 816)
Biology (n = 681)
Math (n = 1037)

TYPE AND FORMAT OF TASK

The first levels of categorization are type and format of task. Type is the first level of categorization that is assigned to each question or task. It is used to distinguish objective tasks from tasks that might be considered to be more subjective. Examples of 'type of task' include: quizzes, class tests, final exams, assignments, group work, in-class essays, out-of-class essays, research papers, lab quizzes, oral presentations and integrative activities. The second level of categorization was 'format of task'. Format refers to how the assessment task or question was arranged or constructed. Examples of different formats include: multiple choice, true-false, short answers, extended responses, essays, research papers, paragraphs, group work, diagrams and calculations. In general, objective tasks, that is, tasks where a right answer exists, such as quizzes and class tests were comprised of different formats. Most performance-based tasks, such as essays, research papers, oral presentations and projects received the same classification in terms of type and format of task.

TYPES OF KNOWLEDGE AND LEVELS OF COGNITIVE COMPLEXITY

The revised version of Bloom's taxonomy (Anderson & Krathwohl, 2001) was offered as a generic theoretical framework for identifying the kinds of knowledge and thought processes inherent in each assessment item or task.

Anderson and Krathwohl (2001) suggest that teachers can determine which level they are reaching by identifying the nouns and verbs in their objectives. The noun describes the category of knowledge they are assessing and the verb defines the category and sub-category of the cognitive domain they have reached. Anderson and Krathwohl (2001) noted that teachers can create their assessments by examining the categories covered in classroom instructional objectives. Using this process backwards, the coders analyzed each assessment item according to the knowledge and thinking skill it demanded of the learner.

The Coders were encouraged to adjust the taxonomy in any way needed to capture the thought processes required to master the competencies reflected in their courses. Psychology, Humanities, Biology, Methodology and Math chose to use the revised version of Bloom's taxonomy without any changes. English, Chemistry and Physics made revisions to the taxonomy by adjusting it to their respective situations. Most importantly, these taxonomies provide a vocabulary that can be used to discuss curriculum in a new way in the participating departments. They gave labels to the thought processes that teachers try to develop in their students, thereby capturing the thought processes that are inherent in each discipline. They are central to the goal of achieving curriculum coherence within and between courses in a specific academic discipline, and in answering the question: "What are we asking students to be successful at?" When a department adopts a taxonomy and makes it its own, it has a new vocabulary that can be used to steer departmental conversations about curriculum and assessment decisions.

REVIEWING AND AFFIRMING INSTRUCTIONAL OBJECTIVES

A fundamental characteristic of an aligned curriculum is that the assessments used to measure student learning directly connect to the instructional goals of the course. These goals represent the "vision" of the department in terms of how a particular course contributes to the overall development of a student. Therefore, there has to be a common understanding about the types of knowledge and levels of thinking in the discipline that the achievement of the instructional goals demands. Defining the instructional objectives of a course is required before it can be established that the assessments being used to measure the achievement



of those objectives are valid; that is, that they actually measure what they claim to be measuring. The variation in course objectives found across multiple sections of the same course came as a surprise to the PAREA research team because it was assumed that the reforms of the 1990s had solved this problem. The educational reform of the CEGEP system inaugurated competency-based education within a program approach. Ministerial objectives and standards (the goals of learning) were assigned for each course, in each department, within each program. When these external directives were first mandated, departments spent a great deal of time debating what the 'competencies' represented in terms of student learning and transferred them into instructional goals for each of their courses.

Most importantly, these taxonomies provide a vocabulary that can be used to discuss curriculum in a new way in the participating departments. They gave labels to the thought processes that teachers try to develop in their students, thereby capturing the thought processes that are inherent in each discipline.

The PAREA research team therefore assumed that a common understanding of the objectives and standards for each course being examined already existed and would be found in the department's course objectives. However, this was not the case. In fact, each department had work to do in this area before the coders could proceed. For some this meant a simple clarification; for others it required a Delphi sorting procedure to reach a meaningful agreement. In skills-oriented courses, such as English and Humanities, the department had to reach a common understanding about the thinking processes or intellectual abilities that characterize the successful student. In content-oriented courses, such as Introduction to Psychology, Biology NYA and Chemistry NYA, the subject-matter knowledge or topics to be addressed also had to be established.

The need for this important, initial step was confirmed by the departments that joined the project in the second year. In all cases, the general course objectives had to be revisited, realigned and reconfirmed by the entire department before the analysis of assessment tasks could be completed. The common lack of agreement across sections of the same course on what the instructional goals were highlighted the fact that in many departments a common understanding of how a particular course contributes to the intellectual development of the student does not necessarily exist. Clearly, revisiting these goals, having the discussion and reaching a consensus about what they mean in terms of student learning and how they should be assessed is a step that has to be repeated periodically. Without this important exchange, an examination of the assessment tasks used to measure the achievement of these goals becomes meaningless.

Therefore, what first appeared to be a methodological setback, soon emerged as a necessary step in an effective *Curriculum Review Process*. In many ways, this step brought the responsibility for coherence back "into" the department and actually served as the first step in establishing a common vision. Challenging the department to make sense of the external, ministerial objectives and standards, forced them to begin the process of combining their wisdom and expertise for the sake of the students. It challenged them to go beyond the complexity of the information, and to translate the competencies into meaningful instructional goals that were understood, intellectually endorsed and integrated into classroom practice. It also challenged them to identify the content knowledge and intellectual abilities that they hoped to see develop in successful students. In some departments, this unexpected but necessary step reaffirmed a strong disciplinary identity or cultural community while in others, it served as an important first step in the formation of a community of practice that shared a vision, values and goals (Wenger, 1998).

TRANSFORMING DATA INTO KNOWLEDGE THAT DIRECTS CURRICULUM DECISIONS

Once the data were coded, they were entered into SPSS and summarized graphically. In all cases, the selection of the data presentation format was driven by the knowledge that the range of statistical expertise between departments was large; and consequently, it would be best if the results were as visual as possible in order to make them understandable to all. Stacked bars were selected as the most accessible format, one that would allow teachers to be compared side by side in terms of the proportion of marks they allocated in each of the measured categories (task type, knowledge, level of cognitive complexity, etc.). For example, Figure 5 illustrates the variation in type of task across sections initially found in English 103 theme courses. Presenting the results in this visual manner highlights the misalignment between different teachers and raises important questions: Is constructing an essay outside of class equal to constructing an essay during class time? Is it appropriate for one teacher to count essay writing for 35% of the student's grade (ET11) while someone else (ET31) counts it for 80%? One teacher has a final exam worth 40% (ET21); the majority of teachers do not use a final exam. Given the variation in

task type, can we assume that the grades awarded by the teachers of this course represent achievement of the same instructional objectives? Have the students taking this course experienced an equal opportunity to learn and develop the same intellectual abilities?

The types of knowledge and the levels of cognitive complexity are presented in a similar format. Figure 6 shows the variation among the sections of English 102 Genre courses with respect to the types of knowledge required by the assessment items used in different sections. It quickly becomes apparent that the students in one section are asked to do very different work from those in another.

This variation is shown to be even more dramatically different when the levels of cognitive complexity required by the students are compared as in Figure 7. The course presented is considered to be a higher-level English course, but only a few sections require students to do the more difficult cognitive tasks of evaluating, analyzing, synthesizing or creating. Again these results raise issues to be discussed within the department.

Figures 8, 9 and 10 compare the value given to the measurement of the instructional objectives for English 103 sections in the Fall of 2003. Figure 8 combines all sections; Figures 9 and 10 represent two different sections. If one accepts the premise that students focus their learning on how they are assessed, then students in sections 9 and 10 learned very different things.

TOWARDS A COLLECTIVE INTERPRETATION

The PAREA Research Team first presents data in these formats to the coders so that certain corrections and clarifications can be made. When the coders are comfortable with the data, the department chairperson is invited to meet with the coders and research team before the

FIGURE 5: TYPE OF TASK BY MARKS ALLOCATED

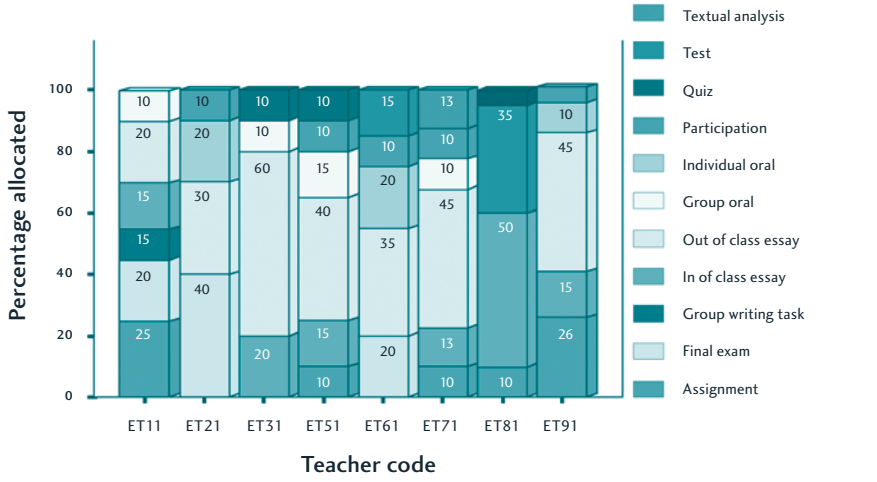


FIGURE 6: TYPE OF KNOWLEDGE

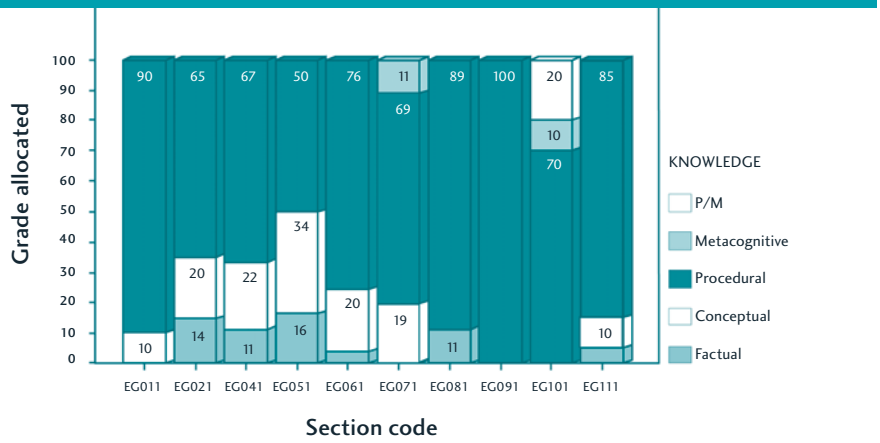
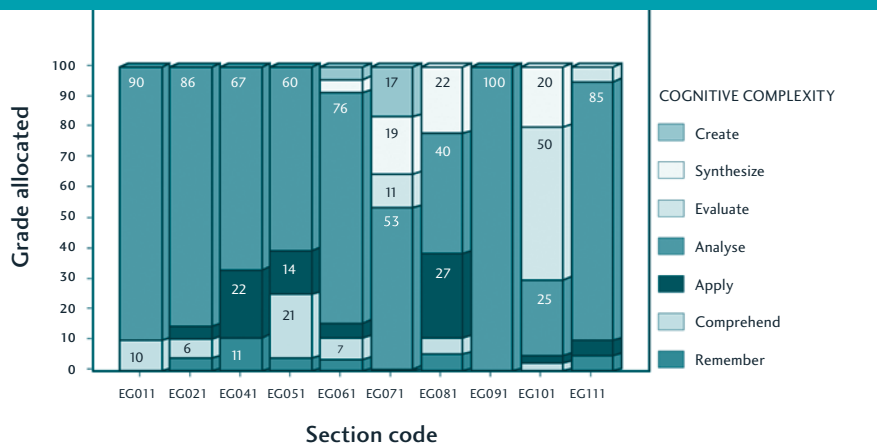
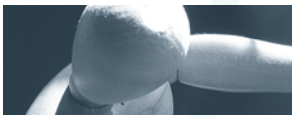


FIGURE 7: LEVELS OF COGNITIVE COMPLEXITY





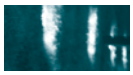


FIGURE 8: OBJECTIVES TESTED ACROSS ALL SECTIONS OF ENGLISH 103-FALL 2003

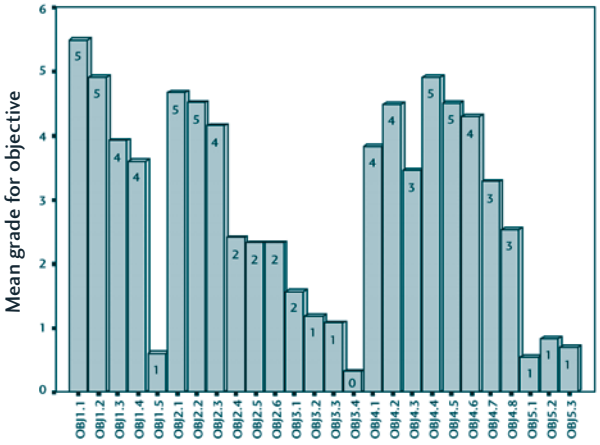


FIGURE 9: OBJECTIVES TESTED IN ENGLISH 103-SECTION X-FALL 2003

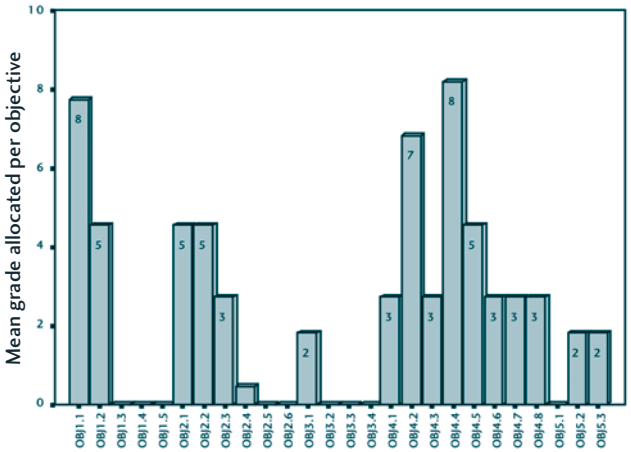
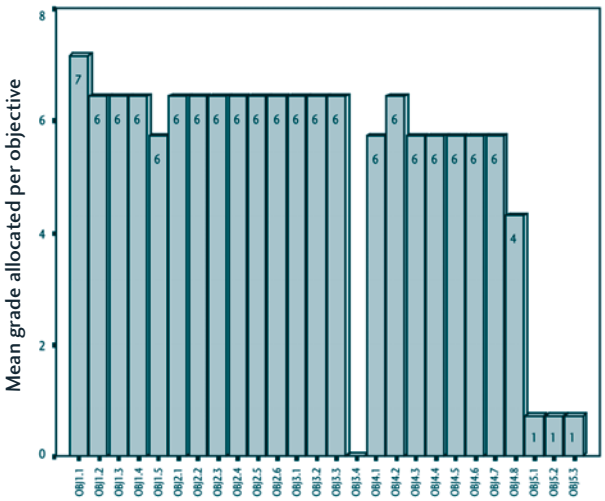


FIGURE 10: OBJECTIVES TESTED IN ENGLISH 103-SECTION Y-FALL 2003



data is presented to all members of the department. This step launches a period of examination and reflection, as the department works together to determine if the results represent the kinds of knowledge and levels of cognitive complexity that are appropriate for the course under study. All department members are expected to participate in this part of the process as members express their concerns, questions and ideas. In most departments, these curriculum consensus-building discussions result in a clear set of guidelines outlining appropriate tasks, formats, types of knowledge, levels of cognitive complexity and relative grade values that were appropriate for that particular course. In some cases, the goals and objectives for the course are further discussed so that a common understanding is established and assessment adjustments can be made.

ESTABLISHING A SHARED VISION

The most constructive discussions were observed in departments where the coders made a special effort to ensure that the taxonomy represented the intellectual abilities inherent in their discipline. If the coders ignored this step, which happened in one department, they were frustrated with their results and tended to blame this outcome on the limitations of the taxonomy. Using a language that resonated with a particular disciplinary culture to analyze the cognitive complexity of the assessment tasks being assigned is beneficial because it promotes buying-in to the process and a new way to engage in dialogue about the curriculum. In other words, taxonomies that identify the thinking skills and intellectual abilities inherent in the discipline provide a framework for the department to use when constructing their assessment tasks. This current analysis illustrated where their assessments were adequate and where their assessments needed to be adjusted.

It was during this step in the process that the PAREA Research Team witnessed the merging of the project's underlying theories, practical tools and methods in a way that led faculty members to new insights about the relationship between teaching and assessment. The development of this "shared awareness" (Senge, 1992, p. 205) is a prerequisite for the continuous implementation of the *Curriculum Review Cycle*. After a consensus was reached about what the assessment tasks in a particular course should be, the department began to prepare to offer their newly aligned course.

After the newly aligned course is offered, a complete data set from each teacher is collected again and the coders repeat the coding process. A new analysis reveals if the level of coherence between multiple sections of the same course has increased and whether or not the increase in coherence results in a corresponding increase in student achievement. Three of the lead departments (English, Humanities and Chemistry) were able to progress to this point.

IMPLEMENTING THE REVISIONS

Each department has its own way of implementing the curriculum changes that were decided upon. Most passed motions at the department level and created tools and procedures to help faculty members integrate these changes into their practice. The Psychology Department created a bank of short-answer questions while the English Department created a literature committee that verifies the congruence of course outlines with departmental assessment policies before they go to print. These accountability mechanisms were created internally to maintain the collegial responsibility that department members have to respect and activate the decisions of the department. The unique, spontaneous curriculum decisions made by each department and the methods used to activate and sustain those decisions are summarized in an *Issues and Resolution* table that appears at the end of seven of the eight disciplinary chapters found in the complete report (Bateman *et al.*, 2007).

Turning a *Curriculum Review Process* into a continuous *Curriculum Review Cycle* requires a collective effort but the actual implementation of agreed-upon changes depends on the individual commitment of individual teachers to make the necessary changes in how they assess student learning. The chances of this occurring have been increased because all decisions were evidence-based and informed by a process of collective critical reflection situated in each department's cultural, political and moral context. Having the department coordinator and two subject-matter experts involved in each department also encouraged this part of the process. Their involvement created a sense of departmental ownership that increased the chances of the agreed-upon changes being implemented and sustained.

Establishing and maintaining curriculum coherence presents a constant challenge because it rests upon the never-ending tensions between the individual and the group, between freedom and control, between independence and interdependence.

CONCLUSION

The need to establish a coherent curriculum became obvious as Champlain St-Lambert CEGEP worked on developing a plan to improve student success. When we began, a process that provides academic departments with a systematic way to do this did not exist. The *Curriculum Review Cycle* addresses this omission. As the study progressed, however, we realized that our traditional, concrete definition of coherence describes it as an objective outcome and does not account for the complex factors and conditions that must be in place for curriculum coherence to be achieved. In addition, it places the achievement of coherence as the primary goal as opposed to stressing the strategies and conditions under which it might be achieved. We have redefined the concept of curriculum coherence as a socially constructed phenomenon that brings all the members of a department together to collaborate and create environments that strengthen opportunities for all students to learn. The project has awakened a sense of moral purpose within participating departments and has roused their teachers to overcome inequity by providing fair assessments and learning activities that prepare students to succeed at them. Successful departments benefit by evolving into communities of practice where shared learning and decision-making motivates teachers to embrace and implement the changes that emerge from the process.

Implementation of this type of process demands leadership; and successful departments had strong chairpersons who were able to bring their teachers through the steps with the enthusiastic support of the SMEs (coders). The use of this methodology has provided teachers with a common vocabulary for discussing their courses and through this conversation a paradigm shift has occurred such that teachers are able to give up the old notion that each individual is the sole owner of the courses he/she teaches and to move to a position whereby, working together, they have produced courses that support each other and achieve their intended instructional goals.



Establishing and maintaining curriculum coherence presents a constant challenge because it rests upon the never-ending tensions between the individual and the group, between freedom and control, between independence and interdependence. As such, it is not an outcome that can be achieved and will then remain constant. It is a never-ending, socially constructed, continuous process that provides a new perspective on how collegial accountability, collaboration and compromise can combine to increase student success.

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