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Designing a Teacher Development Programme to Enhance
the Teaching of Higher Order Thinking and Conceptual
Understanding in Primary School Social Studies

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Abstract

While higher order thinking has always been regarded as an essential component of social studies education, personal observations over a number of years and the findings of a survey which examined New Zealand social studies between 1984 and 1986 indicated that higher order thinking skills were generally taught ineffectively in social studies classrooms in New Zealand schools. This thesis describes a small scale action research project concerned with the development of an intervention process designed to enhance the teaching of higher order thinking skills by affecting changes in teacher understanding and teacher behaviour.

The project sought to determine the extent to which teachers provided learning activities which were likely to bring about higher order thinking; the degree to which higher order thinking skills were used in activities to achieve particular goals; and those aspects of teacher behaviour or understanding which limited opportunity for students to engage in higher order thinking in primary school social studies. Once data had been obtained, the project team, the researcher and six classroom teachers, developed an intervention programme designed to encourage teachers to adopt behaviours which would lead to improved higher order thinking in social studies classrooms.

Elements of both quantitative and qualitative methodology were used in the project, but, because it was primarily concerned with the effects of intervention on the functioning of people in a particular social situation, the project followed an action research model in its structure and in most methods.

The intervention was based on a model which grouped the individual thinking skills in the national social studies curriculum into six groups of analogous skills. The groupings were made on the assumption that one reason teachers used higher order thinking skills ineffectively in social studies, was that they found it impractical to apply the long lists of specific skills provided by the national curriculum. The model was also designed to demonstrate the relationship between specific thinking skills and conceptual understanding because, although the national curriculum emphasised the importance of both of these in classroom social studies, the relationship between the two was not made clear either in that document, or in earlier national curricula.

The model was designed to provide teachers with a representation of the thinking processes in social studies. However, it also proved useful as an analytical tool. In the observations which were a major part of the project, the model was used to identify the thinking skills dominant and evident in classroom learning activities. In a series of detailed classroom observations the researcher recorded and examined teacher questions, time allocated to classroom activities, skills emphasised and evident in learning activities, and teacher understanding of the nature and structure of social studies. In the intervention which followed the observations, members of the research team modified the original model and

developed further models which related the intent of the original to the structure of the national curriculum and to classroom practice. These models were applied, and a second series of observations conducted.

At the time that this project took place New Zealand teachers were teaching social studies from the first draft of a new national curriculum. This draft has since been superseded by a further draft Social Studies in the New Zealand Curriculum (Revised Draft) (New Zealand Ministry of Education 1996) and by the final version of the national curriculum, Social Studies in the New Zealand Curriculum (New Zealand Ministry of Education 1997). The teaching and learning activities in the case studies in this paper are based on the first draft of the national social studies curriculum.

This project was a case study in one school, an action research model that sought to diagnose a particular problem in one setting, plan remedial action to deal with the problem and monitor the results of that action. Because the research field was limited to one setting, and because the research sample was necessarily small, it is not possible to make generalisations that can be applied to contexts wider than the one in which the research took place. In qualitative research conclusions point to possible new policies rather than to scientific generalisations and principles. Nonetheless, the project's results suggest that when teachers understand the nature, purpose and structure of social studies education, planning and teaching are more effective. Teacher understanding can be enhanced through the use of a model when that model is simple, when it has practical classroom application and when teachers are themselves involved in its design and construction.

Preface and Acknowledgements

While any project like this one relies largely on individual effort, successful completion is invariably dependent on the assistance and support of a large number of people. I am particularly grateful for the advice and guidance of my supervisors Peter Ramsay and Clive McGee. Their insistence on attention to detail and on the need for an account which was a narrative as well as a report, helped produce a semblance of form and structure from a collection of notes and observations.

I am grateful to my colleagues in social studies education at the University of Waikato School of Education for their willingness to listen and to readily share ideas. I am especially appreciative of the continual support furnished by my chairperson John Graham who provide all the departmental help that busy teaching schedules would allow.

This project could not have even begun without the willing assistance of six special teachers identified in this paper only as T1, T2, T3, T4, T5 and T6. Anyone who has worked in schools knows how busy teachers are and how difficult it is for them to rearrange schedules and accommodate extras into already overloaded programmes. The teachers in this project welcomed me into their classrooms, let me peruse their work plans and answered endless questions on teaching and social studies without complaint. I was impressed with their professionalism and with their knowledge and skill.

I am particularly grateful to my wife Carmel who has supported me through this project and through countless others. She helped in tangible ways with proof reading and advice but more important was the assistance she provided by just being there.

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Chapter One

Thinking About Thinking

1.

Specifying thinking and decision making objectives, planning for their achievement, lamenting their absence in practice and exhorting teachers to devote themselves to the task are together a time honoured tradition. No other objectives have been espoused so persistently or with such enthusiasm for their anticipated effects on students and society alike. Perhaps no others have been so consistently under achieved (Parker, 1991, p. 345).

Introduction

Recent years have seen a renewed emphasis on the importance of teacher development; increasingly, individual schools are being made responsible for operating appropriate teacher development programmes. In New Zealand, regulations are in place to make this mandatory. Many years of observation in New Zealand social studies classrooms led the writer to believe that teacher development was urgently needed in social studies. The most pressing need in this subject appeared to be for development which encouraged the kind of higher order thinking advocated in national social studies curricula.

Casual observation of a large number of social studies lessons over many years indicated that teachers had a poorly constructed notion of the nature of higher order thinking in social studies education. One likely reason for the absence of appropriate teacher behaviour was the degree of understanding teachers had of the place of higher order thinking in social studies. Another possible reason was the use of ineffective teaching strategies. Evidence to support these suppositions had been noted informally by the researcher, and formally in an extensive, nation wide survey of primary and secondary schools, the Report of the Social Studies Subjects Survey. (New Zealand Department of Education, 1987).

These initial suppositions were supported by some limited research in New Zealand and a number of studies in North America (Goodlad, 1984; Newmann, 1990; National Commission on Social Studies in the Schools, 1991). On the basis of observation and the research available the writer formed an initial thesis to be pursued: that higher order thinking was not being dealt with adequately in New Zealand classrooms and that appropriate teacher development programmes could improve this situation. Before this thesis could be pursued adequately several steps had to be taken. First, definitions were important. In a field described by one writer as a “conceptual swamp” (Cuban, 1984), it was necessary to ascertain exactly what it is meant by “higher order thinking.” It was also necessary to define the special place of higher order thinking in social studies. These definitions involved not only reviewing the literature but also some preliminary field work which enabled the researcher to become more familiar with the situation in social studies classrooms. An important second step in pursuing this thesis was the establishment of baseline data. If the first part of the thesis was proven to be wrong, then the second part would not be necessary. For this reason data were gathered which illustrated how one group of teachers facilitated higher order thinking in

their classrooms. If it could be shown from these observations that some aspects of teaching higher order thinking were inadequate an appropriate teacher development programme could follow.

Fostering children's thinking has always been a primary goal of social studies. As long ago as 1916 the United States Education Association identified promoting "good judgment in making decisions," as a central goal of social studies (Case and Wright, 1997 p.12). But while thinking has always been clearly identified as an essential component of social studies, evidence indicates that teachers have rarely taught thinking skills effectively. Jack Fraenkel (1991) claims that for as long as he can remember, "thinking has been a goal of social studies, yet with a few notable exceptions it has remained just that .a goal and not a classroom reality" (p. 323). Research findings support Fraenkel's claim. In the United States McKee (1988) found that teachers spent only 4% of social studies classroom time on reasoning activities. A Canadian survey of 1700 social studies teachers in elementary and secondary schools in British Columbia found that 88% of teachers supported the idea of critical thinking (Case & Wright, 1997). In spite of this, the 1989 provincial assessment involving 100,000 British Columbian students concluded that, "The relative lack of teaching strategies which support the development of critical thinking, particularly at the secondary level, suggests that students are not being supported in the development of critical thinking" (Bognar and Cassidy, 1991 in Case and Wright, 1997 p. 12).

The situation in New Zealand did not appear to be different to that described by overseas writers. The national primary school social studies curriculum asserted, "In pursuing the aims of social studies children must gain much factual knowledge and they must learn to consider critically, to evaluate many ideas and generalisations, and to discuss and understand many points of view" (New Zealand Department of Education, 1961 p. 42 my emphasis). Nonetheless, the 1987 national survey of social science subjects concluded, "Many lessons were organised in such a way that the teacher dominated them, rather than encouraging student enquiry and initiative" (New Zealand Department of Education, 1987 p.42).

Internationally researchers have suggested that higher order thinking skills have not been given the priority in classroom practice that national social studies curricula suggest they should have had (see for example Case and Wright, 1997; Cuban, 1984; Fraenkel, 1973; Goodlad, 1984; Kitchener, 1983; Newmann, 1990; Perrone, 1994). If, as the literature suggested, teachers in Australia and North America failed to emphasise higher order thinking sufficiently, it seemed likely that this was also the case in New Zealand. Research on social studies in New Zealand has been minimal, and, because New Zealand social studies has developed in unique ways, it seemed likely that while some overseas findings might apply in this country, others might be inapplicable. This study therefore endeavoured to find New Zealand explanations for what appeared to be an international problem in the area of teaching higher order thinking in social studies.

In summary, the writer speculated that failure to teach higher order thinking in social studies in New Zealand, might be due both to teachers' imperfect understanding of the nature of higher order thinking in social studies and their imperfect understanding of the nature and purpose of social studies itself. This project set out to investigate these issues and to propose appropriate teacher development programmes which addressed them.

The Nature of the Project

At the commencement of the study the researcher surmised that although higher order thinking is a declared goal of social studies, it was likely that New Zealand teachers failed to involve their students in activities which promoted such thinking. As part of the investigation the researcher needed to arrive at an appropriate definition of higher order thinking, to investigate the extent to which teachers provided programmes or teaching episodes which enhanced children's engagement in higher order thinking, and, if it could be shown that teacher behaviour was inappropriate in this regard, develop an intervention programme which would remedy this. The project therefore sought to answer the following questions:

- (a) To what extent do teachers provide learning activities which are likely to bring about higher order thinking in their students?
- (b) Are higher order thinking skills used in activities to achieve particular goals? What are these goals and how appropriate are they?
- (c) What aspects of teacher behaviour or understanding limit opportunity for students to engage in higher order thinking in primary schools social studies?
- (d) if opportunities are limited, what intervention programmes can be developed which are likely to lead teachers to adopt behaviours which will lead to improved higher order thinking in social studies classrooms?

While higher order thinking involves both teachers and students, this project focussed on teacher behaviour. It was assumed that positive changes to student behaviour would occur if teacher behaviour changed. The most appropriate way to determine the nature of teacher behaviour was through observation in classrooms, but before this could begin, a number of factors needed to be considered. It was necessary to determine what teachers understood by "higher order thinking" and to re-examine the place of higher order thinking in New Zealand social studies. It was appropriate too, to consider possible reasons for teachers failing to encourage higher order thinking and to devise an effective method of identifying and recording higher order thinking skills. Because it seemed likely that inadequate understanding of processes and terminology was a possible cause of ineffective teaching, it was also necessary to clearly define the terms to be used in this project.

The Importance of Higher Order Thinking in Social Studies

Higher order thinking skills are a critical component of effective social studies. If this project found that teachers were not providing students with opportunities to engage in higher order thinking skills, it could be argued that these teachers were failing to meet an essential requirement of the national curriculum. Social studies curricula in New Zealand, and in other parts of the world where social studies is taught, clearly indicate that higher order thinking is an essential element of social studies education. As long ago as 1961 the New Zealand primary school curriculum Social Studies in the Primary School (New Zealand Department of Education, 1961) stated for example that .

In pursuing the aims of social studies children must gain much factual knowledge and they must learn to consider critically and to evaluate many ideas and generalisations, to discuss and understand many points of view. It is through this kind of study that children will best be helped to develop the sympathies and sensitivities, habits of thought, skills of study and standards of behaviour that are necessary for intelligent, competent and responsible people in our New Zealand society (New Zealand Department of Education, 1961 p.4).

Good social studies is concerned with “ideas” or “understandings” as well as factual information. New Zealand social studies curricula point out that .“Factual knowledge is (to be) seen as the basis for helping students to develop concepts and general understandings about how people think feel and act” (New Zealand Department of Education, 1987 p.17). Social studies educators usually refer to these understandings as “generalisations.” Michaelis (1976) points out that in social studies, generalisations are “stated as main ideas, major understandings, principles, laws, rules or conclusions” (p.19). Generalisations in this sense, are statements of broad applicability that indicate the relationship between concepts. Used in this way, a concept may be regarded as an abstraction which pulls together a number of facts, organises them and tries to make sense of them by revealing patterns of similarity and difference. Concepts and generalisations are not provided by the teacher, they are constructed by the learner using appropriate thinking skills. Thinking skills are therefore a sine qua non in the construction of conceptual understanding. Conceptual understanding, for reasons which will be discussed in some detail later in this thesis, is central to teaching and learning in social studies.

Beyer (1979) sees “understandings” as an intermediate stage between concepts and generalisations. This is the sense in which the term is used in New Zealand, though many teachers would refer to such “understandings” as “main ideas” or “important ideas.” In Social Studies in the New Zealand Curriculum (Draft) (New Zealand Ministry of Education, 1994), the curriculum document being used at the time this project took place, the achievement objectives at each level can be regarded as generalisations, specific unit objectives may be considered as “important ideas” or “understandings.”

A statement that evolves from testing a specific hypothesis may be called an 'understanding' because it customarily describes a relationship between two very specific variables, and because it has specific referents in time and or ——— (understandings) often serve as building blocks for higher levels of cognitive knowledge. Generalisations evolve from understandings. If we investigate a particular war and conclude that it was caused primarily for economic reasons, and if we then investigate another war and yet another and another, reaching the same conclusion (understanding) each time, we can soon generalise about the cause of wars, 'Wars are primarily caused for economic reasons' (Beyer 1979 p. 183).

Understanding the world is one goal of social studies, educating students for effective citizenship is another. Social studies is designed to promote civic competence and while a knowledge of our country's past and the ways in which we are governed is an important part of such competence, informed citizenship requires more. Social studies is concerned with educating citizens to live in representative democracies; such states require citizens who think. Democratic citizenship enfranchises members of the social, cultural and political community. This franchise embodies rights, duties, responsibilities and entitlements. A society which assumes responsible citizen involvement in decision making cannot survive if its members cannot or will not participate in such decision making. To participate effectively in today's society citizens need a range of skills, a defensible system of values, habits of reflection and critical thinking and practical experience of social and political action. "In a world that demands independent and cooperative problem solving to address complex social, economic, ethical, and personal concerns, the social studies are as basic for survival as reading, writing and computing." (National Council for the Social Studies 1989, p.21).

Critics of social studies like Chester Finn (Finn, 1992, in Barth 1992 p.56) argue that citizenship education is not a process of decision making but rather a job of forging historically knowledgeable citizens. Finn and others argue that students should be taught not contemporary issues and persistent global problems but historical content within the context of Western civilisation. They see a disciplined study of history and geography as the primary source of a school's formal citizenship programme. Most social studies educators on the other hand, argue that citizenship education involves an integrated programme where content is concerned with persistent social issues. Such an education requires the practice of critical thinking, problem solving and decision making. Adolf Hitler is alleged to have said "It is enough if the people can count to a hundred and read simple directions - - - every educated person is a future enemy" (Hitler,1939, cited in Hartoonian 1989, p.93). The qualities of citizenship desired by Hitler are not those needed in a modern democracy. Social studies educators would instead follow the advice of the American president who claimed "the course of civilisation is a race between catastrophe and education. In a democracy like ours, we must be sure education wins the race" (John F. Kennedy 1958, cited in Centre for Civic Education 1994, p.1).

The State of Thinking in Social Studies Classrooms

Although the critical role of thinking skills was clearly asserted in New Zealand national social studies curricula, informal evidence noted by the researcher suggested that higher order thinking skills were seldom a major component of classroom social studies. Although teachers generally listed “thinking skills” among their social studies unit objectives, experience suggested that these skills were often chosen at random and that there was seldom any clear structure or system for selecting, teaching or assessing them. There is a good deal of American research to suggest why this is so (Cuban, 1984; Fraenkel, 1973; Goodlad, 1984; Kitchener, 1983; Newmann, 1990; Perrone, 1994) but information on New Zealand social studies classrooms proved hard to come by. As Roger Openshaw (1992) points out, “Although social studies as a curriculum subject has received considerable attention from American and British researchers, the body of scholarly literature on New Zealand social studies remains small”(p. 12).

Some limited information on the state of higher order thinking in New Zealand social studies was found in the former New Zealand Department of Education’s Report on the Social Studies Subjects Survey (New Zealand Department of Education, 1987). The observations on which this paper is based were made in 1984 but many appear to be still relevant. The survey concluded that .

Many lessons were organised in such a way that the teacher dominated them, rather than encouraging student enquiry and initiative (p. 42).

Students had relatively little practice in higher level thinking skills and there also appeared to be few lessons which planned for sequential development (p. 52).

Most learning activities are involved with students taking in informationthe students’ understandings are poorly developed because the skills of processing data and of thinking are not taught (p. 44).

Thus, the researcher’s casual observations suggested, and the Report on the Social Studies Subjects Survey, seemed to confirm, that a large amount of social studies class time in New Zealand classrooms involved students in passively receiving information. In order to confirm this view the researcher conducted a preliminary investigation.

Preliminary Supporting Evidence

Eleven teachers at Caledonia Intermediate School were asked to list the title of their last social studies unit, to state the main purpose of the unit, and to-list the skills taught in that unit (Barr, 1995a p.35). The skills listed by the teachers were collated in categories devised by the researcher but modelled on groupings developed by Fraenkel (1973) and used in Faces Six, a national handbook for teachers (New Zealand Department of Education, 1984). The categories included activities concerned with the intake of information, activities concerned with organising or processing information and activities concerned with presenting information. To these were added further categories from Faces Six concerned with social development and valuing. (The place of the “Faces” curriculum handbooks is discussed in more detail later in this report). The skills

listed by the teachers are shown in Table 1:1. Some proved difficult to categorise precisely because of ambiguity in their definition. This problem was to recur later in the project and had to be resolved before effective teacher development could take place. The nature, scope and size of the exercise at Caledonia meant that the results obtained could provide only a very general picture of the state of thinking skills in one school, nonetheless, the results tended to confirm a number of the researcher's broad suppositions about teacher planning for teaching higher order thinking.

Thinking skills listed by Caledonia teachers as unit objectives in this preliminary exercise tended to be general rather than specific. "Discussion" and "comparing" were easily the most commonly listed specific skills but when pressed to define these terms, teachers were vague about their meaning. "Discussion" could mean "talking about the topic in groups," "discussing ideas with the teacher," "brainstorming ideas," or "talking about information located in resources." Furthermore, there seemed to be little relationship between the skills listed in the teachers' unit objectives and the design of the learning activities in the units of work. It also became obvious that there were no school guidelines for teachers to follow. There was no school policy for assessing thinking skills or for suggestions about how or when they should be taught.

The preliminary exercise was not part of the main project; however, it did suggest directions that the main project might take. In fact, when the main observations were completed some months later, they indicated similar trends to those identified in the preliminary exercise, namely, overly broad objectives, poor definitions of higher order thinking skills and little relationship between those skills listed as objectives and those apparent in learning activities.

Table 1:1. Preliminary Exercise : Skills Listed by Teachers as Used in Social Studies Units at Caledonia Intermediate School.

Categories and numbers of skills listed in responses to the request "itemise the skills you listed as objectives in your last social studies unit." Numbers in parentheses indicate the number of times mentioned.

Research Skills

research unspecified (11)
 reading (3)
 picture interpretation (3)
 sharing ideas (2)
 listening (2)
 interviewing (1)
 note taking (1)
 observing (1)
 writing facts (1)
 planning an itinerary (1)
 recall (1)
total 27

Social Skills

group work (4)

total 4

Presentation Skills

mapping (9)
 presentation unspecified (2)
 chart making (2)
 drama / role play (2)
 graphics (1)
 speaking (1)
 writing (1)
 graphing (1)
 art (1)
 mathematics (1)

total 21

Organising (Processing) Skills

discussion (7)
 comparing (5)
 inferring predicting (2)
 decision making (1)
 debating (1)

total 16

Possible Barriers to Teaching Higher Order Thinking

Before commencing the study proper, some possible barriers to teaching higher order thinking were considered. If teaching and learning higher order thinking skills is an essential aspect of social studies, what accounts for their apparent absence in classrooms? American researchers argue that a number of factors inhibit the promotion of thinking in classrooms. Newmann (1990) and Onosko (1990) found six major barriers to the teaching of thinking in American classrooms. These writers claim that most teachers have considerable difficulty in defining exactly what thinking skills are and how they should be incorporated into classroom programmes. In instances where thinking skills are taught, Newmann and Onosko suggest that teachers find it difficult to design tasks to assess them. Onosko argues that most American teachers are required to work with curriculum guidelines that emphasise content rather than thinking. Many teachers in the

United States also claim that class size and busy schedules prevent them from teaching thinking skills. Many also assert that their students prefer formal work which does not require them to process information. According to Onosko, because the factors listed above are interrelated, they “feed on each other to create a metabarrier to developing student thinking” (Onosko, 1990 p. 444).

While it seemed probable that many of the features identified by Newmann and Onosko (1990) were likely to limit the teaching of higher order thinking in New Zealand schools, the researcher considered that other factors might be as important. These factors were concerned with teacher understanding of the thinking process and with teacher understanding of the relationship between thinking skills and conceptual understanding in social studies. It seemed likely that these might result from weaknesses in national curriculum design and from lack of appropriate teacher development. These weaknesses may result in teacher resistance to teaching higher order skills, inadequate or faulty planning, and ineffective teaching methods. These issues are referred to below and each is dealt with in more detail in later chapters.

Teachers’ Understanding of Thinking

While social studies educators endorse the teaching of thinking, it can be argued that their understanding of the processes involved is not clear. Several studies (Kitchener, 1983; Newmann, 1990; Onosko, 1990) claim that almost all educators who endorse higher order thinking as an essential educational goal, fail to appreciate or understand the complexity of the process. Fraenkel (1973) for example, asserts that “One of the major objectives professed by most social studies educators is to help students learn to think. When pressed, however, many teachers have difficulty specifying exactly what it is that ‘thinking’ involves, or what a teacher needs to do in order to obtain it” (p.187). Case and Wright (1997) complain about “widespread confusion or, at least ‘haziness’ about what critical thinking is and what is involved in promoting it” (p.12).

Unawareness of the Centrality of Conceptual Understanding

Following a pilot study described in detail in Chapter Five, it became clear that the relationship that should occur in social studies between specific thinking skills and conceptual understanding was poorly understood by many of the teachers in the project. This suggested that thinking skills might be taught ineffectively because teachers had no focus or purpose for using these skills. Rather than contributing to a major unit goal or understanding, thinking skills appeared to be taught almost incidentally. The teachers in the project, and teachers in the preliminary exercise at Caledonia admitted to the researcher that in most cases they chose learning activities because “they worked” or because resources were available. They then wrote their thinking skill objectives to match the skills in the learning activities they had already selected.

Teacher Planning

A consequence of poor understanding is poor planning. It seemed probable that teachers who were unclear about the nature of higher order thinking and unaware of the role of higher order thinking in social studies would be unlikely to incorporate thinking skills in their unit plans or design learning activities that provided for them. It seemed possible too, that teachers were aware of the need to incorporate higher order thinking but were uncertain how to do this. American findings indicate that teachers will not teach thinking skills consistently if they lack a clear model of these skills and the ways in which they relate to social studies learning and teaching (Fraenkel, 1973). The preliminary research at Caledonia School and work on teacher development programmes in the Waikato and Bay of Plenty regions over several years led the writer to surmise that Fraenkel's conclusions about American teachers might equally apply to New Zealand teachers. It seemed reasonable to assume, that if teachers were to provide for thinking skills and conceptual understanding in their units of work, they needed to be aware of the importance of these in social studies, and they needed models on which to base the design of appropriate learning activities.

Weaknesses in the National Curriculum

At the time that this research was carried out, the national social studies curriculum provided little guidance for schools. When the project began, the status of the national curriculum was confused. The plethora of official and unofficial curriculum documents pertaining to social studies added to this confusion. The Minister of Education declared in 1993 that Social Studies in the Primary School (New Zealand Department of Education, 1961) would remain the official primary school social studies syllabus until such time as a new curriculum was developed. Although Social Studies in the Primary School covered all primary school class levels from five year old new entrants to eleven and twelve year olds in years seven and eight, it was generally regarded to have been superseded in intermediate schools by a later curriculum for years seven to ten, (the final two years of primary education and the first two years of years of secondary school), Social Studies Syllabus Guidelines (New Zealand Department of Education, 1977).

Between 1978 and 1986 Social Studies in the Primary School was supplemented by a series of documents with the title Faces. The Faces documents, issued to all primary and intermediate schools, dealt with learning activities, (Faces Four) values education, (Faces Five)~ skills in social studies, (Faces Six) and school planning, (Faces Seven). In 1991 The Ministry of Education issued a new social studies curriculum for years nine and ten, Social Studies Forms Three and Four: A Handbook for Teachers. In order to maintain the continuity they had enjoyed with secondary programmes, a group of Auckland intermediate school teachers wrote their own new curriculum for years seven and eight. What came to be known as the "Auckland Curriculum" was widely used in intermediate schools in various parts of the country. Finally, in 1993, The Ministry announced that this plethora of curriculum documents would be replaced by one new national curriculum. This document, Social Studies in the New Zealand Curriculum (Draft), was issued to schools in draft form in January 1995. A second draft, Social

Studies in the New Zealand Curriculum (Revised Draft) (New Zealand Ministry of Education, 1996) was issued to schools in 1996. The final document was completed in 1997 and issued to schools in November of that year. The initial draft curriculum was the document in general use at the time this project took place.

The confusion that teachers experienced over which documents applied to them, which were suggestions and which were national policy was exacerbated by the nature of some of the documents. This was particularly true of the Faces series which presented planning and teaching guidelines in very broad terms. Faces Six (New Zealand Department of Education, 1984), the document most concerned with higher order thinking in social studies, simply presented lists of skills with no suggestion as to how these might be applied. A common plea from many teachers was for more guidance on structure and direction in social studies. This demand was clearly evident in teachers' submissions to the Ministry of Education on the proposed new curriculum (Barr, 1994 p.12). It can be argued too, that programmes like Smythe's "Feeling For Approach" (Smythe, 1988) and Carryer's "Berkley Social Studies Programme" (Carryer, 1993) were adopted by many schools because they provided a structure and direction not apparent in the national curriculum (Faire, 1992; Smythe, 1992).

Elements of Teaching Style

There is a good deal of research which suggests that aspects of teaching style like questioning and task design have a marked effect on the extent of higher order thinking in classrooms. Overseas research indicates that higher order thinking is more likely to take place in classrooms in which there is a large amount of teacher led and student initiated discussion. Goodlad (1984) for example, argues that one reason that thinking skills are seldom evident in American classrooms is because only between four and eight percent of social studies classroom time in the United States is spent in discussion, and that less than one percent of teacher talk is intended to elicit students' responses (In Costa, 1991 p.194).

Newmann (1991) sees higher order thinking as part of what he terms "thoughtfulness." Newmann identifies a number of basic criteria which he considers essential if "thoughtfulness" is to be apparent in classrooms. These criteria include sustained examination of a few topics; lessons which display coherence and continuity; students being given an appropriate amount of time to think and being required to provide explanations for their conclusions; and teachers asking challenging questions and structuring challenging tasks. The most important factor of all, Newmann argues, is that teachers should provide models of higher order thinking for students (pp. 330 -333).

Any project designed to enhance higher thinking in social studies needed to take some account of these findings. If, as Goodlad claims, higher order thinking in the United States is limited by a lack of teacher led discussion, it seemed appropriate to determine the amount and nature of teacher led discussion in New Zealand classrooms. Aspects of teaching like “sustained examination of a few topics,” and “sequence and coherence” that contribute to Newmann’s “thoughtfulness,” were likely to affect higher order thinking in New Zealand social studies. And it seemed likely that teacher understanding of the goals and nature of social studies and the ways in which this understanding was reflected in planning, was likely to have an impact on thinking in the classroom. Then there were the predispositions the writer had before the main study commenced. It has been important to identify these to allow the reader to consider the possible impact of prior expectations on the overall conclusions to the study. The writer was aware of the possibility of “self fulfilling prophecies,” the conclusions were therefore interrogated against the predispositions.

Project Structure

For reasons discussed in detail later in this paper the writer chose to use a combination of qualitative and quantitative research methods to explore these questions. In terms of overall structure the project closely followed the pattern of action research developed by social psychologist Kurt Lewin. Lewin’s seven stages (Lewin, 1946) involve identifying a problem, clarifying the problem, reviewing relevant literature, collecting data, negotiating action, implementing the action and drawing conclusions. The project’s structure is discussed in detail in Chapter Six and illustrated in Table 6:1.

Identifying a problem, the first of Lewin’s seven stages of action research, has been described in this chapter. The four chapters which follow are concerned with the second stage of the project, clarifying the initial problem. Chapter Two considers a number of views of higher order thinking and defines the terminology used to describe it. Chapter Three considers the special relationship between thinking skills and understanding in social studies. Chapter Four describes a pilot study undertaken in order to gain a better understanding of what was happening in classrooms and to trial some research techniques. In Chapter Five evidence from the preceding chapters is combined to develop a tentative model of thinking as it applies to social studies. Chapter Six discusses in detail the research design which was developed to investigate the four questions on page three. Chapter Seven describes the findings of the study and fits Lewin’s fourth stage collecting data. Chapter Eight outlines the first major intervention and corresponds to Lewin’s fifth stage, negotiating action. Chapters Nine and Ten describe the implementation of action and are based on further field work. Chapters Eleven and Twelve draw conclusions from the overall study.

Chapter Two

Defining Thinking Skills

Social studies teachers accepted critical thinking in principle without bothering to define the term precisely or to do too much by the way of direct instruction to see this goal was achieved (Anderson, in Parker 1991 p. 345).

Introduction

This project, as discussed in Chapter One, sought to establish whether or not higher order thinking skills were a major feature of classroom social studies. If they were not, a further task was to determine why this was so. Before this could begin, a number of important issues had to be settled. The first of these was defining exactly what was meant in this project by such terms as “thinking skills,” “critical thinking,” and “higher order thinking.” This chapter and the next consider these terms and the ways they are applied in social studies.

Because experienced educators disagree over exactly what these terms mean, it would not be surprising if teachers had difficulty in incorporating these kinds of thinking into their classroom programmes. It seemed possible that misinterpretation of terminology could adversely affect teaching and learning. In a review of recent literature on thinking, Parker (1991) points out that there is no clear consensus on definitions of thinking in school programmes. Among the “contemporary clutter of terms” evident in the literature, Parker lists critical thinking, creative thinking, problem solving, decision making and divergent and convergent thinking (p. 41). Critical thinking is the term most commonly used in New Zealand, though many educators would disagree with the way the term is used here. Some overseas commentators, notably Beyer (1979, 1985), use the term “critical thinking” in a specific sense which bears little relation to the way the term is used by most New Zealand teachers. A necessary first step in this project therefore, was to clarify the terminology to be used.

Defining the Terms

Lack of agreement over terminology in the United States has led Cuban (1984) to refer to the whole process of defining thinking skills, reasoning, critical thought and problem solving as a “conceptual swamp.” In New Zealand, most teachers, and the national curriculum in use when this project was conducted, used the term “critical thinking” to describe almost any kind of higher order thinking. Thus, Social Studies in the New Zealand Curriculum (Draft) lists under the heading “critical thinking” such skills as, listing, grouping, labelling, ordering and prioritising, making connections, using resources, synthesising, hypothesising, and managing one’s own learning (p.29).

Many writers point out that the term “critical thinking” has been used inconsistently. Most would argue that it has at least three meanings; critical thinking as problem solving, critical thinking as evaluation or judgment, and critical thinking as a combination of evaluation and problem solving. Michaelis (1976) sees problem solving and critical thinking as synonymous. Beyer (1985) on the other hand, concludes his article “Critical thinking: What is it?” by stating “Critical thinking is not problem solving. It is not a cover all term for all thinking skills” (p. 276). Beyer argues that critical thinking is “the assessing of the authenticity, accuracy and / or worth, of knowledge, claims and arguments”(p. 277). Other writers like Ennis (1987), see critical thinking as a combination of problem solving and evaluation or judgment. Ennis includes both in his definition, arguing “Critical thinking is reasonable reflective thinking that is focussed on deciding what to believe or do” (p. 10).

The terminology used is important. Three American states had incorporated “critical thinking” components in their state testing programmes by 1987. In Canada, or at least in British Columbia, critical thinking and higher order thinking seem to be regarded as synonymous (Chance and Wright 1997). Social Studies in the New Zealand Curriculum (Draft) used the term “critical thinking” loosely and without any adequate definition. Perhaps for this reason, several of the teachers in this project listed “critical thinking” as a unit objective without fully understanding what the term meant. Many commentators argue that a broader term is needed, one which encompasses critical thinking, problem solving, creative thinking and decision making. Newmann’s (1991) “thoughtfulness” is probably the most appropriate term, but a term like “higher order thinking” is more generally understood. Higher order thinking is the term used in this project. Higher order thinking skills can be regarded as those skills which involve students in manipulating information and ideas in ways that transform their meaning. Higher order thinking skills require students to combine data in order to explain, synthesise, generalise and to arrive at a conclusion or generalisation. Lower order thinking skills involve students simply in receiving factual data and providing answers to questions that require only repetition of previously acquired information.

The Nature of Higher Order Thinking

Throughout the 1980s and 1990s teachers have been bombarded with programmes designed to teach children to think critically, to reason logically, to make inferences, to organise ideas, and to solve problems. A number of factors have influenced this trend. Hyde and Bizar (1989) identify two. Firstly, they argue that behavioural psychology’s influence on education is being replaced by cognitive approaches. This change in emphasis has resulted in basic skills being seen more often as cognitive operations, thinking processes that require more than just recall. Secondly, Hyde and Bizar assert that concern for cognitive development in children, derived at least in part from developmental psychology, has increased because of the burgeoning early childhood movement. There are broader political and social influences too. Bruner’s “discovery learning” for example, was one result of the Cold War demand for more effective skills in the work place (Bruner, 1974).

Lewis and Smith (1993) claim that two disciplines have contributed to understanding what can be generally called higher order thinking: philosophy and psychology. The contribution of philosophy has been evident in Western thinking from the time of Socrates. Philosophers attempt to discipline thinking and guard against tendencies to accept fallacious arguments and wrong conclusions. In schools, Lipman's (1988) Philosophy for Children programme takes this approach. Lipman argues that if issues are stated in terms that they understand, children find them intrinsically interesting. This kind of philosophical thinking is true critical thinking according to Paul, Binker and Weil (1990). To these authors "Critical thinking is disciplined self directed thinking which exemplifies perfections of thinking appropriate to a particular mode or domain of thought" (In Lewis and Smith p.132).

Definitions derived from philosophy have been developed through discourse, those derived from psychology have been developed from experimentation and research. Psychologists are concerned with the thinking process. They therefore emphasise the process of problem solving. The psychological view is illustrated in the definition of problem solving provided by the American National Council for Teachers of Mathematics.

A genuine problem is a situation in which for the individual or group concerned, one or more appropriate solutions have yet to be developed. The situation should be complex enough to offer challenge but not so complex as to be insoluble (In Lewis and Smith p. 132).

Advocates of a philosophical approach like Beyer, (1991), Lipman (1988), and Paul (1991) argue that social studies teaching is too often didactic. This leads to thinking which is egocentric and sociocentric. These writers argue that in an open society thinking should be both dialectical and dialogical. Students should be able to view problems from a point of view other than their own. Teachers can encourage this kind of thinking by identifying monological issues and by teaching using techniques like Socratic dialogue which encourage metacognition. As important as skills are attitudes. Paul (1991) argues that to teach students to think critically teachers need to encourage traits of mind which employ intellectual and moral commitment that lead to broad open minded thinking.

Both the problem solving strategies derived from psychology and the disciplined thinking strategies derived from philosophy contribute to the goal of learning to reason, but neither is sufficient on its own. To enhance higher order thinking in social studies, teachers must combine a number of aspects of thinking. They need to develop in their students a set of qualities of thinking which are applicable regardless of the task or operation. They need to provide a structure which students can apply to social studies problems. And, if thinking skills are not to become an afterthought in social studies, something that is done if and when teachers consider they have the time, there needs to be an obvious reason for teaching higher order thinking as part of social studies education.

There is general agreement that it is possible to distinguish between higher order and lower order thinking skills. Maier (1993) uses the terms “reasoning” or “productive behaviour” to describe higher order thinking as opposed to what he calls “learned” or “reproductive” behaviour. Maier argues that problems are solved by using productive behaviour. Bartlett (1958) uses the term “gap filling” to describe this problem solving process, arguing that problem solving involves filling in absent information by interpolation (filling in information that is missing), extrapolation (extending an incomplete argument), and reinterpretation (rearrangement of information to affect new interpretation). Thinking, according to Bartlett is, “the extension of evidence in accord with that evidence so as to fill in gaps in the evidence. This is done by moving through a succession of interconnected steps” (In Lewis and Smith p.132).

Some of the confusion about higher order thinking in social studies may arise from the fact that the subject is derived from a number of parent disciplines like history, geography, economics and anthropology. Each of these disciplines has a slightly different focus and each discipline has its own methods of inquiry influenced either by the natural sciences or by the arts. Many of those studying social phenomena have emulated scientists by seeking to establish truth through empirical inquiry and by formulating laws, principles and theories of behaviour. The tradition of the arts, on the other hand, has sought to understand humans in an empathetic way. Subjects like art, literature and music are more concerned with expression, communication and understanding. These aspects of society influence those who would study social phenomena by attempting to see the world empathetically through the eyes of other people, considering a tribe, group, or society for example, by trying to understand how they think about things and by recreating or participating in their ways of seeing the world. These different perspectives are reflected in the “views of social studies” outlined by Barr, Barth and Shermis (1977), namely, social studies as citizenship transmission, social studies as critical thinking, social studies as a social science, and social studies as personal development.

The Nature of Thinking in Social Studies

Writers like Fraenkel (1973; 1992), Fenton (1967; 1991) and Massialas (1992) have argued that the teaching of thinking is an essential component of social studies. Inquiry strategies incorporating terms like problem solving, critical inquiry, and reflective decision making are used frequently and almost interchangeably in social studies curricula. The processes they describe are usually understood to include an awareness of a central problem, the development of a hypothesis, bringing knowledge and values together in an attempt to form a solution or to test the hypothesis, and finally making a judgment that offers a solution to the initial problem. But while educators in social studies education endorse the teaching of thinking, their explanations of the processes involved are not clear. Kitchener (1983) claims that almost all educators who endorse higher order thinking as an essential educational goal, fail to appreciate or understand the complexity of the process.

The theorist most closely associated with the historical antecedents of critical, reflective, or higher order thinking and its importance to social studies education is John Dewey. Many sources trace today's definitions of thinking to Dewey's 1910 conceptualisation of "reflective thinking" as "active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends" (p. 9). Dewey argued that reflective thinking is a more effective way of reasoning than unfounded belief which rests on authority, or with belief dependent on emotional commitment (Dewey 1933). Correctness of belief, Dewey claimed, depended on careful collection and verification of evidence. Because they are based upon rational and careful inquiry, conclusions resulting from such a process are more likely to lead to the discovery of truth.

An educator who perhaps influenced curriculum design in New Zealand social studies more than any other during a crucial period of curriculum development in the late 1960s and early 1970s was Hilda Taba. The Taba Project represented a major attempt to clarify an approach to the development of children's thinking. The work of Taba, Durkin, Fraenkel, and MacNaughton in the late 1960's and early 1970s (see for example Taba, 1967; Taba, Durkin, Fraenkel & MacNaughton 1971), has been a major influence in establishing teaching and learning in New Zealand social studies. Taba's team, working out of San Francisco State University, sought to restructure social studies in the United States by reorganising curriculum content in terms of broad areas of knowledge and organising learning activities designed to enhance students' understanding of these. The Taba curriculum organised information into three blocks of knowledge; key concepts, organising ideas, and specific facts. In the Taba programme key concepts are words that represent highly abstract generalisations. Examples used in Taba project materials include among others, cultural change, interdependence, power, cooperation, conflict and causality. These key concepts were chosen for their capacity to organise and synthesise large amounts of information. Because of their power, such concepts can be developed in an increasingly complex and abstract manner throughout a curriculum, and they can be illustrated at various levels of abstraction, complexity and generality.

Taba claimed that key concepts cannot be taught directly. They must be illustrated over and over again through a variety of factual examples appropriate to the level of the students. Key concepts not only indicate organising ideas that can serve as a focus around which teachers can develop instructional units, they also suggest key questions which can be asked about such ideas. These key questions in turn help to identify the dimensions of the idea that students need to investigate and suggest which facts best serve as examples to illustrate and support the organising ideas. Organising ideas represent important connections that students should understand after completing a unit of study. They are the organising foci of instructional units; they are generalisations, usually less abstract than key concepts. Organising ideas should be considered hypotheses rather than certainties. They offer insights into the relationships that appear to exist in the world.

Taba also argued that conceptual understanding of ideas was more important than knowing facts. She asserted that because it is impossible to teach all the facts about anything, teachers should only teach those facts that will enhance the understanding of an important idea. Students are more likely to obtain a clear understanding of an important idea from a detailed in depth study of two or three contrasting samples than from a more inclusive, but necessarily limited study of several samples. The important thing in social studies, Taba argued, is not how many facts, but which facts we want students to think about. The Taba curriculum required students to work with these facts once they had been identified. “We want teachers to get students to do the organising, the questioning, the summarising, the analysing etc. Our guides should reflect this” (Taba, in Fraenkel, 1992, p.175).

Social studies writers have used different terms to describe variations of this process or they have emphasised some aspects of the process rather than others. Massialas and Cox (1966) and Gross and Muessig (1971) favour the term reflective thinking to describe the process which encompasses all Dewey’s stages. Bruner (1960, 1987) divides thinking into two processes by making a distinction between intuitive thought and analytic thought. The process has variously been labelled cognitive tasks, thinking processes, problem solving, human enquiry, productive thinking, creative thinking and scientific enquiry (Suchman, 1966; Taba, 1966; Covington, 1968; Allender, 1969; Kaltsounis, 1969; Herron, 1971). A number of researchers have sought to isolate specific skills within the process. Nay (1971) found Dewey’s five steps inadequate to describe the process of reflective thinking as it applied to science. He subdivided Dewey’s five categories to form fourteen. Michaelis (1976) identified thirteen separate skills in the inquiry process in social studies. Most social studies educators would probably agree that almost all of these skills should be apparent in social studies. Michaelis’s list of skills is shown in Table 2:1.

Table 2:1. Michaelis’s Thinking Skills

- | | |
|-----------------------------|--------------------|
| 1. Recalling. | 8. Inferring. |
| 2. Observing. | 9. Predicting. |
| 3. Comparing / contrasting. | 10. Hypothesising. |
| 4. Classifying. | 11. Analysing. |
| 5. Defining. | 12. Synthesising. |
| 6. Interpreting. | 13. Evaluating. |
| 7. Generalising. | |

(Michaelis, 1976 pp. 190 .217)

Many representations of the inquiry process follow a Deweyan model (see for example Carryer, 1992; National Council for the Social Studies (NCSS), 1989). NCSS divides thinking skills into four main categories, data gathering skills, intellectual skills, decision making skills and interpersonal skills. Social Studies in the New Zealand Curriculum (Draft) identifies seven categories of skills, decision making, critical thinking,

creative thinking, values exploration, communication, research and inquiry, and social and cooperative skills. Of these, research and inquiry, critical thinking, creative thinking and decision making, all relate to the Deweyan model. These skills roughly correspond to the first three categories of the NCSS skills. valuing skills are certainly concerned with thinking but may perhaps be regarded as an outcome or consequence of basic thinking skills. Social skills and communication skills are less clearly related to higher order thinking though effective thinking is dependent of course, on efficient communication of information.

It is apparent that a number of labels are used to represent complex thinking skills, the problem for teachers is to know what these labels mean. It seemed possible that the provision of a model which helped teachers to clarify their understanding of higher order thinking and thus facilitated the application of this understanding in classrooms might help in this area. This possibility is discussed in the following section.

The Need for a Generic Model

American research indicates that teachers will not teach thinking skills consistently if they lack a clear model of these skills and if they fail to understand the ways in which thinking skills relate to social studies learning and teaching (Fraenkel, 1973). It seemed likely from the preliminary observations at Caledonia Intermediate School and from informal observations in other schools, that local teachers lacked such a model. In the New Zealand context any model provided to fill this gap needed to meet the needs of teachers working with the new national social studies curriculum Social Studies in the New Zealand Curriculum (Draft) (Ministry of Education 1994). While the model was likely to draw on a number of overseas examples, these examples would need to be modified if they were to suit the specific requirements of New Zealand teachers.

Social studies educators have used a variety of approaches to teach thinking. These have included critical thinking (Ennis, 1962; Giroux, 1978); reflective thinking (Hunt and Metcalf, 1968); social scientific inquiry (Barr, Barth and Shermis, 1977) and jurisprudential reasoning (Oliver and Shaver, 1974). Although all of these approaches have much in common, they have never been synthesised into a general framework that might address the more specific concerns of teachers of social studies. Newmann (1990, 1991) and others claim that a more general view of thinking is appropriate.

Newmann's work with several hundred social studies teachers in the United States has led him to conclude that calls for specific types of thinking (critical, reflective, inductive, moral) are unlikely to generate widespread consensus. Teachers, especially in social studies, Newmann claims, are more likely to emphasise a combination of several types of thinking. For this reason he favours a broad conception of thinking, one which is adaptable to a wide variety of content and skill objectives and more likely to attract wide professional support. Newmann uses the general term "thoughtfulness" to describe the kind of thinking which he considers should be present in good social studies classrooms. Because informal evidence from teachers suggested that New Zealand teachers had

difficulty interpreting the national curriculum's statements on thinking, it seemed likely that a generic model like Newmann's might be more appropriate.

Newmann's (1991) Effective Secondary Schools Project, which involved observations and interviews in over 500 classrooms in 16 American high schools, sought to overcome some of the problems involved in defining thinking skills in social studies by designing a framework for teaching thinking which synthesised theoretical literature with the views of practitioners. A general framework for thinking like Newmann's has a number of advantages. It assumes that any person can participate in higher order thinking, it encompasses problem solving in a wide range of subjects, and it does not require acceptance of any particular theory of cognitive processing or acceptance of a particular pedagogy. According to Newmann, three essential components are necessary if students are to cope with cognitive challenge. The components are, in depth knowledge of subject matter, skills in processing information, and attitudes or dispositions of reflectiveness. These components can be readily related to the "knowledge, skills, and values" espoused in New Zealand social studies curricula.

Previously acquired domain specific knowledge is essential if students are to effectively solve problems in any subject. While most teachers would agree that factual information is an essential component of good social studies, a number of observations in the United States have suggested that many American teachers are more concerned with transmitting facts to students than encouraging in-depth understanding (Brophy, 1990, 1992; Bragaw and Hartoonian, 1988; Fenton, 1991; Fraenkel, 1992). To achieve Newmann's second essential component, skills in processing information, students need to master general thinking skills like identifying problems, stating alternative solutions, offering evidence, detecting bias and monitoring their own thinking. Finally, higher order thinking requires a set of dispositions which together constitute thoughtfulness. These include a desire that claims be supported with evidence, a tendency to be reflective, the curiosity to explore new questions and the flexibility to entertain alternative ideas. If higher order thinking is to be developed systematically, teachers need to incorporate Newmann's three essential components into a perception of thinking which they can understand and which they can relate to their classroom programmes.

Newmann argues that social studies teachers are more likely to emphasise a plurality of types of thinking. He considers that a broad conception of thinking, adaptable to a wide variety of content and skill objectives is more likely to attract wide support from teachers and meet the need to promote "thoughtfulness" in classrooms. Newmann's team sought to identify a number of observable qualities of classroom activity which are generic indicators of "thoughtfulness." According to Newmann, the basic elements of higher order thinking can be expressed quite succinctly. Essentially, lower order thinking demands only routine, mechanistic application of previously acquired knowledge, for example, repetitive exercises such as listing information previously memorised or inserting numbers into previously learned formulae. In contrast, higher order thinking challenges students to interpret, analyse, or manipulate information because a question

has to be answered or because a problem cannot be resolved through the routine application of previously learned knowledge. The essence of higher order thinking is going beyond the information that one has previously acquired in order to solve a particular problem. On the basis of this broad definition, Newmann's team developed a framework based on seventeen observational dimensions of teacher behaviour, and student behaviour.

While Newmann's idea of a general framework which combines theoretical literature and the views of practitioners appears to be both practical and appropriate, his research team found it difficult to observe and evaluate all seventeen points (Newmann 1990). The team therefore reduced the original seventeen points to six "essential criteria." A five point rating scale based on these criteria was then developed to assess classroom thoughtfulness. Newmann's six essential criteria are shown in Table 2: 2. In the Effective Secondary Schools Project each of these criteria was rated from 1 to 5 on a five point scale.

Table 2:2. Newmann's Essential Criteria for Thoughtfulness.

1. There was sustained examination of a few topics rather than a superficial coverage of many.
2. The lesson displayed substantive coherence and continuity.
3. Students were given an appropriate amount of time to think, that is, to prepare responses to questions.
4. The teacher asked challenging questions and I or structured challenging tasks.
5. The teacher was a model of thoughtfulness.
6. Students offered explanations and reasons for their conclusions.

(Newmann, 1991 pp. 330 -333).

Newmann's work provided the writer with the basis of a model for New Zealand social studies teachers. Newmann's essential criteria could be viewed in terms of teacher understanding of the nature and purpose of social studies (points one and two), and teacher effectiveness in the classroom (Points 3 to 6). The Newmann model used a plurality of types of thinking, reduced the elements of thinking to a minimum and related thinking skills to real classroom practice. However, the Newmann model was inadequate in that it did not suggest a relationship between specific thinking skills and conceptual understanding. The model was also difficult to relate directly to the New Zealand primary school curriculum. Newmann's work was based in secondary schools and in a country in which social studies is still viewed in terms of a loose amalgamation of related but individual disciplines. New Zealand social studies content is more integrated with a thematic approach which places less emphasis on factual information and allows teachers considerably more choice of topics, resources and learning activities. Moreover this study was concerned with primary schools, thus a different age group of students was involved.

Developing an Appropriate Model

Newmann's study indicated that a generic model of thinking like "thoughtfulness" was likely to be more appropriate and effective than using any one-specific model. The Newmann model also suggested that thinking skills could be considered in broad groups rather than individually. For the reasons given above and because of the differences in teaching styles in New Zealand and the United States, it seemed unlikely that Newmann's findings could be directly related to New Zealand schools. Content and methodology in American secondary school social studies is determined to a considerable extent by text books (Goodlad, 1984; Brophy, 1992), whereas New Zealand primary school social studies allows for a much greater degree of teacher choice (Barr, 1989, 1994). Newmann's categories did however, provide useful guidelines for measuring "thoughtfulness" and a basis on which to develop a model of the thinking process that applied to social studies in New Zealand.

Using Newmann's work as a starting point, the researcher developed models designed to determine the presence or absence of specific thinking skills in social studies lessons, the degree of "thoughtfulness" apparent in classrooms and the proportion of time spent by students and teachers on particular activities. To determine the presence or absence of specific thinking skills in learning activities a composite checklist drawn from Michaelis's list of thinking skills (Michaelis, 1976 pp. 190 -210) and the critical thinking skills listed in the national curriculum (New Zealand Ministry of Education, 1994 p. 29) was compiled. To determine "thoughtfulness" the researcher developed a model based on Newmann's seventeen points and "criteria for determining authentic instruction" (Newmann and Wehlage 1991). Allocation of teacher time was loosely based on techniques used in the Survey of Social Studies Subjects (New Zealand Department of Education, 1987).

The model based on Michaelis's specific skills was abandoned after the pilot study described in Chapter Five and a new model was developed. Newmann's criteria became the basis for describing a good deal of what was observed in the data gathering phase of the project described in Chapter Seven. After considerable modification, (detailed in Chapter Five), a number of Newmann's criteria were incorporated into the new model of thinking and conceptual understanding which became the basis of this project.

In this chapter the writer has outlined a number of views of higher order thinking and suggested that one reason for its ineffective application in New Zealand social studies might be confusion over widely used but poorly understood terminology. This chapter has also considered some aspects of social studies curriculum development in New Zealand, in particular the ways in which that the work of Dewey and Taba has influenced how thinking skills are viewed in social studies in this country. Finally the writer considered Newmann's proposition that a broad conception of thinking which combines theoretical literature and the views of practitioners was likely to appeal to teachers and thus likely to lead to successful teacher development programmes.

The writer argued that while Newmann's model was not directly applicable in New Zealand, some of the ideas used in Newmann's work could help form the basis of a New Zealand model. Any model that was developed needed to consider the special place of higher order thinking in New Zealand social studies. This is discussed in the chapter which follows

Chapter Three

Thinking Skills and Conceptual Understanding in Social Studies

Social studies programmes based on this curriculum statement will enable students to identify and develop understandings of concepts related to people and society, and to make progressively complex generalisations based on these understandings (New Zealand Ministry of Education, 1994).

Introduction

In Chapter One the writer pointed out that conceptual understanding is central to teaching and learning in social studies. It was suggested that one reason that teachers might fail to teach higher order thinking effectively might be because they failed to understand this centrality. It seemed probable that teachers lacking this understanding would be unlikely to plan units and learning activities in which higher order thinking was used to achieve conceptual understanding. If this was the case, higher order thinking was less likely to be taught systematically with clear appropriate goals. It seemed possible that some teacher misunderstanding of the relationship between higher order thinking skills and conceptual understanding was due to the way in which thinking skills and their place in social studies were explained in the national curriculum.

In social studies, thinking skills are a means of helping students attain conceptual understanding of curriculum content. Research and preliminary observation in this project indicated that higher order thinking was not a feature of most social studies lessons. A likely reason for this was the confusion about the nature of thinking skills discussed in the last chapter. Another reason appeared to be failure on the part of teachers to recognise the importance of conceptual understanding in social studies and the contribution of thinking skills to that understanding. Thinking skills in social studies are a means to an end and teachers who fail to understand that end cannot teach thinking skills with any clear purpose. Fraenkel (1973) and others claim that teachers often fail to teach thinking skills adequately because they lack a model of thinking. The researcher considered that comprehending the place of conceptual understanding and recognising the contribution of thinking skills to that understanding was an essential part of such a model.

The Nature of Conceptual Understanding

Many educators argue that to teach content more effectively teachers need to do more than simply impart facts. Facts are important because they contribute to understanding. To develop understanding students need to take pieces of factual information provided by teachers or texts and structure these to show relationships among them. Students can then use these relationships to construct their own concepts. The principal task for teachers is not simply delivering information, but helping students develop conceptual understanding. Teachers who do this will teach for better comprehension of core concepts in subject matter, and they will equip students with the

kinds of patterns of thinking that will help them to manage their thinking and their learning. Such teachers are concerned with “knowledge” rather than “information,” the difference is explained by Bragaw and Hartoonian (1988) as follows:

There is a significant difference between information and knowledge. Information is one dimensional : linear or horizontal, fragmented and quite useless in and of itself. On the other hand, students gain knowledge when they take information and structure it to show relationships among those pieces of information and use it to form their own concept. Once formed, the student’s concept can be refined and used again and again, each time with greater clarity and analytical power. It is the structuring and use of information that becomes knowledge. Information provided by a teacher or a textbook is generally and wrongly, perceived as knowledge. Such collections of information, structured according to frameworks designed by the text or constructed by adults, remain information. Knowledge is something created through a process of personal involvement that allows for complex relationships between the learners (including the teacher), and the text and context of the classroom (p. 11).

The goals of social studies are expressed in national curricula as concepts, ideas and generalisations. These are constructed by students using higher order thinking skills to process factual data. Because conceptual understanding cannot be attained without using higher order thinking skills, understanding the relationship between factual data, higher order thinking skills and conceptual understanding is fundamental to teaching social studies. Perkins (in Brandt 1990) identifies two essential components of thinking in the classroom, arguing that, “there are two fundamental challenges [to teaching thinking]. One is conceptual understanding of the subject matter, the other is thinking skills, or cognitive skills” (p. 5). Perkins’ prerequisites for teaching thinking skills almost exactly parallel what most writers would see as the essential requirements of good social studies. Massialas and Cox (1966) for example, claim that .

A social studies programme is acceptable to the extent that it meets the following criteria: (1) It emphasises concepts and generalisations which explain human interactions and illuminate problems of mankind (sic). (2) It incorporates within itself models of search, verification, and invention which the learner employs in his (sic) quest to find dependable knowledge (p.54).

Conceptual Understanding in Social Studies

The national curriculum in use at the time this project took place indicated that the principal aims of social studies are “to enable students to develop understandings of people, their actions and their activities” and “to enable students to contribute to a changing society as confident, informed and responsible participants” (New Zealand Ministry of Education, 1994 p. 9). Implicit in these broad aims is the need for thinking, valuing and decision making. The goals of the 1994 curriculum are not new, they reiterate aims that have been part of social studies education in New Zealand for at least thirty years (New Zealand Department of Education, 1961; 1977).

The curriculum goals contain two main elements, understanding the world and educating students to take their place in that world. These elements are common to most social studies curricula. Australian curricula have similar goals (see for example Ministry of Education of Victoria, 1988 p. 23 and Education Department of South Australia, 1987 p. 4). Equivalent goals are expressed in the American National Commission on the Social Studies Charting a Course: Social Studies for the 21st Century, (1989) and Expectations of Excellence : Curriculum Standards for the Social Studies, (NCSS 1994). The same goals are evident in the curriculum documents of most U.S. states and Canadian provinces. (See for example Alberta Ministry of Education, 1990 p. 2).

The first stated goal of the New Zealand national social studies curriculum in use at the time this project took place was “to enable students to develop understandings of people, their actions and their activities” (New Zealand Ministry of Education, 1994, p.9). The New Zealand national curriculum and other national social studies curricula use the term “understanding” consciously because learning in social studies involves more than simply memorising factual information. Social studies goals are expressed as ideas or understandings because social studies is concerned with “knowledge” in the sense that Bragaw and Hartoonian (1988) use the term. This knowledge is expressed as concepts, understandings and generalisations. In social studies terms, a concept may be regarded as an abstraction which pulls together a number of facts. Concepts can be used to group certain facts together, organise them and try to make sense of them by revealing patterns of similarity and difference. Concepts are constructed by the learner not provided by the teacher. Higher order thinking skills are important in social studies because they are the means by which this construction occurs. “The teacher’s task is to guide students so that they group related concepts into clusters and use them to locate and organise data, pose questions and formulate generalisations” (Michaelis, 1976, p.19).

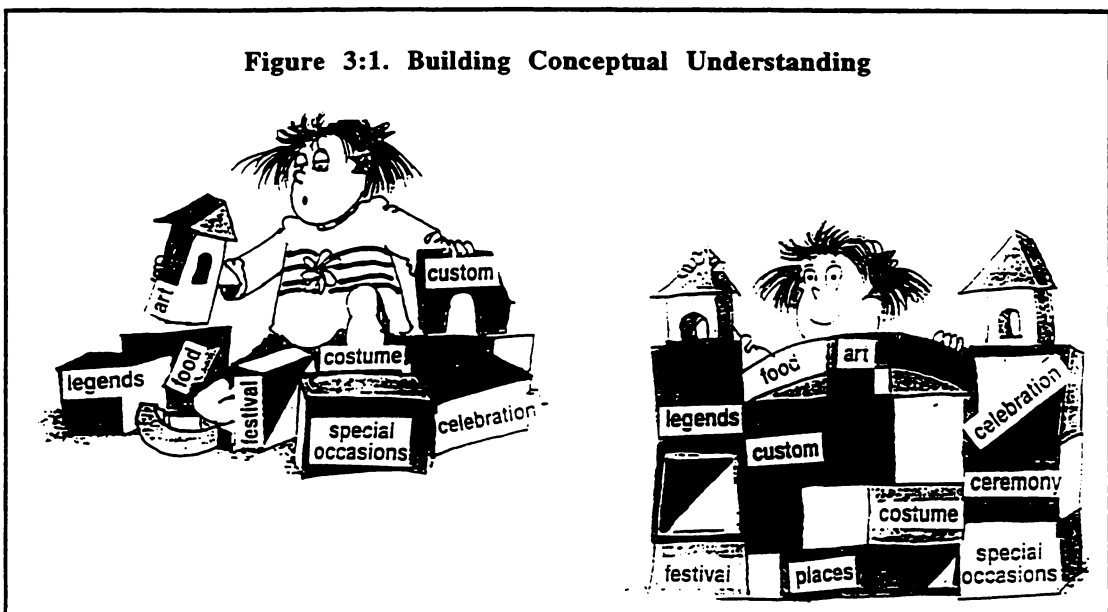
In an effective social studies programme a number of examples are presented by the teacher until the student develops a prototype of the concept. Thereafter the prototype may be defined and redefined. The processes involved in developing concepts, attaining concepts, and generalising, are complex and comprehensive and involve a number of specific thinking skills. Developing a concept for example, involves according to Fraenkel (1973), observing, grouping, classifying, explaining, labelling, comparing, and contrasting. Concept attainment involves differentiating, classifying, comparing, contrasting and generalising. The process of generalisation involves almost all of the activities in Fraenkel’s list. Because concepts and “knowledge” or “understanding” are essential aspects of effective social studies, the thinking skills which contribute to their construction are equally essential.

Concepts, generalisations and understandings developed for one situation can be reapplied in other situations to develop major generalisations. Students working on the Social Organisation and Processes strand in Social Studies in the New Zealand Curriculum (Draft) (New Zealand Ministry of Education, 1994) might develop understandings which relate to the ways in which a Pacific Island community organises

itself to deal with a cyclone. These same understandings can be reapplied to demonstrate how a New Zealand community deals with an earthquake or an Asian community with a flood. Learning about cyclones, floods and earthquakes is incidental to the main objective, the generalisations concerned with the ways in which people reshape their social organisation to deal with emergencies. Concepts and generalisations then, help students organise and apply information. As the Ministry of Education of Victoria (1988) states in the introduction to its curriculum “Concepts and generalisations organise and make sense of large bodies of facts and convey what people see as significant about their society” (p.11).

The process of conceptual understanding and the way that higher order thinking relates to this understanding can be explained by using the analogy of a child building a castle from building blocks Figure 3:1. When she encounters the blocks the child has only a vague idea of the ways in which they might be fitted together. By experimenting and relating the blocks to each other in various ways she is able to piece them together to build a castle. In social studies students take individual pieces of information and examine the ways these relate to each other. Like the building blocks, these pieces of information may be fitted together in different ways. Students build conceptual understanding in the same way that the child builds the castle. As the child might use all or some of the blocks, students might use all or some of the factual information to build their conceptual idea. The child fits the blocks together by observing, comparing, analysing and synthesising their shape texture and colour. Students build conceptual understanding by using higher order thinking skills to compare, analyse and synthesise factual data. The illustration in Figure 3:1 is derived from a transparency used to explain the nature of conceptual understanding in the intervention described in Chapter Eight.

Figure 3:1. Building Conceptual Understanding



If social studies programmes in New Zealand schools are to achieve the two stated goals of the national curriculum, they must incorporate a number of fundamental elements. The first and most obvious of these is the element of knowledge. Social studies educators like Meyer (1990) assert that students need a broad liberal education which relates to the problems society faces. This education should provide students with a wide perspective on world affairs and the ability to see their nation as part of the world. Students need to understand how political, economic, governmental, legal, family, and religious institutions work. This learning needs to include an understanding of the basic ideas that characterise democracy and how these ideas have come about. Because New Zealand is a bicultural nation and because our society is rapidly becoming multicultural, citizens need also, to understand and appreciate the nature of cultural differences.

A second element, one described in detail by writers like Engle and Ochoa (1988) is commitment to democracy. Democracy operates only if citizens are committed to it. In a democratic state citizens need more than a knowledge of the mechanics of government; they need commitment to democratic ideals. A third element, and one central to this paper, is the development of basic thinking skills. Skills of retrieving and remembering information are of course important, but in education for democracy, we need to consider too those skills which are concerned with ways of using knowledge; skills concerned with analysing, synthesising and evaluating information; skills which lead to responsible decision making.

The main focus of social studies has variously been on thinking, knowledge or citizenship, (see for example Kaltsounis, 1987, and Barr, Barth and Shermis, 1977), but differences in approach have always been a matter of emphasis rather than any substantial difference in curriculum intent. The two essential components of social studies remain the same and each complements the other. The major purpose of social studies is to produce thinking, responsible citizens and the development of knowledge and thinking skills are a means to this end. "By emphasising the interrelation of knowledge and thinking, you will be helping students become more effective citizens" (Hyde and Bizar 1989, p.165).

Conceptual Understanding and Curriculum Structure

The two goals of the national social studies curriculum, understanding the world and education for effective citizenship, are complementary and both have thinking skills as an essential element. The general aims of social studies listed in the opening section of Social Studies in the New Zealand Curriculum (Draft) emphasise understanding (p. 9). Curriculum content is organised into five strands, social organisation and processes, culture and heritage, place and environment, time continuity and change and resources and economic activities. The achievement aims for each of these strands are designed to promote understanding of a particular area of content. Each strand aim states that students will "gain and apply knowledge, ideas and skills in order to develop understanding (p.34, p.52. p.70, p.88. p.106). The aims for the Social Organisation strand for example state :

In their study of Social Organisation and processes, students will gain and apply knowledge to understand :

1. how and why people organise themselves to meet their needs;
2. the social processes that are evident when people interact with each other as they exercise their rights, roles, and responsibilities (p.34 my emphasis).

The achievement aims for each strand are broken down into more specific achievement objectives at each level of achievement. These objectives also emphasise understanding. The level four objectives for Social Organisation and Processes for example, state:

Using a range of skills, students will demonstrate their understandings of:

- 1 ways people reshape their social organisations in response to challenge or crisis;
- 2 the changing interactions of women, men and children when rights, roles and responsibilities are affected by challenge or crisis (p. 42 my emphasis).

The whole structure of the national curriculum (Table 3.1) emphasises the place of conceptual understanding at each level of New Zealand social studies. The understanding a student reaches about an important idea in a specific unit of work can be related to the achievement objective at a particular level of achievement. This objective relates in turn to the more general understanding which is the aim of a particular strand. The strand aims can be related to the broad generalisations which are the general aims of the curriculum.

Table. 3:1. Understanding as an Objective in the National Curriculum

General Aims of Social Studies

To enable students to develop understandings of people, their actions and their activities.

Achievement Aims for Each Strand

In their study of (strand) students will gain and apply knowledge, ideas and skills to understand

Achievement Objectives at Each Level

Using a range of skills students will demonstrate their understandings of ..

(N.Z. Ministry Of Education 1994, pp. 9, 34, 35. My emphases)

Specific Thinking Skills and the National Curriculum

The aims and objectives of the national curriculum indicate that social studies lessons should lead students towards conceptual understanding of content rather than simply learning facts. The verb stems in the statements which follow the aims and objectives, verbs like “develop,” “examine,” “explore,” and “clarify,” indicate that teachers should require students to use specific thinking skills to meet these aims. The subsidiary statement, “develop general and specific skills relevant to social studies” (p. 9), further indicates to teachers that the skill component of social studies, which includes higher order thinking skills, is an essential aspect of the national curriculum.

Eight essential curriculum skills were identified in the earlier curriculum document, The National Curriculum Framework. (New Zealand Ministry of Education, 1993). This document makes it clear that all eight skills, communication skills, numeracy skills, information skills, problem solving skills, self management skills, social skills, work and study skills, and physical skills, should be incorporated into all new curricula. Thinking skills are evident in the Framework's eight essential skills in the areas of "problem solving" and "decision making."

But while Social Studies in the New Zealand Curriculum (Draft) indicates that skills should be taught and that they should be taught in context, the document provides little direction on how skills should be taught and assessed. Specific thinking skills are listed in the curriculum between pages 26 and 33. The skills section of the curriculum identifies seven essential social studies skills and matches these on a grid with the National Curriculum Framework's eight essential skills. The seven social studies skills are decision making, critical thinking, creative thinking, values exploration, communication, research and inquiry, and social and cooperative skills. Although all seven sets of skills may be considered to deal with thinking, the sets which focus more specifically on those skills which match Dewey's inquiry model are critical thinking and creative thinking, (though many commentators would disagree with the way in which the former term has been applied).

Although Social Studies in the New Zealand Curriculum (Draft) makes it clear that thinking skills are essential in social studies, the document fails to provide a model which will allow teachers to apply these skills effectively. Questions which arise include: How do teachers differentiate between decision making skills and critical thinking skills? Or between creative thinking skills and problem solving skills? The examples of "critical thinking skills" listed in the national curriculum include listing, grouping, labelling, distinguishing between fact and opinion, recognising bias and contradictions, ordering and prioritising, making connections, interpreting data, using resources, synthesising, hypothesising, managing ones own learning, and evaluating one's own view point (p. 29). Some of these skills could be regarded as research skills. Others, like evaluating one's view point, could be regarded as valuing skills. None conform to Beyer's (1985, 1993) definition of critical thinking.

The lists of skills in Social Studies in the New Zealand Curriculum (Draft) do not seem to follow a Deweyan model which would emphasise a process of inquiry based on a problem which had to be defined, data which had to be processed and a solution which had to be applied. Nor do they include many of the thinking skills outlined by Michaelis (1976) or other important inquiry skills like classifying, defining, generalising, inferring, hypothesising, predicting, analysing, synthesising and evaluating. And, in spite of the emphasis on "understanding" as a curriculum goal, the national curriculum in use at the time of this project failed to indicate the link between specific thinking skills and conceptual understanding. In this sense Social Studies in the New Zealand Curriculum (Draft) could be said to ignore the "Taba Approach" which has been a

tradition in New Zealand social studies since at least the 1970s. If conceptual understanding is as important as the general aims and structure of the curriculum suggest, the thinking skills outlined in the curriculum should demonstrate a process of leading students towards an understanding of important ideas or understandings. Instead they encourage teachers to list objectives that are either broad general categories of skills like “critical thinking” or to list large numbers of specific thinking skills like grouping, recalling, designing, comparing, predicting, identifying, evaluating and applying, with little or no attempt to order or structure these.

One possible reason for the change in the character of the draft is that the location of the writing team had shifted. Social Studies in the New Zealand Curriculum (Draft) was written by a team of teachers and teacher educators under contract to the Ministry of Education. Prior to major curriculum reform in 1993 new curricula were written by the Curriculum Development Division of the Department of Education. One commentator (Openshaw 1995) claims that this unit was “non responsive and averse to change.” The same writer points out that although the contract system should have resulted in a more liberal approach, curriculum change still came from the top. The new writers were however more politicised and tended to take a “left liberal” stance on issues like biculturalism and feminism.

Perhaps as important was the fact that the writing team were primarily chosen for their classroom expertise rather than their knowledge of curriculum design and social studies theory. Perceived inadequacies in both draft curricula led the Ministry of Education to commission a theoretical position paper before the final curriculum was written. (see Barr, Graham, Hunter, Keown and McGee, 1997).

For whatever reason, skills listed under the heading “Critical Thinking Skills” in Social Studies in the New Zealand Curriculum (Draft) are listed in no particular sequence or hierarchy. Like its predecessor Faces Six (Department of Education 1984), Social Studies in the New Zealand Curriculum (Draft) simply provides names of specific skills in very broad categories. The document suggests that some skills should be emphasised more than others at particular levels of achievement, but otherwise there is no guidance for teachers in applying specific skills. Some educators might also argue over the inclusion of some of the skills listed under the heading “critical thinking.” Beyer’s (1985) definition of critical thinking would exclude many, and one could ask if “hypothesising, predicting and inferring” are not possibly variations on one basic skill. Teachers might also ask if “questioning and recall” are truly critical thinking skills, or if they should more correctly be listed as research skills.

Providing a Model

It became apparent early in this project that a way to help teachers facilitate the use of higher order thinking skills to achieve conceptual understanding in their classrooms, might be to organise the skills outlined in the national curriculum into sets or groups of similar skills. It is obviously impractical for teachers to apply all the skills in

the national curriculum in one unit, even though a typical unit of work in social studies might span several lessons. But if skills were grouped, teachers could choose particular skills from each group list, thus ensuring that an appropriate range of skills was covered. A model which grouped skills would also allow teachers to apply skills more effectively by providing a structure which illustrated the process of thinking in social studies. It would also provide a check list teachers could use to indicate which skills had been taught or utilised in lessons.

The writer considered it possible that aspects of the structure and content of the national curriculum might affect ways in which thinking skills and conceptual understanding are taught in New Zealand classrooms. Teacher interpretation (or misinterpretation) of the curriculum, could determine the degree to which higher order thinking was present in classrooms and the degree to which thinking skills contributed positively to conceptual understanding. If observation confirmed the researcher's initial supposition that higher order thinking was not evident in many classrooms, it seemed likely that this might be because the curriculum failed to provide a practical model for teaching thinking when research indicated that such a model was an essential prerequisite. If the curriculum did not provide a model it seemed appropriate that this project should at least experiment with one. Any model developed as part of the project needed to have practical application in schools and, if it was to be readily accepted, it needed to be developed in conjunction with practising teachers.

The researcher initially devised a composite checklist of thinking skills drawn from Michaelis's list of skills (Table 2:1) and the critical thinking skills listed in the national curriculum (New Zealand Ministry of Education, 1994 p. 29). This list, shown in Table 3:2, was used to identify specific thinking skills in the pilot lessons. Starred items are those which appear in both documents.

Table 3:2. Skills Checklist: Pilot Observations

1. Recalling*	7. Generalising*
2. Observing	8. Inferring*
3. Comparing/contrasting*	9. Predicting*
4. Classifying*	10. Hypothesising*
5. Defining	11. Analysing
6. Interpreting	12. Synthesising*

Criteria used to identify Newmann's "thoughtfulness" were developed from a number of sources. The most important of these were Newmann's (1991) "seventeen points" and Newmann and Wehlage's (1992) "standards for rating authentic instruction" a derivative of the original seventeen points. The composite model used in the pilot is shown in Table 3:3. It was designed to evaluate both teacher planning, and teacher behaviour. While Newmann's framework is both practical and relevant, it did not entirely suit the needs of this research in its original form. The researcher surmised for example,

that the paucity of opportunities for higher order thinking in New Zealand primary school social studies might be largely due to faulty planning and unit structure. This is much less the case in the American high schools studied by Newmann's team where lessons were based heavily on set texts and where teacher planning of unique units of study was less evident. Where Newmann's work focussed on individual lessons, New Zealand primary school social studies is almost always taught in units of work involving a series of sequential lessons. Observation of individual social studies lessons was thus unlikely to give an accurate indication of the state of social studies in a particular classroom, because some categories of thinking skills might be concentrated in particular parts of the unit. Finally, while Newmann used social studies as a vehicle to identify those teacher characteristics which encourage "thoughtfulness" in classrooms, this project was somewhat broader in its principal thesis. Table 3:3 is based on Newmann's 17 points (labelled N) and Newmann and Wehlage's Standards for Rating Authentic Instruction (labelled RAI). Numbers in brackets refer to numbers in the original versions, for example (N 4, 5) indicates that the criterion is based on numbers 4 and 5 of Newmann's 17 points (Newmann, 1991; Newmann and Wehlage 1992).

Any model which was to help teachers, needed to be based on what was happening in classrooms. This led the writer to the next step in the second stage of Lewin's model. Clarifying the problem had so far involved the writer in defining the terminology to be used in the project, considering the need for a conception of thinking which combined theory with the views of practising teachers, and considering the special place of higher order thinking in New Zealand social studies and the ways that the national curriculum addressed this. To gain a better understanding of what was happening in social studies classrooms, and in order to trial some proposed research techniques, it was necessary to move from studying what the literature said about thinking and social studies and begin observing what actually occurred in schools. This observation is described in Chapter Four.

Table 3:3. Criteria for Identifying “Thoughtfulness” in the Pilot**Unit**

1. The unit plan is based on central ideas (N 1)’ (RAI 1).
2. A few ideas are covered in depth (N1), (RAI 3).
3. Information is linked to provide sequence, coherence, continuity (N2), (RAI 2).

Learning Activities

1. Provide opportunity for information gathering, processing, presenting. (RAI 4).
2. Based on problem solving. Require students to work with information (N7).
3. Information is evaluated (N8), (RAI 6).
4. Students have opportunity to discuss and debate.

Teacher Behaviour

- 1 Teacher asks challenging questions (N4).
2. Students are given time to think (N3).
- 3 .Students responses are challenged. Students are pressed to justify and clarify responses (N 5, 6).
4. Teacher is a model of thoughtfulness (N6).

Student Behaviour

1. Offers explanations and reasons (N1 1).
2. Generates original ideas and explanations (12).
3. Questions and criticises information (N13).
4. Contributions are germane and articulate (N14).

N = from Newmann’s 17 Points. RAI = From Standards for Rating Authentic Instruction

Chapter Four Establishing Parameters

The action researcher is interested in the improvement of the educational practices in which he (sic) is engaging - how to do his job better. His investigations are conducted into those activities which he (sic) wishes to handle more capably (Burns 1991 p. 259).

Introduction

Identifying a problem, the first of Lewin's seven stages of action research, was described in Chapter One. Subsequent chapters have described how the initial problem was clarified by defining the terminology used (Chapter Two), and by considering the special relationship between thinking skills and understanding in social studies (Chapter Three). Some further clarification was needed before the next stages of the project could begin. This part of the study meets this requirement in two areas. First it provides an assessment of the tentative model in the field. Second, it identifies procedures for determining higher order thinking skills and those aspects of teaching likely to enhance them. In some respects this section of the study provides a step between stage three of Lewin's approach, reviewing the literature and stage four, collecting data. This part of the study constituted a preliminary assessment of a model in the field before further development and investigation.

The preliminary exercise undertaken at Caledonia Intermediate School and described in Chapter One tended to confirm the researcher's original suppositions. Thinking skills listed by teachers at Caledonia were general rather than specific; teachers were vague about what terms meant; there was little relationship between skills listed in the unit objectives and the design of the learning activities in the units; and there was no school policy for assessing thinking skills or suggesting how or when they should be taught. The pilot study described in this chapter was carried out in order to determine whether the characteristics observed at Caledonia were apparent in other schools. It provided the researcher with an opportunity to determine whether specific thinking skills could be readily identified, observed and recorded by one observer; and it tentatively identified classroom procedures which fostered higher order thinking.

The Pilot Schools and Classes

The exercise carried out at Caledonia School at the beginning of the investigation could not be categorised as a pilot study. It was simply a preliminary exercise which helped the writer to determine whether or not the extent of higher order thinking in social studies was a topic worth investigating and whether a teacher development programme might be needed. The pilot which followed was conducted in two intermediate schools, Nightingale and Brightmeadows. Two observations were conducted on March 7th and 8th 1995 at Brightmeadows. On March 12th a further lesson was observed at Nightingale.

The Procedures

The researcher hoped to identify and record three aspects of social studies learning and teaching in the pilot. The first of these was the presence or absence of the specific thinking skills listed in Social Studies in the New Zealand Curriculum (Draft) (New Zealand Ministry of Education, 1994), in earlier curriculum documents like Faces Six, (New Zealand Department of Education, 1984), or by writers like Michaelis (1976). The second aspect was the kind of positive learning environment identified by Newmann and described in Chapter Two of this paper. Newmann's "thoughtfulness" is dependent on effective planning and on structural factors like focus, sequence, and continuity. It is also dependent on facets of teacher behaviour like questioning and task design. Finally, the researcher sought to determine the amount of time devoted to various activities in each lesson. Goodlad (1984) and Newmann (1991) suggest that higher order thinking skills are more evident when there is a high degree of teacher led whole class discussion and when learning activities promote debate and discussion.

The structure of the lessons observed was analysed in order to ascertain the extent to which class discussion was a significant feature of lessons and to quantify the proportion of time spent on different activities. The researcher also sought to identify specific skills using the skills list shown in Table 3:2. When identifying specific skills the researcher used a printed copy of the checklist on which a vertical columns had been ruled. When a skill was apparent in a learning activity a tick was placed in the appropriate column. The teachers participating in the pilot study provided the researcher with copies of their unit plans. Elements of these were matched against criteria listed in Table 3:3 under the headings "unit" and "learning activities." Identification of the criteria listed as "teacher behaviour" and "student behaviour" was based on the researcher's overall impressions of the lessons and field notes taken during the observations.

The Pilot Lessons

The lessons observed at Brightmeadows were part of a series on fish. In an earlier lesson the students had written their own questions about fish and the lessons observed were part of the process of answering these questions. To this extent the lessons were student centred and based on student needs. The first lesson was dominated by teacher led discussion. Most of this discussion was concerned with recapitulation of earlier research and revision of information already discovered.

In the second lesson the class was divided into four groups. Each group was asked to investigate the function of a fish's swim bladder. This promised to be an activity which involved student interaction, discussion, debate and exploration but this was not the case. Firstly, with the exception of one group, there was no interaction among students in the groups. Though in most cases students sat together, they worked individually on set tasks. The first of the four groups was sent to the school library to locate information on C.D.

Roms. This group reported that the research process involved a student more familiar with computers than the others locating the information while the others watched. This student then printed out copies of the collected data for each group member. The second group was provided with books and photocopied textual material on fish. They selected their own books and text, took them back to their desks and worked individually. The writer noted that two of the texts gave different explanations on the function of a fish's swim bladder. This difference was not noted by students or the teacher.

The third group was asked to observe a video tape about fish. This activity provided a good deal of opportunity for discussion and debate but little eventuated. Students generally observed as individuals, made notes and returned to their desks to write these up. The final activity did promote a good deal of excitement and discussion. Students in this group were provided with a basin of water, a plastic soft drink bottle, plasticene and some plastic tubing. They were required to demonstrate how a swim bladder functioned by causing the bottle to rise, fall and stay motionless in the water. Every group member was involved in the activity and discussion was active and relevant.

The teacher at Nightingale was beginning a new unit. The lesson, which followed a talk by a guest speaker, was concerned with defining the term "refugee." Discussion was initiated with some photographs of refugees from different countries in a variety of settings. After some discussion the students were asked to write their own definition of the term "refugee." They next compared their definition with that of their immediate neighbour before assembling in groups to discuss their ideas and write a group definition. Each group then shared their definition with the rest of the class. The teacher noted their ideas and led a discussion designed to arrive at a class definition with which all could agree. Finally the class definition was compared with "official" definitions used by national and international agencies.

Identifying Specific Skills

A number of specific skills were apparent in varying degrees in all the activities observed. At Brightmeadows, questioning, analysing, recalling, observing, defining, hypothesising, and synthesising were all evident to some extent. Most occurred in teacher led discussion. Though the students worked in groups in lesson two, group activities were concerned largely with collecting information rather than processing it. Observation and recording were evident in individual and group activities but apart from the group working on the bottle experiment, most students were essentially engaged in passive activities, gathering information and recording it. In the Nightingale lesson, teacher led discussion provided good opportunities for students to exercise thinking skills. The lesson was largely concerned with defining the term "refugee." Skills evident included comparing, classifying, defining, inferring and synthesising. In both schools higher order thinking skills were confined in the main to teacher led discussion confirming the findings of Onosko (1992).

While some information processing skills were evident in the learning activities of the lessons observed at Brightmeadows, most activities were concerned with collecting, labelling and examining information. Observation of lessons in the pilot study emphasised the need for the researcher to consider whole units rather than individual lessons. Specific skills which were not apparent in the first lesson at Brightmeadows were evident in the second and still others were scheduled to take place later in the study. The pilot observations at both schools indicated that thinking skills were difficult to identify with any accuracy using the system devised thus far. This was partly because the skills checklist included too many skills. It also became apparent that it was difficult to make precise distinctions between skills on the checklist. Differences between synthesising and generalising, or between hypothesising and predicting for example, are at best imprecise. Assessing the presence of higher order thinking in more general terms using Newmann's categories proved easier to do but it proved difficult to draw any clear conclusions from such broad and general criteria.

The skills checklist (Table 3:2) proved less than adequate for identifying higher order thinking skills in the pilot lessons. It was evident from the pilot observations that clearer definitions of individual skills and specific examples of each skill were necessary if these were to be identified with any accuracy. The observations also indicated that any list of specific skills needed to be either condensed and simplified or organised in a way that made identification of skills more logical. Fraenkel (1973) argues that teachers have difficulty teaching thinking skills when they lack a clear model of skills and the way these relate to social studies. Recording the presence of thinking skills without an appropriate model proved equally difficult.

Identifying "Thoughtfulness"

Using the model based on Newmann's criteria proved somewhat easier. Observations based on the criteria listed in Table 3:3 are outlined below.

The unit plan is based on central ideas.

This criterion was not really applicable at Brightmeadows as the lessons observed were science lessons. The Nightingale lesson had an appropriate unit topic and the lesson focussed specifically on this.

A few ideas are covered in depth.

At both schools the lessons emphasised one or two ideas and focussed on these.

Information is linked to provide sequence, coherence and continuity

The lessons in both schools were part of a series and the activities used were based on questions that students in the classes had initiated. The second lesson at Brightmeadows built on information discovered in the first, and it was apparent from the teacher's unit plan at Nightingale that the lessons at that school were sequential. Sequence

and continuity were evident within the lessons at both schools in the way that activities were developed from class discussion and vice versa.

Activities provide opportunity for information gathering, processing and presenting.

There was ample opportunity for information gathering at Brightmeadows. Students were not simply required to get information from books but to observe real fish and to access C.D. Rom information on the library computer. Evidence of information processing was apparent in the teacher led class discussion which followed. Individual activities at Brightmeadows required less processing. Students were essentially asked to record their observations and to make hypotheses. Although hypothesising can be regarded as a thinking skill, most Brightmeadows students simply recorded factual information in the first lesson. Information processing was more evident in the second lesson, but although students were placed in groups, the majority of the work was done individually. At first glance the students in this busy session were involved in a good deal of information processing but in reality, most of their work was concerned with collecting facts and recording them.

Where processing did occur at Brightmeadows, it was in most cases at a fairly low level. Most activities simply required students to locate information from one of a number of sources and record it. Questions were initiated by the teacher and information was easy to locate and neither contradictory nor controversial. The unit plan at Nightingale indicated that there would be opportunity for students to gather, process and present information later in the unit. Processing skills were apparent in the lesson observed both in group discussions and in teacher led discussion. Although it was not observed, processing would also have occurred in the group activities at the work stations which were completed later. Information gathering was not evident in the conventional sense, however, the group activity which required students to listen to others' definitions and modify their own ideas in the light of new information could be regarded as a form of information gathering. Presentation was not evident in the lesson observed though it was a major feature of later lessons in the unit.

Activities are based on problem solving / require students to work with information.

Lesson one at Brightmeadows was based on problems initiated earlier in the unit. The second lesson was concerned with answering the same student initiated questions. The Nightingale lesson was based on the central problem, "What is a refugee?"

Information is evaluated.

This was not apparent in either lesson at Brightmeadows. At Nightingale students evaluated their own definitions, the definitions of others in their group, the class definition and the United Nations definition of refugees.

Students have opportunity to discuss and debate.

Teacher led class discussion provided opportunities for students to discuss aspects of the topics being studied in all of the lessons observed. At Nightingale discussion and debate were also apparent in the group activity. The experimental group activity in lesson two at Brightmeadows involved students in a good deal of discussion though the number of students involved was relatively small. Other groups at Brightmeadows had little opportunity to discuss and debate in groups.

Teacher asks challenging questions

Questions sometimes encouraged further thinking but the initial observations at both schools indicated that teacher questioning probably needed to be considered further.

Students are given time to think

Students were given a little time to think in the teacher led discussion at both schools but certainly not the “three and three” suggested by Costa (1991) and others. While teachers seemed to be aware of “wait time” there was little real evidence of it in the observations. In most instances teachers simply made a positive comment following a student response and proceeded to the next question.

Students are pressed to justify and clarify responses.

There were few examples at Brightmeadows, none at Nightingale.

Teacher is a model of thoughtfulness.

In Newmann’s examples modelling requires teachers to explain how they have obtained solutions to problems or to describe steps they would take to resolve a problem or a contradiction. Effective modelling also requires teachers to be models of curiosity and enthusiasm and to prompt students to monitor their own learning by asking questions like “How did you arrive at that answer?” or “What are some ways we might solve this problem?” Teacher curiosity and enthusiasm was apparent in both schools but there were no real examples of teachers encouraging metacognition. In this context metacognition refers to “(1) knowledge and control of self, and (2) knowledge and control of process” (Paris, Lipson and Wixson, 1983 in Costa, 1991 p. 89).

Students offer explanations and reasons.

Six or seven examples were observed in each lesson in both schools.

Students generate original ideas and explanations.

This was a strong feature of teacher led discussions in all three lessons. Students gave many examples - “Their eyes might bulge so that they can avoid predators.” “Maybe opening their mouths is a form of communication.” “I think they suck the water in through their mouths, take in air and blow the water out their gills.”

Students are questioners and critics.

Both lessons at Brightmeadows were based on students' questions and the activities were designed to provide answers to these. The lesson at Nightingale was based on a central question and the activities required the students to criticise both their own definitions and conclusions and those of others.

Contributions are germane and articulate

In the two hours of observation at Brightmeadows there were no responses which were not clearly expressed and relevant to the discussion. At Nightingale responses were relevant to the discussion. Students in both schools were attentive and diligent and most remained "on task" throughout all three lessons.

Identifying Structure

The writer had assumed that lesson structure might be a crucial factor in determining whether or not higher order thinking occurred in lessons. Lesson structure was analysed in terms of five categories developed largely from those discussed by Goodlad (1984), and those used to analyse lessons in the New Zealand Department of Education's Report of the Social Studies Subjects Survey (1987). Lessons were analysed in terms of the amount of time allowed for administration, teacher instruction, teacher led class discussion, individual activities and group activities. The choice of categories seemed appropriate for social studies lessons and it allowed a degree of comparison with American and earlier New Zealand data. The "administration" category included such activities as students moving to groups or collecting equipment. It also included listening to teacher instructions when these were concerned with procedural matters rather than content. "Teacher instruction" was concerned only with instruction in content. This category did not include situations in which the teacher moved from group to group during activities where some instruction may have been given. Similarly, "teacher led discussion" was counted as such only when this involved the whole class. Teacher contributions to discussion in group activities were counted as part of the group activity.

It proved relatively easy to determine the amount of lesson time devoted to each category. The researcher made detailed notes during the observations and times were noted at the beginning and end of lesson moves or activities. The times for each category were totalled and converted to percentages of total lesson time to allow for difference in the length of lessons. The proportion of lesson time devoted to administration, teacher instruction, teacher led discussion, individual activity, and group activity is shown in Table 4:1

Table 4:1. Analysis of Lesson Time (Pilot)

Brightmeadows (2 lessons)	Nightingale [1 lesson]
administration 15 %	administration 13.3%
teacher led discussion 33%	teacher led discussion 63.3%
teacher instruction 0%	teacher instruction 0%
individual activities 44%	individual activities 8.3%
group activities 8%	group activities 15%

Conclusions and Implications

The pilot observation helped the researcher to clarify both ideas and procedures. The teacher at Nightingale appeared to have some understanding of the place of conceptual understanding in social studies. His unit was “based on central ideas, a few ideas were covered in depth, and information was linked to provide sequence, coherence and continuity” (Newmann 1991 p.325). Imbalance in the number and variety of higher order thinking skills used in learning activities, the ways skills were listed as objectives, and provision for teaching and assessing thinking skills led the writer to surmise that the relationship between specific thinking skills and conceptual understanding was not well understood by either teacher. It still seemed probable therefore, that one reason that little higher order thinking was evident was because there was no focus or purpose for using the skills associated with higher order thinking. Rather than contributing to a major unit goal, thinking skills appeared to be taught almost incidentally. Both teachers in the pilot admitted to the researcher that in most cases they chose learning activities because “they worked” or because resources were available. They then wrote their thinking skill objectives to match the skills in learning activities they had already chosen. In other words, learning activities were not designed to teach thinking skills; thinking skills were chosen because they happened to match the unit’s learning activities.

The pilot showed that while the methods of observations used by the researcher were practical in most respects, they did not provide enough information which could be analysed in depth. Noting the specific skills evident in learning activities was not enough. Because observations needed to contain much more detail the researcher decided that in the main observations which were to follow the pilot, it would be necessary to record as much as possible of what was said in the lessons observed and to keep detailed records of the time at which things were said or events occurred. Because the educational world is subjective and experiential and because educational settings are seldom fixed, detailed observations of classroom procedures and conversations would also help readers to understand the climate of the classrooms in which the observations took place. The practice of showing teachers the transcripts of their lessons as soon as possible after the observation was appreciated by the teachers observed in the pilot and it was decided that this practice needed to be continued.

It was apparent from the initial pilot that observing individual lessons as in the American research of Newmann and Wehlage (1992) was not a desirable option. Because social studies is generally taught in units which can run over several lessons, skills not apparent in one lesson may well be present in another. Because it was impractical to observe whole units in the main observations the researcher asked permission to observe sequences of three lessons which were part of a longer unit of work.

Specific thinking skills are listed as objectives in the national curriculum and it seemed appropriate as part of a project designed to enhance higher order thinking to observe the frequency of the occurrence of these skills in lessons. In the pilot observations the researcher attempted to identify these specific thinking skills as they were used, and to mark these off on the skills check list. This proved impossible. The pilot observations made it very clear that a check list derived from Michaelis's skill list and similar sources was inappropriate. Skills were difficult to identify and it became patently evident that a simplified method of recording was needed. Although it was possible to record the presence of some specific skills, such recording proved difficult to do with any precision. It was difficult to identify skills accurately and difficult to differentiate between similar skills.

The pilot suggested that dealing with a large number of specific thinking skills might in fact be inappropriate. It became apparent in discussion with teachers that they seldom dealt with particular skills. When and if they did, they found it impractical to work with a list of some seventy skills like that in Social Studies in the New Zealand Curriculum (Draft), particularly when the national curriculum indicated neither priority nor sequence. Working with long lists of individual skills could be seen as both impractical and undesirable but general grouping of skills like Fraenkel's (1973) gathering, processing and presenting were probably too broad. Working with groups of similar skills seemed a viable alternative. In this respect the pilot reinforced the researcher's assumption that teachers failed to use thinking skills with any system or structure because they lacked a clear model of children's thinking in social studies. It also provided some ideas for the direction such a model should take.

Teacher questioning seemed an obvious factor to consider when discussing student thinking. The teachers observed in the pilot were recommended by their principals and syndicate leaders as being excellent teachers with bright intelligent students. The teacher questioning in the lessons observed was therefore probably better than that found in most classrooms. Nonetheless, there was still evidence of lack of variety in questions and an absence of wait time, prompting and modelling. The pilot indicated that teacher questioning needed to be analysed further in order to determine the kind of questions being asked by teachers and the frequency of these questions.

On the basis of the work done in the pilot, modifications were made to the pattern of observing and recording. Of greater significance was the way in which the pilot reinforced the notion of the need for a model of thinking and planning. A model of conceptual understanding and the relationship of specific thinking skills to this understanding was developed following the pilot observations. The development of this model is described in Chapter Five. This model and techniques developed in the pilot were applied in the main observations which followed this part of the project.

On the basis of a large amount of casual observation and research evidence from New Zealand and abroad, the researcher believed that teacher development was urgently needed in the area of higher order thinking in social studies. This supposition was confirmed through preliminary work at Caledonia. The need for a clear model of thinking in social studies became increasingly apparent and the researcher drew on the literature to develop a possible model. A pilot study followed. In this exercise the model and procedures for recording the facilitation of higher order thinking were tested. The pilot study confirmed original suppositions but indicated that both the model and methods of observing and recording needed refining. The next chapter describes how the researcher developed the new model which became the basis of this project.

Chapter Five

Developing New Models

Of the many tasks that confront educators in planning for thinking skills in the curriculum, few are more critical than determining what is meant by thinking or developing a model of the thinking process (Presseisen 1991 p. 56).

Introduction

The pilot observation, background research, and earlier observations in classrooms, suggested that a number of factors might influence the teaching of higher order thinking in social studies. The pilot observation reinforced the notion that these factors could be considered in two related categories. The first category is teacher effectiveness in areas like management, motivation, questioning and task design. The second is related to teacher effectiveness and concerned with teacher understanding. This understanding includes understanding the thinking process, understanding the requirements of the social studies curriculum, and understanding the ways in which these relate to each other. Before the principal observations could be carried out, components of these two categories needed to be designated and defined. A related task was the design of a model which related specific thinking skills to conceptual understanding, which could be easily understood by teachers and readily applied in the classroom. These issues are dealt with in this chapter.

Effectiveness, Understanding and a New Model.

One way to enhance the effective teaching of thinking in social studies might have been to undertake programmes of teacher development which concentrated on specific aspects of teacher behaviour like teacher questioning, organising group activities, or clarifying instructions in the manner advocated by researchers like Goodlad (1984) and Newmann (1991). However, evidence from the pilot study showed that these aspects did not on their own seem to explain why teachers did not engage their students in activities that might enhance higher order thinking. The researcher hypothesised that a broader, more general factor might also be crucial to the teaching of thinking skills. This factor emerged during the pilot study more by its absence than its presence.

It seemed that while teachers asked a variety of questions, clarified instructions and organised learning activities, these were not always related to an overall goal or purpose that would ensure that students had the chance to engage in higher order thinking. Classroom processes seemed somewhat haphazard and there was little to suggest that teachers had an overarching “theory” or model of higher order thinking that they used to design lessons. It appeared therefore, that teachers had limited understanding of the nature of higher order thinking in social studies. It seemed likely that a major reason for this lack of understanding was the absence of a clear model of the thinking process as it applied to conceptual understanding in social studies. This view is consistent with international literature; reference has been made in earlier chapters to American research which indicates that teachers’

understanding of what constitutes higher order thinking is often unclear. Fraenkel (1973) for example, claims that “many teachers have difficulty specifying exactly what it is that ‘thinking’ involves, or what a teacher needs to do in order to obtain it”(p.187). Fraenkel (1973) and Presseisen (1991) both claim that teachers will not teach higher order thinking skills consistently unless they have a clear model of these skills.

The development of a model which would provide a rationale and purpose for using thinking skills and thus help teachers enhance higher order thinking in their classrooms became a primary goal of this project. Other aspects of teacher effectiveness however, could not be discounted. Effectiveness and understanding are obviously closely related. Conceptual understanding is an important goal of social studies, understanding the centrality of this goal and understanding the need to design learning activities which incorporate the specific thinking skills students need to achieve this goal, are essential for effective social studies teaching. It seemed likely that the provision of a model which provided a rationale for using thinking skills would increase teacher understanding. This in turn was likely to improve teacher effectiveness. Criteria for determining indicators of teacher effectiveness and teacher understanding are outlined in the sections which follow.

While many features of teacher and student behaviour observed in the pilot were relevant to this study, there were difficulties in identifying, recording and analysing some of these. Some reorganisation of data collection processes was necessary in the main observations if identification and recording were to be simpler and more effective. Categories used in the pilot like time allocation of teacher activities, identification of specific thinking skills, and criteria which enhance “thoughtfulness” were all relevant, but most needed some restructuring and reorganisation. The pilot also indicated that it was likely to be impractical to work with too many items in the extensive observations which were to follow. The criteria used in the pilot were therefore reorganised in terms of the two general categories discussed in the introduction to this chapter, teacher effectiveness and teacher understanding. The changes made are shown diagrammatically in Table 5:1. The reasons for the changes are explained in the remainder of this chapter.

Table 5:1. Revised Criteria for Main Observations

Criteria Used in Pilot	New Criteria
<u>1. Thoughtfulness</u>	<u>1. Teacher Effectiveness</u>
(a) planning	(a) questioning
(b) teacher behaviour	(b) structure
(c) student behaviour	(1) time allocation
	(2) specific skills in learning activities
	(3) planning
	(i) focus is on important ideas
	(ii) skills are expressed as objectives
	(iii) plan has structure, sequence, continuity.
<u>2. Time Allocation</u>	<u>2. Teacher Understanding</u>
	(a) understands conceptual understanding.
	(b) understands relationship of specific skills to conceptual understanding.
<u>3. Specific Skills</u>	

Teacher Effectiveness and Higher Order Thinking

A good deal of educational research has been concerned with identifying those general characteristics which make some teachers more effective than others in developing children's learning. Typical of these findings are those of Ryan (1960) and Rosenshine and Furst (1973). Ryan identified three main characteristics of an effective teacher. Such teachers he claimed, are warm and understanding rather than cold and aloof; organised and businesslike rather than unplanned and slipshod; and stimulating and imaginative rather than dull and routine. Rosenshine and Furst identified a number of teacher characteristics which they considered were consistently associated with gains in pupil achievement. Their study suggested effective teachers were those who were enthusiastic, businesslike and task oriented, clear when presenting instructional content, and made use of a variety of instructional materials and procedures (In Perrott, 1982, pp.3, 4).

More recently Brophy and Porter (1988) compiled a synthesis of research on effective teaching. Their list is based, to a considerable extent, on work undertaken at the Institute for Research on Teaching in the United States. Brophy and Porter suggest that good teachers are "semi autonomous individuals" who :

- * are clear about their instructional goals;
- * are knowledgeable about their content and the strategies for teaching it;
- * communicate to their students what is expected of them and why;
- * make expert use of existing instructional materials;
- * are knowledgeable about their students, adapting instruction to their needs;
- * teach students metacognitive strategies and give them opportunities to master them;
- * address higher as well as lower level cognitive objectives;
- * integrate their instruction with that in other subject areas;
- * accept responsibility for student outcome;
- * are thoughtful and reflective about their practice.

Of key importance among these criteria are those concerned with teaching students metacognitive strategies and addressing higher level cognitive objectives. These two criteria are directly relevant to the argument advanced above, and consistent with the view of Fraenkel (1973) and Presseisen (1991). To restate the argument, teachers need to possess a model of higher order thinking if they are to plan lessons that incorporate higher order thinking skills and engage their students in advanced levels of thinking.

In New Zealand, research by Ramsay (1993) drew similar conclusions. In summarising the main points of his study on quality teaching, Ramsay suggested that quality teachers are those who have a high level of expectation both for themselves and for their students. According to Ramsay, quality teachers are facilitators of learning. They see themselves as providing friendly learning environments in which children can become independent learners. In these environments children are immersed in a colourful learning climate full of resources and their own work. Quality teachers provide an open learning environment, one in which children feel secure in their endeavours to solve problems. Classroom procedures in quality classrooms are flexible enough to cater for individual needs. Groupings of students in such classrooms are fluid and based on the demands of the given context. Assessment in quality classrooms is formative rather than summative and arises from reflection (Ramsay, 1993 p. 63). The implications for the development of higher order thinking are clear, teachers need to provide a climate which gives children confidence to engage in higher order thinking. A model of thinking skills on its own is not enough.

Although there is considerable agreement about the characteristics of effective teachers in general terms, research in the specific area of social studies is less common (Openshaw, 1992; Stanley, 1992). Moreover, while researchers are able to identify the generic characteristics of a good teacher, many comment that in their research they have only infrequently observed teaching for higher order thinking (Baxter, Ferrell & Wiltz, 1964; Boyer, 1983; Christopoulos, Rowe & Thomas, 1987; Goodlad, 1984; Howard and Mendenhall, 1982; National Commission, 1983; Ravitch and Finn, 1987; Shaver et al., 1979; Wiley and Race, 1977, cited in Stanley 1992 p.255).

Costa (1991) argues that those teacher behaviours which best encourage higher order thinking fall into four major categories, questioning, structuring, responding and modelling. These categories can be summarised as follows :

Questioning

Costa suggests that teachers should structure questions so that they invite students to take steps of intellectual functioning by -

- * getting information through the senses;
- * comparing that information with what they already know;
- * drawing meaningful relationships;
- * applying or transferring those relationships.

Structuring

Structuring refers to the ways teachers control the classroom environment. Costa's research suggests that higher order thinking takes place in well structured classrooms where students know the objectives of the lesson, where time is used efficiently, where the teacher is clear about directions, the classroom has a congenial sense of order and students are engaged in meaningful tasks. This means that teachers need to consider -

- * the clarity of verbal and written instructions;
- * effective ways of structuring of time and energy;
- * ways of organising and arranging interaction.

Responding and Modelling

Responding involves helping students maintain, extend and become aware of their own thinking. When teachers model thinking they exhibit desirable intellectual behaviours in the day to day problems and strategies of the classroom and the school.

Costa also argues that learning activities should be designed to comply with students' steps of intellectual functioning. They should move students through the steps of input, getting information through the senses; comparing that information with what they know; drawing meaningful relationships; applying or transferring those relationships to novel situations and finally evaluating what they have done.

Newmann provides perhaps the best summary of what teachers need to do to encourage higher order thinking in social studies. His conclusions are very similar to Costa's. Newmann claims that teachers need to ask challenging questions and to structure challenging tasks which encourage students to consider explanations and reasons for conclusions. They need to press students to justify or to clarify their assertions and encourage students to generate original and unconventional ideas, explanations and solutions to problems.

A review of research and the observations made in the pilot study indicated that the aspects of teacher behaviour discussed above needed to be monitored as part of this project's observations. Costa's categories, questioning and structure, were used as a general base from which to consider teacher effectiveness (see Table 5:1). A system for determining the characteristics of teacher questions and their frequency was formulated. "Structure" in this project incorporated time allocation, skills apparent in learning activities, and planning. Aspects of structure like sequence and continuity in planning, were analysed through teachers' plans, in particular, the ways in which teachers focussed on important ideas, expressed skills as unit objectives and wrote plans which had a clear focus and direction.

Teacher Understanding and Higher Order Thinking

While effectiveness in areas of professional behaviour like questioning, time allocation, classroom management and planning discussed above was undoubtedly important, the researcher surmised that to teach social studies effectively, teachers needed to be aware of the centrality of conceptual understanding in social studies and the contribution specific thinking skills make to this understanding. They also needed to be familiar with the structure of the national curriculum so that they could apply it in a way that would lead students to conceptual understanding. If social studies is concerned with teaching children to think, and if that thinking should lead to conceptual understanding which allows students to reapply knowledge, then teachers need a clear understanding of what they are supposed to be teaching and a clear model which allows them to teach it effectively by engaging their students in appropriate learning activities.

The central role of conceptual understanding in social studies and the contribution of thinking skills to that understanding was not made clear in the national curriculum in use at the time this project took place. Social Studies in the New Zealand Curriculum (Draft) indicated the need for conceptual understanding, albeit briefly and unclearly (p. 15), but the role of thinking skills in developing conceptual understanding was not made clear. This meant that teachers were not provided with a cogent reason for teaching higher order thinking or with a structure for teaching it. If the national curriculum was unclear on the place of conceptual understanding in social studies, it was equally unclear about the nature of the specific thinking skills which students should use to develop this understanding. The New Zealand curriculum was not alone in this. Commentators on curricula in other countries have complained that many social studies curricula and textbooks relegate thinking to a low status so that -

critical thinking is overlooked or downplayed, becoming an add-on or an enhancement if and when the subject matter in the curriculum or textbook has been covered. - - - critical thinking becomes a task that is undertaken from time to time, if teachers have the time (Chance and Wright, 1997 p. 13).

Terminology is another problem. Even thinking skills “experts” like Beyer, Perkins and Newmann fail to define terms exactly. Social Studies in the New Zealand Curriculum (Draft) proved to be of little help to teachers on this project who found its presentation of specific thinking skills (pp. 28-33) to be confusing. Teachers could ask themselves for example, is “defining a problem” (p. 28) a decision making skill, as indicated in the curriculum, or a critical thinking skill? Is “recalling information” (p. 29) really a critical thinking skill as the curriculum suggests? Is “elaborating an idea”(p. 30) a creative thinking skill or a critical thinking skill? Is “curiosity”(p. 30) a creative skill or a component of all the main categories?

Given the lack of definitional clarity and the failure of the national curriculum to demonstrate the relationship between specific thinking skills and conceptual understanding, it was evident that a model which demonstrated this relationship was a necessary part of this project. Such a model needed to be readily applicable in the classroom and to relate the teaching process to the structure of national curriculum. The development of a model designed to meet these criteria, “The Brightmeadows Model” is described in the sections which follow.

Towards a Model of Conceptual Understanding

A model which goes some way towards demonstrating the relationship between specific thinking skills and conceptual understanding has been developed by Marzano, Brandt, Hughes, Jones, Presseisen, Rankin and Suhor (1988). This model is shown in Table 5: 2. These writers view thinking in terms of “skills” and “processes.” Processes, in the sense in which the authors use the term, may be regarded as broad mental operations which involve the use of several thinking skills. Thinking processes include concept formation, principle formation, comprehension, problem solving, decision making, research, composition, and oral discourses. According to Marzano et al., thinking skills are simpler cognitive operations such as observing, sequencing, and comparing. The authors divide these more specific skills into eight categories, focussing skills, information gathering skills, remembering skills, organising skills, analysing skills, generating skills, integrating skills and evaluating skills. In this model thinking processes are complex, macro level operations. The core thinking skills are micro level operations used in the service of the processes.

While the structure outlined by Marzano et.al. is a useful way of viewing thinking skills, it is difficult to relate this model specifically to social studies. Conceptual understanding and higher order thinking, the two principal types of thinking skills described by Perkins (in Brandt, 1990) and by Massialas and Cox (1966) are still not clearly delineated in the Marzano model, though conceptual understanding can be generally equated with Marzano’s process of concept formation and the specific thinking components can be equated with Marzano’s core thinking skills. Strengths of the Marzano model are the way in which it differentiates between specific skills and broader processes, and the way that it groups skills.

An alternative structure is that described by Newmann and Wehlage (1992). In an effort to develop a system for assessing “authentic instruction” Newman and Wehlage developed a rating system for five “standards.” These standards are higher order thinking, depth of knowledge, connectedness to the world beyond the classroom, substantive conversation and social support for student achievement. The differentiations that Newmann and Wehlage make within their standards, particularly in depth of knowledge and higher order thinking, are perhaps closer to the kind of model needed for social studies. Newmann and Wehlage rate each of their standards on a five point scale. In the depth of knowledge standard this represents a range from “shallow knowledge” (1) to “deep knowledge”(5). Shallow knowledge is defined as that which is thin or superficial, not dealing with significant concepts. Deep knowledge is that which concerns the central idea of a topic or discipline.

The five point rating scale used to rate thinking skills in the higher order thinking standard uses a similar continuum which runs from lower order thinking to higher order thinking. Lower-order thinking skills are those in which students are asked to receive factual information or to employ rules and algorithms through repetitive routines. As information receivers, students are given pre specified knowledge ranging from simple facts to more complex concepts. Students are in this role when they recite previously acquired knowledge by responding to questions that require recall of pre specified knowledge. Higher order thinking skills at the other end of the continuum, are those skills which require students to manipulate information and ideas in ways that transform their meaning and implications. These are evident when students combine facts and ideas in order to synthesise, generalise, explain, hypothesise or arrive at a conclusion or interpretation. Manipulating information and ideas through these processes allows students to discover new (for them) meanings and understandings.

For Marzano, conceptual understanding is a “process” while thinking skills are those specific skills which contribute to that process. Newmann sees the two as complementary. In other respects Newmann’s “depth of knowledge” can generally be equated with conceptual understanding as this term is understood by Marzano. Similarly, Marzano’s thinking skills can be equated with the categories in Newmann’s “high order thinking.” Newmann’s description of “deep knowledge” (Newmann and Wehlage, 1992 p. 50), contains all of the elements that social studies writers would consider apply to the development of conceptual understanding. Newmann’s model is also useful because it goes some way towards measuring degrees of conceptual understanding or depth of thought.

The models are shown in Tables 5:2 and 5:3. In Table 5:3 the intermediate points on the five point scale have been omitted. While both the Marzano model and the Newmann model provide a basis from which teachers can begin to understand the relationship between specific thinking skills and conceptual understanding, neither model is adequate on its own.

Table 5:2. Thinking Processes and Thinking Skills (Marzano et al.)

Thinking Processes	
* Concept formation	* Decision making
* Principle formation	* Research
* Comprehension	* Composition
* Problem solving	* Oral discourse
Core Thinking Skills	
<u>Focussing Skills</u>	<u>Analysing Skills</u>
1. Defining problems	11. Identifying attributes and components
2. Setting goals	12. Identifying relationships, patterns
<u>Information Gathering Skills</u>	13. Identifying main ideas
3. Observing	14. Identifying errors
4. Formulating questions	<u>Generating Skills</u>
<u>Remembering Skills</u>	15. Inferring
5. Encoding	16. Predicting
6. Recalling	17. Elaborating
<u>Organising Skills</u>	<u>Integrating Skills</u>
7. Comparing	18. Summarising
8. Classifying	19. Restructuring
9. Ordering	<u>Evaluating Skills</u>
10. Representing	20. Establishing criteria
	21. Verifying

Marzano et al.. in Costa (1991) pp. 91.92

Table 5:3. Higher and Lower Order Thinking (Newmann & Wehlage)

High Order Thinking (5)		Low Order Thinking (1)
* Students work with information	---	* Students receive or recite information
* Students combine facts and ideas	---	* Students given pre specified knowledge
* Responses require synthesis	---	* Responses require recall and hypothesising
* Students make a conclusion	---	* No conclusion required.

Newmann & Wehlage 1992 p.10

Developing the “Brightmeadows Model”

On the basis of the foregoing the writer decided that there was a need for a simpler way to structure the processes of thinking, a way which could enhance the teaching of thinking in social studies if certain conditions were met. Such a structure would need to be easily understood by teachers and students and readily applicable in the classroom. It needed to incorporate a range of specific skills but it should not require teachers to work through long lists of individual skills. A good structure would allow teachers to use skills in an appropriate sequence and it would be based on the initial premise about thinking outlined in Chapter One of this paper, that is, thinking in social studies is concerned both with specific skills and conceptual understanding, where the former is used to develop the latter.

A model with the goal of representing conceptual understanding as a primary focus can be constructed so that it matches the structure for thinking suggested by Marzano (1991). In such a model conceptual understanding is a “process” to which core thinking skills contribute. By limiting what they teach, and structuring content around important ideas, teachers can use such a model to enable students to work with and structure pieces of information to show the relationships among them. Students can then use these relationships to construct their own concepts and reapply these. A model which uses Marzano’s structure also meets Newmann’s requirements for teaching higher order thinking because it advocates sustained examination of a few topics and lessons which display substantive coherence and continuity (Newmann, 1991). Such a model also conforms with the intellectual process of thinking described for example by Costa (1991) which sees a movement in learning from an input of information, through processing and output, to application.

Any new model should take into account of a number of existing models. It could for example consider structures like Bloom’s Taxonomy of Educational Objectives (Bloom, 1956) and Guilford’s Structure of Intellect (Guilford, 1967). Bloom’s taxonomy represents objectives not activities, but the nature and sequencing of those objectives, knowledge, comprehension, application, analysis, synthesis and evaluation, suggest both a possible hierarchy of levels of thinking and a sequence in which activities designed to enhance higher order thinking might occur. The “operations” dimension of Guilford’s “Structure of Intellect” has already been referred to in connection with cognitive memory, convergent, and divergent questions. Perhaps more relevant to conceptual understanding however, is the way Guilford structures intellect in terms of units, classes, relations, systems, transformations and implications. These categories can be easily related to levels of conceptual understanding in social studies, that is, items of factual data (units), concepts formed by relating data (classes), understanding developed by processing a number of concepts (relations), and generalisations (systems). Guilford’s final category, transformation, can be equated with the application of generalisations in new situations. In social studies terms, Guilford’s categories can be related to Beyer’s (1979; 1985) concepts, understandings and generalisations and Taba’s (1967) specific facts, organising ideas and key concepts.

Both Bloom's taxonomy of objectives and Guilford's structure of intellect can provide broad headings within which specific skills can be grouped. They also suggest a hierarchy of skills, both in terms of sequence and in terms of higher and lower order thinking. Finally, they take into account the thinking process employed by students and outlined by Costa (1991). It is possible to allocate the kind of specific social studies thinking skills discussed in earlier chapters and shown in Table 2:1, to the more general categories used by Bloom and Guilford. Presseisen (1991) suggests that this can be done as shown in Table 5: 4. Presseisen's model provides a practical structure for social studies skills that is lacking in Social Studies in the New Zealand Curriculum (Draft) though it is still too complicated for teachers to apply readily.

Table 5:4. Thinking Skills and Bloom's Taxonomy

<u>Knowledge</u> :	define, recognise, recall, identify, label, understand, examine, collect.
<u>Comprehension</u> :	translate, interpret, explain, describe, summarise, extrapolate.
<u>Application</u> :	apply, solve, experiment, show, predict.
<u>Analysis</u> :	connect, relate, differentiate, classify, arrange, check, group, distinguish, organise, categorise, detect, compare, infer.
<u>Synthesis</u> :	produce, propose, design, plan, combine, formulate, compose, hypothesise, construct.
<u>Evaluation</u> :	appraise, judge, criticise, decide.

(After Presseisen, 1991)

Social studies curricula in the Australian states of Victoria, New South Wales and South Australia use a model of learning activities derived from the work of Fraenkel (1973) which divides learning activities into intake activities, organising activities, and presentation activities. This model is used in at least one teacher education institution in New Zealand and it features in a social studies text for teachers (Barr and Carryer, 1991). This three stage model has a good deal of merit because it allows teachers to incorporate a range of skills and it ensures that students work with information in order to construct knowledge. The Australian model is however, probably too simple in that it fails to specify particular skills clearly enough. A similar but better model, is that devised by Costa (1991). Costa's five stages are, gathering information through the senses; processing information by comparing it with what is already known; processing information by drawing relationships; applying or transferring information; and evaluating.

Costa's five stages provide a logical sequence which appears to encourage effective thinking. Presseisen's model using Bloom's Taxonomy (Table 5: 4) and Costa's five stages can be combined. If we list Presseisen's skills under Costa's headings the model looks like that shown in Table 5: 5. The "synthesis" component of Presseisen's list is missing in this model, but Presseisen's synthesising process includes skills like producing, proposing,

designing, planning, combining, formulating, composing, and constructing. These could be included under a new heading missing from Costa's model "presenting." This could result in a new six step model like that shown in Table 5: 6.

Table 5:5. Specific Skills and Stages of Learning

Gathering information through the senses

defining, recognising, recalling, identifying, labelling, examining, collecting, understanding.

Processing information by comparing it with what is known

translating, interpreting, explaining, describing, summarising, extrapolating.

Processing information by drawing relationships

connecting, relating, differentiating, classifying, arranging, checking, grouping, distinguishing.

Applying or transferring information

applying, solving, experimenting, showing, predicting.

Evaluating.

appraising, judging, criticising, deciding.

(After Costa and Presseisen, 1991)

Table 5:6. Six Step Model for Learning Activities

Gathering Information

defining, recognising, recalling, identifying, labelling, examining, collecting, understanding.

Processing Information : Explaining

translating, interpreting, explaining, describing, summarising, extrapolating.

Processing Information : Relating

connecting, relating, differentiating, classifying, arranging, checking, grouping, distinguishing.

Applying or Transferring

applying, solving, experimenting, showing, predicting.

Presenting

producing, proposing, designing, planning, combining, formulating, composing, hypothesising, and constructing.

Evaluating.

appraising, judging, criticising, deciding.

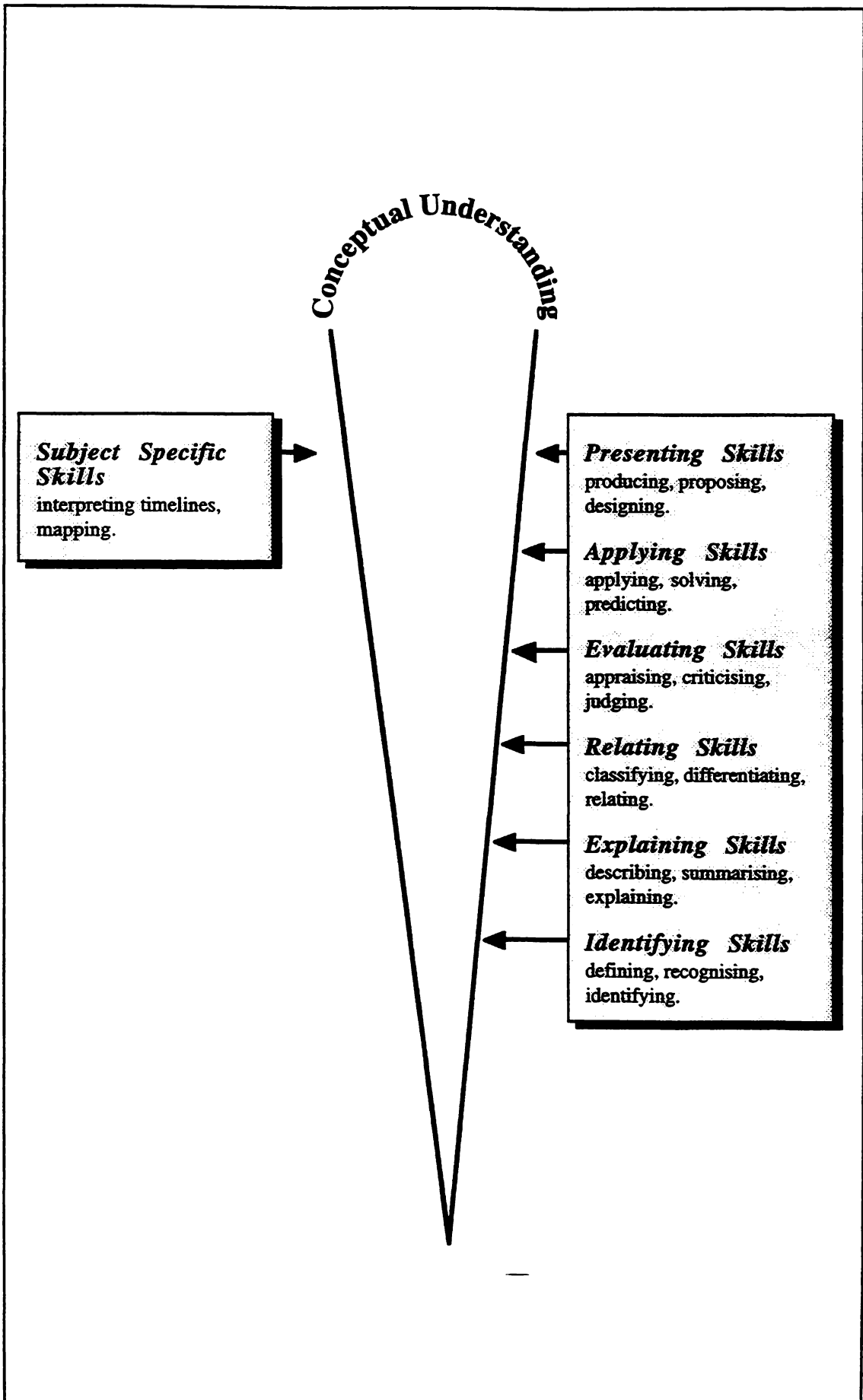
A model like that shown in Table 5: 6 combines forty specific skills into groups or categories of similar skills. The pilot study and earlier observations indicated that teachers were confused both by long lists of specific skills and by broad generic headings and that they found it difficult to plan and evaluate using these. The model shown in Table 5: 6 allows teachers to consider skills in groups or blocks. It could thus provide a more useful base for designing sequential learning activities.

What a model like that shown in Table 5:6 lacks, is some way of showing the link between the skills in the groups and conceptual understanding. Conceptual understanding is central to social studies, and higher order thinking skills should be used to develop such understanding. By incorporating conceptual understanding as a central component in the six step model, the model can be expanded to become a representation of conceptual understanding. Such a model links the specific skills of the national curriculum, now grouped into categories of similar skills, with conceptual understanding. This new model allows teachers to apply skills in workable groups instead of using generic objectives like “critical thinking” or attempting to list several individual skills in no particular sequence and to no particular purpose. The model also provides focus and direction for unit planning because it provides a rationale and a structure for teaching thinking skills. A model which demonstrates this structure, “The Brightmeadows Model,” named for the school in which the observations took place, is shown in Table 5: 7.

The diagram in Table 5: 7 should be read from the bottom up. The central column represents conceptual understanding or “knowledge,” in the sense that Bragaw and Hartoonian (1988) use the term (see Chapter Two), or “understanding,” in the sense that this term is used in Social Studies in the New Zealand Curriculum.(Draft) and by Beyer (1971, 1979). Knowledge is constructed from isolated pieces of factual information. The pieces of information from which knowledge is formed may represent students’ prior knowledge or information gained from a variety of sources including books, film, pictures, teacher instruction etc.. Information is processed using the thinking skills on the right hand side of the diagram. As facts are processed they are linked to other facts, the central knowledge core becomes broader and deeper until it approaches a level of conceptual understanding. Of course total conceptual understanding can never be achieved, but the level students will reach should be sufficient to allow them to apply their understanding in a new situation

Skills impinge on the knowledge column from both sides. The skills on the right could be termed generic thinking skills. They are skills applicable in subjects other than social studies which have special relevance for that subject. It is unlikely that teachers would use all of the sub skills listed at each of the six steps, however, it is likely that they would proceed through each step even if they only use one or two sub skills at each level. The subject specific skills shown on the left hand side of the diagram are skills which apply specifically to social studies or to kindred disciplines. Obvious examples of these are geographical skills like using latitude and longitude or reading contour lines on a map. Skills drawn from history might include those which require students to interpret chronological sequences or determine cause and effect. Skills concerned with valuing and social action are also important in social studies and could well be included in this section. However, this project was concerned primarily with higher order thinking, and, during the first intervention, the teachers in the research team pointed out the need to keep any models simple and easily understood. For these reasons subject specific skills were not considered as part of this exercise.

Table 5:7. The Brightmeadows Model of Conceptual Understanding



The Brightmeadows Model was discussed initially with teachers and colleagues. It was regarded favourably by teachers outside the project with whom it was discussed, and by tertiary staff who examined it before the main observations took place. Teachers liked the idea of viewing thinking skills in small analogous groups. They admitted that they found the lists of skills in Social Studies in the New Zealand Curriculum (Draft) confusing and unmanageable. Grouping skills together they claimed, allowed them to consider unit objectives and specific learning outcomes more realistically because they had only to consider incorporating skills from six groups rather than from a list of up to seventy individual items. Teachers also pointed out that arranging skills in groups enabled them to ensure that all categories of skills were included in unit and lesson planning. Finally, teachers claimed that the model presented an illustration of the process involved in inquiry learning which was useful in their planning and teaching. The teachers on the research team later claimed that the model helped them understand the place of conceptual understanding in social studies and the relationship between thinking skills and conceptual understanding. In discussing the model with teachers not involved in the project T1, explained

What we are trying to signify is that each of these processes becomes more refined as you move up. In a unit you may be doing these skills a lot more than you would be doing these. ...You move up through the diagram until you reach conceptual understanding here... You go through all these skills to reach good conceptual understanding (See Chapter Ten).

Modification

The original Brightmeadows Model underwent some minor refinement before it was used in the observations. After discussion with colleagues and comparison with other models it became evident that there was a need to include a greater number of specific skills and to move some skills from one category to another. For example, “defining” is more akin to “explaining” than to “collecting” or “recognising” so it was better placed in group two than in group one. “Analysing” and “hypothesising” needed to be included because they are skills commonly used in social studies which could not be described accurately using the original list. “Analysing,” defined as “to examine in detail the constitution or structure of,” or “to ascertain the constituents of,” seemed to fit best in group one or two. It could be seen as part of the process of identifying (group one) or as a necessary precursor to describing or interpreting (group two). “Hypothesising” seemed to fit best at set four with experimenting and predicting. New skills were added with care, the lists needed to be manageable in size if the model was to remain simple and easy to use.

Headings were changed. “Gathering information” in the original six step model (Table 5: 6) was seen as too general and it became “identifying.” The two processing headings, “processing information : explaining” and “processing information : relating” were seen as too similar. They became respectively “explaining” and “relating.” The word “steps,” used in the original model was changed to “groups” because University social studies education staff with whom the model was discussed pointed out that the skills in the model need not

necessarily be taught sequentially. They agreed however that the groups did represent a general hierarchy both in terms of levels of thinking and in terms of the breadth of knowledge dealt with when a particular skill was applied. This suggested that the model could perhaps be regarded as sequential in broad terms. The subject specific skills section of the model was not applied for the reasons discussed earlier.

Using the Model as an Analytical Tool

The Brightmeadows Model of conceptual understanding was devised as a structure which teachers could use to plan units of work and design appropriate learning activities. However, it became apparent from the initial pilot that identifying specific thinking skills in an observed lesson was extremely difficult, and, because evidence suggested that teachers tend to view thinking skills generally rather than specifically, this system was probably also inappropriate. The writer decided therefore, to use the Brightmeadows Model to identify thinking skills by using the broad groups in the model in the observations which were to follow the pilot. The Brightmeadows Model in other words, became not only a model for future planning and teaching, but also a tool used to identify the presence of thinking skills in social studies lessons. This process is discussed in Chapters Six and Eight.

The development of the Brightmeadows Model took the project to the end of Lewin's third research stage. In the first stages the researcher identified and clarified an initial problem through observation and review. A pilot study demonstrated that initial procedures developed to identify aspects of teacher behaviour were in some respects inadequate. New criteria categorised under two broad headings "teacher effectiveness" and "teacher understanding" (Table 5:1) were developed to replace the original criteria. Effectiveness included questioning and "structure." Understanding included an understanding of the relationship between conceptual understanding and specific thinking skills and an understanding of the way this relationship was expressed in the structure of the national curriculum. The Brightmeadows Model of conceptual understanding was designed to provide both a model to aid teacher understanding and an analytical tool that the researcher could use to measure such understanding.

Some further aspects still needed to be considered, notably the role of the teachers in the research team and what happened when the model was applied. However, the project had now reached the stage where an in depth study based on the research questions outlined in Chapter One could be undertaken. The next chapter is devoted to a consideration of the methods to be used in this study.

Chapter Six

Research Methods and Methodology

Action research is a family of activities in curriculum development, professional development, school improvement programmes, and systems planning and policy development. These activities have in common the identification of strategies of planned action which are implemented, and then systematically submitted to observation, reflection and change. Participants in the action being considered are integrally involved in all of these activities (Grundy & Kemmis, 1987 p.17).

Introduction

Trow (1957) asserts that “The research problem under investigation properly dictates the method of investigation” (p. 3). In the case of this project the methods and methodology employed were dictated by the research questions outlined in Chapter One.

- a) To what extent do teachers provide learning activities which are likely to bring about higher order thinking in their students?
- (b) Are higher order thinking skills used in activities to achieve particular goals? What are these goals and how appropriate are they?
- (c) What aspects of teacher behaviour or understanding limit opportunity for students to engage in higher order thinking in primary schools social studies?
- (d) If opportunities are limited, what intervention programmes can be developed which are likely to lead teachers to adopt behaviours which will lead to improved higher order thinking in social studies classrooms?

Effectively, answering these questions required the researcher to ask, Where are we now ? (How effective is the current teaching of higher order thinking?) Where do we want to be at the end of this project ? (What kind of behaviours would we like teachers to exhibit?) How will we get there ? (What kind of intervention programmes will best allow us to positively modify teacher behaviour) and How will we know when we have got there ? (What indicators will tell us that teachers are teaching higher order thinking more effectively?).

These questions suggested a procedure which involved observation; an intervention, probably using a model; and an evaluation or further observation. But the scope of the project, described in Chapter Five and illustrated in Table 5: 1, indicated that the actual process might be rather more complex. As Table 5:1 shows, the project considered teacher behaviour in terms of teacher effectiveness and teacher understanding. Teacher effectiveness involved questioning and structure, where structure incorporated time allocation to activities, skills used in learning activities, and planning. Teacher understanding involved determining both teacher comprehension of conceptual understanding and the relationship of specific higher order thinking skills to conceptual understanding. It appeared that some aspects of the research questions were best answered using quantitative methodology, others appeared to require qualitative methodology. Both needed to be considered.

Quantitative and Qualitative Research

The main strength of quantitative technique lies in its precision and control. Control is achieved through sampling and design, precision through reliable measurement. Scientific research is able to lead to statements about causation because systematic manipulation of variables can be shown to have direct causal effect when other variables have been eliminated or controlled. Because hypotheses are tested deductively and statistical analysis is possible, answers to questions have a firm basis.

But quantitative research has its drawbacks. Burns, (1991) claims that the chief problem with this type of research is that it -

denigrates human individuality and ability to think. Its mechanistic ethos tends to exclude notions of freedom of choice and moral responsibility. Quantification can become an end in itself rather than a humane endeavour seeking to explore the human condition. It fails to take account of man's (*sic*) unique ability to interpret his experiences, construct his own meanings and act on these (pp. 7, 8).

Some qualitative researchers also argue that findings in scientific research are often banal or trivial with little real consequence and that this method of research can lead to the assumption that facts are true and the same for all people all the time. A problem which has special relevance for this study is that quantitative research seldom captures the dynamics of everyday life. This study sought to identify what happens in classrooms, thus, while some quantitative research was necessary, other techniques were also needed.

Qualitative researchers on the other hand, are concerned with processes rather than consequences, with wholeness rather than independent variables, and with meanings rather than statistics. Qualitative researchers like Eisner (1979) argue that there can be little meaning, impact or quality in an event isolated from the context in which it is found. In qualitative research, conclusions point to possible new policies rather than to scientific generalisations and principles. There are interrelated approaches within educational qualitative research, the most commonly used are action research, case studies, and ethnography. Typical qualitative research techniques include observation and interviewing.

Qualitative research also has a number of disadvantages and limitations. Because it is subjective and because its research field is limited to one setting, quantitative researchers claim that qualitative research lacks validity. While qualitative researchers seek validity, qualitative procedures cannot meet many of the essential criteria which apply to quantitative research. The unique contexts used in qualitative research cannot be replicated; qualitative researchers are not usually able to make generalisations which can be applied to contexts wider than the one in which the research took place. Because the researcher is involved with the participants, the likelihood of bias is more likely. A final and major limitation is the amount of time necessary for data collection, analysis and interpretation using qualitative methodology.

However, qualitative research has a number of distinct advantages. The qualitative mode is eclectic and hypothesis free, because of this, and because the researcher maintains a close working relationship with the participants, he or she gains an “insider’s” view of the field. Proximity also allows the researcher to research more deeply, and often see and document events that might be missed by a quantitative researcher. Qualitative descriptions can play an important part in suggesting possible relationships, causes, and effects. They can highlight aspects of teacher and pupil behaviour and provide in depth information on teaching style and pupil reaction. Because qualitative reports are descriptive and narrative rather than statistical, the research is of special benefit to practitioners who are more likely to relate to it, understand it, interpret it and apply it.

Choosing and Applying a Methodology

It seemed likely from initial observation and discussion with teachers that a number of factors were likely to influence the ways in which higher order thinking skills were taught in social studies classrooms. These variables included issues as diverse as the nature of the school and the class, school policy on teaching social studies, curriculum leadership and teacher development, availability of resource material, familiarity with the national curriculum and skill as a teacher and classroom manager. All of these features are implicit in the choices made by teachers and students. While this project was concerned with teachers, in that its final goal was the development of appropriate interventions to enhance the teaching of higher order thinking and conceptual understanding, field work needed to incorporate teachers, students, and other aspects of the school environment. Both the initial identification of thinking processes and the subsequent application of interventions, needed to take place inside classrooms. This suggested that an inclusive, qualitative approach might be more appropriate.

But it was also apparent that some aspects of the project were better determined using quantitative methodology. In Chapter Five the writer pointed out how after the pilot observation it was decided that the project should have two broad foci, teacher effectiveness and teacher understanding (Table 5:1). Several aspects of teacher effectiveness could be quantified, notably teacher questioning, time allocation, and skills apparent in learning activities. If these characteristics of the lessons were to be assessed, it seemed appropriate to count the number of questions asked in each category, to record the time spent on particular activities and to list the skills used in learning activities. After the first intervention the team decided to concentrate on teacher understanding rather than teacher effectiveness (see Chapter Eight), nonetheless the quantitative components of the research were retained in both series of observations.

Because the project was concerned with changing teacher behaviour, it was also necessary to consider what research tells us about those factors which contribute to effective curriculum change. Nisbet (1980) argues that teachers will accept curriculum change if they see a need for that change. They must identify a range of alternatives that might help them meet this need and they must work in a climate that is conducive to

change (Nisbet, in McGee, 1997 p. 261). Effective change requires the empowerment of teachers. Empowering teachers puts them at the forefront of curriculum decision making allowing them to develop a sense of ownership of the change process. Empowerment is derived from working in a collaborative atmosphere in which individuals trust and support each other. If change is to occur all members of a research team need to be informed about the nature of the change and they need to see that change will lead to improvement in practice. Problems which arise during the research should be should be openly confronted and discussed.

The ultimate goal of any research is to formulate questions and to find the answers to those questions. According to Dane (1970), the more immediate goals of research provide the researcher with a strategy for determining which questions to ask and which answers to seek. These immediate goals are generally understood to include exploration, description, prediction and explanation (p.7). Exploration is concerned with determining whether or not a phenomenon exists. In the case of this exercise, exploration involved determining the extent to which higher order thinking was taught effectively in social studies. Description is examining a phenomenon in order to more fully define it. In this project the researcher needed to define higher order thinking with more precision and to describe the ways in which higher order thinking related to the aims of the social studies curriculum. The goal of prediction involves identifying relationships that enable researchers to speculate about one thing by knowing about another. The researcher needed to know for example, what skills were evident in social studies classrooms and how these related to the skills prescribed by the curriculum. He needed to know how teachers chose objectives and planned lessons so that these could be related to national curriculum achievement objectives. Explanation, the final immediate goal is examining the relationship between phenomena. It is used to determine the validity of explanations.

While most educational research incorporates the stages described by Dane, methods and methodology can vary considerably. Each have their own advantages and disadvantages but most, in the view of the researcher, provided only partial answers to this project's research questions. Experimental research for example, involves deliberately controlling and manipulating conditions which determine events. Generally this comprises making a change in the value of one variable and observing the effect of that change on another. In this project the independent variable could be a stimulus like a new method of teaching higher order thinking. However, the research problem in this project involved a large number of possible variables, many of which were inter related. The eclectic nature of the project made it difficult to isolate particular variables. Ex post facto research which involves investigating possible cause and effect relationships by examining existing conditions and searching for possible causal factors might have helped identify some reasons for teachers failing to include higher order thinking in their social studies programmes. It would not however provide a means of remedying the situation. Similarly, a survey or series of interviews might have been useful in obtaining data but they were insufficient on their own. The methods finally employed included some elements of non participant case study because, as Cohen and Manion point out,

“case studies can be a step to action. They begin in a world of action and contribute to it.” (p.123), but like other approaches a case study approach provided only part of the solution to the research questions.

The research questions in this project were concerned with real problems. To answer them research methodology needed to involve “the application of fact finding to practical problem solving in a social situation with a view to improving the quality of action within it” (Burns, 1991 p. 252). Burns’ definition of action research seemed to describe the kind of approach which might best answer the questions posed in this project. Action research is a complete process, it involves diagnosing the problem, devising appropriate remedial action, implementing that action and monitoring the results. The most effective way to deal with the problems identified in the research questions in this project was in real classrooms working together with classroom teachers with a view to improving quality of action.

The project was concerned with changing teacher behaviour and action research is “a study of a social situation with a view to improving the quality of action within it. - - - [it] is intended to support teachers, and groups of teachers, in coping with the challenges and problems of practice and carrying through innovations in a reflective way” (Altricher, Posch and Somekh, 1993 p.4). Action research is characterised by a number of features which were applicable to this exercise. The project was carried out by people directly concerned with the situation, it originated in practical questions arising in educational work, it was compatible with the values of the school, and it sought to relate and confront action and reflection (Altricher et. al. pp.6,7). However, while action research appeared to be the most appropriate methodology to follow in terms of overall project structure and design, some aspects of the project were not purely qualitative. Answering at least some of the initial questions required the quantification of time allocated to aspects of teaching and learning and quantification of questions asked and skills used in learning activities.

The Nature of Action Research

Action research began in the United States in the 1940s. It is one of several qualitative research methodologies which grew from the application of the scientific method to the study of educational problems in the 1920s. This period also saw the emergence of the progressive movement and a growing interest in group interaction and group processes. What distinguishes action research from other research methods is that while all research is concerned with exploration, description and prediction, action research “adds to such goals the requirement of finding a solution” (Dane, 1990 p.8).

The beginnings of action research can be traced to the work of Kurt Lewin (1948). Lewin believed that it was not only important but ethically essential that educational research resulted in change. He argued that although the desired outcomes of research are often clear, ways of attaining these outcomes are often unclear. Action research is a way of defining and achieving these outcomes. According to Lewin, action

research begins with “a grand idea.” The next step involves data gathering and fact finding about the present situation. Two outcomes arise from this, an overall general plan of how to reach the project’s objectives and a decision in regard to the first step of action. Lewin then advocated a series of phases which involved circles of action, evaluation, reflection, fact finding, modifying the original plan, and planning the next action. He likened the process to climbing a spiral staircase.

Other educators saw value in Lewin’s work. Corey (1952) saw a similarity between Lewin’s process and the processes used by teachers in problem solving in schools. Corey believed that the process of action research began with a hypothesis about “what something could be.” The most important benefit of action research according to Corey, was improvement in practice. He asserted that findings from traditional research had never influenced educational practice arguing that in most cases scientific researchers had no intention of doing anything practical with their research findings.

After Corey action research techniques were infrequently applied until the 1960s. This period saw an increase in teacher development programmes which emphasised the importance of making schools, with the help of consultants, the centre of inquiry. This practice led to the recognition that “top down” skills based teacher development imposed from outside was less effective than process oriented programmes which saw personal development as important aspect of teacher and school development (see for example Joyce and Showers, 1980).

Discussion of action research was further promoted by the 1970s curriculum development work of Stenhouse (1975) and Elliott (1977). These educators concluded that the simultaneous utilisation of research and development was important in institutionalising change in schools. This was particularly evident in terms of changing teaching style and curriculum content. Stenhouse pointed out that if teachers are actively involved in data gathering, planning action to achieve outcomes, monitoring actions and reflection, it is more likely that change will occur. By the 1980s and 1990s action research became commonplace. Action researchers like Carr and Kemmis, (1986); Cohen and Manion, (1994); Fullan, (1985); and Kolb, (1984); believe that by taking part in the research process practitioners become empowered and knowledgeable about the process.

Action research usually has social or educational aims and it is widely used in schools. It is applicable in “almost any setting where a problem involving people, tasks and procedures cries out for a solution, or when some change of feature results in a more desirable outcome” (Cohen and Manion, 1994 p. 188). In schools, action research can be a means of remedying problems diagnosed in specific situations; a way of providing inservice training; equipping teachers with new skills; or a means of injecting new or innovative approaches to teaching and learning into classrooms. Action research also has the advantage of improving communication between teachers and academic researchers.

While action research projects may vary in size and scope, they are generally small in scale and concerned with the effects of intervention on the functioning of people in a particular social situation. Irrespective of size, action research projects serve to add to the practitioner's functional knowledge of the phenomena he or she must deal with. This type of research has two main stages. The first is a diagnostic stage in which a problem is analysed and hypotheses are developed. In the second therapeutic stage, the hypotheses are tested by a consciously directed change experiment usually conducted in a social situation. The chief goal of action research is enhanced performance, but this on its own is not enough, school based action research should contribute not only to practice but also to a theory of education.

Action research has a number of characteristics that distinguish it from other methodologies. In action research theories are validated through practice. A problem is diagnosed, remedial action is planned and implemented and its effects monitored. Action research is situational, it diagnoses a problem in a specific context and attempts to solve it in that context. It is collaborative in that it involves teams of researchers and practitioners working together. Action research is participatory, team members take part directly in implementing the research. Finally action research is self evaluative, modifications are continuously evaluated within an ongoing situation to improve practice. Action research is appropriate in school situations because it acts as a spur to action. The objective of the research is to get something done more expeditiously. To achieve this goal, projects need to address not only purely educational factors but also such social factors as personal functioning in the work place, human relations, motivation and job efficiency.

There is some disagreement over where the process starts. Lewin (1948) suggests that action research begins with a desired goal. Kemmis (1985) argues that it begins with a problem or an assessment of current practice. Most educators agree with Winter (1989) "Does it matter which comes first? Do you start by implementing a change? or do you start by analysing current practice in order to formulate a desirable change?" (p. 13)

Various writers identify slightly different stages within action research projects. Carr and Kemmis (1986) and Cohen and Manion (1994) for example use eight stages, formulating a problem in an everyday situation; preliminary discussion and negotiation with participants; review of research literature; modification or redefinition of the original problem; selection of research procedures; selection of evaluation procedures; and implementation and evaluation. Lewin identified seven separate stages in the action research process. Stage one involves identifying a critical problem in an everyday situation. Stage two is a "fact finding" stage in which information is collected in order to clarify the nature of the problem. In stage three research literature is reviewed to determine what can be learned from comparable studies in the same field. This information is then related to the original problem so that hypotheses can be developed. In stage four data is collected so that the hypotheses may be tested. Data collection may also suggest further problems or possible solutions. Testing hypotheses at this stage should not be regarded as statistical testing, it is simply concerned with determining

whether the evidence is congruent with the hypotheses. Stage five is the action stage, in this stage the researcher and the practitioners together negotiate proposed action. This action is implemented in stage six and interpreted and written up as a case study in stage seven.

The principal justification for action research is improvement in practice. This is achieved through enhancing the capacity of teachers as generators of professional knowledge rather than enhancing their capacity to apply someone else's knowledge. Action research is therefore, a bottom up rather than a top down model of teacher development. It assumes that improvements in educational practice ought to be grounded in insights generated by teachers themselves, it therefore shifts the locus of control from the researcher to the classroom. The action researcher assumes that all teachers have certain skills which they can contribute to the research process. To take advantage of these skills the facilitator takes a Socratic role. He or she provides a sounding board against which practitioners can try out ideas and learn more about the reasons for their own actions. Action research is both collaborative and empirical. It relies chiefly on observation and behavioural data. Over the period of the research information is collected, shared, evaluated, recorded, discussed, reviewed and acted upon. Because the situations in which teachers work impose particular restraints, action research procedures need to be flexible and adaptable.

The Research Model

Although this project incorporated elements of both quantitative and qualitative methodology, its overall structure was based on Lewin's (1948) seven stage model of action research (Table 6:1). This model is a cyclic one and some stages of the model were repeated. The initial problem had been formulated during many years of observing and discussing social studies in local classrooms. These general suppositions about learning and teaching in social studies were then refined into specific research questions. The researcher was aware of the paucity of evidence on social studies in New Zealand schools and a fact finding stage was necessary in order to test the accuracy of the initial hypotheses and to refine and clarify the research questions. This stage was completed by undertaking some preliminary observations at Caledonia School. Following this preliminary investigation, a review of current research was completed. This review incorporated relevant research in the field of social studies education and in the wider field of teaching thinking.

The literature review and the preliminary investigation at Caledonia enabled the researcher to refine the initial research questions and to develop some ideas about the form the research might take. These ideas were trialled in an initial pilot at Brightmeadows and Nightingale Schools. Broad hypotheses were developed as a result of this pilot. Participants were arranged at Brightmeadows and the hypotheses were discussed. Data collection followed. Thirty hours of class time was observed in six classrooms at Brightmeadows School and data were collated. This period of observation was followed by the first intervention. In a two day team meeting the participants in the

Table 6 : 1. Project Structure			
Stage (Lewin Model)	Chapter(s)	Date	Action
<u>Stage 1 Identifying the Problem</u>	Chpt. 1	1994	Formulate questions.
*Are higher order thinking skills evident?			
* If not why not?			
* How can the teaching of higher order thinking be enhanced?			
<u>Stage 2 Clarifying the Problem</u>	Chpts. 2, 3,	1994	Review literature.
* What do we mean by “higher order thinking?”			
* What is the place of higher order thinking in social studies?			
<u>Stage 3 Reviewing the Literature</u>	Chpts. 4,5,	1994	Review literature.
*What research has been done in this field?			
* Can this research be used to devise a model which can help to solve the problem?		Feb. 1995	Informal observation.
* Will a pilot demonstrate that this model is practical?		Mch.1995	Pilot.
* What methodology is most appropriate for locating data and implementing change?	Chpt. 6.		
<u>Stage 4 Collecting Data</u>	Chpt. 7.	May 1995	Observation.
*What do observations tell us about higher order thinking in classrooms?			
* What conclusions can we draw ?			Analysis.
<u>Stage 5 Negotiating Action</u>	Chpt. 8.		
* How can we implement change?		Oct.1995	Intervention.
* How can we apply this in classrooms?			
<u>Stage 6 Implementing Action</u>	Chpts. 9,10	May 1996	Observation.
* Does implementing our action plan have positive benefits?		Oct. 1996	Intervention.
* Does the plan have general applicability?		Nov. 1996	Application
<u>Stage Seven Drawing Conclusions</u>	Chpts. 11,12		
* What conclusions can we make.		Dec.1997	

project discussed lesson transcripts and analyses of the observations and proposed possible solutions to the problems posed in the research questions. These solutions were applied in the participants' classrooms and a second series of observations was completed. The second series of observations was followed by a second intervention meeting after which the new methods were implemented again, this time in classrooms not associated with the project. Finally the results were collated and conclusions drawn.

The Nature of the Sample

Observations were conducted at Brightmeadows, a large suburban intermediate school in a major New Zealand city. Brightmeadows is a typical intermediate school whose students represent a range of socio economic and ethnic groups. It was chosen partly for this reason but it was also selected because the researcher is well known at the school and he considered that staff would feel comfortable and confident working with him. Teacher confidence would help ensure the kind of collaboration and participation necessary in an action research project. Like most New Zealand intermediate schools Brightmeadows draws its students from a variety of local neighbourhoods. Many students are the sons and daughters of professional and business families from relatively affluent families, others are from one of the poorer areas of the city where a large number of parents are unemployed. The student population is about thirty percent indigenous Maori but a concentration of Maori students in a bilingual unit reduced the proportion of Maori students in regular classrooms. Each class was a composite year seven and eight of about thirty five students.

Teachers were selected in consultation with the school's deputy principal. For administrative purposes the school is organised into teams or "syndicates" of five or six classes. Syndicates at Brightmeadows are structured so that each comprised a balance of experienced and less experienced teachers and a balance of male and female teachers. Working within one syndicate suited both the researcher and the school very well. The teachers in the group chosen ranged from a teacher in her first year of the profession to teachers with some thirty years of service. One teacher was male, five female. Brightmeadows is of course a pseudonym for the school concerned and the teachers in the study are identified only as T1, T2, T3, T4, T5, and T6. In this study all teachers are identified as female to protect the identity of the one male teacher. Mid way through the first observations an additional observation was undertaken at Ebb Tide Primary School. This observation allowed the researcher to check that techniques being used at Brightmeadows could be applied in a different but similar school. The teacher at Ebb Tide was designated T7.

Methods

The nature of the project was explained to the principal, deputy principal and the teachers concerned. A written description of the project was provided to the Brightmeadows Board of Trustees, the principal, the deputy principal and each of the teachers in the research team. The information provided to the teachers explained that the research was concerned with "the kind of activities students and teachers employed in

social studies lessons.” The researcher stressed that interruptions to classroom routines would be minimal and he asked teachers to teach in the manner and style that they normally used. Thinking skills were not mentioned specifically in the initial discussion with the teachers as it was considered that this information could distort the results of the observations by encouraging teachers to concentrate on this aspect of teaching and learning. The teachers agreed to allow the researcher to observe a number of social studies lessons in their classrooms and to provide him with a copy of their planning.

Before the observations began the writer emphasised to the six teachers in the project that the exercise was to be a team effort. He explained that he was not going to analyse what was wrong with their teaching and then tell them how to correct it. Together the researcher and the teachers would constitute a research team. The writer was simply one member of this team (albeit an important one), together they would identify problems in social studies classrooms at Brightmeadows and then work together to develop solutions to those problems.

Teachers were initially asked to teach a sequence of three lessons on a social studies topic of their choosing. In most instances the lessons were taught on three successive days. Where the school timetable prevented this, the interval between lessons was no greater than one day. Almost all the lessons were an hour in duration or slightly longer.

Because the research needed to “reveal the quality of the setting and reflect the multiple realities of the classroom from the perspectives of the participants,” the researcher endeavoured to record all the important conversation that took place during the lesson. Using a kind of personal short hand made it possible to record all of the teachers’ comments and all of the students’ responses in teacher led discussion. It was not possible to record all of the student discussion which took place during group activities, though the researcher sat with a number of groups and recorded some of these. While student group discussion was interesting, and while it served to illustrate the extent to which higher order thinking was being practised in learning activities, this project was more directly concerned with aspects of teacher behaviour so it was not considered necessary to record all student conversation and discussion. Because recording all student conversation was not essential, the researcher spent some student activity time rewriting sections of “shorthand” notes in more legible form for easier transcription. Lesson transcripts were written up as soon as possible after the lesson, usually the same day, and copies were given to team members the day after their lesson so that they could check them for accuracy. None of the teachers requested changes to any of the transcripts.

In the first series of observations three lessons were observed in the classrooms of four of the six teachers at Brightmeadows. Timetable constraints restricted observations in the other two classrooms to two. The observations indicated that the procedures modified after use in the pilot would allow the researcher to record and collate data effectively. As in the pilot, teacher time was analysed in terms of administration,

direct instruction, teacher led discussion, individual activities, and group activities. Teacher questions were categorised as administrative, simple, prompting, convergent or divergent. Specific higher order thinking skills were identified and categorised using the Brightmeadows model of conceptual understanding discussed in Chapter Five (Table 5: 7). A more detailed description of the categories used and the reasons for choosing them is included in Chapter Seven.

University of Waikato School of Education staff who teach social studies education were asked to validate some of the researcher's initial coding. They were provided with a copy of the Brightmeadows Model (Table 5: 7), a definition of specific higher order thinking skills (Table 7: 1) and a sample of lesson transcript. They were asked to code the transcript according to the categories used in the Brightmeadows Model. Their results were then compared with the researcher's original coding. The validators were experienced teacher educators familiar with social studies skills and terminology.

While there were some minor differences in their coding in terms of specific skills, all staff members identified the same skill groups in the transcripts. The validating exercise did however raise a number of other issues concerning the model. The validators pointed out that although almost all the skills identified in a learning activity were in one of the model's six skills groups, there were activities which included skills from a number of groups. The presence of a variety of skill groups in any one activity needed to be made apparent. Sequences were therefore considered in terms of dominant groups of skills and minor groups of skills and two systems of collating results were devised. Using the first system the skill emphasised or dominant in the activity was scored, using the second system all skills evident in the activity were scored. The scoring system is explained in more detail in Chapter Eight. Question categories were validated in the same way that coding using the skill groups in the Brightmeadows Model was validated. That is, a description of each question category and examples of questions in each category were provided to staff members who then coded a series of questions from the lesson transcripts. The results were compared with those completed by the researcher and other staff members.

Interventions followed each of the two series of observations. In the first the team discussed the model of conceptual understanding described in Chapter Five. They related this model to the national curriculum in a second model, and, because the project was concerned with improving practice, they developed a planning format based on both models. The first intervention is described in detail in Chapter Eight, the second in Chapter Nine. Both were held on a local university campus. This provided a location in which the team were less likely to be disturbed and ensured access to paper, pens, curricula, and equipment. Working in different surroundings was beneficial for other reasons, it was important for example that the surroundings were pleasant to work in. Taking the team out of their usual environment also gave the teachers a pleasant change in routine and enhanced the importance of the project.

The chosen methodology required the researcher to participate in the intervention as a team member and to “provide a sounding board against which practitioners could try out ideas and learn more about the reasons for their own actions.” Because this meant he could not record dialogue in the same way as in the observation lessons, a tape recorder was used. The taped discussion was written up into transcripts as soon as possible after the discussion and transcripts provided to team members.

A final consideration was reliability. The writer has pointed out in this chapter that there are limitations to qualitative research. Because it is subjective, limited to one setting, and unable to be replicated, qualitative researchers are required to use other tests of reliability. In this project reliability was achieved by triangulation, described by Cohen and Manion (1994) as “the use of two or more methods of data collection in the study of some aspect of human behaviour” (p. 233). In normative research triangulation provides the kind of reliability provided by replication in positivistic research. In fact, Cohen and Manion argue that “confidence can only be achieved as far as normative research is concerned when different methods of data collection yield substantially the same results (p. 233).

In this project data on higher order thinking and conceptual understanding were collected from a variety of sources. Time allocation, teacher questions and the presence of specific thinking skills were quantified. The use of thinking skills and conceptual understanding was determined by perusing teachers’ planning. Detailed lesson transcripts provided an overview of classroom interaction and behaviour. During the interventions the teachers in the team had opportunity to discuss and debate issues and to present their views visually and verbally. They were observed and recorded as they explained their ideas to a teachers meeting and they formulated practical working plans for applying their ideas in their own classrooms and in the classrooms of other teachers.

This chapter has provided a broad overview of the methods and methodology employed on this project. More detail on particular aspects of the project is provided in chapters which follow, particularly Chapters Seven and Eight.

Chapter Seven

The First Observations : Recording and Analysing

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The purpose of observational data is to describe the setting that was observed, the activities that took place in that setting, the people who participated in those activities, and the meanings of what was observed from the perspective of those observed (Patton,1990 p. 202).

Introduction

This chapter and the three which follow it describe the major findings of the research. This chapter which describes the first series of observations, represents stage four of Lewin's (1948) action research model. In all, sixteen lessons were observed. This involved twenty two hours of classroom time. The observations were transcribed and the transcriptions were validated by the teachers' comments. The transcripts were next examined in order to identify indicators of higher order thinking. When the extent of higher order thinking indicators and the degree to which these related to the six categories of skills in the Brightmeadows Model had been ascertained, the researcher reanalysed the transcripts in order to identify those aspects of teacher effectiveness and teacher understanding which might have enhanced or limited higher order thinking. Teacher effectiveness was considered in terms of time allocation, questioning and planning as discussed in Chapter Five and illustrated in Table 5:1. Analysis of the degree to which teachers understood the process of conceptual understanding and the relationship between specific higher order thinking skills and conceptual understanding was dependent on discussion and interaction with the teachers in the team. This discussion took place in the intervention which followed the observations. The intervention is considered in detail in Chapter Eight.

From the beginning of the project the need for accurate definitions of specific skills had been apparent. Some of the confusion noted in the preliminary exercise at Caledonia and discussed in Chapter One was the result of confusion over terminology. The pilot study and the process used to validate the Brightmeadows Model described in Chapter Five further highlighted the need for accurate definitions of specific skills. To counter this confusion the writer prepared a more detailed version of the Brightmeadows Model which incorporated definitions of each of the specific thinking skills. This revised version of the Brightmeadows Model is shown in Table 7:1. In order to make the process of transcription and analysis clear to the reader, two complete lesson transcripts follow Table 7:1. Examples of the methods used to analyse the transcripts follow each example. The transcripts also serve to make the reader aware of the tenor of interaction which occurred in the classrooms and to provide a "feeling for" the type of lesson being observed.

Table 7:1. Categories and Definitions in the Brightmeadows Model.**Group One Skills : Identifying****Characteristics**

Group one skills require students to identify items of information relevant to a topic and to collect these in no special order or sequence.

Example

That is an Indian on a horse. He looks like a Plains Indian. He could be a Sioux or an Arapaho.

Definitions

recall	To recollect or remember.
collect	To bring or come together to assemble or accumulate.
recognise	To identify a person or thing as already known. To know again.
describe	To state the characteristics, appearance etc. of in spoken or written form.
identify	To establish the identity of. To recognise.
label	To attach a label to. To assign to a category.

Group Two Skills : Explaining**Characteristics**

Group two skills require students to elaborate or explain items of information.

Example

The Indian is on horse back because he needs to follow the buffalo herds and hunt them.

Definitions

translate	To express an idea, book etc. in a simpler form.
interpret	To explain the meaning of.
define	To give the exact meaning. To describe or explain the scope of.
explain	To make clear or intelligible with detailed information.
summarise	To make a brief account or abridgement of.
extrapolate	To calculate approximately from known data.

Group Three Skills : Relating**Characteristics**

Group three skills require students to relate collected pieces of information to each other or to relate them to prior knowledge or information from other sources.

Examples

The Plains Indians were dependent on the buffalo in the same way that the Lapps were dependent on the reindeer.

We can group the words hide, sinew, horn, fur, bone, and meat together because these are all things the Plains Indians got from the buffalo and used to sustain themselves.

Definitions

connect	To join one thing with another.
relate	To establish a connection between.
group	To form into a group (a number of things located close together or classed together).
differentiate	To constitute a difference between or in. To find differences between.
arrange	To put into the required order. To classify.
distinguish	To see or point out the difference of. To draw distinctions.
check	To examine the accuracy, quality or condition of.
compare	To liken. To express similarities in.

Group Four Skills : Evaluating**Characteristics**

Group four skills require students to judge the validity of evidence or to make decisions based on appraisal of evidence.

Examples

The evidence suggests that once the Sioux had horses and firearms the decline of buffalo numbers was rapid. It could be argued therefore, that the Sioux started the decline.

The Sioux had no title to the land and they wandered over the plains as nomads. European settlers, had as much right to hunt and kill buffalo as the Sioux.

Definitions

appraise	To estimate the value or quality of.
judge	To form an opinion about. To estimate or appraise.
decide	To come to a resolution as a result of consideration.
criticise	To discuss critically.

Group Five Skills : Applying**Characteristics**

Group five activities require students to use processed information to predict, to solve problems or to use information in new situations.

Example

The plains were grassland so once the buffalo were gone maybe the Sioux could have raised cattle.

In other parts of the plains they grow wheat; wheat is a kind of grass, so the Sioux could grow wheat instead of hunting.

Definitions

apply	To make use of as relevant or suitable. To employ.
solve	To find an answer to an action or course that removes or effectively deals with a problem.
show	To cause to be visible or manifest. To produce or exhibit a thing for scrutiny. To demonstrate, point out or prove.
experiment	To test or trial a hypothesis.
predict	To make a statement about the future. To foretell or prophesy.

Group Six Skills : Presenting

Characteristics

Group six skills require students to demonstrate their understanding of a topic by presenting processed information in new ways.

Example

These bar graphs show the decline of the buffalo population between 1850 and 1880.

This chart shows the products the Plains Indians got from the buffalo and the importance of each.

In our role play members of a tribal council will debate whether to stay in South Dakota or move to Canada.

Definitions

produce	To bring forward for consideration, inspection or use. To manufacture from raw materials. To bring into existence.
propose	To put forward for consideration or as a plan.
design	To produce a design for.
plan	To arrange a procedure beforehand. To form a plan.
combine	To join together. To unite for a common purpose.
formulate	To express clearly and precisely.
construct	To make by fitting parts together.
compose	To construct or create a work of art.

Lesson Transcript One Series One

Observation #3A

School Brightmeadows

Teacher T3

Date May 2nd

The lesson begins at 11.11 with students in their desks. T3 is at the front of the room. An OHP and prepared transparency are at the front of the room.

T3 Bring your chairs around here.

Students move their chairs so that they can see the OHP.

T3 Okay, we've done this kind of activity before. We did it as part of our last social studies unit. Let's hope we don't have too much trouble with the sun. Can everyone see the screen? Put your hand up if you can't see. Okay, move in a little closer.

T3 displays one corner of a masked OHT of a New Zealand stamp.

T3 What do you think this might be? What can you see?

St There is a d.

St A one and a d. It might stand for one dollar.

St It's a one dollar stamp.

St It's part of a picture.

T3 un.masks a little of the transparency to show the date 1940.

T3 Now what?

St It's one dollar or one cent.

St It could be part of a 1940 one dollar note.

St D means cent.

St 1940 says when the picture is. The picture is on a one dollar note.

St If it was a note it would be a different shape.

T3 un.masks more of the picture

St It's a centennial note.

St That looks like the ship on the fifty cent coin.

St The "Endeavour."

T3 So someone thinks it's the "Endeavour." Whose ship is that?

St Captain Cook's.

St It might be about Captain Cook in 1840.

T3 Has anyone worked out what the dates might be about?

St It could be celebrating a hundred years.

T3 Good, someone remembered. What do we call a hundred years?

St A century.

T3 What do we know about the ships in those days?

St They were wooden.

St They didn't have motors.

St They used wind power.

St The ships were called clippers.

St It's about the landing of Captain Cook.

T3 There is something different here - *unmasks a little more* - . What can you see now?

St That's a wave.

St It's a hand.

St It's a picture in a frame.

T3 Put your hand in a similar position. What do you think the hand in the picture might be doing?

St Pointing.

St Pointing to a navigational map.

T3 Well there are lots of good words coming out - *unmasks a little more* - .

St He is holding something.

T3 What do you think it is?

St A map.

T3 Are you certain about that?

St Yes.

T3 Why can you be so certain? How do you know it is the "Endeavour"?

St It looks like it.

St It looks like the ship on the fifty cent coin.

T3 Let's have some more - *unmasks more* - .

T3 Let's refocus on the date. We believe the ship is the "Endeavour" and we believe that the man is Captain Cook. We know there is 100 years difference in the dates. What is the picture about?

St 1840 is the date of the signing of the Treaty of Waitangi.

St 1844.

T3 How could we find out?

St The map might be New Zealand.

T3 What about the period between the dates?

St A century.

St See I knew it.

St There's a trace of an island.

T3 Which side is the compass? Left or right?

St Right.

T3 Do you see anything else besides the island which might tell us it is New Zealand?

St There is a frame around it.

T3 So we predict that the map is of New Zealand. *Students assent.*

St It looks like part of a boat.

St It's the bottom of the North Island and the top of the South Island.

St It says century.

St Centennial.

St Centenary.

T3 That might be right.

St There are marks on the map showing where they have been.

T3 Good girl, she's reading up above the picture to use all the clues.

St It's a century, it's a hundred years of something.

St It's the centenary of the discovery of New Zealand.

T3 Put your hands up if you think that's right.

St Its the centenary of Cook's discovery.

T3 unmask more.

St See I told you, it's a stamp.

St It's a map of New Zealand. It might be the one that Captain Cook drew.

St Cook visited New Zealand in 1769.

St It could be an old one dollar note.

St It says chart of New Zealand 1769.

St It's got perforations on it so it's a stamp.

T3 Yes what we have been looking at is a stamp.

St And it cost one dollar.

T3 Why do you say that?

St Because it says.

St No the 'd' stands for one dime.

T3 Focus back on the stamp. We haven't finished looking yet. We haven't worked out what the lines are around the stamp.

St They might mean the stamp is worth a lot of money.

St They are just to look at.

St No, they are those lines on a map.

T3 What do you call those?

St Latitude and longitude.

St Is that a hole in the side of his coat or is it something in the picture?

T3 If you look closely you will see it's a map rolled up.

St A scroll.

T3 Now does anyone have any idea what our social studies topic is going to be about?

St New Zealand stamps.

St History.

St Captain Cook.

St A history about stamps.

T3 We've had ideas from four people, we need to put their ideas together later but the next step is to put you into groups. In here I have some cards. We have done this before but this time we are doing something similar but with different examples. On the back of each card there is a number. The people with numbers have a special task.

T3 hands out cards to students. Each one shows part of a picture.

T3 Take one piece and sit down. Excuse me, sit down please. You are going to be formed into six groups.

When you are asked to I want you to stand and move the chairs to the back then I will give you three minutes to form your groups by matching up the pictures. One group will be short one person because we have one person away today. Right you have three minutes. Begin now.

Students move around the room showing their pieces of picture to others and forming whole pictures in groups.

T3 You have one minute left. Don't form your groups by the numbers on the back, use the pictures on the front.

T3 claps and students respond by stopping their activity and listening.

T3 Please sit down in your groups in six separate areas of the classroom. Thank you Kiley you are showing good initiative. No Katrina you can't work in the cloak bay. Sit down and face here please.

Students sit down in groups, five groups are at desks, one group on the floor. T3 checks the groups to see if they are correct and redirects one student. T3 puts her hand up and the students respond by facing her quietly.

T3 Hands up people with number one on the back of their piece. That's good, you people are in charge of these sheets of paper. You will ensure that they are used correctly. There is one for every group.

T3 hands out sheets of prepared paper.

Hands up those with number two on their piece. You are responsible for getting some glue, a brush and a piece of grey paper. Number threes, you are responsible for getting a pair of scissors, writing tools and a ruler. Now you have ninety seconds to make your groups work.

As students collect material T3 prepares a drawing on the board and writes up a list of tasks.

T3 Right, looking at the board. You've had enough time to get ready. There's a bit of writing out involved in the task and don't glue anything until everything else is ready. The first task is to glue the stamp in place.

Please ensure that the sheet is the way I have it here, the narrow edge is at the top.

This task - *indicates task one on board* - asks you to do as explained here. This is a collection of things. This one - *indicates task two* - requires you to do a bit of writing for your group. This is the final one - *indicates a blank space on the blackboard diagram* - I want to tell you about that later, at about 12. 15. Now you have twenty minutes to complete your tasks.

Each group has a photocopied enlargement of a New Zealand stamp with an historic theme. The task requires students to paste the stamp onto a large sheet, hypothesise about the event depicted on the stamp and write a short statement about it. Hypotheses were later verified by referring to texts..

T3 (*ten minutes into the activity*) I hope those pictures are pasted on and you have begun writing. You only have twenty minutes to finish. One group has complained about being unable to work because it is too noisy so please keep the noise down.

T3 claps ten minutes later and students respond.

T3 You have five minutes before the bell goes, five minutes to find out all the facts about why your stamp was printed. You have five minutes to do so.

T3 claps five minutes later, students respond

T3 Stop what you are doing and sit in your groups. The last task I am going to give you is a piece of information that comes from a book where the stamps are illustrated. It is the text that accompanies the illustration. What do you think the text might be about?

St It could be about the stamp and say what it is.

St It explains what is on the stamp.

T3 Yes, it says why the stamp was printed and when. Read your predictions and compare them with the text. I would like you to highlight sections in your prediction that are verified by the text.

Then I want two people from each group prepared to come up in five minutes, one to talk about their report and another person to tell what the text says about the stamp.

T3 claps and students respond

T3 Please send up to the front two representatives from each group. The rest of you congregate in the centre to listen to the reports. Ross Dependency Group you might like to go first. First reader tell us what you thought the stamp was about.

St We thought it was to celebrate the Ross Dependency doing something about Antarctica.

T3 Second reader tell us what the text says your stamp is in fact about.

St reads from text about the Ross Dependency and Scott Base.

T3 What points were you able to check off as correct?

St We said it was about Antarctica.

T3 Next the two people from the group with the Christmas stamp. Hold it up so we can see.

St It looks like a Maori Christmas. The stamp is from 1964. It looks like the man is speaking or praying and the people are listening or mourning.

T3 What does the text say the stamp is about?

St The stamp commemorates the first Christian sermon --- *reads from text.*

T3 What points were you able to cross check?

St None.

T3 Didn't you say it was a missionary?

St Yes we did.

T3 Thank you, now the air force stamp with the war birds on it. What did your group think about it?

St We thought the war planes on the stamp were to remind the people of New Zealand about the war.

T3 What did the text say?

St After World War Two --- reads from text.

T3 Thank you. Oh we didn't find out what facts checked out. Didn't you have any?

St No.

T3 Next stamp, the Anzac stamp.

St Our stamp celebrated World War One and World War Two. It was printed on the twenty first anniversary. We celebrate Anzac Day to remember the soldiers who died.

T3 What does the text say?

St This stamp represents --- reads from text.

T3 What about cross references?

St We got the twenty first anniversary, and that it was about Anzac Day and about soldiers dying.

T3 Thank you, we are running out of time. Has anyone put together those ideas to tell us what our social studies unit is about?

St Stamps.

St A history of New Zealand stamps.

St A history of stamps in New Zealand.

T3 You are all nearly right. We will be looking at New Zealand history through stamps. I am sorry we have no more time please see that the paper and glue are returned.

Lesson ends 12. 38

Transcript Two Series One

Observation #4B

School Brightmeadows

Teacher T4

Date May 4th

The lesson begins with students in their desks, they are just finishing Maths. At the front of the room there is a chart with an enlarged photocopy of a postage stamp depicting a sea horse in the top left hand quarter.

Opposite the sea horse in the right hand top quarter is some text describing sea horses. The bottom section of the chart is drawn up in a grid of 9 squares.

T4. Everything off desks please, sitting up and facing this way. You had time yesterday to work on your task and you had last night to complete it. Put your name on the back and we'll collect them in so I can go through what you've done so far. This is to be done as a group task and I have enough materials for eight groups. That means groups of four. On the board I have an enlargement of an early stamp depicting a sea horse. Why might that be on a stamp?

St To advise people about marine life.

St Are sea horses real?

T4 Yes, some years ago I went netting and we came up with six or seven. My father in law told me that they make great ornaments. You put them in the sun and dry them and they keep their shape. When they are dry you can spray them with polyurethane. But that's getting off the subject.

St How big do they get?

T4 About as big as the picture at the front there.

St At Raglan we used to catch them and take them to the man who ran the fish and chip shop. He would give us a free feed of chips for them. He had a salt water aquarium where he would put them.

T4 Okay. You're going to be given a picture of a stamp and I want you to draw an enlargement. On mine I wanted to make it twice the size so these squares - *indicates on chart* - are twice the size. Each member of the group draws one section. I suggest you use pencil. If you choose this - *holds up rectangular stamp* the shape is different so if you have a rectangular stamp don't make your enlargement twice as big increase it by 50%. If for example from there to there - *indicates* - is 20 centimetres yours will be -?

St 40.

St 30.

T4 Each team will have someone in the group who will need to make that decision and there is another task. I want you to choose a title. Look at the picture on the stamp and choose one group member as a scribe or recorder. Write down the different things about that stamp, for example, why the stamp was made, what's on the stamp, what it commemorates if anything, then I will provide you with facts about the stamp so you can check to see how accurate you have been. One group can have this chart - *gives chart to a group near the board.* -.

I'm sure the other groups will work well with the stamps I have here.

T4 hands out large photocopies of stamps till every group has one.

T4 There is cartridge paper at the back. Find a gap on the floor to work if you wish. If you want to borrow the thick felt pens I have some here.

Group work begins

T4 - 5 minutes into group activity - Everybody, you are all preoccupied with enlarging the picture. Some are sitting back. You need to organise your groups. Someone has to write up the information and someone needs to do the headings. Everyone should contribute in some way. There are spare desk tops or you can use the floor if you wish.

T4 circulates around the groups. Most discussion is concerned with measurement. e.g.

T4 Are you making yours twice as big?

St No half as big again.

T4 Okay so measure this section.

St 14 centimetres.

T4 So if it's half as big again how big will it be? What's half of 14?

St 7

T4 So add that to the eight.

St 21.

T4 Right, so this part of the enlargement will be 21 centimetres.

T4 You can all be working on that.

St We don't know where the tail will go until he's finished.

T4 You should be able to figure that out. See where the tail is on this square, it will be in the same place on the enlargement, so it will be here.

T4 - 36 minutes into task - . Thank you, stop what you are doing. At this stage there are only two groups where everyone is contributing. You need to sit so that everyone in the group is able to contribute. I'll remind you that after you have got the measurements for the enlargement you are to identify aspects of the picture on the stamp. If you are in a group of four, two people can do the drawing and two can do the ideas about the picture. If you are not exactly right at this stage it doesn't matter, we will check your facts later on. You have ten more minutes to work.

T4 - 53 minutes into activity- How many have glued the smaller stamps on the chart? Those who haven't please do that. Can I have those charts as they are. Stack them up at the back of the room please.

T4 comments on noise and the need for manners when working in groups before going over some aspects of the activity.

T4 This stamp is 12 by 16. If I asked you to double it what would it be?

St 24 x 32.

T4 If I asked you to increase this picture by half what would it be?

St 18 x 24.

T4 Yes that's it, half of 12 added to 12 is 18 and half of this- *indicates* - added is 24. Some groups were doing their enlargements 3 to 1 or 4 to 1 and because the pictures were good I let you go on with them but you're not going to have room to put in the rest of the things on the chart.

The bell rings

Lesson finishes 10.44

Analysing the Data : Skills Emphasised and Skills Evident

In earlier chapters the researcher explained how the Brightmeadows model (Table 5: 7) was used as an analytical tool to determine the extent of higher order thinking in the observations. Validation of the model's use by lecturers in social studies education at the University of Waikato indicated that while most learning activities emphasised one skill, a number of other specific skills were usually also present in the same task. That is, in a learning activity which emphasised for example, categorising and grouping information (skill group three, Table 7:1), students might also be required to identify items (skill group one, Table 7:1) or make inferences about data (skill group five, Table 7:1). This tendency encouraged the writer to devise two methods of determining the nature of skills in the observations. The first method was used to identify the skill emphasised in the activity, the second, the skills evident in the activity. A description of the application of each of these methods follows.

Skills were first determined using the classifications and definitions in the Brightmeadows Model (Tables 5: 7 and 7:1). The learning activity was timed to the nearest minute and this time was listed against the skill category identified as emphasised. When this had been done other skills apparent in the task were distinguished. These were listed as skills evident. To ascertain the number and category of evident skills used, skills were listed in columns ordered according to the six groups of the Brightmeadows Model.

The systems can be best explained by referring to the learning activities in the transcript of T3's lesson (Transcript One). T3 set three tasks as learning activities. Students spent a total of twenty eight minutes on these tasks. In the first task T3 asked the students to "Paste the picture of the stamp onto the large sheet of paper, use a ruler to draw a box beneath the the picture." The students followed T3's instructions by pasting a photo copied enlargement of a stamp onto a sheet of paper and drawing a box in a prescribed area. This task took five minutes. Few higher order thinking skills were involved in this task which required students simply to follow written and verbal instructions concerned with pasting the picture and drawing the box. In terms of the Brightmeadows Model some skills from group one are evident, notably, collecting, recognising and labelling. The skills emphasised in this task are in the same category.

In the second task students were asked to "Discuss in your group what you think the picture on the stamp is about. Write a statement in the box below the picture describing what you think is happening in the picture and why it is important." The processes involved in this task can be best illustrated by referring to one group's stamp. The stamp commemorated the first Christian sermon preached in New Zealand in 1814. The task required the students to identify things and people in the picture (Maori, a preacher or missionary, a pulpit, a British flag). They then had to interpret what they had identified (the clothing suggested the event took place in the nineteenth century). The students related the items in the picture with each

other, (the missionary was either preaching or talking to the Maori, some Maori were listening some were not). They related data to what they knew about New Zealand history (because the man preaching was dressed in nineteenth century clothes he was probably a missionary. Samuel Marsden was a famous missionary). Finally the group had to synthesise their data to produce a written statement about the picture on the stamp. Other groups followed the same procedures with stamps which depicted events like the anniversary of the Battle of Britain, Antarctic exploration, and the first export of frozen meat from a New Zealand port.

The time allowed for this task was fifteen minutes. The task was a complex one involving a number of skills. The students were required to first identify familiar elements in the picture (group one), to interpret these (group two), to relate them to what they knew about New Zealand history (group 3), and to share their ideas in producing a written statement (group 6). The skill groups evident included groups 1, 2, 3, and 6. Because the task was concerned primarily with interpreting the picture (group 2), the task emphasised was categorised as skill group three, interpreting and relating. In recording skills emphasised, the researcher listed fifteen minutes against skill group three. In recording skills evident the researcher listed identifying, interpreting, relating and producing in the appropriate skill column for this lesson (see Table 7: 3).

In task three students were required to “Compare the ideas your group had about the picture on the stamp with the information in the text.” The task took eight minutes. Students were asked to compare their interpretation of the picture with factual information in a text on stamps. The skills used were primarily those in group 3, checking, comparing and relating. The skill group emphasised was again group three.

Thus, in the one lesson illustrated in T3’s lesson transcript, the skills emphasised were identifying (group one) five minutes; interpreting (group two) fifteen minutes; comparing or checking (group three) eight minutes. Skills evident in T3’s lesson were collecting, recognising, labelling, (group one), interpreting, (group two), relating, (group three), producing, (group six).

The second illustrative transcript, T4’s second lesson (Transcript Two), provides an interesting contrast in terms of skills. This lesson ran for seventy five minutes, the one learning activity was fifty two minutes long. T4 asked her students to enlarge a photocopied picture of a stamp on to a larger sheet of art paper and to “Write down the different things about that stamp, for example, why the stamp was made, what’s on the stamp, what it commemorates if anything.” While the teacher led discussion at the beginning of the lesson involved some specific thinking skills, the learning activity as it was observed, required virtually none. Although T4 told the groups that someone in each group should identify and

interpret the items on their stamp, no one did. All of the students who were on task were involved in the scale drawing. Fifty three minutes into the activity, shortly before it finished, T4 reminded students that they were to have listed some factual information.

In this respect T4's lesson provides a good example of a trend present in varying degrees in all of the lessons observed. Although T4 listed thinking skills as learning objectives, many were not apparent in the learning activities in her unit. This demonstrated that checking teachers' plans to ensure that thinking skills were included in units of work was insufficient on its own. All of the teachers in the team listed specific thinking skills as objectives but whether or not learning activities incorporated these skills depended on that teachers goals and classroom management.

Skills Emphasised

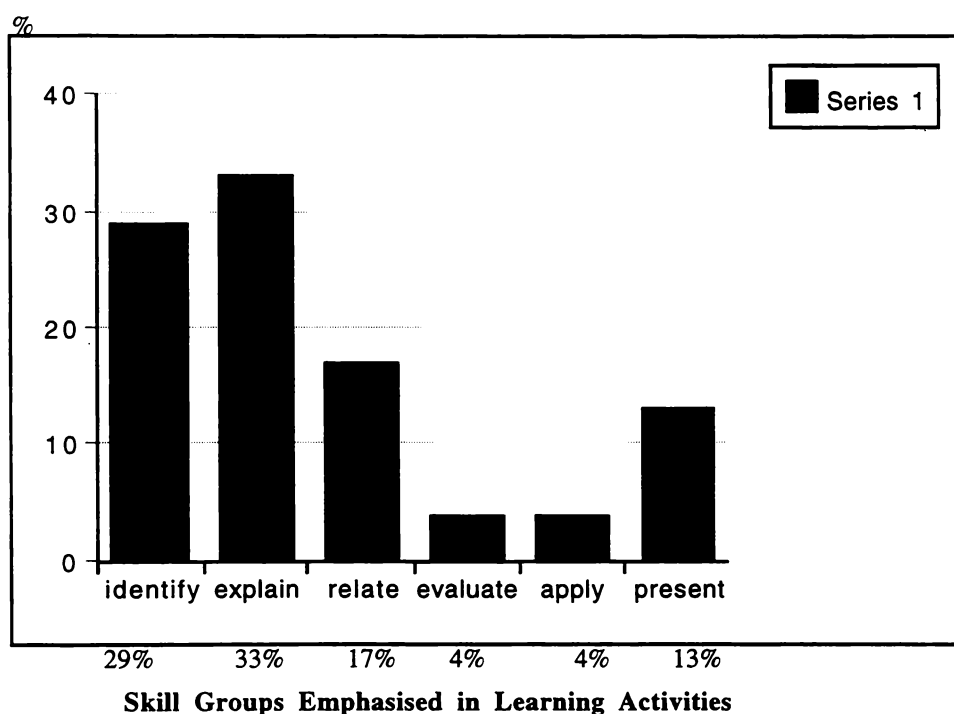
The foregoing illustrates the way in which each transcript was analysed in terms of skills emphasised and skills evident. The next step was to consider the lessons observed teacher by teacher and then to aggregate the data. Results of the analyses for skills emphasised appear in Table 7:2 and Figure 7:1. Results for skills evident are shown in Table 7:3 and Figure 7:2. When data from all of the transcripts were reviewed, it was found that the researcher was mistaken in his initial assumption that few higher order thinking skills would be apparent in the lessons observed. The transcripts showed that all of the teachers in the study used a number of higher order thinking skills in their lessons though there was in most instances a marked imbalance in skill groups. Table 7:2 and Figure 7:1 illustrate the spread of skills emphasised over the six skill groups. Table 7:2 also demonstrates differences among individual teachers. While a range of skills is apparent in most lessons, the absence of intermediary skills between identifying and presenting in T4's lessons discussed above is clear. T1, T5 and T6 utilised a reasonable spread of skills, although "applying" was emphasised by none of the teachers except T6. In T2 and T3's lessons almost all of the time, (94% and 82%) was spent on the first two skill groups. Evaluating and applying skills were rarely apparent.

When the skills emphasised by all the teachers in all twenty four lessons observed in the first series of observations were considered, it was apparent that most were concentrated in the lower groups of the Brightmeadows Model. Sixty two percent of the skills emphasised were in groups one and two. Seventy nine percent of skills emphasised were in the first three skill groups, identifying, explaining and relating. These data led the researcher to conclude that while a considerable amount of higher order thinking was apparent in the first series of observations, more could be achieved. There appeared to be a need to encourage the teachers in the team to use a greater variety of skills and to concentrate more on teaching skills in those areas of the Brightmeadows Model which were receiving least attention.

Table 7:2. Aggregated Skills Emphasised Represented as a Percentage of Task Time:Individual Teachers

CATEGORY	Tchr. T1	Tchr. T2	Tchr. T3	Tchr. T4	Tchr. T5	Tchr. T6
identifying	12	16	41	50	37	18
explaining	23	78	41	0	29	27
relating	25	0	18	0	16	43
evaluating	17	6	0	0	1	0
applying	7	0	0	0	5	12
presenting	16	0	0	50	12	0
TOTAL	100	100	100	100	100	100

Fig. 7:1. Aggregated Skills Emphasised Represented as a Percentage of Total Task Time : All Teachers



Skills Evident

In Chapter Five the writer described how University of Waikato staff validated procedures for identifying specific thinking skills in the Brightmeadows Model by checking sections of coded transcript against the skills in the model. In the discussion which followed this exercise, validators pointed out that although activities generally emphasised a particular skill, most incorporated a number of others. In an early attempt at coding, the researcher had used six colours, one for each skill group in the model. If tasks were described in terms of these colours, the block of time which constituted a particular learning activity could be

represented as shaded in one colour to represent the dominant or emphasised skill group. The other skills involved in the activity could be represented by swirls of other colours within the main block of colour. These secondary skills were labelled skills evident.

The task already discussed in T3's transcript (Transcript One), provides a good example of skills evident. T3's second learning activity required students to "Discuss in your group what you think the picture on the stamp is about. Write a statement in the box below the picture describing what you think is happening in the picture and why it is important." The task was primarily concerned with interpreting (skill group two) but the activity required students to use a number of other skills as well. The students were asked to identify things and people in the picture, to relate the items in the picture with each other, to relate them what they knew about New Zealand history, and to finally produce a written statement about the picture on the stamp. The skill of interpreting was emphasised in the task but the skills evident included identifying, relating, and producing.

To ascertain the number and category of the skills evident in learning activities, skills were grouped in columns ordered according to the six groups in the Brightmeadows Model (Table 5:7). Using this method the skills listed for T3 in the tasks described in the lesson transcript were collecting or recognising, (group one), relating (group three) and producing (group six). The system of listing skills evident in learning activities is shown in Table 7:3. This table lists all of the skills evident in the learning activities observed in the first series of observations (24 lessons, over 30 hours of teaching time). Figure 7:2 shows skills evident in each category in the lessons of all six teachers as a percentage of the total number of skills evident in all the lessons. The numbers in the left hand column of Table 7:3 identify lessons and tasks. For example, 3:4 indicates the third lesson for a particular teacher and the fourth task in that lesson.

While Table 7:3 should be interpreted broadly, it is possible to gain a general picture of the application of skills evident in all of the classrooms. Table 7:3 lists 139 skills, 48 in group 1, 33 in group 2, 27 in group 3, 7 in group 4, 15 in group 5, and 9 in group 6. These figures are represented as a percentage of the total number of skills in Figure 7:2. This figure indicates that while there were again differences among individual teachers, overall trends are the same as those for skills emphasised. Fifty nine percent of the skills evident are in the first two skill groups, identifying and explaining. Seventy eight percent are within the first three skills groups.

A comparison of Tables 7:2 (skills emphasised by individual teachers) and 7:3 (skills evident in the lessons of particular teachers) indicates that the balance of skills taught by individual teachers is better than suggested in Table 7:2. T2 did not emphasise relating or applying skills in her lessons, T3 emphasised neither evaluating nor applying; T6 did not emphasise evaluating. However, all of these teachers compensate for an imbalance of

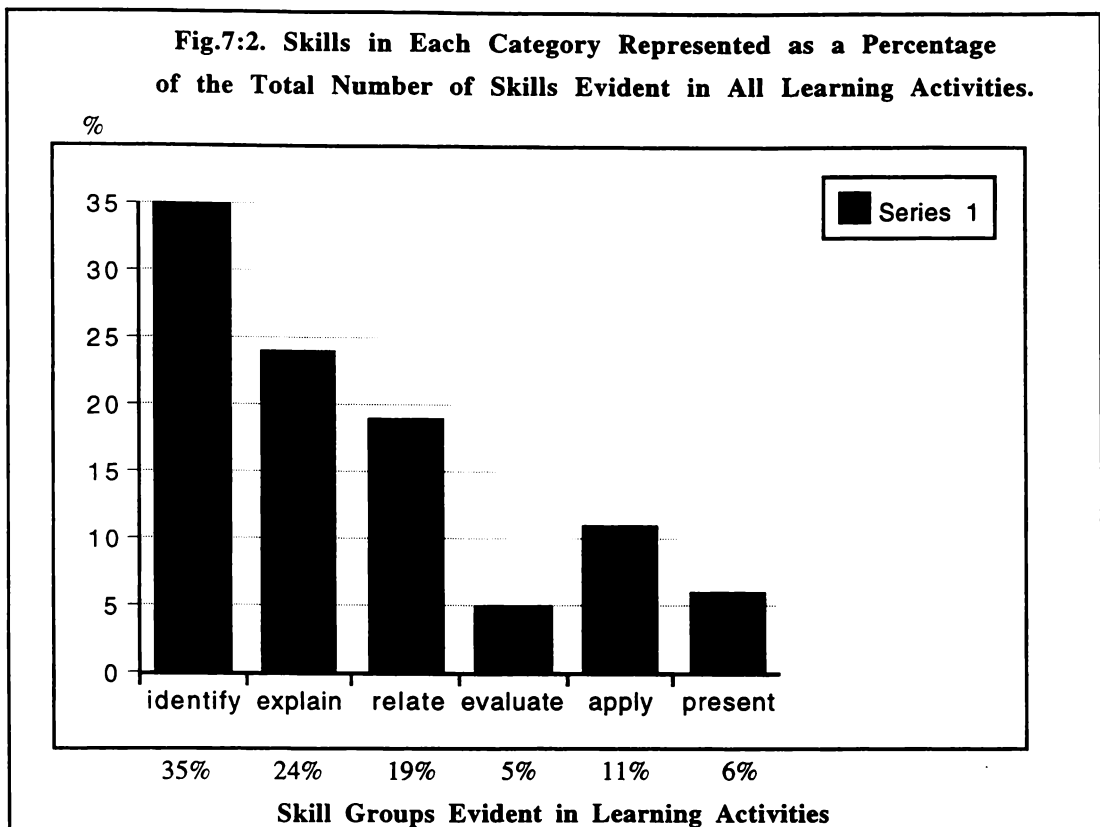
emphasised skills by including these skills in their tasks as evident skills. Relating skills were evident in T2's lessons on three occasions and evaluating skills on two. T3 had five examples of applying skills evident. and T6 three examples of evaluating.

Table 7:3. Skills Evident in Learning Activities : All Teachers, Series One Observations

Thinking skills identified in each task set by the teachers are identified in six columns, these represent the six sets of thinking skills in the Brightmeadows Model. The numbers in the left hand margin indicate the lesson and task.

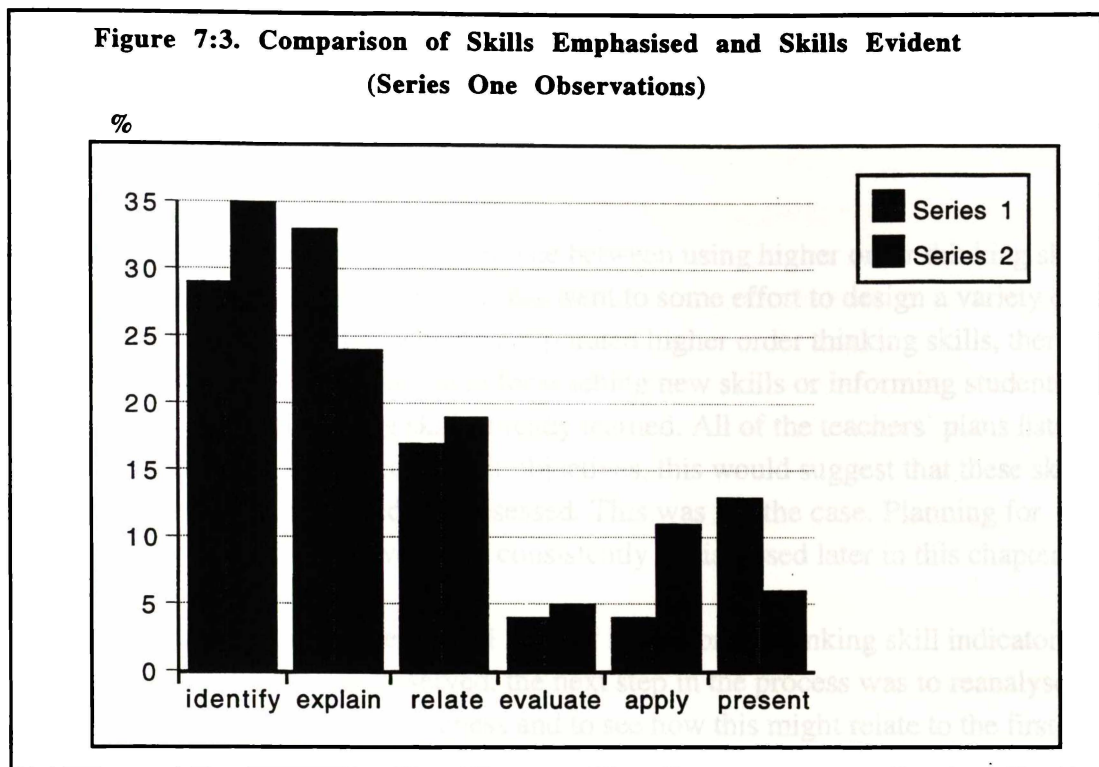
	Group 1 Identify	Group 2 Explain	Group 3 Relate	Group 4 Evaluate	Group 5 Apply	Group 6 Present
Teacher T1						
1.1	identify	interpret	relate		infer	
1.2	recall	interpret				produce
1.3	recognise	interpret				
2.1	summarise					
2.2	recognise	explain	classify			
3.1	summarise					
3.2	recall	define				
3.3	recall	explain				
3.4	recognise	interpret	group			
4.1	identify	interpret				
4.2	identify		classify			
5.1	recognise	interpret				
5.2	examine	interpret				
Teacher T2						
1.1	recognise	interpret	relate		infer	
1.2	recall			decide	infer	
1.3	identify	interpret	relate			solve
1.4	recall	interpret	relate			apply
2.1	recall			appraise		
Teacher T3						
1.1	recognise					
1.2	identify	interpret	relate			produce
1.3			check			
1.4			relate			
2.1	identify		arrange		infer	

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
	Identify	Explain	Relate	Evaluate	Apply	Present
3.1	identify		arrange		infer	
3.2			relate			
3.3	recognise	interpret	arrange		apply	
4.1	recognise	interpret	relate			
4.2	identify	interpret	relate		infer	
4.3			check			compose
5.1	examine					
Teacher T4						
1.1	collect					design
2.1	collect					produce
Teacher T5						
1.1				appraise		
1.2	recognise	interpret	relate		apply	
2.1	recognise	interpret	relate			design
3.1						design
3.2	collect					
4.1	identify	interpret	relate		infer	
4.2	recall	interpret	relate		infer	
5.1	recall	interpret	relate		infer	
5.2	recall	interpret	relate			design
Teacher T6						
1.1	recall	interpret	relate			
1.2	collect		relate			
1.3			distinguish			
1.4	identify	describe		appraise		
1.5					generalise	
2.1	recall	summarise				
2.2	collect					
2.3	identify	describe	classify			
3.1	identify	describe		appraise		
3.2	identify	interpret	classify			
3.3	identify		arrange			
4.1	recall					
4.2	identify					
5.1	recall					
5.2	recognise	interpret		appraise	apply	
5.3		interpret			apply	



Skills Emphasised and Skills Evident in Learning Activities

When skills emphasised and evident were considered together, variation among teachers was again confirmed but a number of general trends were evident. Tables 7:2, 7:3, and Figures 7:1 and 7: 2 indicate that the tasks teachers set for students in learning activities used more skills in the lower groups on the Brightmeadows Model. This trend, apparent both in terms of skills emphasised and in terms of skills evident is illustrated in Figure 7: 3. In Figure 7:3 the first column represents skills emphasised, the second column skills evident. The data were strong enough to confirm trends but it was apparent from the observations that a number of variables influenced the extent to which higher order thinking was present in the teachers' learning activities. As we will see in discussing teachers' planning, T4's unit had the same aims and objectives as T3's though the lessons were very different. In her first lesson, (Transcript One), T3 used a number of activities and a variety of skills. T4 set one activity which primarily used skills associated with mathematics. If any thinking skills were emphasised in T4's lesson they were at group one, identifying, collecting and recalling. No other skills were apparent though the instructions to the groups indicated that at least some group members should have been engaging in the kind of skills apparent in T3's lesson. In the next lesson of T4's unit the students had not discussed the illustrations nor had they had an opportunity to check their illustration against an authoritative text. In terms of using higher order thinking skills, students were asked to move from group one skills to group six skills without using any of the intermediate skills.



T1 and T5 showed a reasonable balance of skill groups. The other teachers tended to concentrate on tasks at groups one, two and three, though as discussed, skills evident in learning activities sometimes compensated for a lack of skills emphasised. T4 had tasks which required the use of group one skills and group six skills but no skills at the intervening levels. This suggests her students moved from gathering information to presenting it without any significant processing. While we would expect to see evidence of a range of higher order thinking skills in the lessons observed, it is probably reasonable to expect more in the lower levels of the model as mastery of these skills is usually a prerequisite to using skills at higher levels. A cautionary note needs to be made here. At least some of the differences observed were due to the number of lessons observed and the stage in the unit at which the lessons observed occurred. As Table 7: 3 illustrates, fewer lessons were observed in the classrooms of T2 and T4, thus the skills groups listed for the lessons observed in their classrooms may not give a totally accurate indication of skills taught in units several weeks long.

While the Brightmeadows Model proved a useful guide for categorising skills, defining specific skills exactly is challenging. It was difficult to precisely quantify the number of skills taught. Thus, although the observations indicated broad trends there is a danger in interpreting the data too literally. T6 for example, demonstrated virtually no presentation skills in the first three lessons observed, but her unit continued for another three lessons. In some of these lessons students concentrated primarily on presenting information on charts and visual displays. In fact, in all the lessons observed there was a disproportionately small

number of presenting activities though in every case there was provision for presenting activities in the overall unit plans. Like T6, most of the teachers in the team reserved presenting activities for the final lessons in their units. In most cases these lessons were not observed.

Finally, there is an important difference between using higher order thinking skills and teaching them. While most of the teachers went to some effort to design a variety of student centred learning activities which incorporated higher order thinking skills, there was no evidence of teachers making provision for teaching new skills or informing students that they were practising or reinforcing skills already learned. All of the teachers' plans listed higher order thinking skills as specific unit objectives, this would suggest that these skills should have been taught, practised and assessed. This was not the case. Planning for teaching thinking skills progressively and consistently is discussed later in this chapter.

Having outlined the frequency and level of higher order thinking skill indicators in the learning activities of the lessons observed, the next step in the process was to reanalyse the transcripts in terms of teacher effectiveness and to see how this might relate to the first finding, viz., that while higher order thinking skills were evident in the lessons observed, most were concentrated at the lower levels of the Brightmeadows Model. The researcher surmised that if the teaching of higher order thinking was not at the level desired, this might be due to an inadequate understanding of the nature of thinking skills or the place of thinking skills in the social studies curriculum (issues discussed in detail in Chapters Eight and Ten). It might also be due to teacher ineffectiveness in a number of areas. The aspects of teacher effectiveness considered in the project were outlined in Chapter Five and illustrated in Table 5:1. They included time allocation, types of questions asked by teachers, and teacher planning. Planning was viewed in terms of a focus on important ideas, skills expressed as objectives and structure, sequence and continuity in the plan. Each of these is considered in turn.

Analysis of Time Allocation

Allocation of time was considered because writers like Newmann (1991) and Goodlad (1984) suggest that higher order thinking skills are more evident when lessons include a large amount of teacher led whole class discussion and when learning activities promote debate and discussion (Chapters One and Two). The first analysis of teacher effectiveness was concerned with the amount of teacher time allocated to administration, teacher led discussion, instruction in content, group activities and individual activities.

Sequences categorised as "administration" were those in which teachers were concerned with organisation for learning activities. This organisation included instructions on task procedure, moving to groups, or collecting equipment. Teacher instruction involved presenting information on content to the class. It could therefore include providing factual

information, telling a story, or reading an extract from a book. It could not include “instructions” to take out books or move to groups. Teacher led discussion involved the whole class. In most instances students were positioned in the front of the room in a designated area. Dialogue was promoted through questions and often initiated with a resource like an OHT, a picture, or a story. Group activities involved students working in small groups on a task set by the teacher. Groups were either social groups or groups chosen by a process of random selection. Individual activities normally took place at students’ desks and involved tasks set by the teacher. Timing was taken to the nearest minute, categories were totalled and converted to a percentage of the total lesson time in order to allow for differences in the length of lessons. T3’s lesson at the beginning of this chapter (Transcript One) was analysed as shown in Table 7:4.

Table 7:4. Time Allocation, Teacher T3, Lesson 3A

Activity Sequence		
administration	11.11 - 11.12	1 minute
Teacher led discussion	11.12 - 11.31	19 minutes
administration	11.31 - 11.49	18 minutes
group activity	11.49 - 12 .14	25 minutes
administration	12.14 - 12.15	1 minute
group activity	12.15 - 12.23	8 minutes
administration	12.23 - 12.25	2 minutes
Teacher led discussion	12.25 - 12.37	12 minutes
administration	12.37 - 12.38	1 minute
total time		87 minutes
Categories as a Percentage of Lesson Time		
administration	26%	
teacher led discussion l	36%	
teacher instruction	0%	
group activity	38%	
individual activity	0%	
total		100%

As Table 7:5 indicates, there was considerable difference in the time allocated to different aspects of teaching and learning by individual teachers. As in previous examples, the figures in Table 7:5 have been converted to a percentage of total lesson time over all of each teacher’s lessons. Figure 7:4 shows the aggregated time allocated by all teachers in all twenty four lessons.

Table 7.5. Time Allocated in Each Category Represented as a Percentage of Total Lesson Time : Individual Teachers

CATEGORY	Tchr T1	Tchr T2	Tchr T3	Tchr T4	Tchr T5	Tchr T6
administration	12	9	30	19	15	13
tchr discussion	45	18	17	16	33	38
tchr instruction	20	6	0	0	2	0
group	16	6	33	35	43	46
individual	7	61	20	30	7	3
TOTAL	100	100	100	100	100	100

Figure 7.4. Time Allocation in All Lessons Represented as a Percentage of Total Lesson Time : All Teachers

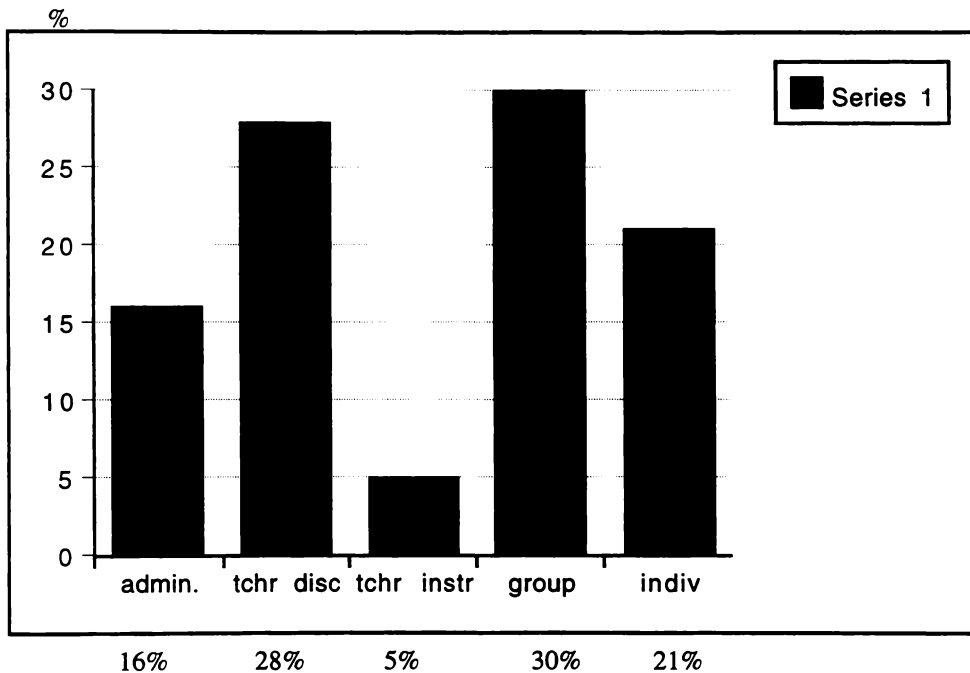


Table 7: 5 and Figure 7:4 indicate that teacher led discussion accounted for 28 % of average classroom time. T1 devoted almost half her classroom time to teacher led discussion and no teacher allocated less than 16% of classroom time to this aspect of teaching. We could expect, according to Goodlad (1984), that students in the class with the highest amount of teacher led discussion (T1's at 46 %), should exhibit more higher order thinking than those in a class with less (T3's with 18% or T4's with 16%). Figures do not indicate this is so. If T2 and T4 are eliminated from the sample because only two lessons were observed in their classrooms in the the first series of observations, figures for teacher led discussion are T1,

46 %; T6, 38%; T5, 33%; and T3, 18%. The figures for three of the four teachers are reasonably close, the exception is T3. But there is no difference in the number of higher order thinking skills evident in T1's classroom and those observed in T3's. If we use the model to consider the nature of those skills, we find T3 has more applying skills evident, four to T1's one (Table 7:3). On the other hand, Table 7: 2 shows that T1 emphasised a greater number of applying and evaluating skills (24% of task time in contrast to T3's 0%).

If teacher led discussion involves real discussion and not simply the repetition of facts that Dillon (1982) terms "recitation," the amount of time allocated to it almost certainly has some influence on the extent to which higher order thinking takes place in classrooms. However, this survey indicated that the amount of teacher led discussion is not on its own a clear determinant of higher order thinking. The nature and quality of the discussion and a number of other factors may be as important, or more important.

Many group activities also provide opportunity for student discussion. Apart from T2, all of the teachers in the study used a relatively large amount of group activity in the first series of observations. Again however, there was some variation in the amount of time allocated - T6, 46%; T5, 43%; T4, 35%; T3, 33%; T1, 16.%; T2, 6.%. It should be pointed out that observations in T2's classroom were made at the end of a teaching unit. Observations made in the second series indicated that T2 customarily used a good deal more group activity than is suggested in this analysis. The amount of group activity used in learning experiences appears also to have had little effect on the number of higher order skills observed in the tasks set. If we consider skill groups four and five, evaluating and applying, as examples of higher order skills, T5 and T6 with the most group time (43% and 46%) had no more skills evident in these areas than T3 and fewer skills emphasised than T1.

Most of the group activities in the lessons observed were carefully planned and organised but often they provided little evidence of consistent higher order thinking. In a typical example T3 gave groups of three students a set of five photographs depicting scenes in Asia with the instruction "I want you to work out what theme I have used to group these pictures together." One group's discussion was as follows :.

St2 There's not much greenery, it's in a city.

St1 It's pretty green.

St3 There's a -

St2 plants.

St3 That's enough for that one, look at the next one.

St1 We've got to do more than that.

St2 That might be a building, a business.

St1 There are bricks and rubble.

St3 Do 'different culture.'

St2 People.

St1 How many ?

St2 Two, one there and one there.

St3 There's washing.

St2 That's an entry.

St1- writing - How do you spell Chinese?

St2 What are those letters ? It looks like a restaurant.

St3 That's enough for this one.

St1 In number one here there is an umbrella.

St3 and a T.V.

St2 Do they have T.V in China?

St1 Of course they have cable there.

St3 How come we haven't got it?

St2 They've got more photo's than us. - *to the next group* - How many photos have you got ?

St3 - *to the next group* - How much photos have you got?

St2 Okay, there's a bicycle there and there's a live chicken on it,

St1 There's a bicycle and a chicken.

St2 Probably because its so hot and they don't have fridges,

St3 No look, they've got fan heaters,

St2 Is that a fan?

T3 claps for attention

St1 Oh we only did four photos.

T3's activity looked like a good one. The exercise required students to identify items in the photographs, to relate items in each photograph to each other and to items in the other photographs, and, on the basis of this relationship, to form a generalisation. However, most of the discussion was taken up with identifying - they're buildings; plants; bricks and rubble; people; there's washing; and a T.V.. When the discussion begins to move to a higher level the thinking does not go anywhere. Student Three's "do different culture" is the closest the group came to a generalisation. Student One, who was allotted the task of writing down the group's findings was largely preoccupied with that task. Student Three's aim appeared to be to deal with all the photographs in the allotted time.

Although time allocation for activities varied among teachers, direct instruction by teachers and passive reception of that information by students was invariably low. The observations indicated that time given over to activities which could involve students in discussion was high. Teacher led discussion and group activities together accounted for almost 60 % of classroom time. On the other hand, activities that required students to sit and listen to the teacher, (administration and teacher instruction) accounted for only 21% of classroom time. Furthermore, most administration time was used for setting up interactive student centred activities. One administration section of T1's transcript for example reads as follows:

T1. Yesterday we talked about some ideas on conservation. This is a statement that I put together from all our comments. It contains all your ideas.

T1 reads a statement compiled from the previous day's discussion indicating that conservation is concerned with preserving the environment and wild life.

T1 Now keep thinking about that statement because your views may change as we look at other issues. Now this is what we are going to do now.

T1 shows an overhead transparency which has a picture of a whale and statements written around it. the statements are 'scientific research, whaling industry, killing young, pollution of the ocean, less plentiful feeding grounds, slow reproduction'. There is also a list of three activities.

T1 At the bottom of the picture there is a list of things I want you to do.

T1 reads the exercise from the oht- exercise 1 asks students to discuss which of the statements listed we have no control over ; exercise 2 asks students to consider which threats are the most dangerous to the whales; exercise 3 asks students to rank the dangers to the whales from most dangerous to least dangerous.

T1 I really want you to think about this. You may find that there are different opinions in your group. I want you to talk about why your opinions are different.

The last exercise asks you to rank the order of threats to whales. The greatest threat is number 1, the least is number 6. Now you have three things to do. I will give you 10 minutes but I don't want you to rush. One person from each group please come up and get a sheet of paper and a vivid.

Analysis of Teacher Questioning

The second analysis concerned teacher questioning. As discussed in Chapter Five, questioning is one of four categories of teacher behaviour which Costa (1991) considers encourage higher order thinking. Asking "challenging questions" is also one of Newmann's criteria for "thoughtfulness." Every teacher question in each transcript was considered in terms of five question categories. As well as direct questions, statements which effectively posed a question were included. For example, the statement "I want you to think about what this picture might be" is not question, but it poses the question "What is this picture about?" Question categories were modelled on those devised by Goodlad (1984) and used in the Report on the Social Studies Subjects Survey (New Zealand Department of Education, 1987).

The categories were validated by University of Waikato School of Education staff in the same way that coding using the skill groups in the Brightmeadows Model was validated. That is, a description of each question category and examples of questions in each category were provided to staff members who then coded a series of questions from the lesson transcripts. The results were compared with those completed by the researcher and other staff members. The questions in T3's lesson transcript at the beginning of this chapter are categorised in Table 7:6. The questions have been coded by the researcher using the five categories of question types. Student responses have been deleted from the passage.

Questions which were concerned with classroom management or routines were categorised as administrative. Simple questions were those which had only one possible answer. While a large proportion of simple questions involved recall, this category included questions dependent entirely on memory, those with only one possible answer and those that could be answered in one word. Typical examples are “What is the name of the Maori Queen?” “Would you wear this dress or that one?”

Prompting questions were those questions which promoted further thinking or discussion. Examples were “Can you tell me more about that?” or “What makes you think that is correct?” Convergent questions were those with more than one possible answer where the answer was likely to be drawn from a finite number of possible responses. T1’s question “What does sexual maturity mean?” is a convergent question because although there is more than one possible answer, the answer is limited by the biological framework implied by the question. Divergent questions were questions which had an unlimited number of possible answers. They generally called for creativity and imagination on the part of the student. “What do you think about this situation?” or “Why do people believe in the supernatural?” are examples of divergent questions used by the teachers in the team.

Table 7:7 shows the questions asked in each category by individual teachers. The total number of questions asked is indicated in the first horizontal column. The other figures shown are a percentage of the total number of questions asked. Figure 7:5 illustrates the distribution of questions asked by all the teachers in the first series of observations. Five lessons were observed in the classrooms of T1, T3, T5 and T6; two lessons with T2 and T4. In total the teachers in the study asked almost five hundred questions in the twenty four lessons observed in the first series of observations. The total results show a reasonable balance of question types, 19% administration, 24% simple, 11% prompting, 27% convergent and 19% divergent, but again there was considerable variation among individual teachers. Three of the six teachers had more convergent questions than questions in any other category, T4 had predominantly administration questions (65%), T6 predominantly simple (46%), and T5 predominantly divergent (28%).

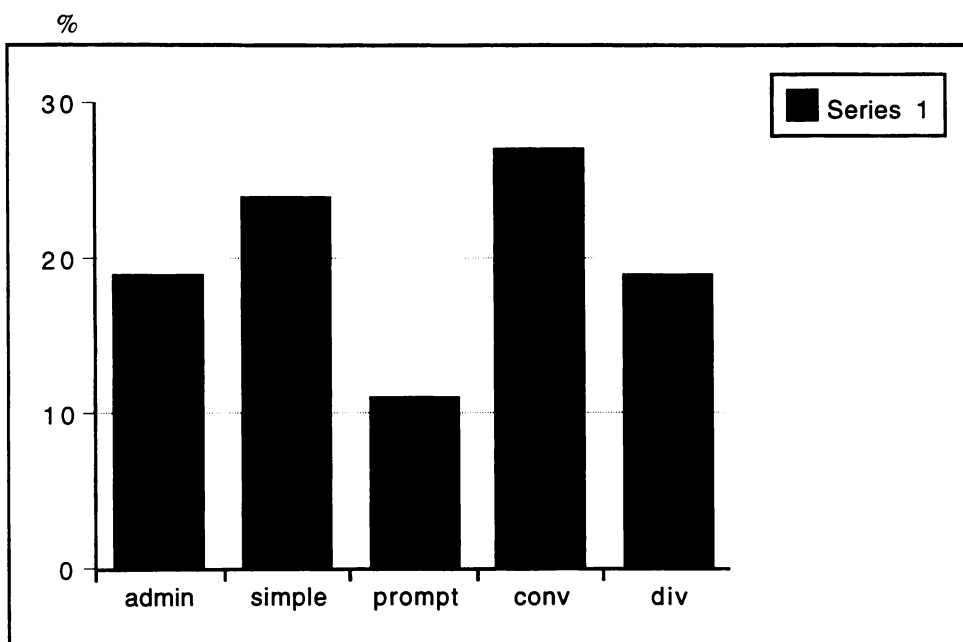
Table 7:6. Question Categories Teacher T3 Lesson 3A

- T3** Can everyone see the screen? **administration**
- T3** What do you think this might be? **divergent**
- T3** Now what? **prompt**
- T3** So someone thinks it's the "Endeavour." Whose ship is that? **simple**
- T3** Has anyone worked out what the dates might be about? **convergent**
- T3** Good, someone remembered. What do we call a hundred years? **simple**
- T3** What do we know about the ships in those days? **divergent**
- T3** What can you see now? **convergent**
- T3** Put your hand in a similar position. What do you think the hand in the picture might be doing? **convergent**
- T3** What do you think it is? **convergent**
- T3** Are you certain about that? **prompt**
- T3** Why can you be so certain? How do you know it is the "Endeavour"? **prompt**
- T3** Let's refocus on the date. We believe the ship is the "Endeavour" and we believe that the man is Captain Cook. We know there is 100 years difference in the dates. What is the picture about? **convergent**
- T3** How could we find out? **convergent**
- T3** What about the period between the dates? **simple**
- T3** Which side is the compass? left or right? **simple**
- T3** Do you see anything else which might tell us it is New Zealand? **prompt**
- T3** Why do you say that? **prompt**
- T3** What do you call those? (*the lines on a map*) **simple**
- T3** What do you think the text might be about? **convergent**
- T3** What points were you able to check off as correct? **convergent**
- T3** What does the text say the stamp is about? **convergent**
- T3** What points were you able to cross check? **convergent**
- T3** Didn't you say it was a missionary? **simple**

Table 7:7. Questions Asked by Individual Teachers Represented as a Percentage of Questions Asked in All Lessons

CATEGORY	T1	T2	T3	T4	T5	T6
Questions asked	91	18	72	34	112	151
Administration	4	22	32	65	20	7
Simple	25	11	11	14	8	46
Prompt	3	11	11	4	17	13
Convergent	49	45	39	6	27	15
Divergent	19	11	7	1	28	20
	100	100	100	100	100	100

Figure 7:5. Questions in Each Category Represented as a Percentage of the Total Number of Questions Asked by All Teachers



Simple questions were very common in many lessons. In the sequence which follows, simple questions to which there is only one possible answer (usually yes or no), have been underlined for emphasis. Sequences like this suggested that it would be beneficial for all of the teachers in the team to spend some time analysing their questioning and considering systems to improve it.

- T6 What's fashionable?
- T6 What are some of the things this group found unfashionable?
- T6 You listed uniforms. What is wrong with our school uniform?
- T6 What sort of ties are fashionable ties?
- T6 So something like this, holds up school tie is not what you would wear to a party?
- T6 Do you think fashion in New Zealand is the same as fashion in Europe?
- T6 So different cultures have different fashions. Do they wear jeans in Japan and Korea?
- T6 What is there to prevent me wearing this?
- T6 So I if I want to wear this it is up to me?
- T6 Do you know what she wore underneath?
- T6 Why don't you like it?
- T6 What don't you like about it?
- T6 Would it serve some purpose
- T6 Is that from overseas?
- T6 Hats are now fashionable again. What don't you like about this one
- T6 These were very fashionable at one time. Does anyone know when?
- T6 Do you like it?
- T6 Which one would you prefer to wear?
- T6 Have you noticed that many clothes now are bigger. How many people buy extra large tee shirts?
- T6 What is it called?
- T6 Why don't you like it?
- T6 Did it have some purpose?
- T6 What coats are very fashionable now that people wear a lot?

It is difficult to discern any clear pattern of teacher questioning from the data. The results indicate that convergent questions were common in all classrooms and that there were generally few prompting questions. If teacher modelling and metacognition are as important in enhancing higher order thinking as Newmann (1991) and others suggest, this would be appear to be an area of weakness. However, there appeared to be little relationship between the types of questions asked and the skills emphasised in learning activities. T1 and T6 emphasised the greatest numbers of skills in the higher levels of the Brightmeadows Model. T5 with less asked more divergent and prompting questions (Tables 7:2 and 7:12).

Teacher Planning

Social studies in New Zealand primary and intermediate schools is taught in “units” which span several lessons. The length of a unit depends on a number of factors and it is difficult to generalise about length but typically, an intermediate school social studies unit would run for three or four weeks with three or four lessons taught each week. New Zealand primary and intermediate teachers do not use text books for social studies. As a result they are required to choose their own topics, write their own plans, and select their own resources and learning activities. While teachers value the freedom that this entails, a concomitant of freedom of choice is the demand for detailed and effective individual unit plans.

Teachers’ unit plans in this project were firstly analysed in terms of the extent to which conceptual understanding and specific thinking skills were recognised as unit objectives. Structure, sequence and continuity were determined by reference to the model developed by the researcher, discussed in Chapter Five and illustrated in Table 5:1. Plans for whole units and planning for specific learning activities within units varied in quality and relevance. Discussion with the deputy principal who checks planning regularly, indicated that the plans of one teacher in the team were considerably more detailed than those she usually submitted. On the other hand, the deputy principal pointed out that the other five teachers in the team always used detailed and comprehensive plans in all subjects. To illustrate in general terms the kind of planning used by the teachers, a section of T3’s plan which relates to the lesson transcript (Transcript One), follows.

Unit Plan Objectives Teacher T3 Unit 1 First Series of Observations

Unit Goals

Using a range of skills students will demonstrate their understanding of -

1. Ways in which people and activities in the past have had connections with and significance for the communities that followed.
2. How beliefs and forces spread and their impact on the lives of the people in the past present and future.

Skills

Predicting , summarising, generalising, reading, researching, cross checking, reporting, recording.

Class Organisation

Social groups for introductory activities, individual for major task with some students working as a group but individual recording on an identical task. Individual for design brief.

Unit Activities and Tasks

- 1 Picture disclosure to establish unit title.
2. Stamp jig saw places students in six social groups. Discover the data and facts on the stamp.
Make a prediction as to why the stamp was produced. What event is it remembering?
Cross check with actual reference.

3. A heritage stamp set of six stamps (Waikato Times article). Repeating the task as above but each member has to record the group predictions. Chronological sequence skill is introduced
4. (a) (capable students) Individually looking at a collection of stamps to identify the key elements as identified in the unit's goals. Charts for display on a larger time line.
(b) (teacher guided group) Using a variety of references further develop close reading.
5. The design brief : create a stamp that records an event in our recent history going back approximately 10 - 20 years. Present a page as per the "Golden Book."

T3's lesson met most of the requirements for encouraging higher order thinking. Conceptual understanding was a main unit objective, though most social studies "experts" would argue that the level of understanding was too broad (This factor is discussed in some detail later in this chapter). T3's plan also made provision for specific thinking skills as objectives and had a very clear sequence and structure.

As discussed earlier, plans which promote opportunities for students to use thinking skills to achieve conceptual understanding should be based on central ideas, cover a few ideas in depth and exhibit sequence, coherence and continuity (Table 5:2 Chapter Five). Learning activities within the units should provide opportunity for information gathering, processing and presenting and they should normally be based on problem solving. Specific thinking skills needed to be a feature of the plans in the lessons observed if students were to achieve conceptual understanding, and, if learning activities were to provide for information gathering, processing and presenting. The extent to which the plans of the six teachers in the study met these requirements is discussed below.

Unit Objectives and Conceptual Understanding

The objectives of the unit plans were firstly considered in terms of the degree to which conceptual understanding, represented as an "important idea," was the principal goal of the unit. If the teachers in the team recognised conceptual understanding as a primary goal of social studies, their unit objectives should have focussed on "important" or "main" ideas. The goals of social studies are not concerned with memorising facts but with "enabling students to develop understandings of people, their actions and activities (New Zealand Ministry of Education, 1994 p.9). The need for "important ideas" as a focus for units has already been discussed in this paper at some length and a number of authorities cited (See Chapter One, Chapter Three). Writing objectives expressed as important ideas is concerned as much with teacher understanding as with teacher effectiveness because listing conceptual objectives at appropriate levels requires an understanding of the nature of conceptual understanding and its place in social studies.

When used as a unit objective conceptual understanding can be equated with Beyer's (1979) category of "understanding" (Chapter One) or Taba's (1967) "organising ideas" (Chapter Two). In New Zealand social studies the terms "important ideas" or "main ideas" are more commonly used. These ideas should provide a focus for a unit of study. They should be at a level of generality between the curriculum's achievement objectives and concepts developed by students. In earlier chapters the writer discussed the importance of studying a few ideas in depth in social studies. This notion derives both from the work of social studies writers like Taba (1967) and more recent work on generic higher order thinking by Newmann (1991). Taba pointed out that social studies is about understanding. She argued that students are more likely to obtain clear understanding of an idea from a detailed in depth study of two or three samples than from a superficial study of many. The need for in depth study in social studies has also been advocated by educators like Meyer (1990), Bragaw and Hartonian (1988), Fenton (1991), and Fraenkel (1992) (See Chapter Two). Social studies writers use the term "less is more" to describe this characteristic of the subject.

Table 7:8 uses a hypothetical sequence of social studies objectives to illustrate the hierarchy of understanding which should occur in social studies. In Table 7: 8 the national curriculum achievement objectives are at step 4 (the bracketed numbers represent levels of achievement). The important ideas, developed by the teacher for this particular unit are at step 3. McGee and Taylor (1994) point out that in applying New Zealand curricula "goals, general aims, achievement aims and achievement objectives (should) show a progression from broad general intentions to specific intentions that are much closer to what a teacher would include in daily lesson plans"(p.86). Although this kind of hierarchy showing specificity of objectives is important, it seemed evident from the pilot that teachers had some difficulty in framing objectives at an appropriate conceptual level.

Teachers at Brightmeadows plan jointly for subjects like mathematics and science. In social studies there is some sharing of ideas, for example the unit plans for T3 and T4 in this study, but generally teachers choose their own social studies topic and plan it individually. Although Brightmeadows School has a school social studies plan, the teachers appear to take little account of it. Topics for the units observed were selected randomly by the teachers in the team without reference to any school plan or programme of work. The objectives for the units observed in the first series of observations are shown in Table 7:9, they are copied from planning folders provided by the teachers in the team.

Table 7:8. Hierarchy of Facts, Concepts, Understandings, Generalisations

1. Facts

Indians hunt buffalo.

Indians collect medicinal plants.

The shaman blessed the hunters before they left on a hunt.

Buffalo skins are used for clothing.

Deer antlers are made into tools.

The tribe follow the buffalo herds.

European hunters killed thousands of buffalo.

2. Concepts

conservation, exploitation, interaction, scarcity, nomadic.

3. Understandings (Important Ideas Determined by The Teacher)

The Plains Indians relied on the physical environment for sustenance.

The Plains Indians treated the environment with respect.

The Plains Indians life style had to change when the buffalo were gone.

4. Generalisations (National Curriculum Achievement Objectives)

People relate to the environment in different ways (3).

People's interactions with the environment have changed over time (4).

Table 7:9. Unit Plan Objectives (Series One Observations)

T1 Unit 1

Understandings

* That people in the past are not to blame for the current state of the world but instead have had their own opinions and reasons for doing what they have done.

* That people usually have reasons for the way they think and for what they believe.

T2 Unit 1

Learning Outcomes

Pupils will :

1. become familiar with an important aspect of Waikato history;
2. identify key points in the development of the Waikato region;
3. be able to re-tell the legend of the Waikato River's creation;
4. identify the importance of the bridges on the Waikato.

T3 Unit 1

Using a range of skills students will demonstrate their understanding of:

1. ways in which people's activities in the past have had connections with and significance for the communities that followed;
2. how beliefs and forces spread and their impact on the lives of the people in the past present and future.

T4 Unit 1

As for T3

T5 Unit 1Goals

1. Using a range of skills the students will demonstrate their understandings of the origins of tangata whenua and Pakeha cultural groups and the reasons for moving to Aotearoa (Culture and Heritage level 3).
2. Using a range of skills the students will demonstrate their understanding of past interactions of Pakeha and tangata whenua in New Zealand communities (Adapted from Culture and Heritage level 4).
3. Using a range of skills the students will be able to identify differences between their lives and the lives of early New Zealand immigrants from England and the tangata whenua during the period of early interaction in the 19th century.

T6 Unit 1Strands and Achievement Objectives

Social Organisation and Processes Level 3.1, 3.2

Place and Environment 3.1

Time Continuity and Change 3.1, 3.2.

Learning Context / Topic

interaction; coping with challenges; history's impact on people, stereotyping.

Specific Learning Outcomes for This Unit

Knowledge

Ways in which people express themselves and communicate with others - e.g. fashion, 1960's, hippy, rock.

Ways in which people are influenced by custom and tradition - .

Knowledge

Ways in which people:

- * relate to others in families, groups and communities;
- * express themselves and communicate with others;
- * initiate and respond to challenges and cope with change;
- * are influenced by custom and tradition.

While the teachers' unit objectives were comprehensive, few could be said to focus on conceptual understanding at an appropriate level. T1's objectives involved understanding but in a very general sense. They could be regarded as general goals for social studies over a whole year rather than objectives for specific unit. T2's objectives emphasised facts rather than understanding. T3's objectives were copied directly from the national curriculum. Like T1's they were appropriate in general terms but at the level of achievement objectives in Table 7: 8 rather than the level for a specific unit. T4's objectives were identical to T3's. This would suggest that the needs of each class and the design of learning activities in each lesson were also identical.

T5 and T6 perhaps came closest to objectives which required students to reach objectives which were general enough to be categorised as “understandings” but specific enough to relate to a particular unit of work. While T5’s first objective was copied directly from the national curriculum, the second was a refinement of the curriculum’s achievement objectives to suit the needs of her unit. T6 probably had too many objectives for one unit and they were awkwardly phrased but she came closest to writing objectives which involved broad understanding of concepts and ideas contained in her particular unit.

The plans seemed to indicate a number of trends. Many teachers simply copied what they considered to be appropriate objectives from the national curriculum. When this happened the objectives listed were too broad to be applied with any precision or assessed with any accuracy. The objectives in the six units varied greatly in specificity and number. Generally there were too many and most were too broad. A sample of the objectives used and the researcher’s analysis of these is listed below.

T1 Unit 1.

*People in the past are not to blame for the current state of the world but instead have had their own opinions and reasons for doing what they have done.

* People usually have reasons for the way they think and for what they believe.

T1’s objectives are original and the ideas expressed relate to the material covered in the unit. As unit objectives however they are too broad. If we use Beyer’s terminology T1’s objectives are at the level of generalisations. Using Taba’s terminology they can be regarded as key concepts. In other words they are at the same conceptual level as the achievement objectives in Social Studies in the New Zealand Curriculum (Draft) or level four on Table 7:8.

T2 Unit 1

T2’s objectives - “Pupils will become familiar with an important aspect of Waikato history; identify key points in the development of the Waikato region; be able to re-tell the legend of the Waikato River’s creation; identify the importance of the bridges on the Waikato” - are all concerned with recalling factual information. T2 listed no objectives which focus on conceptual understanding. So, while students may have reached T2’s unit objectives, the objectives were inappropriate.

T3 Unit 1

Using a range of skills students will demonstrate their understanding of:

1. ways in which people and activities in the past have had connections with and significance for the communities that followed;
2. how beliefs and forces spread and their impact on the lives of the people in the past present and future.

T3’s objectives were copied directly from the national curriculum. They are the two achievement objectives for the Time Continuity and Change strand at level four (p.96). Like T1’s objectives these objectives are too broad. The achievement objectives in the national

curriculum were intentionally made broad enough to deal with a variety of content. Using T3's second objective for example, a teacher could plan a unit on the spread of religious beliefs, political ideas, new technology, or social trends. While unit objectives must be related to broader achievement objectives, they should focus upon a particular aspect of that objective.

T4 Unit 1

As discussed above, T4's objectives were identical to T3's. Objectives for a unit should be specific to that unit and take into account the unit's content, learning activities and the nature of the class. Unless the units and the students in each class were identical in every respect, T4's objectives were inappropriate. Like T3's, T4's objectives were too broad and refer to a year's work rather than a particular unit.

T5 Unit 1

1. Using a range of skills the students will demonstrate their understandings of the origins of tangata whenua and Pakeha cultural groups and the reasons for moving to Aotearoa.
2. Using a range of skills the students will demonstrate their understanding of the past interactions of Pakeha and tangata whenua in New Zealand communities.
3. Using a range of skill the students will be able to identify differences between their lives and the lives of early New Zealand immigrants from England and the tangata whenua during the period of early interaction in the 19th century.

T5's first objective is an achievement objective copied from Social Studies in the New Zealand Curriculum(Draft). In this respect it is the same as T3's or T4's. The other unit objectives are more specific being developed from the other achievement objectives for this particular strand.

T6 Unit 1

Specific Learning Outcomes for This Unit

Student will develop understandings of :

Ways in which people express themselves and communicate with others e.g. fashion, 1960's, hippy, rock;

Ways in which people are influenced by custom and tradition.

T6's objectives are probably closer to appropriate conceptual understanding than any of those listed by other teachers in the team. They meet the requirements outlined by Beyer (1979) in that they "evolve from testing a specific hypothesis, describe a relationship between two specific variables, and have specific referents in time and or place" (p.183). T6 has taken broad achievement objectives listed in Social Studies in the New Zealand Curriculum(Draft) and refined these into more specific objectives which relate to the content studied in her particular unit. A problem with T6's unit objectives might be that she draws on too many achievement objectives, (Social Organisation and Processes Level 3. 1, 3. 2; Place and Environment 3. 1; Time Continuity and Change 3. 1, 3. 2). Trying to cover too many objectives is contrary to Newmann and Wehlage's (1992) admonition to "cover a few ideas in depth." Some of T6's five achievement objectives are of minimal relevance in a unit on fashion.

With the exception of T6's, the team's unit objectives were too broad to achieve effective conceptual understanding. Most were at the level McGee and Taylor (1994) would describe as "broad general intentions" rather than "evolving from testing a specific hypothesis, describing a relationship between two specific variables, and having specific referents in time and or place," as suggested by Beyer (1979). Most objectives were copied verbatim from Social Studies in the New Zealand Curriculum (Draft) rather than being derived from it.

In many instances the objectives in the plan bore little or no relationship to the learning activities observed in the classroom. Social Studies in the New Zealand Curriculum (Draft) indicates that "understanding" is a goal of social studies. Those teachers who copied objectives directly from the curriculum may have understood this, but if they did, they seem to have made little provision for teaching understanding or for assessing it. T2's objectives "identify key points in the development of the Waikato region" and "be able to re-tell the legend of the Waikato River's creation," require no understanding, simply recall. T4's objective, "students will demonstrate their understanding of ways in which people and activities in the past have had connections with and significance for the communities that followed," was certainly not met in T4's stamp drawing exercise. T3's objective "students will understand how beliefs and forces spread and their impact on the lives of the people in the past present and future," is at a level students could not possibly achieve in one unit of work. If "understanding" is an objective, it follows that it should be taught and assessed; none of the units made provision for assessing understanding and few made provision for teaching it.

Specific Thinking Skills Expressed as Objectives

The focus of social studies units should be on conceptual understanding. This understanding can only be attained if factual information is processed using thinking skills. Social Studies in the New Zealand Curriculum (Draft) made it clear that specific thinking skills should be listed as objectives. "When planning, teachers should take into account the objectives related to particular skills and integrate these into their social studies programme" (p.27). This statement indicates that teachers should identify particular skills as unit objectives and teach to attain these objectives. Most of the teachers in the team did list specific skills in their plans. A sample of these skills objectives is shown in Table 7:10.

**Table 7:10. Specific Thinking Skills Listed as Unit Objectives
(Series One)**

T1 Unit 1	T1 Unit 2
<u>Skills</u>	<u>Skills</u>
-decision making skills	-decision making skills
-critical thinking skills	-critical thinking skills
-values exploration skills	-values exploration skills
-communication skills	-communication skills
-research and inquiry skills	-research and inquiry skills
-social and cooperative skills	-social and cooperative skills
T2 Unit 1	
No skills listed as objectives	
T3 Unit 1	
Predicting , summarising, generalising, reading, researching, cross checking, reporting, recording.	
T4 Unit 1	
<u>Skills to Consider</u>	
<u>Decision Making Skills</u>	<u>Critical Thinking Skills</u>
* implement a solution or decision	* recall information
* evaluate the effectiveness of decisions	*compare and contrast information
<u>Creative Thinking Skills</u>	<u>Values Exploration Skills</u>
* enter imaginatively into another time and place	* recognise that values change
<u>Communication Skills</u>	
-receive and convey information, ideas and feelings through written, aural, oral, and visual language.	
T5 Unit 1	
<u>Skills to be Assessed</u>	
a. students will work cooperatively in small groups.	
b. students will compare and contrast information to make connections and generalisations.	
c students will receive and convey information, ideas and feelings through written, aural, oral and visual language.	
T6 Unit 1	
<u>Social Studies Skills and Attitudes</u>	
* Apply different perspectives to examine events, e.g. fashion trends.	
* Enter imaginatively into another time or place e.g. 1960's.	
* Respond in a variety of ways to ideas and information.	
* Explain how values positions influence the ways people think feel and act.	
* Recognise and analyse stereotypes.	
* Express ideas and viewpoints clearly and effectively and accurately.	
* Identify communication modes e.g modelling, graphing, time lines, role play.	

When listing specific thinking skills as objectives the teachers in the team tended to be either too general or too specific. T3 listed eight separate specific thinking skills as objectives, while some of these were used, none were taught or assessed in the lessons observed and it would seem unlikely that all were covered in the unit. More often objectives were too broad. T1, T4, and T5 simply copied statements on specific skills from the national curriculum. Social Studies in the New Zealand Curriculum (Draft) lists 21 separate skills under the heading “Critical Thinking” and another 25 under the heading “Decision Making Skills (pp. 28, 29). To list “critical thinking” and “decision making” as specific skills objectives as T1 does, is to suggest that students will learn, practise and be tested on 46 separate skills in one unit. Of course it was not T1’s intention to do this, but the only other possible interpretation of objectives set in this way, is to see them as so broad that they can be applied to any social studies unit. This interpretation is reinforced in T1’s duplication of the same objectives in her second unit. If T1 saw skills objectives as so general that they could be used with any unit, it is possible that specific skills might be included in learning activities, but unlikely that they would be singled out and consciously taught and assessed as the national curriculum indicates they should be.

In many instances the skills listed included very few thinking skills. Of T6’s skills “respond in a variety of ways to ideas and information,” “explain how values positions influence the ways people think feel,” and “recognise and analyse stereotypes,” could be regarded as involving higher order thinking, but all of these objectives lack the specificity the national curriculum suggests they should have. T5’s “students will compare and contrast information to make connections and generalisations,” is similarly general. T3 probably makes the best job of listing specific skills but while some of these skills were evident in her classroom learning activities, none were taught specifically.

Where specific skills were listed, teachers listed more than they could adequately teach and assess in a single unit. In most cases skills appeared to be chosen at random. T4’s skills objectives were copied directly from Social Studies in the New Zealand Curriculum (Draft). In a relatively short unit (three lessons) it would not have been possible to deal with all of the skills listed, in a way which would provide for effective assessment. None of the skills in T4’s impressive list of skill objectives were in fact evident in the unit’s learning activities. T6 presented a good list of specific skills though it was difficult to see how she could have dealt adequately with such a long list in a relatively short unit.

Teachers’ planning was thorough in all cases. Plans were detailed and objectives clearly stated, however, in both areas of planning, conceptual understanding as an objective and specific thinking skills as objectives, there was often little relationship between the objectives listed at the beginning of the unit and the activities that took place in the unit’s learning activities. In some instances the unit objectives indicated that the students would be led towards an understanding or idea, but in almost every case the idea was too broad.

This suggested that teachers' understanding of the place of conceptual understanding in social studies learning was unclear. Similarly, when specific thinking skills were listed as objectives, these objectives consisted of lists of specific skills copied from Social Studies in the New Zealand Curriculum (Draft) or broad skill headings like "decision making" or "critical thinking." Skills were taught in no particular order or sequence, in fact, although skills were used, they were not really taught at all. The relationship between specific skills and the conceptual understanding which was the central goal of the units was unclear, possibly because this relationship was not clearly understood by the teachers on the team.

Summary

An analysis of the data collected in the first series of observations indicated that while teacher effectiveness was a factor in determining the extent of higher order thinking in social studies lessons, it appeared that teacher understanding was at least as important. It was difficult to draw any clear conclusions from the data collected from the observations in the area of teacher effectiveness. In the area of teacher understanding on the other hand, none of the teachers in the team appeared to fully understand the centrality of conceptual understanding in social studies. This was evidenced by the problems they experienced in designing objectives which would allow students to reach an appropriate level of conceptual understanding. Recognition of the centrality of conceptual understanding should have been apparent in objectives at an appropriate level, learning activities which encouraged understanding rather than recollection of factual data, and provision in units of work for the assessment of understanding. In cases where important ideas were the focus of units these were usually too broad and too general. If the team did understand the relationship between specific thinking skills and conceptual understanding, they lacked a system or structure which would allow them to consistently teach and assess the specific thinking skills on which conceptual understanding is dependent.

While aspects of teacher effectiveness were undoubtedly important, the observations indicated that the most pressing needs were in the area of understanding. Data on teacher effectiveness were inconclusive and a number of disparate aspects needed to be addressed in this area. Teacher understanding on the other hand, provided a pressing and obvious avenue for teacher development. At this stage in the project it also became apparent that the project needed to be narrower in scope. It could not deal with every variable which might affect higher order thinking. The researcher decided therefore, that the teacher development programmes which resulted from the observations needed to emphasise the central place of conceptual understanding in social studies; understanding the relationship between conceptual understanding and specific thinking skills; and understanding how the national curriculum could be applied in ways which would enhance conceptual understanding. While the decision to focus on "teacher understanding" was made at this point, data collection on teacher effectiveness was undertaken in the second series of observations. It was believed that this

would still prove useful because teacher effectiveness was likely to improve as a result of greater understanding and the more effective planning and teaching which was derived from this understanding.

Chapter Eight

Intervention : Considering the Model

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As a teacher it's really good. I know if I was looking at something like this I'd just say "Okay, I've done this skill and I've done that skill, what skills haven't I covered?" And there's a list there, and I can go to the list and say, "I need to do this skill and I need to do that" (Teacher T1).

Introduction

While elements of quantitative research were part of the study thus far, the project was essentially an exercise in action research in that it sought from the beginning to improve teacher performance. As Cohen and Manion (1994) point out, action research should focus on job analysis and improving professional functioning and efficiency (pp. 218, 219). Chapter Six explained that action research is cooperative, one of its major features is the way that research team members take part directly or indirectly both in the research and in implementing the action that results from that research. Action research thus "improves the normally poor communication between the practising teacher and the academic researcher by giving team members ownership of the research" (Cohen and Manion, 1994 p. 211). It is this kind of communication that leads to teacher empowerment and willingness to change. "The more people who are affected by a change are involved in decisions about it, the more they will be committed to implementing the change" (McGee, 1997 p. 266). It is for this reason that writers like Bellanca (1991) argue that "one off" teacher inservice programmes directed from above are seldom effective (Bellanca, in Costa, 1991 p. 20). Improvement in practice will only take place if intervention programmes are characterised by group interaction and sharing ideas.

It had been made clear to the research team at the commencement of this project that the exercise would involve participants in the processes of analysis and decision making. This aspect of the project was reinforced at the beginning of the two team days which constituted the first intervention. The researcher explained to the team that during the team days they would together attempt to provide joint solutions to problems they had identified in the observations. Throughout this process the researcher was to be seen as an adviser and facilitator. With this in mind, the researcher was careful during the intervention to let the teachers in the team do most of the talking and to make all of the decisions.

Organising the Team Days

When all observations had been completed, analysed, and written up, the six teachers involved in the research project were released from teaching duties at Brightmeadows for two days. Before this intervention meeting each teacher was supplied with a folder which contained additional copies of the transcripts of their own lessons and the researcher's

analyses of these in terms of time allocation and questioning. The researcher explained to the team that the two intervention days would provide an opportunity for them to discuss the results of the research to date and to help determine the direction the exercise should take from that point. The teachers were enthusiastic about the project and participated actively, partly because of inherent interest and partly because they saw the project as an opportunity to improve social studies learning and teaching in their classrooms and in their school. They agreed to a tape recorder being used to record parts of the daily discussion.

A good deal of material in the form of charts, diagrams and planning formats was produced as a result of the two team days. Drafts of these in their preliminary form were discussed with the team four days after the last day of the two day meeting. This consultation was held to check with teachers that the work they had produced had been accurately represented. Early in the following year the researcher and the teachers in the project were asked to discuss their work at a meeting of the local social studies teachers' association. The teachers on the research team provided most of the explanations at this meeting. Their comments were again recorded and transcripts made. The original programme for the two days is shown in Table 8:1.

Table 8:1 Programme for Team Days

Day One

9.00 Explain the purpose of the research , i.e. to ascertain evidence of thinking skills in social studies lessons, to develop ways of enhancing those skills, to examine the link between skills and conceptual understanding. Use NZFSSA workshop paper to explain that:

- (a) thinking is a professed goal of social studies education;
- (b) overseas research suggests that thinking is often taught ineffectively in social studies;
- (c) overseas research indicates that there are a number of reasons for this, notably, restrictive timetables and curricula with an emphasis on facts; teachers giving thinking low priority; teachers lacking an effective model of thinking and therefore not understanding what is involved; curricula and or school plans that are unclear.

Handout - extracts from NZFSSA Conference

10.00 Morning tea.

10.15 Define conceptual understanding by considering it in terms of concepts, generalisations and important ideas (see Barr and Carryer 1991, Taba 1967). Discuss the place of conceptual understanding in social studies by relating it to the goals of the national curriculum. Discuss how conceptual understanding is dependent on gathering and processing factual information. Discuss how conceptual understanding occurs and demonstrate this through a practical exercise.

Handout - extracts from The Curriculum in the Classroom Chapter Nine (Barr & Gordon 1995)

11.00 If students are to achieve conceptual understanding teachers need to make it the principal goal of their social studies units and they need to emphasise appropriate thinking skills in the learning activities which make up their programmes. Discuss possible obstacles to this including :

- * planning with conceptual understanding as a goal;
- * incorporating the skills outlined in the national curriculum into unit plans;
- * designing learning activities which incorporate thinking skills at appropriate levels;
- * teaching techniques which teach and encourage thinking.

Note common problems and any tentative solutions which may arise at this time.

12.00 Lunch.

1.00 Discuss planning and teaching for conceptual understanding using the series one unit plans.

Planning:

- * to what extent are topics and / or unit design determined by school policy?
- * how can schools ensure that the 'understanding' indicated as a goal in the national curriculum becomes a focus of social studies units in the school?
- * is the focus of our last unit plan on conceptual understanding?
- * is the unit based on important ideas?
- * how do you determine thinking skill objectives?
- * what difficulties are involved in setting these objectives?
- * are the thinking skill objectives we set realistic?
- * is there consistency over the unit? Over the year?
- * are skill objectives consistent with the goals of the curriculum?
- * are skills listed in the objectives apparent in the unit's learning activities?

Teaching

How can we enhance thinking skills through allocation of time for activities of various types? Design of learning activities ?

- * class discussion?

Assessment

- * can you assess conceptual understanding?
- * how do you assess specific thinking skills?

Handout - Copies of the transcripts and analyses of observed lessons.

3.00 Afternoon tea.

3.15 Discuss the Brightmeadows Model of conceptual understanding. Explain the steps and processes involved and ask teachers to suggest how the model might be applied to teacher planning and assessment.

Handouts - Diagrammatic model of conceptual understanding, definitions of specific skills at each step.

4.00 End of day one

Day Two

9.00 Analyse teacher unit planning. Work on devising a model which will :

- (a) have conceptual understanding as a goal or goals;
- (b) have realistic objectives for thinking skills;
- (c) provide learning activities which incorporated a range of thinking skills and lead to conceptual understanding.

It is likely that teachers will work in two groups of three. The groups will compare their planning and arrive at a consensus model.

10.00 Morning tea.

10.15 Continue work on unit planning.

12.00 Lunch.

1.00 Analyse teaching transcripts. Consider particularly teacher questioning, teacher led discussion and group work. What are the apparent weaknesses in these areas? Consider ways in which these could be improved in order to promote thinking skills and conceptual understanding. Consider the use of strategies like “think pair share” and Dillon’s work on discussion.

3.00 Afternoon tea.

3.15 Where to from here? Discuss how the proposals advocated by the team can best be applied and monitored in school.

4.00 Day two ends.

Revising the Model of Conceptual Understanding

The teachers in the group were aware that the project was concerned with devising more effective ways of teaching and learning social studies, but the central role of conceptual understanding and the contribution of specific thinking skills to this understanding had not been discussed in detail with them before the team days. On the first day of the intervention programme the team considered conceptual understanding in some detail. The researcher first led an activity which involved the team in an exercise concerned with developing concepts, generalisations and important ideas. The exercise was based on material from two texts on social studies teaching (Barr and Carryer 1991, Barr 1995). The discussion which followed emphasised the way in which conceptual understanding is a central goal in all social studies curricula and the way that conceptual understanding is dependent on providing students with the opportunity to gather information before processing it using thinking skills. The team found it easy to relate this exercise to their classroom practice. They then related classroom planning to school and national planning by extending the exercise so that it incorporated broader objectives. In this part of the intervention the team referred to Social Studies in the New Zealand Curriculum (Draft). They also referred to a number of overseas curricula notably the NCSS standards and Australian state curricula for Victoria and South Australia. These provided further examples of ways in which conceptual understanding can be developed and served to illustrate how conceptual understanding is regarded as an essential

aspect of social studies in countries other than New Zealand. Two younger teachers, T1 and T5, were reasonably familiar with using important ideas as a focus for unit planning and their plans reflected this to some degree. The older teachers were familiar with the terminology but not with the ways in which it could be applied.

When it was evident that the group had a broad understanding of the nature of conceptual understanding, the relationship between conceptual understanding and the goals of the national social studies curriculum was considered. The teachers' lesson transcripts were reviewed and obstacles to conceptual understanding evident in the analyses were discussed. These obstacles included: failing to plan with conceptual understanding as a goal; failing to incorporate the skills outlined in the national curriculum into unit plans; failing to design learning activities which incorporated thinking skills at appropriate levels and in appropriate sequences; and failing to use teaching techniques which taught and encouraged higher order thinking.

Early in the session the teachers pointed out the need for a clear model of conceptual understanding. The need for such a model was discussed at some length and the merits of the original Brightmeadows model (Table 5: 7) were debated. The excerpts which follow provide a typical example of the team's discussion on conceptual understanding in general and on the Brightmeadows model in particular.

T3 This conceptual understanding, this goes against some of the theories that we have been doing in our classrooms. That we should be displaying what we want the children to gain at the beginning of the unit. Now if we do that, you've trashed this model.

T5 Can you explain that in other words?

T3 Well, you know, "By the end of this unit you will be able to do this, this and this".

T5 Okay.

T3 And you put that at the beginning of your unit so that children know where they're going, where they're heading.

T1 But I was thinking that you could do this backwards. You can start with the understanding or idea and then get the kids to reach it using these skills - *indicates the skills on the diagram* - . You could still start with the idea though.

T5 So you mean you start with the conceptual understanding. But if the kids don't have any information themselves how can they - -

T1 No, you say, "how did I get this idea?" "Where did this idea come from?"

T5 Let's have an example.

T4 The reason for doing all this is - -

T1 You will understand that - -

T3 No, no, no, not at all.

T2 What about that Japanese example? No I can't remember that.

T1 The Kenyan people use their environment to survive.

T4 Yes okay.

T1 You start with that idea then the children go away and they find the information to justify it.

T3 Or support it.

T5 So you are going back down to the bottom (*of the diagram*). So they are gathering information here - *indicates on the diagram* - and then processing it and then applying it.

T3 They can still do it if you have actually fed the key idea to the children first without them coming up with it.

Researcher Maybe you just reframe the important idea. Instead of saying “The Kenyan people use their environment etc. etc.,” you reframe that as a question and say “How do the Kenyan people use their environment?”

T1 Right

T4 Yes

T2 So that becomes your focus. Then the kids have a focus, a reason for gathering information.

The preliminary discussion, the handout material and the model appeared to provide a reasonable understanding of the way in which conceptual understanding should become the primary focus of a unit. It was also apparent that the team had some understanding of the relationship between learning activities and conceptual understanding. There was little variation in degrees of understanding. The definitions of terms (Table 7: 1) helped the team define the skills in each section of the model and “evaluating” was the only section discussed at any length. In discussing a hypothetical unit on teenagers the team commented -

T3- They could collect information to make a statement about teenagers in New Zealand society.

T5 That’s a specific learning outcome. You shouldn’t be designing a unit on the basis of the specific learning outcomes. It should be on the unit objectives.

Researcher Say that louder for the tape.

T5 - *laughs and speaks slowly and deliberately* - You shouldn’t design a unit on the basis of - - - *laughs*

T3 The unit’s learning activities should be designed to achieve conceptual understanding and not simply the specific learning activities.

T5 The learning activities help you get there.

R Yes.

T4 They’re part of the process.

T2 They are an aid in the process of getting there.

On the basis of their discussion the group devised a new version of the original Brightmeadows Model. This is shown in Table 8:2. The team liked the original model and agreed that they could easily relate it to their planning and teaching. None of the changes to the original model were major. The first was in the terminology used. The team agreed that the term “steps” used initially to describe each group of skills was inappropriate because it suggested a sequence which must be followed. They agreed that the groups of skills in the

model need not be taught sequentially. They also considered that terms like “sets” or “groups” were too loose and finally agreed on the term “processes.” A more important change involved moving “presenting skills” so that these skills appeared above “conceptual understanding” in the diagram. This was done because the team felt that students needed to understand an idea before they could adequately present it. Thus, although the model was not designed to show sequence, the teachers argued that the location of “presenting processes” in the model should demonstrate that students needed to have an understanding of an idea before they could present it.

The team discussed the place of evaluating skills at some length. After it had been made clear that this group of skills was concerned with evaluating the worth and validity of evidence, some team members argued that the use of these skills throughout the unit should be demonstrated by listing the skill group vertically up the side of the diagram. However, simplicity of representation was an important team goal and it was finally agreed that the placement of one skill group vertically made the diagram clumsy and confusing. Moreover, the team had already agreed that the skill groups need not be seen as sequential. If this was the case the relative position of evaluating skills was not important.

The team also discussed the place of valuing, creative thinking and decision making and the ways in which these related to the model. Some attempts were made to include these aspects of thinking into the model but the team eventually concluded that adding to the model only served to confuse and complicate it. They agreed that while teachers needed to be aware of these components of thinking, they could not be shown adequately in a simple model which should restrict itself to higher order thinking as it related to conceptual understanding.

Table 8:2 Revised Model of Conceptual Understanding

Presenting Processes

producing, proposing, designing, planning, combining, formulating, constructing, composing

CONCEPTUAL UNDERSTANDING

Applying Processes

applying, solving, showing, predicting, inferring

Evaluating Processes

appraising, judging, deciding, criticising

Relating Processes

connecting, relating, grouping, differentiating, arranging, classifying, distinguishing, checking

Explaining Processes

translating, interpreting, explaining, describing, summarising, extrapolating, defining

Identifying Processes

recalling, collecting, recognising, identifying, labelling, examining

When refining the diagram for use in their school, the team redrew the model to include a triangle with the apex at the top. T1 explained the application of the diagram and the reason for including the triangle to teachers at the social studies teachers' meeting.

T1 The triangle is there because what we're trying to signify is that each of these processes becomes more refined as you move up. In a unit you may be doing these skills - *indicates identifying skills on the diagram* - a lot more than you would be doing these (*indicates skills higher up on the diagram*). These, - *indicates identifying skills* - are the ones that you are most likely to be doing all the time. You move up through the others till you reach conceptual understanding here. We've put presenting skills up there - *indicates* - because a lot of the time in social studies you have presenting skills at the end. But you go through all these skills to reach good conceptual understanding. This will become clear when we explain our unit plan. You don't do every skill. You may pick as many as you want. They don't have to go in any particular order. We are just saying that they become more refined as you move up.

Teacher Effectiveness

Less time was spent on aspects of teacher effectiveness like questioning and time allocation than on understanding for the reasons discussed in Chapter Seven. The team agreed that the limited time available and the small size of the team precluded a detailed study of every aspect of teaching and learning covered in the observations. They also agreed that the provision of a model which demonstrated the relationship between specific thinking skills and conceptual understanding was the greater need. It was acknowledged that time allocation and questioning were important because both affected the degree of higher order thinking in social studies lessons. The team agreed that while a programme directed at improving these aspects of classroom management was certainly warranted, such a programme would be complex enough to necessitate a complete study in its own right. They agreed with the researcher that if the project concentrated on producing an effective model and designing ways of applying that model in classrooms, changes in time allocation and questioning should be evident in the next series of observations. The team asserted for example that the application of a new model should lead to better questions, because teaching a range of skills would require teachers to use a range of questions.

The Conceptual Understanding Model and the Curriculum

Having developed a model of conceptual understanding which they considered could be easily used in practice, the group attempted to relate this model to the aims and objectives of the national curriculum. The group's starting point was an overhead transparency which the researcher had used to illustrate the relationship of objectives in the draft document. The transparency listed in sequence the general aims of social studies, stems for achievement aims for each strand, and stems for the achievement objectives at each level. (Table 3:1 is based on the original transparency). The transparency had been used to show how "understanding" in various degrees of complexity, is a stated goal at each level of the curriculum.

In discussion the group pointed out that the more specific unit objectives (important ideas), which represent conceptual understanding in social studies units, are really a refinement of the national curriculum's achievement objectives. This meant that unit objectives might be shown as a new, more specific layer in the model on the transparency. Specific learning outcomes could in turn be developed from the important ideas to become the next layer. On this basis the team developed a second model. While they agreed that this new model (Table 8:3) would probably need some refinement, it served to make the necessary links between the national curriculum and the Brightmeadows Model.

T5 See this diagram here? - *indicates the OHT* - Maybe what we are talking about is another level below this so that you are talking about the broad aims of social studies here, the achievement aims of a particular strand here, the achievement objective at a particular level, then the aims of your unit come in here.

T3 No, I've gone one below that in what I have interpreted, because I don't include the curriculum aim. I go to the specific "using a range of skills students will demonstrate their understanding of how and why peoples' perceptions of place and environment change over time," (*the level four achievement objective for the Time Continuity and Change strand in SSNZC*). From there I write one that is related to the "Red Crabs of Christmas Island" unit. Then I write my specific learning outcomes.

Researcher Okay, I don't have a problem with that.

T3 But I don't include the ones at the top here - *indicates the general aims and the achievement aims for each strand* -

Researcher Well you wouldn't have to.

T6 No, because that's at the beginning of the year.

Researcher And that's implied. It's implied that you are going to be doing that because you are doing that strand.

T3 Yes, and "how and why interactions between people and the environment change over time." (*the second achievement objective at level four*), I adapt that to the "Red Crabs of Christmas Island" unit. Then I put my specific learning objectives in. So there are three levels really aren't there?

T5 So in other words, if we take this objective for example, - *consults SSNZC and picks an achievement objective at random* - "Using a range of skills students will demonstrate their understandings of past interactions between Pakeha and Tangata Whenua in New Zealand communities" (*level four achievement objective, Culture and Heritage strand*), that would need to be broken down further to look at specific interactions.

Researcher Yes.

T6 Or specific locations.

T3 Whereabouts.

T5 Maybe just in the Waikato area.

Researcher Maybe in the Waikato before the Treaty of Waitangi.

T6 Yes, that's true because that's (*the level four achievement objective*) very broad and I wouldn't -

T3 Yes I can see now where you are coming from. And from there you have your skills and your S.L.O's.

Researcher And then you link all of those up so that you are saying, "Here we are dealing with interaction between Maori and Pakeha in the Waikato before the Treaty of Waitangi, then it goes up to your achievement objective, "interaction between Maori and Pakeha," that goes up to your strand aim, "students will gain and apply knowledge to understand the bicultural identity and heritage of the people of Aotearoa New Zealand," which then goes up to the general aims of social studies, "Enable students to understand people, their actions and their activities."

T6 So what we need is a model.

T5 Yes we need a model for that too.

T4 We need another model.

T2 Yes, because once you have a model it is much easier to see how it fits.

T1 Well okay we could do that quite easily because we can modify the one we already have on the OHT.

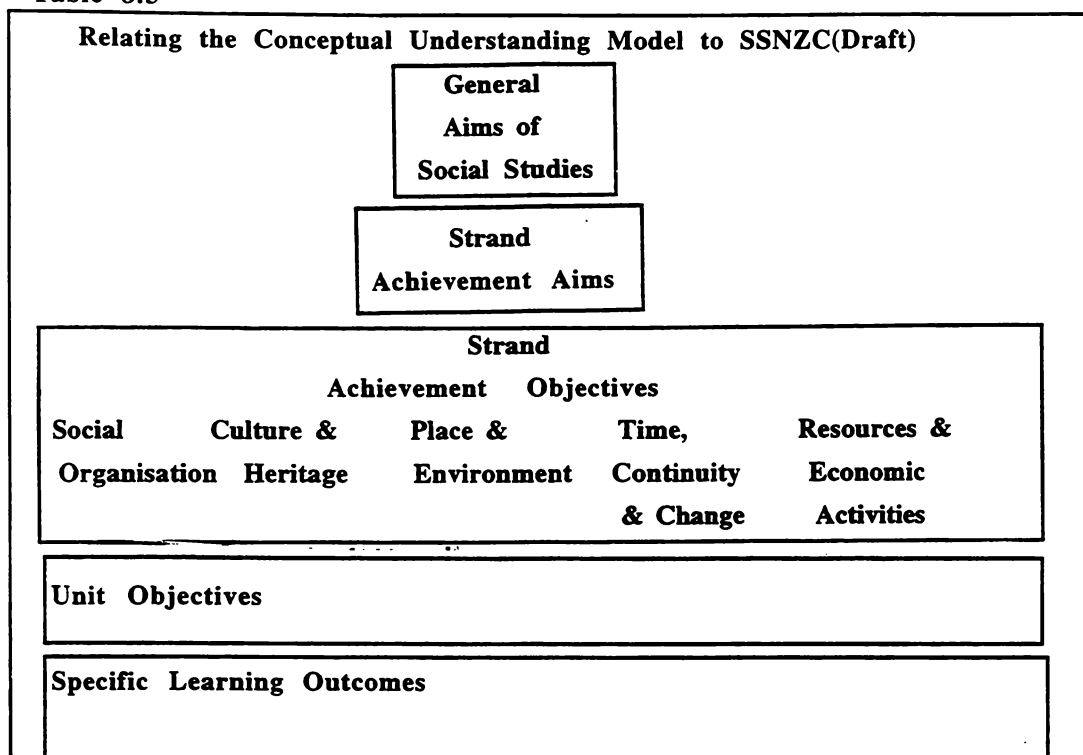
The model derived from this discussion was also further refined by the team when they came to apply it in their school. Like the revised Brightmeadows Model, the refined model relating conceptual understanding to the national curriculum included a triangle. T1 explained the reason for this at the teachers' meeting.

T1 What we have done is put in another triangle, because my computer does triangles. We put in the triangle because in the end you're supposed to be heading for the general aims of social studies. So that comes at the top. It shows you when you are doing your unit plan what sequence you would go in. This first section is straight from the book and it's really easy if you go through these different sections.

Applying the Models in the Classroom

Because they were practising teachers, the team was understandably concerned with practical application of the models which would allow them to relate conceptual understanding to the national curriculum and to classroom practice. The next step therefore, was to take the two models the team had developed so far, the revised model of the original Brightmeadows Model of conceptual understanding (Table 8:2), and the model which related conceptual understanding to the structure of the national curriculum (Table 8:3) and develop a practical planning format which would allow them to apply these.

Table 8:3



The planning format can be seen as the practical application of both models. It is related to, and can be read in conjunction with, the conceptual understanding model (Table 8:2) and the curriculum model (Table 8:3). The opening section relates general aims, achievement aims, and achievement objectives to important ideas in the form of unit objectives. Items in the boxed section of the planning model can be completed by using appropriate sections from Social Studies in the New Zealand Curriculum (Draft). These items were finally included in the unit format in spite of the team's earlier decision to leave this section out. When it came to applying their ideas in unit form the team felt strongly that although copying the opening section of the plan from the national curriculum for every unit could be seen as repeating information they already knew, this section needed to be included in every unit plan because it demonstrated the important link between individual unit objectives and the objectives of the national curriculum.

Items in the unboxed section of the planning model are chosen by the teacher designing the unit. The unit's general objectives are derived from, but are more specific than, the achievement objectives taken from Social Studies in the New Zealand Curriculum (Draft). Headings in the "Specific Learning Outcomes" box allow teachers to identify particular groups of skills from the Brightmeadows Model and to design assessable learning outcomes for these. On page two of the format, teachers take each important idea (unit

objective), in turn, and design learning activities which will help students to reach an understanding of this idea. Learning activities incorporate the skills in the “Specific Learning Outcomes” section and lead students to the understanding which is the unit objective.

The columns on the right hand side of the format indicate the six groups of skills in the Brightmeadows Model, (identifying, explaining, relating, evaluating, applying, and presenting). The team argued that ticking boxes to indicate a particular group of skills allowed teachers to provide a balance of skill groups in their planning and teaching. This check list thus provided a guide for classroom teachers and school curriculum planners by indicating thinking skills covered in learning activities. T3 outlined the use of the plan at the social studies teachers’ meeting.

T3 Our unit plan was designed for teachers who like filling in boxes with ideas. I think all teachers like filling in boxes. We are still arguing over whether we should have the first boxes already filled in. This way (*with the boxes not filled in*), it makes you focus again on that general social studies aim. If you have to write it in then you will keep remembering it. Then going on down, we decided that we needed to identify the different strands that we are going to cover in our unit because sometimes you might cover more than one strand. Here’s your tick box. Then further down in the document are your strand achievement objectives. Then you get a chance to put in your choice, the topic you are using. You put there what you want the children to understand. This is the big idea you want the children to get. - - - From there you go to this special box. This is the S.L.O’s that everyone is getting hung up on at the moment. We decided to refine this area by having three tick areas across here at the side. The first one is for a new skill. This is a skill you want the children to gain. This is one goal, one purpose for teaching your unit. The other one might be a skill that you have taught previously but it didn’t go down very well. The kids didn’t get it. So we use that activity again just to practise it more. We have decided we could be listing up to ten skill S.L.O’s but we are only going to assess three or four of them. The key ones, the ones we are using this unit to teach. So here you just tick the ones you want. Then of course there is a small box for the resources you are going to use.

Table 8:4. Unit Plan Applying the Models of Conceptual Understanding

General Aim of Social Studies

The aims of *Social Studies in the New Zealand Curriculum* are:

- to enable students to develop understandings of people their actions and their activities
- to enable students to contribute to a changing society as confident informed and responsible participants

Strands Covered in this Unit

S,O,& P C & H P & E T,C,&Ch R&EA

Strand Achievement Aims

In their study of --- and --- students will gain and apply knowledge, ideas, skills and values to understand

Achievement Objectives (Level four)

Using a range of skills students will demonstrate their understandings of

Unit Objectives :

By the end of the unit students will have developed a greater conceptual understanding of the following important ideas

Setting :

Specific Learning Outcomes :

By the end of the unit students should be able to

N.S Re

explain

relate

apply

produce

Resources :

Teaching and Learning Activities					
Introductory activity		I	Ex	R	Ev
A	P				
Idea One					
Idea Two					

Note : The initials I, Ex, R, Ev, A, P, represent the six skill groups in the Brightmeadows Model, identifying, explaining, relating, evaluating, applying, and presenting.

To test their planning format the team wrote the hypothetical social studies unit which follows. It uses the Social Organisation and Processes Strand and the Time Continuity and Change strand as bases for a study on teenagers. The achievement aims and objectives from Social Studies in the New Zealand Curriculum (Draft) are listed in the first section. These are developed into the more specific important ideas in the second section where they become the main focus of the unit. Four of the six sets of processes in the conceptual understanding model have been chosen as the basis of assessable tasks.

The abbreviations in the “Strands Covered in this Unit” section refer to the five content strands of the national curriculum, social organisation and processes (S, O & P); culture and heritage (C &H); place and environment (P & E); time continuity and change (T, C &Ch); and resources and economic activities (R & E A). “N” and “Re” in the Specific Learning Activities section indicate whether the skills in the unit are new to the students (N), or if they are being revised (Re). The abbreviations at the head of each column in the Teaching and Learning Activities section represent the six groups of processes in the Brightmeadows Model, identifying, explaining, relating, evaluating, applying and presenting.

Hypothetical Unit Plan #1

General Aim of Social Studies

The aims of *Social Studies in the New Zealand Curriculum* are:

- to enable students to develop understandings of people their actions and their activities
- to enable students to contribute to a changing society as confident informed and responsible participants

Strands Covered in this Unit

Social Organisation and Processes, Time Continuity and Change

Strand Achievement Aims

In their study of *S,O &P* and *T,C&Ch* students will gain and apply knowledge, ideas, skills and values to understand

- *Events beliefs and forces that have changed peoples' lives*
- *How and why people organise themselves to meet their needs*

Achievement Objectives (Level four)

Using a range of skills students will demonstrate their understandings of

- (a) *How beliefs and forces spread and their impact on the lives of people in the past and in the present* (b) *ways people shape their social organisation to meet their needs.*

Unit Objectives

By the end of the unit students will have developed a greater conceptual understanding of the following important ideas :

- *a number of factors influence the ways teenagers use their leisure time;*
- *teenagers use groups for mutual support.*

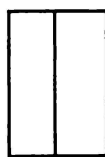
Setting

Teenagers in New Zealand today and in the recent past.

Specific Learning Outcomes

By the end of the unit students should be able to :

N.S Re



- explain - *give reasons why leisure activities change*
- relate - *group factual information into appropriate categories*
- apply - *use factors identified to predict leisure activities in the future*
- present - *display factual information visually*

Resources

Books on leisure activities today and in the past from the school library and the library service. Tape recorders and audio equipment. Parents and grandparents.

Old school photographs. Public Relations Office

** design a recruiting poster for a groups listed. Outline benefits.*

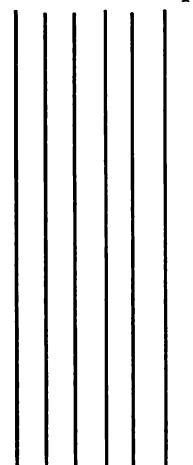
** watch a clip from 'West Side Story' and answer the following - What determines*

membership of the Blades or the Jets? Could members of one gang join another?

Why do the two gangs fight? Could gang members be younger or older? Why do people leave gangs when they grow up?

Would everyone in the neighbourhood be a member of a gang?

** in small groups make a Venn diagram which shows positive and negative aspects of group membership*



Teacher Understanding

During the intervention the researcher introduced the notion of conceptual understanding in a number of ways. Texts and notes were used but concepts were also introduced visually. Figure 2:1 in Chapter Two of this paper is derived from a transparency used in the intervention. Practical activities were also used. One involved the teachers in listing items in a series of pictures, categorising and labelling these items, developing concepts from the categories and writing generalisations based on the relationship between the concepts. The notion of conceptual understanding was also considered from the perspective of curriculum design and purpose by studying sections of the New Zealand national curriculum and curricula from Australia, Canada and the United States. All of the above were related to the Brightmeadows Model.

Teachers demonstrated understanding in the discussion which took place during the intervention. They further demonstrated this understanding by relating the Brightmeadows Model to the national curriculum in their own model and by devising a planning format which put the principles of the model into practice. Later in the project they applied their understanding by explaining the nature of higher order thinking in social studies to another group of teachers

Understanding was facilitated by the model which was simple and easily understood. However, process was also important. As indicated in Chapter Six, the researcher informed teachers at the beginning of the exercise that he was not going to identify weaknesses in their lessons and tell them how to correct them. For this reason, the researcher took pains in the intervention to guide and facilitate but not to instruct. The project thus became a team project. Because the teachers in the team were free to express their ideas and contribute to the development of the models, the models became theirs and the teachers became a team which worked together to achieve a common goal. Team work was further facilitated through the provision of quality time by removing teachers from their regular classroom duties.

By the end of the two day intervention it was apparent from the discussion that had taken place that the teachers in the team had a better understanding of the nature of conceptual understanding and the relationship of specific skills to this understanding. They clearly demonstrated this understanding by explaining this relationship both verbally and diagrammatically to the teachers at the social studies association meeting. They applied their knowledge in a practical way by designing a classroom social studies unit which had conceptual understanding as an objective and made provision for teaching and assessing specific thinking skills. The team achieved these goals together. By the end of the intervention they were talking about “our” models and they felt confident that they could apply them in their classrooms. A measure of their confidence would be when they were asked to individually design and teach a real unit in their own classrooms. This process is described in Chapter Nine.

Chapter Nine Comparing Observations.

In our minds we knew where we were going. I felt that much more in the second one than in the first (Teacher T6).

I felt much more confident in where I wanted to go and what I wanted my kids to do (Teacher T1).

Introduction

A second series of observations was carried out after the first intervention. Because the first intervention took place in the final term of the school year, the team considered that the first term of the following year would be the most appropriate time to begin the second series of observations. Unfortunately, it proved impossible to observe in the first term as all of the teachers in the project team were involved in school camps, sports days, swimming instruction, school visits and a variety of other school activities. The team members all argued that pressure on their daily classroom programmes made it impossible to teach social studies in the first term.

Because this was so, the second series of observations was held in the second school term. This placement was less than satisfactory as the summer vacation and the whole of the first term had elapsed since the first intervention programme. It could be argued however, that the longer interval of time between the first intervention and the second observations resulted in a more rigorous measure of the effectiveness of the intervention process. Even in the second term it was difficult to arrange suitable observation times. The teachers in the team cancelled or changed scheduled observations several times during the observation period. By the second school term teacher T5 had left the school to further her academic qualifications so the number of teachers in the team was reduced to five.

The primary purpose of the second series of observations was to allow the researcher to observe changes in teacher behaviour. In particular, the observations provided opportunity to see in action the planning programme devised in the first intervention and to observe any change that had occurred since the observations in series one. Three lessons were observed in the classrooms of T2, T3 and T6 and two lessons in the classrooms of T1 and T4. Observation procedures were the same as those used in series one, that is, all conversation between teachers and students in class discussion was recorded, full transcripts were written up immediately after the observation and these were checked for accuracy by the teachers the following day. The lessons were again of about an hour's duration and part of a social studies unit chosen by the teacher.

Although it had been agreed in the first intervention that appraising teacher understanding and developing a model which allowed the effective application of this understanding would be the principal goals of this part of the project, aspects of teacher effectiveness were also recorded in the second intervention. The primary purpose of this recording was to determine the extent to which increased understanding of the processes and structures of teaching and learning in social studies had caused any change in teacher effectiveness in areas other than planning. Time allocation, questioning, task design and planning were therefore considered in the second series of observations as in the first.

Skills Emphasised and Skills Evident

The tasks set by each teacher were again analysed in terms of the skill groups in the Brightmeadows Model of conceptual understanding. Both systems of identifying skills were used, that is, tasks were analysed in terms of skills emphasised and skills evident. The procedures followed in identifying and recording skills were the same as those used in the first series of observations and described in Chapter Seven. Learning activities were timed to the nearest minute and the time was recorded against the skill the researcher identified as dominant or emphasised in the activity. Time in minutes was again converted to a percentage of lesson time to account for differences in the length of lessons. Other skills evident in the task were then identified. The skills evident were listed in columns ordered according to the categories in the Brightmeadows Model as in the first observations.

The emphasised skill became the basis of the first task analysis. Differences between lessons in the first series of observations and those in the second are shown in Tables 9:1 and 9:2. Table 9:1 illustrates differences for individual teachers, Table 9:2 illustrates differences apparent in skills emphasised in all tasks in both for series. The comparison of total results for skills emphasised shown in Table 9 : 2 and Figure 9 : 1 indicates an overall decrease in what could be considered to be the skill groups concerned with relatively lower order thinking. While there is no change in task time used for identifying skills, there was a 10% decrease in the time used in activities which emphasised explaining skills. There was a corresponding rise in higher order skill groups, only 1% in relating but 8% in evaluating and 14% in applying. There was a significant decrease in time used for presenting, even though all teachers indicated their intention to devote time to presenting in their plans. Once again this was because presenting skills are normally concentrated at the end of a unit of work. In the second series of observations at Brightmeadows all of the lessons observed were either at the beginning of, or in the middle of units.

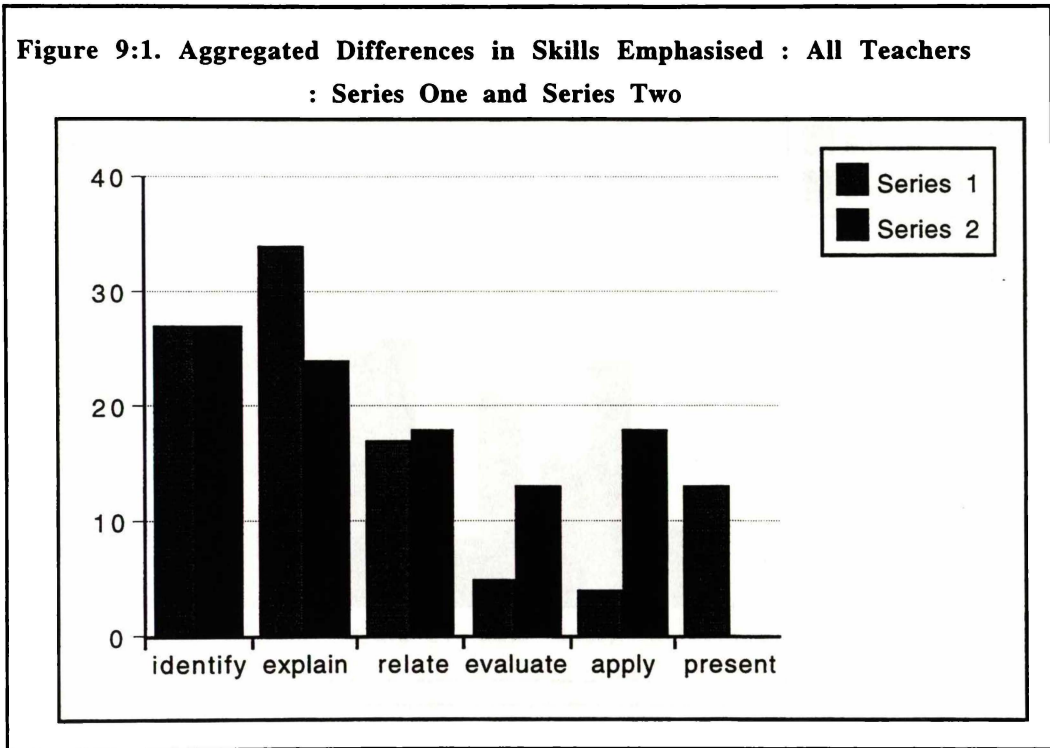
The differences in skills emphasised which were observed in series two were not marked but two trends were apparent. Firstly there was a tendency for the teachers in the team to use less “lower level” and more “higher level” skill groups. Secondly, teachers in the second series of observations tended to use skills more evenly. This trend was most apparent in teachers who demonstrated the greatest imbalance in the first series.

Table 9:1. Differences in Skills Emphasised Series One and Series Two Among Individual Teachers as a Percentage of Task Time

Teacher T1	Series 1	Series 2	Difference
identify	12	23	11
explain	23	46	23
relate	25	18	-7
evaluate	17	0	-17
apply	7	13	6
present	16	0	-16
	100	100	
Teacher T2	Series 1	Series 2	Difference
identify	16	36	20
explain	78	14	-64
relate	0	5	5
evaluate	6	39	33
apply	0	6	6
present	0	0	0
	100	100	
Teacher T3	Series 1	Series 2	Difference
identify	41	39	-2
explain	41	30	-11
relate	18	12	-6
evaluate	0	14	14
apply	0	5	5
present	0	0	0
	100	100	
Teacher T4	Series 1	Series 2	Difference
identify	50	14	-36
explain	0	22	22
relate	0	10	10
evaluate	0	0	0
apply	0	54	54
present	50	0	-50
	100	100	
Teacher T6	Series 1	Series 2	Difference
identify	18	26	-8
explain	27	10	-17
relate	43	45	2
evaluate	0	5	5
apply	12	14	2
present	0	0	0
	100	100	

Table 9:2. Aggregated Differences in Skills Emphasised : All Teachers: Series One and Series Two

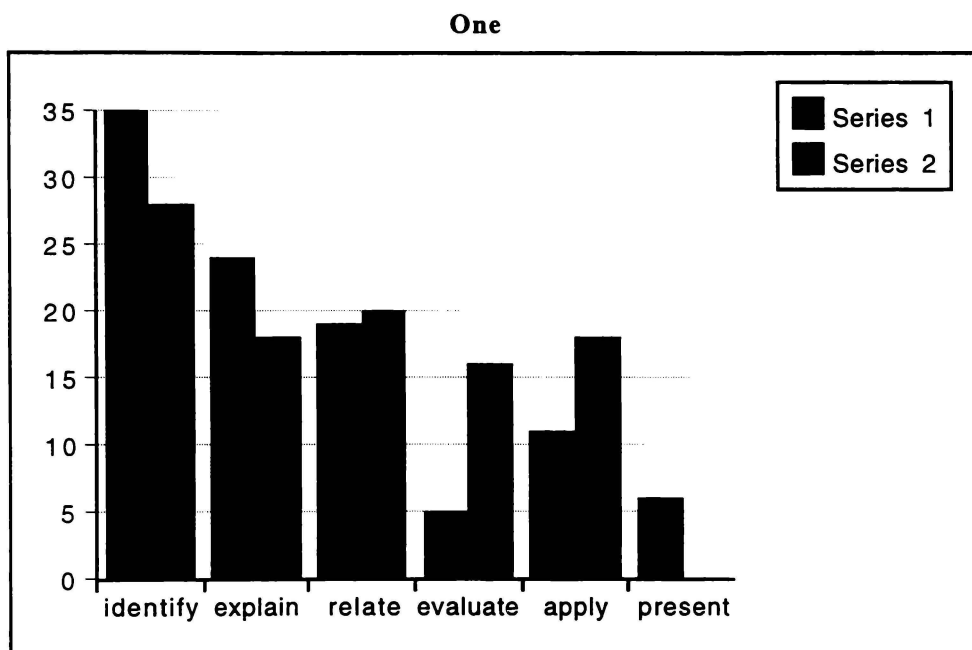
	Series One Observations	Series Two Observations	Difference
Identify	27%	27%	0%
Explain	34%	24%	-10%
Relate	17%	18%	+1%
Evaluate	5%	13%	+8%
Apply	4%	18%	+14%
Present	13%	0%	-13%



A further measure of the use of skills in learning activities was made using the second system, that is, by recording and listing all the skills evident in a lesson and totalling these. To avoid an undue emphasis on similar skills, the researcher listed a maximum of two skills in any one category. A comparison between the percentages of skills evident in series one and those in series two is shown in Table 9:3 and Figure 9:2.

Table 9:3. Differences in Total Skills Evident Series One and Series

	Two		Difference
	Series One Observations	Series Two Observations	
Identify	35%	28%	-7%
Explain	24%	18%	-6%
Relate	19%	20%	+1%
Evaluate	5%	16%	+11%
Apply	11%	18%	+7%
Present	6%	0%	- 6%

Figure 9 :2. Aggregated Differences Skills Evident : All Teacher Series

Results using system two, (skill groups evident), compare favourably with those obtained using system one (skill groups emphasised). Both sets of results indicate a small reduction in the number of skills in the first two categories, identifying and explaining. Using system two (skills evident), these decreases are 7% and 6% respectively. The increased proportion of skills in other groups is again apparent when system two is used. There is a minimal 1% increase in relating, but an 11% increase in evaluating and 6% in applying. Presenting skills are not evident for the reasons already discussed.

Results for skills evident also indicate a more balanced use of skills in the second series of observations. That is, there was a more even spread of activities across all skill groups and fewer extremes. In the first series of observations skills evident ranged from a high of 35% for identifying to a low of 5% for evaluating. If presenting is omitted for the

reasons outlined above, the range between the highest recorded skill group evident (identifying in series one) and the lowest (evaluating in series one) is 30%. In series two the range was 12%. A similar trend is apparent in skills emphasised where the range was 30% for series one (the difference between 34% explaining and 4% evaluating) and 14% for series two (the difference between 27% identifying and 13% applying).

In Chapter Eight the writer related how the research team decided to make teacher understanding the main focus of the project. The writer argued in the same chapter that the teachers in the team completed the intervention with a good understanding of what conceptual understanding was and how specific thinking skills related to conceptual understanding. If this was the case, planning in the second series of observations should have demonstrated this understanding.

As in series one, teachers' unit plans were analysed in terms of the extent to which they were based on a few central ideas covered in depth, were sequential and coherent, and based on problem solving. Again, because the curriculum indicated that specific thinking skills should be taught in social studies units, the extent to which specific thinking skills were listed as objectives and whether or not activities and assessment tasks helped students reach these objectives was also considered. Teachers' objectives in these two areas appear in Tables 9: 4 and 9: 5. The researcher's comments on each set of objectives follow. As explained in the description of the planning model in Chapter Eight, the achievement objectives in the teachers' plans were copied from the national curriculum Social Studies in the New Zealand Curriculum (Draft). The "important ideas" which follow these objectives were developed by the teachers to suit the needs of their particular unit.

Table 9:4 Main Unit Objectives (Important Ideas) Series Two Observations**T 1**Achievement Objectives

Students will develop an understanding of:

- how and why different cultural groups value and use a resource;
- the implications of decisions people make about using a resource.

Important Ideas

1. The Waikato River is important to people in our community for a number of different reasons.
2. People use the river in a variety of ways to enhance their life style.

T 2Achievement Objective

Students will demonstrate an understanding of :

- the changing interactions of women men and children when rights roles and responsibilities are affected by challenge.

Important ideas.

1. We all have to make a variety of decisions in our daily lives.
2. There are a number of factors which affect the daily decisions we make.

T 3Achievement Objectives

Students will demonstrate their understanding of:

- particular systems relating to hospitality in a range of cultural groups;
- the ways different groups of people relate to the physical environment;
- the ways people gain access to different resources.

Important ideas

1. Every culture has different attitudes and practices in the way they prepare and eat food.
2. Menus reflect the resources and customs of the country.

T 4Achievement Objectives

Students will develop an understanding of :

- the way natural features affect peoples lives;
- how and why people have interacted with their environment;
- how and why different cultural groups use a resource;
- the activities and experiences of a group of people in the past;
- ways in which individuals and groups initiated and respond to change.

Important Ideas

1. Bison were the Plains Indians' most important resource.
2. Spiritual beliefs had a strong influence over the way they used this resource.
3. Traditional life styles can change drastically as a result of outside intervention.

T 6Achievement Objectives

Students will demonstrate an understanding of :

- how people respond to crises;
- how groups plan to cope in emergencies;
- how rights and responsibilities change in times of challenge;
- how individuals groups and organisations in our community address challenges.

Important Ideas

1. There are especially challenged people in our community who are different to us and who have different needs but the same feelings.
2. Empathy and respect should be shown to those in our community. who are especially challenged.
3. Support services are available in our community for a whole range of people.

The objectives of the units observed in series one and discussed in Chapter Seven were extensive, but few focussed on conceptual understanding at an appropriate level (see Table 7: 9). In series one almost every teacher in the team listed unit objectives at the conceptual level of the achievement objectives in the national curriculum. These could be regarded as general goals for social studies over a whole year, but they were not specific enough for individual units. Most objectives were simply copied directly from the national curriculum. Objectives in the second series of observations were markedly different.

If we use the terminology developed by Beyer (1979) and discussed in Chapter One, the achievement objectives at each level in Social Studies in the New Zealand Curriculum (Draft) can be regarded as “generalisations.” The specific objectives for a unit on a particular topic are at the level Beyer would call “understandings” and what most New Zealand teachers would call “important ideas.” Most units in series one were based inappropriately on objectives at the level of generalisations, all of the units in series two were based on appropriate important ideas. These ideas were derived from the achievement objectives of the national curriculum but each related to the particular topic being studied. In other words, they met the requirements discussed in Chapter One. They were the “intermediate stage between concepts and generalisations;” they “described a relationship between specific variables;” they had “specific referents in time and or place;” and they “served as building blocks for higher levels of cognitive knowledge” (the curriculum achievement objectives at Beyer’s level of generalisation) (Beyer 1979 p. 183).

T1 for example worked from achievement objectives which required her students to “develop an understanding of how and why different cultural groups value and use a resource” and to develop an understanding of “the implications of decisions people make about using a resource.” She refined these objectives so that they dealt with a specific

resource, the Waikato River. In the same way T4 took an achievement objective which required her students to “develop an understanding of how and why people have interacted with their environment” and developed specific unit objectives concerned with a particular people and a particular resource, the Plains Indians and the bison.

In the second series of observations the teachers in the research team came very much closer to the unit planning requirements discussed in Chapter Five (Table 5:2), and in Chapter Eight. The unit plans were “based on central ideas,” “a few ideas were covered in depth,” and because the units were now focussed on clear realistic objectives, they “linked information to provide sequence, coherence, continuity.” All of the units exhibited appropriate application of the national curriculum according to the model devised by the teachers in the second intervention, that is, there were clear links between the general aims of social studies, the strand achievement aims, the strand achievement objectives at the appropriate level, unit objectives and specific learning outcomes.

Teacher Planning and Specific Thinking Skills

The specific thinking skills listed as objectives in series two were fewer and more specific than those in series one. In the first series of units the teachers in the team were inclined to copy broad headings for skills from Social Studies in the New Zealand Curriculum (Draft). The most obvious case was in T1’s units in which she listed “decision making skills,” and “critical thinking skills” as specific skills objectives. Because of the generality of these objectives T1 was able to list them unchanged for both her first two units. Other teachers listed rather more specific skill objectives, but these were still in most cases too broad. T4’s objectives for example, required students to “combine information in a creative way.” T6 asked her students to “respond in a variety of ways to ideas and information.

Where thinking skill objectives were specific in series one, there was no attempt to link these objectives to particular learning activities. The most obvious example was T4. Her plan indicated that students would be involved in “decision making,” “entering imaginatively into other times and places,” and “recognising how values change.” The activities in the unit required students to enlarge a drawing of a postage stamp and to design their own stamp, activities which used none of these skills. T5 wrote of students “comparing and contrasting information to make connections” but activities which incorporated the skills of comparing and contrasting were not apparent in her unit. Comparing and contrasting were in this case general descriptions of an overall process rather than specification of particular skills which were to be taught and assessed.

There was also a tendency in series one for the teachers to list too many skills, either by implication as in T1's "critical thinking," or specifically like T6's list of ten skills for her second unit. At the other extreme, T2 listed no specific thinking skills at all. Generally there appeared to be considerable confusion about whether to make long lists of specific thinking skills like T3, to list very broad categories of skills like T1, or to leave skill objectives out of planning altogether like T2.

The skills listed in series two and illustrated in Table 9: 5 were fewer in number and more specific. Grouping specific skills into categories using the Brightmeadows Model appeared to help in this regard. In series two, teachers' plans indicated that students would be required to identify, explain, relate, evaluate or apply. The teachers in the team used the categories of skills in the Brightmeadows Model as objectives on the understanding that each of these general headings incorporated a number of more specific skills.

The specific skills listed as objectives in series two were related to particular learning activities. T1's students for example were asked to "classify information by arranging it in categories;" T2's "applied understanding by participating in a decision making game;" T3 asked her students to "explain why certain foods are related to particular cultures or circumstances." Using the columns on the unit planning format allowed teachers to indicate if a skill was being taught for the first time or if it was being revised and reinforced and to show whether or not the skill was being assessed in this unit.

Teacher Planning and Sequence, Coherence and Continuity

In the second series of observations teachers' unit plans demonstrated greater sequence, coherence and continuity. These were apparent in the way that learning activities built on each other in order to achieve the unit's central goal of conceptual understanding. For example, T6's unit asked students to identify disabilities, define disability, categorise disabilities, locate data on particular disabilities and to demonstrate understanding of the place of the disabled in our community by performing a role play. T3 began her unit by using a poem to make students aware that people in different countries eat different foods. Students then used resources to find out what foods were eaten in different places, compared these with the foods we eat in New Zealand and identified the factors that determine what foods people eat.

In this respect the series two unit plans differed markedly from those examined in series one. All of the teachers used the planning format designed in the intervention. They commented that they found the format effective and easy to use. T6 remarked "In our minds we knew where we were going. I felt that much more in the second one than in the first." T1 commented, "I felt much more confident in where I wanted to go and what I wanted my kids to do."

Table 9:5. Specific Thinking Skills Expressed as Unit Objectives Series Two**T 1**

Identify major features of the Waikato River using maps, pamphlets and texts.

Classify this information by arranging facts in categories.

Explain why the features identified are important to our community.

Present information to the syndicate using a newspaper format (including graphics, maps and cartoons).

T 2

Identify decisions people in our class make every day.

Categorise decisions using headings discussed.

Explain what influences people's decision making.

Apply understanding by participating in a decision making game.

T 3

Identify food types which relate to a particular culture.

Explain why certain foods are related to particular cultures or circumstances.

Arrange data on a chart so that people can follow the information in a logical sequence.

Apply knowledge gained in this unit in a practical way by presenting a food sample.

T 4

Recall known data.

Locate information from resource material provided.

Record by note taking.

Analyse and interpret information.

Present material graphically.

T 6

Collect resources relevant to a particular disability.

Explain the effects of a particular disability.

Relate facts from an initial brainstorming by grouping and categorising.

Demonstrate an understanding of how to cope with by performing a role play.

Present information on a particular disability graphically.

Teacher Effectiveness

Although the team had agreed to make teacher understanding the main focus of the project, teacher effectiveness was still considered in the second series of observations. Primarily this was because the team considered it would be interesting to see if differences in planning resulting from the models devised in the intervention would result in different patterns of teacher behaviour. In addition, as T3 pointed out, "It seemed a shame to waste all that information." In the second series of observations time allocation in lessons was again recorded and categorised as administration, teacher led discussion, teacher instruction, group activity, and individual activity. Teacher questions were again recorded and categorised as administrative, simple, prompting, convergent or divergent.

When figures for time allocation in series one and series two were compared little change was apparent in any of the categories measured. The greatest difference in time allocation in the two series was in the area of teacher led discussion. This category showed a 4% increase from 28% in series one to 32% in series two. Differences in all other categories were in the area of 2% or less. Differences are listed in Tables 9: 6 and 9: 7.

Table 9:6. Differences in Time Allocation Series One and Series Two : Individual Teachers

Teacher T1	Series 1	Series 2	Difference
administration	12	23	11
teacher instruction	20	13	-7
teacher led discussion	46	23	-23
individual	7	5	-2
group	15	36	21
	100	100	
Teacher T2			
administration	8	19	11
teacher instruction	6	6	0
teacher led discussion	18	18	0
individual	62	30	-32
group	6	27	21
	100	100	
Teacher T3			
administration	30	8	-22
teacher instruction	0	1	1
teacher led discussion	17	44	27
individual	20	32	12
group	33	15	-18
	100	100	
Teacher T4			
administration	19	12	-7
teacher instruction	0	2	2
teacher led discussion	16	36	20
individual	30	19	-11
group	35	31	-4
	100	100	
Teacher T6			
administration	13	14	1
teacher instruction	0	8	8
teacher led discussion	38	41	3
individual	3	12	9
group	46	25	-21
	100	100	

Table 9:7. Aggregated Differences in Time Allocation Series One and Series Two : Total All Teachers

	Series One Observations	Series Two Observations	Difference
Administration	16%	15%	- 1%
Tchr. Instruction	5%	6%	+1%
Tchr Led discussion	28%	32%	+4.%
Individual Activities	21%	19%	-2%
Group Activities	30%	27%	-3%

Differences in categories of questions between series one and series two were also minimal except in two areas. There was an increase of 5% in the number of prompting questions asked and a decrease of 4% in the number of divergent questions. The increase in prompting questions, though not large, suggested that the teachers in the study were making a greater effort in series two to encourage students to think farther and at a higher level. The decrease in the number of divergent questions was at first a little surprising. It is customary to see divergent questions as more likely to encourage higher order thinking, this would suggest that these questions would be more likely to be apparent in series two. However, as one of the team pointed out in the second intervention, using the new planning format encouraged the teachers to deal with fewer objectives in greater depth. The focus and direction provided by the new format, the team argued, may have resulted in teachers asking fewer questions which allowed students to digress from the main unit topic. This response is discussed in more detail in Chapter 10.

Table 9:8. Aggregated Differences in Teacher Questions in Series One and Series Two For All Teachers

	Series One Observations	Series Two Observations	Difference
Administration	19%	19%	0%
Simple	24%	23%	-1%
Prompting	11%	16%	+5%
Convergent	27%	28%	+1%
Divergent	19%	15%	- 4%

Conclusion

The second series of observations appeared to indicate a greater degree of teacher confidence and awareness. Unit objectives in conceptual understanding and in the area of specific thinking skills were at an appropriate level and clearly stated. Learning activities in the second series of observations incorporated activities which were related to conceptual and skill objectives and they encouraged students to think. All the teachers in the team designed learning activities which required students to gather, process and present information. Typically, students having listed facts, grouped these facts into classes or categories, and provided headings or labels for these categories before applying them in a variety of ways.

The planning format devised during the intervention had less effect on teacher effectiveness than the researcher or the teachers in the team expected. Differences in time allocation and questioning were minimal although there was a 4% increase in the amount of teacher led discussion and a 5% increase in the number of prompting questions asked by teachers. Differences in the nature of tasks set for students were much more apparent. The results showed increases in the time spent on dominant or emphasised skills of 1% in relating skills, 8% in evaluating skills and 14% in applying skills. Using skills evident in learning activities these figures were 1%, 11% and 7% respectively (Tables 9:2 and 9:3).

Change was even more evident in the area of teacher understanding and the ways that this understanding made itself apparent in teachers' planning. The series two units were based on important ideas at an appropriate level of understanding. They were derived from, but more specific than, the achievement objectives in Social Studies in the New Zealand Curriculum (Draft). The Brightmeadows Model and the planning model appeared to allow teachers to identify specific skills in practically applicable groups and make provision for teaching, practising and assessing these skills. It seemed from the observations that the planning format allowed teachers to plan more efficiently and effectively.

While a shift from lower order to higher order was apparent both in skills emphasised and skills evident, this result should be considered with some caution. In spite of many hours of observation, few lessons which featured presentation were observed. This aspect of the observation process could have distorted the percentage results in other model categories. Nor were the shifts tested for statistical significance as the sample size was too small. Despite these reservations, the shifts observed were important and the teachers in the team were pleased by the outcome.

A finding related to the first was that planning was considerably more focussed. The evidence indicated that the teachers had greater understanding of the social studies issues involved in planning and teaching and were thus planning more carefully. These points are discussed in more detail in Chapter Ten.

Chapter Ten

Second Intervention

The most important thing you are doing is working with the growth of knowledge in children. You put the priority for whatever is being done in terms of the skills and understandings, and by seeing that using topics is just a means to an end (Teacher T2).

Introduction

The second intervention was held ten weeks after the end of the second series of observations. The teachers in the team were released from school for a day, they spent this day on the university campus discussing progress on the project with the researcher. With the teachers' permission the discussion was again recorded on audio tape. The primary goals of the second intervention were to discuss the comparative results from the two observations, to analyse the degree of success of the conceptual understanding model and the unit plan derived from it, and to consider directions the project should take from this point.

Teacher Understanding and the Planning Format

The team agreed that using the Brightmeadows conceptual understanding model and the planning format derived from it had given their social studies lessons more focus and direction. They claimed that the planning format made it easier both to design units which had conceptual understanding as a goal and to relate thinking skills to this goal. T2 summarised the feelings of the group as follows :

Researcher We hypothesised that teachers were using some thinking skills but not others. We had to ask ourselves, 'How do we set up a programme which will help teachers to cover a range of thinking skills?'

T2 You do this by changing the emphasis of the teaching, by realising that the most important thing you are working with is the growth of knowledge in children. You put the priority for whatever is being done in terms of skills and understandings and by seeing that using topics is just a means to an end. So, you change it round.

While the team was generally satisfied with the Brightmeadows Model and the planning models derived from it, some further adjustments were made during the second intervention. In the first intervention "presenting activities" had been moved to a position in the model above "conceptual understanding" because the teachers saw the students' presentations as an end product, an indication that a degree of conceptual understanding had been attained. During the second intervention the team moved "presenting activities" back to its original position. This change was the result of a reassessment of the place of presenting skills. After consideration the team agreed that presenting information effectively was really part of the learning and understanding process. Presenting skills therefore contributed to conceptual understanding in the same way that other skills did. The repositioning of "presenting" also served to emphasise that the process of thinking and learning described in the model was not necessarily sequential. The team argued that representing presenting skills as the end product of the understanding process could suggest to teachers that this was so.

The team agreed that using the planning format had also helped them to meet other planning criteria discussed in Chapter Five (Table 5:1), particularly dealing with a few central ideas and dealing with these ideas in depth. They asserted that the unit planning format derived from the model had helped them to achieve this by allowing them to maintain a focus on conceptual understanding expressed as an important idea.

T6 - and in our minds we knew where we were going. I felt that much more in the second one than in the first.

Researcher Did the plan help in that?

T6 Yes.

T3 So our model works.

T1 Well I felt much more confident in where I wanted to go and what I wanted my kids to do.

Researcher And you thought that was because of the focus that the plan provided?

T1 Yes definitely.

Researcher Did you find that using the plan helped you to focus and concentrate on the important ideas?

T4 Oh yes definitely.

T3 You couldn't go wishy washy.

Researcher So it was an improvement over what you were using before?

T6 Yes, it was easier to fill out, easier to relate to the draft (*national curriculum*).

T3 Easier to focus on ---

T2 Without copious amounts of writing.

Researcher So you were able to keep the important idea in mind?

All Ts Yes definitely.

T2 You remained focussed and that's why the results were better. We remained focussed.

T6 I also knew from the start exactly what I was going to assess and how I was going to do it and I could relate that easily back to the skills that I had outlined. I thought of that from the start. I thought right, 'at the end of this my kids are going to do a seminar,' and I geared my teaching towards that.

A major problem identified in the first observations was the difficulty teachers had in selecting specific thinking skills to use in units of work and, once selected, expressing these as realistic objectives. The team members tended to either list a generic group of skills like "critical thinking" as an objective, or they tended to list unrealistically large numbers of specific thinking skills individually. In either case there was little evidence in the teachers' plans of a relationship between the skills listed as objectives and the skills observed in the unit's learning activities. The team agreed that the planning format used in the second series of observations allowed them to deal more successfully with the application of specific thinking skills.

Researcher How did it work in terms of identifying the thinking skills you were going to teach in your unit? How did the check list work for ticking them off?

T4 That was good.

T1 That worked well.

T2 Well, when I looked at the results on here (*the specific learning outcomes on the first page of the planning format*) and quickly checked back here (*the skills checklist on the second page of the planning format*) they actually came out right. I feel for myself I must have been on task, because the skills I didn't want to do didn't come up and the ones I did want to do did come up. That may be a test in itself. Okay, something was working."

Researcher Were you able to say when you were planning, 'I am going to teach this skill and this skill?'

T6 Yes, in your mind you've got a fair idea.

T3 Do you mean first up, before you've actually got your idea?

Researcher Yes, what did you identify here? (*in the specific learning outcomes box*)

What did you put for your specific learning outcomes?

T6 (*reads from her plan*) Apply, identify, describe.

T1 Identify, relate, apply.

T2 Demonstrate- - -

Researcher And were those the ones you did?

All Ts Yes.

R So that part of the model works as well?

All Ts Yes.

Discussions like the one above indicated that teachers had a good understanding of the place of specific higher order thinking skills in their planning. During and following the first intervention the team had discussed the definitions of specific skills (Table 7:1), the ways in which these skills were grouped together, and the way that specific higher order thinking skills contributed to conceptual understanding. They had demonstrated their understanding of these at the social studies teachers' association meeting. The second observations provided them with an opportunity to apply this understanding using the planning format derived from their models. They agreed that the planning format they had designed to apply the Brightmeadows Model (Table 8:4) allowed them to deal with workable groups of skills rather than with generic headings or with long lists of individual skills. The team agreed with T2 that "the skills I didn't want to do didn't come up and the ones I did want to do did come up." In other words, the skills they set as objectives on page one of the planning format were evident in their learning activities and they were able to be identified on the check list on page two of the format.

Teacher Effectiveness

While the team had agreed that learning about teaching understanding and applying this learning through their models had become the primary focus of the project, the measures of teacher effectiveness used in both sets of observations, time allocation and questioning, were again discussed during the second intervention. The teachers and the researcher saw no problem with the minimal changes in time allocation (Tables 9: 6 and 9: 7). Some team members expected that the time spent on administration might have decreased in the second series of observations but none were particularly perturbed that it had not. They pointed out that in the second series of lessons their units were more tightly focussed and structured. Some of the team argued that this change could be expected to increase the time given over to administration because tasks in the second series of units were generally more complex. Consequently teachers needed to provide more detailed instructions. All agreed that time allowed for administration was low anyway and not really a matter for concern. As T2 explained, "I don't think we have too much administration time. If you want to keep your lesson focussed you need the administration. I don't think it would change if we did it again. We would still have that much administration."

All of the team expected the nature of the questions asked in series two to have changed. They were pleased with the increase in the number of prompting questions, arguing that this showed that they were encouraging their students to think. The team thought that divergent questions would be more apparent in the second series than in the first because they associated these questions with a higher level of thinking than questions in the other categories. A comparison of data showed that the number of divergent questions asked by teachers had in fact decreased by 4% in spite of an increase in the amount of time given over to teacher led discussion, the aspect of the lessons in which most divergent questions were asked in series one (Table 9:7).

T4 I thought there might be more divergent questions because divergent questions encourage kids to expand their thinking in a whole range of areas and really use their imagination, but there isn't much difference.

T1 That's because in the teacher led discussion the teacher is guiding the kids.

Researcher Yes, we've been looking at thinking skills but we're also looking at how thinking skills can lead to conceptual understanding. Perhaps what the unit should be doing is focussing on the important ideas. If you're focussing inwards, on an idea, maybe your questions shouldn't have kids heading off in all directions.

T1 Right, so some of the thinking should be convergent.

T3 But you still need the divergent thinking.

T2 You need to lead your children, otherwise they could be all over the place.

T3 But we were encouraging children to be divergent thinkers by going through the process. So maybe they need to go through the process of divergent thinking so that they can learn the skills they need to be divergent thinkers. You need to have some skills firmly under your belt. In action learning for example, they do become much more divergent

thinkers and towards the end they are looking out this way (*indicates by spreading her hands*) instead of straight ahead. They need to go there first.

T1 They start that way then they come back to the important idea.

T2 Yes, we say, 'Now come back to your focus point.'

T3 It's like a diamond (*instead of the triangle the group has been using as a model*) . We take the kids out to explore many ideas, then bring them back in to focus on the important idea.

It was generally agreed that considering thinking in terms of T3's diamond was a useful analogy. The teachers pointed out that many social studies lessons began with an exercise like "brainstorming" which encouraged divergent thinking. Once a variety of alternatives had been explored, students needed to be encouraged to organise and structure their thinking. This structuring channelled thinking toward the unit's important ideas.

The team had to agree that while a comparison of data indicated that thinking skills in the higher levels of the Brightmeadows Model were more apparent in the second series of observations, changes in time allocation and questioning were minimal. They argued nonetheless that their teaching was more effective in the second series because of their increased understanding. They pointed to their clearer, more appropriate objectives and the way that thinking skills in their units were channelled towards these objectives. They claimed too that they were now consciously teaching thinking skills for some purpose, assessing this teaching, and monitoring which skills had been taught.

Applying the Model

Having established that the model and the planning format seemed to be working at Brightmeadows, the team considered the next stage in the project. They all agreed that a trial in new schools at different class levels was the most appropriate next step.

Researcher If we agree that the model and the unit are working with the refinements we have made, where do we go from here? Is it important that we go back to Brightmeadows?

T2 No we shouldn't go back to Brightmeadows. Once we start going back the process of finding out information won't work because you are recording again from the same people.

I would suggest we take the unit plan and the concepts and go to another school, one that we felt friendly about. If they used the plan successfully that would be much more useful.

T1 We need to go to different schools and we need to look at classes at different levels.

---inaudible as everyone talks ---

T3 -- having to explain what we were doing and giving them time to take that on board. We know there will be teachers out there who would do it for us.

T2 And that way, we could bring it back afterwards and look at how they coped. We could have some form of evaluation that they very quickly had to fill in. As a group it would be really interesting to have that and to see whether or not they came up with the same concepts and ideas that we did. Did they achieve the same things? Did they pick up faults we

weren't aware of? Then we would really have a workable document.

T6 It would be nice to use someone who didn't know what we were going on about.

We could see if they found it easy to fill in for a start.

T1 I think you need to look at different levels too. That's really important.

T3 We could target some of the teachers in our own school.

Researcher Yes I had thought of that. I had thought of giving one to B and saying 'Try this'.

T1 You could use it with a group of student teachers.

T2 But that's not what we want. We want to see if it is a usable document in schools, so they need to do it blind. They might need to have a page attached that told them about it and we could ask them about problems and suggestions for change.

T3 And areas of concern.

T2 That's why you can't use our school. It's too close. They are too close to it. And we need teachers at new entrant and J1 and 2 level. Do they work with the same things? Can they apply conceptual understanding at that level? Do they understand the process?

The researcher was uncertain that applying the model in new schools was necessarily the best next step; such application did however have some advantages. Firstly application was the next logical step in a project concerned with higher order thinking. In a classroom, teachers might well test the level of students' conceptual understanding of an idea by having them apply it in a new situation. The team had already indicated their understanding of the process by explaining it to the social studies teachers' group after the first intervention, preparing and explaining the model and the planning format for other teachers would provide a further demonstration of this understanding. Furthermore, the project had from the beginning followed an action research model, such models emphasise a cooperative team approach to decision making. By this stage in the project the models had become the team's models not solely the researcher's. The researcher felt that having the team extend the project to other schools would enhance this sense of team ownership of the models.

Once it was decided that the model and planning format should be tested in other schools the team discussed possible locations. It was decided that the primary schools which contribute students to Brightmeadows and the secondary college to which Brightmeadows contributes should be approached. These schools were chosen because of their proximity to Brightmeadows, and because the staff at many of them were known to teachers in the research team. Five schools were chosen for the blind test. The teachers in the team each agreed to be responsible for one school. This responsibility entailed contacting two teachers in the school, discussing the project with them, making themselves available if there were any questions or problems in using the model, and collecting completed units at the end of

the exercise. The researcher undertook to write up a brief explanation of the place of conceptual understanding in social studies and the way in which the plan implemented this understanding. The researcher also agreed to contact the principal of each school, explain the nature of the project and request permission for their teachers to participate. Principals and teachers were contacted initially by telephone, arrangements made by telephone were then confirmed by mail.

Each teacher contacted was provided with a booklet containing a short statement explaining the thinking skills model, notes on conceptual understanding in social studies, a copy of the unit planning format and brief notes explaining the relationship between the planning format and the national curriculum. The remaining pages in the booklet included the two page planning format devised by the Brightmeadows team and a questionnaire asking the teachers in the six test schools to comment on the effectiveness of the plan. The questionnaire made twelve statements about the format. Respondents were asked to comment on each and to tick a box indicating their level of agreement.

Table 10:1. Diagram in Teachers' Planning Booklet #1

**General Aims
of Social Studies**

Strand Achievement Aims

Strand Achievement Objectives

Unit Objectives (Important Ideas)

Specific Learning Outcomes

Social studies is an ideas based subject. While it is important that students learn facts in social studies, facts are a means to an end not an end in themselves.

The structure of Social Studies in the New Zealand Curriculum makes it clear that ideas, or understandings are the main focus of social studies in New Zealand schools. All of the objectives in the national document are expressed as ideas or understandings at different levels

Unit plans need to emphasise understanding as their primary objectives. The unit objectives or important ideas are at a more specific level of understanding than the curriculum achievement objectives. .

Table 10:2. Diagram in Teachers Planning Booklet #2

Conceptual Understanding

Presenting Processes

Producing, Planning, Combining, Formulating, Constructing, Composing.

Applying Processes

Applying, Solving, Showing, Predicting, Inferring.

Evaluating Processes

Appraising, Judging, Deciding, Criticising.

Relating Processes

Connecting, Relating, Grouping, Differentiating, Arranging, Classifying, Distinguishing, Checking, Comparing.

Explaining Processes

Translating, Interpreting, Describing, Summarising, Extrapolating, Defining

Identifying Processes

Recalling, Collecting, Recognising, Identifying, Labelling, Examining.

Conceptual Understanding

Good social studies is concerned with conceptual understanding. Thinking skills are important in social studies because students use them to process facts in order that specific pieces of information can be related to each other in a variety of ways to become important ideas or or understandings. To teach social studies better, teachers need to do more than simply impart facts. Students need to be able to take pieces of factual information and structure these using thinking skills to show the relationships between them. They can use these relationships to construct their own concepts and ideas. Once formed, the students' ideas can be refined and used again and again, each time with greater clarity and analytical power. The principal task for teachers in today's social studies classrooms is not simply delivering information, but teaching through conceptual understanding.

Table 10:3. Questionnaire in Teachers' Planning Booklet

	St	Agr	Agree	Nthr	Dis	St	Dis
1. The planning format was easy to use.							
2. The conceptual understanding model helped me to understand the relationship between thinking skills and conceptual understanding.							
3. The method used to identify strands was appropriate.							
4. The plan made the relationship between general aims, strand aims, achievement objectives and important ideas clear. I found it easy to write an important idea related to the achievement objectives							
5. Working with this planning guide made it easier to use <i>Social Studies in the New Zealand Curriculum</i> .							
6. I found it helpful to have thinking skills grouped in categories.							
7. The thinking skill categories were appropriate.							
8. I found that I applied the skills I identified in the checklist in my learning activities.							

Teachers at Brightmeadows College, the high school to which Brightmeadows contributes, expressed considerable interest in the project but were unable to participate in the trial because at the time they were approached they were busy with school and national examinations. They did however comment favourably on the format and agreed to look at it in the future. Eight teachers in four of the primary schools approached used the format to teach their next social studies unit. All completed the questionnaire and almost all commented favourably. The units were taught in a range of classes from five year olds at year one to ten year olds at year five. Units covered a range of topics from the general election to gold mining and festivals celebrated in other nations. Most teachers claimed they were able to follow the plan easily and the structure of their plans indicated that in most cases units focussed on important ideas and identified and taught specific thinking skills.

An analysis of the extent to which the teachers in the new schools understood and successfully applied the planning model devised by the team was beyond the scope of this project. Application in new schools was important to this research only to the extent that it allowed the teachers in the team to demonstrate their understanding of the models and their application by explaining them to other teachers and helping them apply the models in different situations. For this reason the applications in the new schools were not considered in any detail. Two points however are worth noting. Firstly, the model and the plan were regarded favourably by the other teachers. They found the planning format easy to follow

and to apply. However, the design of some of the teachers' units suggested that their understanding of the process was not at the same level as that of the Brightmeadows teachers. This point is discussed further in Chapter 12.

Conclusion

When discussing the Brightmeadows Model in the second intervention the teachers in the research team agreed that it had helped them to understand the process of conceptual understanding. Their understanding of this process, and the application of their understanding in classrooms through the planning format derived from the model, gave their social studies units greater focus and direction. While the team agreed that the model needed some minor modification, they were content to leave it essentially unchanged from the first intervention. They agreed that the models provided a more effective way of determining which specific thinking skills should be taught and assessed and that it demonstrated the ways in which specific thinking skills contributed to conceptual understanding.

The team saw the minimal changes in teacher effectiveness as interesting but relatively unimportant. This was because they had agreed during the first intervention that the principal aim of the project should be to focus on enhancing teacher understanding of the process of conceptual understanding and the ways that higher order thinking skills contribute to this understanding. They agreed that programmes to enhance teacher effectiveness were likely to improve their competency in the classroom, but they conceded that this was beyond the scope of this project.

While it seemed evident that the models worked for them, the team argued that the ultimate test was to apply them in other schools. While this application was carried out, it is not described in detail in this report because it was essentially an extension of the original research rather than part of it. Nonetheless, discussion of the application and the design of the material that was distributed to the teachers in the blind study, proved very useful for the researcher. In Chapter Five (especially Tables 5:4 and 5:7) the writer described how effective learning in social studies is generally understood to involve a process of gathering and processing information to culminate in the application of new knowledge in a new situation. The team's design of the material for the blind test allowed the researcher to see team members demonstrate their understanding of the models and the knowledge they represented by applying them in other schools.

It could also be argued that the application in other schools pointed out the disadvantages of "centre periphery" models of teacher development and the advantages of models like that used in this project. The Brightmeadows teachers saw a need to change their planning and teaching and they engineered that change. In their case the change process was successful. The teachers in the application schools participated in the project as a favour to

the team. They did not necessarily see a need for change and the change provided by the team was essentially imposed from outside. While they all liked the planning format, their plans suggested their understanding of the process was not as great as that of the Brightmeadows team.

Chapter Eleven

A Discussion of Project Findings

As a teacher it's really good to know. If I was looking at something like this I'd just say "Okay, I've done this skill and I've done that skill, what skills haven't I covered?" And there's a list, and I can go to the list and say, "I need to do this skill and I need to do that (Teacher T1).

Introduction

This project was concerned with teacher development. It involved some elements of quantitative methodology but essentially it followed the structure of action research projects advocated by writers like Lewin (1948). An action research model was considered appropriate because the project sought to enhance teachers' professional knowledge and expertise by using a bottom up model, one in which the researcher worked on the assumption that improvements in educational practice are grounded in insights generated by teachers themselves. In accordance with action research methodology the project was situational. It dealt with a particular problem in a specific context and attempted to solve the problem in that context. It was collaborative, involving a researcher and a team of practitioners working together. Team members modified and evaluated the research as it progressed and they were directly involved in its implementation.

The project was concerned with the nature of higher order thinking in New Zealand social studies. In particular it sought to determine if it was possible to devise an intervention programme which would enhance the teaching of higher order thinking skills by affecting changes in teacher understanding and behaviour. Personal observations over a number of years and the findings of a survey which examined New Zealand social studies between 1984 and 1986 (New Zealand Department of Education 1987) indicated that thinking skills were generally taught ineffectively in social studies classrooms in New Zealand. It seemed likely that one reason for this ineffectiveness was teachers' lack of understanding about the nature of higher order thinking skills and their place in social studies education. It also seemed likely that teachers failed to understand the centrality of conceptual understanding in social studies and the contribution of higher order thinking skills to this understanding. While inadequate understanding was a likely reason for ineffective teaching of higher order thinking, other factors were important too. It seemed probable for example, that teachers failed to teach higher order thinking skills adequately because they were not using the most effective teaching strategies.

These two themes, teacher understanding and teacher effectiveness, became the initial foci of the project. As research progressed it became apparent that teacher understanding was probably the more important. It also became apparent that the original scope of the project was too broad. The researcher and the team of teachers involved in the exercise decided therefore to deal with one of the two foci in greater depth. While acknowledging that teacher

effectiveness was important in enhancing higher order thinking, they decided to concentrate on developing a programme which would enhance teacher comprehension of the process of conceptual understanding and the contribution of higher order thinking to conceptual understanding.

Project Sequence

The national social studies curriculum used by the teachers in this study indicated that social studies learning should result in conceptual understanding. It pointed out that conceptual understanding is the end result of processing factual information by using higher order thinking skills, thus, both conceptual understanding and the specific skills which contribute to that understanding are crucial elements of social studies. This project began with the supposition that neither conceptual understanding nor the specific higher order thinking skills which contribute to it would be evident in social studies classrooms to the extent required by the national social studies curriculum. To test the writer's hypotheses twenty five lessons, each of approximately an hour's duration, were observed in the classrooms of six teachers. A full transcript was made of each lesson. These transcripts were analysed in terms of "teacher understanding" and "teacher effectiveness."

A model of conceptual understanding was developed before the observations began. This model became both a means of demonstrating to the teachers in the research team the processes involved in conceptual understanding, and a tool for analysing learning activities in the observations. An intervention followed the first series of observations. During this intervention the six teachers and the researcher discussed and refined the original model. The team then developed a further model which related conceptual understanding to the national curriculum. Finally the group devised a planning format which allowed the teachers to apply the ideas discussed in the intervention in their classrooms. A second series of observations involving thirteen lessons in the classrooms of five of the original six teachers allowed the researcher to note any changes in teacher understanding or teacher effectiveness that had taken place following the intervention. At a second intervention these changes and their implications were discussed. The teachers in the team then devised an extension to the project which involved testing their ideas by applying them in other schools.

The Brightmeadows Model

The central role of conceptual understanding in social studies and the contribution of specific thinking skills to that understanding were not made clear in the national social studies curriculum in use when this project began. Social Studies in the New Zealand Curriculum(Draft) (New Zealand Ministry of Education 1994) failed to provide a model of thinking and understanding. Fraenkel (1973), argues that without a model of thinking, teachers will not teach thinking skills. It became apparent early in the project that there was a need for a model which demonstrated the relationship between specific thinking skills and conceptual understanding. "The Brightmeadows Model" was developed by the

researcher to meet this need. It was based on observations made in a number of pilot studies and on the work of writers like Bloom, (1956); Guilford, (1967); Marzano, Brandt, Hughes, Jones, Presseisen, Rankin and Suhor, (1988); Costa, (1991); Presseisen, (1991); Newmann, (1991); and Newmann and Wehlage (1992).

Lack of teacher understanding was most obviously apparent in the way that the teachers in the team set unit objectives in their social studies plans. Objectives which should have been expressed in terms of conceptual understanding were either not expressed in this way or they were framed at an inappropriate level. Specific thinking skills were either listed under very broad headings or they featured as long lists of individual skills. The Brightmeadows Model was developed with a view to changing teacher behaviour in these areas by providing teachers with a rationale and purpose for using thinking skills in social studies and a structure which would allow them to apply this rationale in their classrooms. The model grouped similar skills together in categories. This allowed teachers to incorporate a range of specific higher order thinking skills in their units of work and to relate these skills to conceptual understanding without either working through long lists of individual skills or using overly broad generic groups of skills. The Brightmeadows Model was designed to be easily understood and readily applicable. It suggested an appropriate sequence of skills and it was based on the initial premise about thinking outlined in Chapter One of this paper, that is, that higher order thinking in social studies is concerned both with specific thinking skills and conceptual understanding where the former are used to develop the latter.

It was apparent from an initial pilot that identifying specific thinking skills in an observed lesson was both difficult and imprecise. Moreover, initial evidence suggested that teachers tended to view thinking skills generally rather than specifically. Thus, while the Brightmeadows Model was initially devised to help teachers conceptualise the process of conceptual understanding, the writer found that it could also be used to identify thinking skills in classroom learning activities. Although the model proved useful for this purpose, it became clear during the validation process that higher order thinking skills needed to be regarded in two ways, first in terms of the one or two skills dominant or emphasised in a particular activity, and secondly in terms of the other skills usually evident in the same activity.

The Model and Task Analysis

Thinking skills in teachers' learning activities were identified according to the six categories in the Brightmeadows Model. Each learning activity was timed to the nearest minute and this time was listed against the skill category emphasised in the activity. When this had been done other skills apparent in the task were identified. These were listed as skills evident. Analyses of learning activities according to skills emphasised and evident are shown in Tables 7:2 and 7:3. They indicate that although the teachers in the study used a number of higher order thinking skills in the first series of lessons, there were differences among

individual teachers. Most skills emphasised in learning activities in the first series of observations were concentrated in the two lower skill groups of the Brightmeadows Model. 62% of the skills emphasised were in groups one and two, 79% of the skills emphasised were in the first three skill groups, identifying, explaining and relating. The other skill groups, evaluating, applying and presenting, were used much less. Thus, while analysis indicated that some higher order thinking was taking place in the classrooms of the teachers in the research team, results suggested that the teachers in the team needed to use a greater variety of skills and to concentrate more on teaching skills in those areas of the Brightmeadows Model which were receiving least attention. The same trends were apparent when learning activities were analysed in terms of skills evident. Of the 139 skills evident in the teachers' learning activities 59% were in the first two skill group identifying and explaining. 78% were within the first three skill groups. While there were again differences among individual teachers, the overall pattern for skills evident was the same as that for skills emphasised.

The data were clear enough to confirm general trends though it was apparent from the observations that a number of variables might need to be considered. For example, at least some of the differences were due to the number of lessons observed in each classroom and the stage in the unit of work at which the lesson occurred. Fewer lessons were observed in the classrooms of two teachers and the skill groups listed for the lessons observed in these classrooms may not have accurately represented all the skills taught in units several lessons long. Nonetheless, while it was necessary to interpret the data broadly, a general picture of the application of skills in all the lessons observed was apparent.

While there was evidence that some higher order thinking skills were present in many of the lessons observed, it is important to note the difference between using skills and teaching them. Many of the teachers planned and implemented learning activities which incorporated higher order thinking but there was no evidence that they made provision for teaching new skills or informing students that they were practising or reinforcing skills already learned. Writers like Brandt (1990,1993), Costa (1984,1991), Fisher (1995), and Fraenkel (1973), point out that if they are to be learned effectively, thinking skills must be both taught and practised. The national curriculum also indicated that specific thinking skills should be taught as part of the social studies programme. And, in setting thinking skills as unit objectives, the teachers themselves implied that higher order thinking skills would be consciously taught and assessed as part of their units. This was not apparent in any of the lessons observed.

Teacher Effectiveness : Time Allocation

Brophy and Porter (1988) indicate that effective teaching is based on a number of factors. Among these they identify the need for teachers to be clear about instructional goals, to be knowledgeable about teaching strategies, to make effective use of instructional material to provide time for practices that enrich and clarify content, and to teach students

metacognitive strategies. The extent to which specific thinking skills were practised in learning activities observed in this project, was a product both of teacher understanding of the goals of social studies and a product of their teaching style. Making use of effective teaching strategies and using instructional material in a way which enriched and clarified content and taught students metacognitive strategies was obviously important. For this reason the researcher used the observations to identify a number of aspects of teacher effectiveness. These included the kinds of questions teachers asked, the way they designed their learning activities and the amount of time devoted to activities which provided students with an opportunity to inquire, discuss, debate and make decisions. Following the first intervention, teacher understanding became the primary focus of the project but, because teacher effectiveness had been monitored in the first observations, it was considered worthwhile to continue monitoring it in the second.

The first analysis of teacher effectiveness was concerned with the amount of teacher time allocated to administration, teacher led class discussion, teacher instruction in content, group activities and individual activities. Allocation of time was considered because writers like Goodlad (1984) and Newmann (1991) suggest that higher order thinking skills are more evident when lessons include a large amount of teacher led whole class discussion and when learning activities promote debate and discussion. In the first series of observations the teachers in the project devoted on average, 28% of lesson time to teacher led discussion. One teacher assigned almost half her classroom time to teacher led discussion and no teacher allocated less than 16% of classroom time to this aspect of teaching. Contrary to Goodlad's American findings, students in the class with the highest amount of teacher led discussion did not exhibit more higher order thinking than those in classes with less. The first observations suggested that the amount of teacher led discussion in lessons was not on its own a clear determinant of higher order thinking. The nature and quality of the discussion and a number of other factors seemed to be as important, or more important.

Many group activities also provide opportunity for teachers to provide activities which promote higher order thinking. The teachers in the study used a relatively large amount of group activity in the first series of observations but the amount of activity appeared to have little effect on the nature and quantity of higher order thinking skills. The observations indicated that time given over to activities which could involve students in exercises which could be used to enhance higher order thinking was high. Teacher led discussion and group, activities together accounted for almost 60 % of classroom time. Activities that required students to passively receive information from the teachers, (administration and teacher instruction) accounted for only 21% of classroom time. However, although teachers provided time for activities which might have enhanced higher order thinking, analysis of this time indicated that the use of thinking skills in learning activities was irregular, and unbalanced.

Teacher Effectiveness : Questioning

Teacher questions were identified using categories modelled on those devised by Goodlad (1984) and those used in the Report on the Social Studies Subjects Survey (New Zealand Department of Education 1987). The teachers in the study asked almost five hundred questions in the twenty four lessons observed in the first series of observations. These questions were spread across all of the chosen categories, 19% administration, 24% simple, 11% prompting, 27% convergent and 19% divergent. Again there was considerable variation among individual teachers. It proved difficult to discern any clear pattern of teacher questioning from the data. While convergent questions were most common and there were generally few prompting questions, there was little relationship between the types of questions asked and the skills emphasised or evident in learning activities. T1 and T6 who emphasised the greatest numbers of skills in the higher levels of the Brightmeadows Model asked the most simple questions. T5 with a smaller range of skills asked more divergent and prompting questions (Tables 7: 2 and 7: 7).

Teacher Effectiveness : Planning for Conceptual Understanding

Teachers' unit plans were analysed to determine the extent to which conceptual understanding and specific thinking skills were recognised as unit objectives by the teachers in the project. Plans which promoted opportunities for students to use thinking skills and achieve conceptual understanding were likely to be based on central ideas, cover a few ideas in depth and exhibit sequence, coherence and continuity (Newmann, 1991). Conceptual understanding is the result of processing factual information, learning activities within teachers' units needed therefore, to provide opportunity for students to gather, process and present information (Costa, 1991).

The first series of observations indicated that the researcher's initial hypothesis that teachers did not regard conceptual understanding as a goal of social studies learning was true in some respects. Many of the Brightmeadows teachers did in fact write main unit objectives which listed conceptual understanding as a primary goal of their unit. However, these objectives were generally at an inappropriate level. In most instances they were simply copied verbatim from the national curriculum and invariably they were too broad. This tendency suggested that the teachers in the team were largely unaware of the process of conceptual understanding in social studies. While some objectives were expressed as "ideas," the teachers appeared to list objectives in this way because this was the manner in which objectives were listed in Social Studies in the New Zealand Curriculum (Draft) not because they understood the process of conceptual understanding and its centrality to effective social studies.

When used as a unit objective conceptual understanding can be equated with Beyer's (1979) category of "understanding" or Taba's (1967) "organising ideas." Such objectives provide a focus for a particular unit of study. To do this they need to be at a level of

generality between the curriculum's achievement objectives and the concepts developed by students from processing factual information. Most of the Brightmeadows teachers simply copied objectives directly from the national curriculum. In doing so they framed objectives at the level McGee and Taylor (1994) describe as "broad general intentions" rather than true objectives which "describe a relationship between specific variables, and having specific referents in time and or place" (Beyer 1979). Most of the teachers' objectives were at Beyer's level of generalisation, a level appropriate for a school plan or a national curriculum but not for a particular unit. Finally, while most social studies curricula insist that in social studies "less is more," that is, a few topics should be covered in depth, there was a marked tendency for teachers in the study to list more objectives than could be realistically covered in one unit without coverage becoming superficial.

Teacher Effectiveness : Planning and Specific Thinking Skills

The 1994 national social studies curriculum made it clear that "When planning, teachers should take into account the objectives related to particular skills and integrate these into their social studies programme" (New Zealand Ministry of Education, 1994 p. 27). Specific thinking skills were apparent both in the teachers' unit objectives and in the learning activities which were part of their units. However, skills were generally listed as objectives inappropriately. The teachers in the team either listed generic groups of skills like "critical thinking" or "creative thinking" as objectives, or they made long lists of specific skills. For example, one teacher listed the generic groups of skills in the national curriculum,- decision making skills, critical thinking skills, values exploration skills, communication skills, research and inquiry skills and social and cooperative skills,- as skills objectives for both of her units. Listing categories of skills as objectives in this way is to suggest that students will learn, practise and be tested on all the 76 separate skills listed under these headings in one unit.

Some teachers did list specific thinking skills as objectives. T3 for example included predicting, summarising, generalising, reading, researching, cross checking, reporting, and recording as her objectives. But, while some, but by no means all, of these skills were apparent in T3's learning activities, none were consciously taught. Other teachers simply copied statements on specific skills from the national curriculum. In most cases the skills evident in their learning activities bore little similarity to the skills listed as objectives. Teachers generally listed more skills as objectives than they could possibly teach and assess in one unit.

In most cases skills appeared to be chosen at random. The teachers in the team admitted to the researcher that they generally chose learning activities which they considered applicable to the unit or "fun to do" and then listed as objectives the skills which were evident in those activities. In other words, activities were not designed to achieve objectives; objectives were listed to match activities that had been chosen according to other criteria.

Unit skills objectives therefore had no real purpose but were listed simply because teachers thought they should be. There was no system for teaching or learning thinking skills and no procedures for assessing them. Skills were used rather than taught. Learning activities made use of particular skills and arguably made provision for practising them, but there appeared to be no system for teaching skills according to a predetermined sequence or structure.

Effectiveness and Understanding

An analysis of the data collected in the first series of observations indicated that while teacher effectiveness was certainly a factor in determining the extent of higher order thinking in social studies lessons, teacher understanding was at least as important. While it was difficult to draw any clear conclusions from the data on teacher effectiveness analysis of that concerned with teacher understanding exhibited greater similarity and greater consistency among team members. None of the teachers in the team appeared to fully understand the centrality of conceptual understanding in social studies and all seemed to have difficulty in designing objectives which would allow students to reach an appropriate level of conceptual understanding. Because this was the case, specific thinking skills in their units' learning activities lacked purpose, focus and direction. None of the team appeared to understand the relationship between specific thinking skills and conceptual understanding, or, if they did understand, they lacked a system or structure which would allow them to teach and assess specific thinking skills consistently. This is not to suggest that the fault lay with the teachers. Conceptual understanding is difficult for teachers to learn. The then new curriculum, Social Studies in the New Zealand Curriculum (Draft), did not provide a model of conceptual understanding or explain it in any detail, nor had earlier national curricula. It had been several years since any of the teachers on the team had undertaken teacher inservice in social studies, when they had, this had been concerned with aspects of social studies other than higher order thinking and conceptual understanding.

While teacher effectiveness was undoubtedly important, the observations indicated that the most pressing needs were in the area of teacher understanding. The data on teacher effectiveness were inconclusive and a number of disparate aspects needed to be considered in this area. Teacher understanding on the other hand, provided a patent avenue for teacher development. It was also apparent that the scope of the project was too wide. The research team therefore decided that the project should emphasise teacher understanding and the application of the Brightmeadows Model rather than teacher effectiveness. However, because effectiveness was likely to improve as a result of greater understanding, the team considered that data collected in the area of teacher effectiveness were still useful. For this reason data related to teacher effectiveness was collected in the second series of observations as in the first.

Intervention

During the first intervention the teachers and the researcher discussed the place of conceptual understanding in social studies, the relationship between specific higher order thinking skills and this understanding, and the way that the Brightmeadows Model illustrated this relationship. On the basis of this discussion the research team developed two further models which allowed them to apply this understanding in their classrooms. The first model related the Brightmeadows Model of conceptual understanding to the national social studies curriculum. The second model was a planning format designed to apply the ideas in both models in classroom units of work. A second series of observations followed. These observations provided the researcher with an opportunity to observe the extent to which new understandings resulted in changes in teacher behaviour in the second series of observations. Appraising the effectiveness of the planning model and the teacher understanding which this demonstrated was the principal goal of this part of the project, but aspects of teacher effectiveness were also recorded in order to determine the extent to which increased understanding of the processes and structures involved in teaching and learning social studies had caused any change in teacher behaviour.

Teacher Effectiveness in Both Observations

A comparison of data from the two observations showed few substantial differences in time allocation. The greatest was in the area of teacher led discussion. This category showed a 4% increase from an average of 28% in series one to an average of 32% in series two. Differences in all other categories were in the area of 2% or less. Differences are listed in Tables 9:6 and 9:7. Because the changes in time allocation between the first and second series of observations were so small it is not possible to draw any firm conclusions from them. It is significant however that in both series of observations the amount of time given over to teacher led discussion was considerably greater than that observed in the United States by Goodlad (1984). The amount of time allocated to discussion did not appear to affect the extent of higher order thinking in students. This suggests that the quality of the discussion is more important in this regard than the amount.

Differences in the number of questions asked in each category in series one and series two were also minimal except in two areas. There was an increase of 5% in the number of prompting questions and a decrease of 4% in the number of divergent questions. The increase in prompting questions, though not large, suggested that the teachers in the study were making a greater effort in series two to encourage students to think farther and at a higher level. The decrease in divergent questions was apparently a result of clearer unit structure and objectives in the second series and a resultant tighter focus on the unit's objectives. The decrease in the number of divergent questions could therefore represent not less higher order thinking but more. Channelling students' thinking towards important ideas or understandings required students to collect and label information, to translate and interpret this data, to relate, arrange and classify it, to use combined ideas to solve, predict and apply.

Skills Emphasised and Evident

Changes in skills emphasised and skills evident were not great. An analysis of skills emphasised in learning activities in the first series of observations showed that most were concentrated in the lower two skill groups of the Brightmeadows Model. 61% of the skills emphasised were in groups one and two. 78% of skills emphasised were in the first three skill groups, identifying, explaining and relating. In the second series of observations these figures were less by approximately 10%. 51% of skills emphasised in the second series of observations were in the first two categories of the Brightmeadows Model, 69% in the first three (Table 9:2). The same trend was apparent in skills evident. Skills in the first two categories of the model were at 59% in the first series of observations with 78% of skills in the first three categories. In the second series of observations these figures were 46% and 66%. (Table 9:3).

Two general trends were apparent., firstly there was a tendency in the second series of observations for teachers in the team to use less “lower level” and more “higher level” skill groups from the Brightmeadows Model. Secondly, teachers in the second series tended to use a wider range of skills. This trend was most apparent in teachers who demonstrated the greatest imbalance of skill use in the first series. Every teacher except one used fewer learning activities which emphasised skills at the first two levels of the Brightmeadows Model in the second series of observations than they had in the first. This decrease was matched by a corresponding increase in classroom time devoted to skills which could be regarded as being at a higher level.

The skill groups evident in learning activities in the second series of observations followed a similar pattern. Identifying and explaining skills showed decreases of 7% and 6% respectively. There was a minimal 1 % increase in relating, but an 11% increase in evaluating and 6% in applying. In the second series of observations there was also a more even distribution of skills evident in learning activities across all categories of the model.

Some Conclusions on Teacher Effectiveness

While it was not emphasised following the first intervention, the team assumed that teacher effectiveness might improve as teacher understanding improved. There was some indication that this was so. There was for example, a greater spread of skills emphasised and evident in the lessons observed in the second observations, though it is important to note that some skills, notably presentation skills were under represented in the observations. Although there was no attempt in this study to deal specifically with aspects of teacher effectiveness like questioning, some improvement was evident. Further work on specific aspects of teacher effectiveness would no doubt further improve teacher performance. Any improvement in teacher effectiveness which occurred in this study was probably due to changes in teacher understanding of the processes involved in teaching and learning social studies. The greater

focus and purpose of the lessons in the second series seemed to create a need for learning activities which incorporated gathering, processing and presenting data and an emphasis on generalisations rather than facts.

Differences in skill use following the first intervention were significant but not substantial. However, it is reasonable to conclude that using the models had a positive effect, encouraging greater use of higher order skills and a more even spread of skill use. Less change was apparent than was initially supposed but perhaps this was because the balance of skill use was reasonable in the first instance. There will always be some imbalance of skills in a series of social studies learning activities because it is necessary to use basic skills like identifying to establish a data base before data processing can take place. Presenting skills, as discussed, were under represented in the analyses because they were generally concentrated in one part of a unit and this was not always observed.

Teacher Planning and Conceptual Understanding

In the second series of observations, as in the first, teachers' unit plans were analysed in terms of the degree to which they were based on a few central ideas covered in depth, were sequential and coherent, and based on problem solving. The extent to which specific thinking skills were listed as objectives and whether or not activities and assessment tasks helped students reach these objectives was also considered.

Thinking skills are used in social studies to help students reach higher levels of conceptual understanding. The project's pilot and the first observations indicated that this essential aspect of social studies was not clear to many teachers. Given the nature of social studies and the requirements of the national curriculum, the primary objectives in all of the units observed should have been expressed in terms of conceptual understanding. These objectives should have been framed at a conceptual level specific enough to allow students to deal with the particular topic being studied but general enough to involve them in a process of developing concepts and generalisations which were applicable in other situations.

In the first series of observations almost every teacher listed unit objectives at the conceptual level of the achievement objectives in the national curriculum. Most were simply copied directly from that document. Objectives in the second series of observations were markedly different. While most units in series one were based on objectives which Beyer (1979) would categorise at the level of "generalisations," the objectives in the second series were all at an appropriate level. They were derived from the achievement objectives of the national curriculum but they were devised for the particular topics being studied. The objectives in the second series of observations met all of Beyer's requirements. They were the "intermediate stage between concepts and generalisations;" they "described a relationship between specific variables;" they had "specific referents in time and or place."

T3's unit objectives provide a good example of the way the teachers in the research team initially framed their objectives.

Using a range of skills students will demonstrate their understanding of:

1. ways in which people's activities in the past have had connections with and significance for the communities that followed.

2. The impact of beliefs and forces on the lives of the people in the past present and future.

These objectives are broad enough to be goals for a year's work in social studies rather than a unit of work on a specific topic. They were listed in Social Studies in the New Zealand Curriculum (Draft) with exactly this in mind. T3 copied these general objectives directly from the national curriculum. She needed instead, to use these broad curriculum objectives as a guide from which to develop her own specific objectives for her particular unit. Her failure to do so indicated a lack of understanding of the nature and function of conceptual understanding in social studies. It could be argued that the teachers' inability to frame objectives at an appropriate level was due to weaknesses in the national curriculum. Social Studies in the New Zealand Curriculum (Draft) indicated that conceptual understanding was a goal of social studies, claiming, "Programmes based on this curriculum statement will enable students to identify and develop understandings of concepts related to people and society, and to make progressively complex generalisations based on these understandings." (New Zealand Ministry of Education, 1994 p. 15). But the national curriculum did not provide a model or examples of ways in which conceptual understanding could be achieved.

While some teachers did not have conceptual understanding as an objective at all in the first series of observations, most followed T3's example and copied their unit objectives from the national curriculum. As teachers they knew about objectives; Social Studies in the New Zealand Curriculum (Draft) listed objectives at each level for them, so they copied these out. But objectives in a teaching plan should spell out what students should achieve in that unit. The success or failure of a unit is largely determined by the extent to which students meet the unit objectives. T2 was able to demonstrate that students had achieved her objectives but the national curriculum indicated that these objectives were inappropriate. The other teachers framed their objectives conceptually but in such general terms that it would have been impossible to assess the extent to which students had achieved them. It is unlikely after one unit of work that T3's students would "understand the impact of beliefs and forces on the lives of the people in the past present and future." It is certainly possible however, that in their study of eating habits in different countries in the world (T3's unit in the second series), that T3's students would have reached an increased understanding of the ways in which particular beliefs (in this case customs and traditions) have an impact on the foods people eat and they ways in which they eat them.

Tables 7 9 and 9: 4 show the teachers' unit objectives for the first and second series of observations and illustrate this point. T1's first objectives, students will understand - -

* That people in the past are not to blame for the current state of the world but instead have had their own opinions and reasons for doing what they have done.

* That people usually have reasons for the way they think and for what they believe.

became in the second series, students will understand that - -

1. The Waikato River is important to people in our community for a number of different reasons.

2. People use the river in a variety of ways to enhance their life style.

T2's first set of objectives required no conceptual understanding. Her second set did.

T2 Unit 1

Pupils will

1. Become familiar with an important aspect of Waikato history.

2. Identify key points in the development of the Waikato region.

3. Be able to re- tell the legend of the Waikato River's creation.

4. Identify the importance of the bridges on the Waikato.

T2 Unit 2

Important ideas. Students will understand that _

1. We all have to make a variety of decisions in our daily lives.

2. There are a number of factors which affect the daily decisions we make.

Perhaps more important was the way that in the second series the teachers in the team took a broad objective from the national curriculum and refined and specified it to suit the needs of their particular unit. T3 for example developed the curriculum objective

Using a range of skills students will demonstrate their understanding of particular systems relating to hospitality in a range of cultural groups;

to develop the important ideas

1. Every culture has different attitudes and practices in the way they prepare and eat food.

2. Menus reflect the resources and customs of the country.

Unlike the unit objectives in the first series of lessons, those in the second also satisfied the requirements outlined by Newmann and Wehlage (1991). They focussed on "central ideas," "a few ideas were covered in depth," and they "linked information to provide sequence, coherence, continuity." Both models appear to have contributed to this trend, the Brightmeadows Model by providing a model of conceptual understanding and the curriculum hierarchy model designed in the first intervention by demonstrating how conceptual understanding at the level of individual units related to the structure of the national curriculum. There were clear links in the second series of units between the general aims of social studies, the strand achievement aims, the strand achievement objectives at the appropriate level, unit objectives and specific learning outcomes.

Teacher Planning and Specific Thinking Skills in Both Observations

Students achieve appropriate levels of conceptual understanding by processing factual information using higher order thinking skills. The way the teachers in the research team listed specific thinking skills as objectives in their first units demonstrated a lack of understanding of this process. Social Studies in the New Zealand curriculum (Draft) made it clear that specific thinking skills were to be taught and assessed. The curriculum listed a large number of specific skills under the general headings decision making skills, critical thinking skills, values exploration skills, communication skills, research and inquiry skills, and social and cooperative skills. However, teachers argued nationally that the way thinking skills were presented in the curriculum was difficult to understand (Barr, 1994; Keown,1995) and the national curriculum provided no indication of the way that specific thinking skills are linked to conceptual understanding.

In the first observations the teachers in the team listed specific skills as unit objectives in two ways, each equally ineffective. Some of the team used the general headings in the national curriculum. This practice suggests either that specific thinking skills can be regarded so generally that they can be applied to all units of work in the same way, or it suggests that teachers will teach all of the specific thinking skills listed under these headings (some 76 separate skills), in all their units. Other teachers provided long lists of individual skills, too many to teach and assess in a single unit of work.

Whether thinking skills were framed under general headings or whether they appeared as lists, there was little relationship between the skills listed as objectives and the skills which were evident in the lessons observed. In none of the lessons observed was there any provision for actually teaching those thinking skills listed as objectives. In some instances the skills listed were used in learning activities and on one occasion T3 pointed out to her class that they were practising research skills that they had used in earlier lessons. Otherwise, although skills were listed as objectives, there were no cases in the first observations in which new skills were consciously taught even though the curriculum pointed out the need for skills to be both taught and assessed.

The skills listed as unit objectives in the second series of observations were both fewer and more specific. In the second series teachers listed particular categories of skills as objectives, understanding that each of these categories incorporated a number of individual skills. The specific skills listed as objectives in the second observations were all related to the learning activities in the unit. By using the columns on the unit planning format designed by the team in the first intervention, teachers were able to indicate which skills were being taught and assessed and which revised. The skills columns also served to make skills a feature of the unit to an extent not apparent in the first observations. Specific thinking skills listed as objectives in the first series of observations may be found in Table 7:10. Those for the second series are listed in Table 9:5, some examples are provided below.

T1's generic first observation objectives "decision making skills, critical thinking skills, values exploration skills, communication skills, research and inquiry skills, and social and cooperative skills became in the second series -

Identify major features of the Waikato River using maps, pamphlets and texts.

Classify this information by arranging facts in categories.

Explain why the features identified are important to our community.

Present information to the syndicate using a newspaper format (including graphics, maps and cartoons).

T3's list of specific skills - predicting , summarising , generalising, reading, researching, cross checking, reporting, recording became in the second series -

Identify food types which relate to a particular culture.

Explain why certain foods are related to particular cultures or circumstances.

Arrange data on a chart so that people can follow the information in a logical sequence.

Apply knowledge gained in this unit in a practical way by presenting a food sample.

Sequence, Coherence and Continuity

In the second series of observations teachers' unit plans demonstrated greater sequence, coherence and continuity. These features were apparent in the way that learning activities related to each other and to the unit's central goals. Unit objectives in the second series were more clearly stated. Learning activities incorporated activities which encouraged students to gather, process and present information and greater coherence and structure was evident in teacher led discussion and learning activities.

The New Zealand teachers in this project devoted almost five times more classroom time to teacher led discussion than their American counterparts (Goodlad 1984), but perhaps they proved that quantity of time is less important than quality. While the former was relatively easy to quantify, it is difficult to measure the quality of teacher led discussion with any precision. A study of the transcripts from both series of observations does however indicate greater focus and direction in teacher led discussion in the second. T4's first lesson in series one for example, was based on a good idea but the discussion preceding the first activity lacked focus. The students, and possibly the teacher, appeared to have little idea of where the discussion was headed or why.

T4's unit (like T3's), was concerned with historical themes on New Zealand postage stamps. The main unit objectives were vague, broad, and copied verbatim from the national curriculum.

Using a range of skills students will demonstrate their understanding of:

1. ways in which people and activities in the past have had connections with and significance for the communities that followed;
2. how beliefs and forces spread and their impact on the lives of the people in the past present and future.

T4's skills objectives were ambitious but equally general -

Decision Making Skills

- * implement a solution or decision.
- * evaluate the effectiveness of decisions.

Creative Thinking Skills

- * enter imaginatively into another time and place.

Communication Skills

-receive and convey information, ideas and feelings through written, aural, oral, and visual language.

Critical Thinking Skills

- * recall information
- * compare and contrast information.

Values Exploration Skills

- * recognise that values change.

Although T4 devoted a good deal of time to teacher led discussion (33% of lesson time in this lesson), the discussion lacked purpose and focus. This lack of direction was illustrated later in the lesson when T4 asked her students to explain what they had done on their topics during the activity that followed the first discussion.

T4 Starting from the back group, please explain what your picture is and how it fits in to New Zealand history.

St This is a picture of Hone Heke cutting the flag pole down.

T4 Are you going to find out the year that happened? Do you know what Heke was protesting about? You can find that out. A, what is yours?

St Maori art.

T4 How does that fit into the history of New Zealand?

student shrugs

T4 Well most Maori art tells a story doesn't it. B, tell us about yours.

St It's forestry and how its's changed.

T4 You mean trees are cut down in a different way?

St No just that the trees are all cut down.

St That's environment.

T4 Well, you can cover the environment as well as the forest. C what's yours?

St I'm doing introduced animals.

T4 Which particular animals?

St I don't know yet.

T4 How does that fit into history?

St I don't know.

T4 Some one else?.

St That fella (*sic*) who came and brought animals with him. You know.

T4 There must be a reason that they are here?

St People brought them from Europe.

T4 Okay, animals for farming and for the fur trade and other things. D, is that picture of a plum or is it an apple?

St I just drew an apple because it is a product of New Zealand.

T4 How does it fit in with our history?

St People eat apples.

T4 I'm a bit disappointed, you had another good topic and you changed it. E?

St I'm doing tourist attractions at Raglan. I'm drawing the beach and part of the street and the buildings.

T4 It might be a centenary stamp as well as a tourist stamp. It was established quite a while before Hamilton, it was an Armed Constabulary camp or something like that. F?

St I haven't finished.

T4 Nobody's finished, you are just letting us know where you are up to.

T4's unit objectives for her second unit reflect her greater understanding of the central role of conceptual understanding in social studies. They also show her ability to devise conceptual objectives at an appropriate level and to relate these to the broader objectives in the national curriculum.

Curriculum Objectives

Students will develop an understanding of :

- the way natural features affect peoples lives;
- how and why people have interacted with their environment;
- how and why different cultural groups use a resource;
- the activities and experiences of a group of people in the past;
- ways in which individuals and groups initiated and respond to change.

Unit Objectives (Important Ideas)

1. Bison were the Plains Indians' most important resource.
2. Spiritual beliefs had a strong influence over the way they used this resource.
3. Traditional life styles can change drastically as a result of outside intervention.

Purpose and structure, absent in T4's first lesson, were apparent in the second series of observations. T4's second unit was based on conceptual ideas at an appropriate level and students used specific thinking skills to move towards these objectives. Because T4 understood the process more clearly, the teacher led discussion, though little different in terms of time, was very different in terms of direction.

T4 I want you to think about some of the things we saw in the film this morning and share some of these. What did you notice?

St The grass was quite green.

T4 What did you expect?

St I thought it would be real dry.

T4 Yes, from what we have been reading about the lack of water you would expect it to be drier. Why do you think it was not dry?

St Because of the time of the year.

T4 Yes. Now, what about the people?

St Indian people didn't like whites.

St The Indians didn't fit in well with the whites.

T4 Let's focus on the period before the white man came and remember your key questions.

Was there anything else you saw in the film that was new? What were our key questions?

St How did the Plains Indians use the environment to survive?

T4 Think about that key question, what was happening in the film when we stopped it?

St They had just made friends.

T4 Yes, but think about the film in terms of our important ideas.

St They were going to follow the buffalo.

T4 What does that tell us about the life of the Plains Indians?

St That they didn't stay in one place.

St That they followed the buffalo.

St They were nomads.

T4 Good. You have gathered notes from books and C.D.s and the library about some of those things, now I want you to reshuffle into your groups to begin work on your presentations. Before you start I want to see a draft showing how you are going to present your material. You can have two, three, four, five or six questions on your topic, questions that you are going to answer. You have your main question and several smaller questions.

Who can give us an example of a smaller question?

St What was the buffalo used for?

T4 Is that a little question or a big one?

St A big question.

T4 What might a smaller one be?

St What parts of the buffalo did they eat?

T4 What are the major parts that were used?

St Skin.

St Meat..

St Horns.

T4 Yes and lots of other parts, so one question might be?

St What were the horns used for?

T4 That's a good one. So, little questions on a piece of paper with your draft. Little questions relate to your big ones. Okay, move to your groups and I will have the paper ready for you here.

T4's second unit was guided by the established key ideas or understandings represented in her objectives "Bison were the Plains Indians' most important resource." "Beliefs had a strong influence over the way they used this resource." "Traditional life styles can change as a result of outside intervention." These objectives were translated into focussing questions like "How did the Plains Indians use the environment to survive?" The key questions were supported by a number of "big questions" and these questions by smaller questions. The questions required students to gather information and process it at various levels. The students' levels of understanding progressed from working with factual data through increasing levels of generality. Buffalo skins were used for tents; the buffalo was

used for many different things; Plains Indians depended on the buffalo; when the buffalo were gone and the environment changed the Indians' way of life changed; changes to the physical environment can result in changes to people's way of life.

Conclusion

In this chapter the finding that considerable changes in teacher behaviour occurred from the first to the second series of observations were discussed. While changes in teacher effectiveness, where this was measured in terms of teachers' questions and time allocated to activities, appeared to be minimal, interesting changes were identified in other areas. There was some evidence of a better balance of skill application in learning activities and a marked improvement in planning. There is a strong possibility that using the Brightmeadows Model and the planning models derived from it resulted in considerable change in this area. Objectives related to conceptual understanding and to specific thinking skills were both expressed more appropriately in the second series of observations. The learning activities which enabled students to reach these objectives utilised higher order thinking skills in a sequential and logical manner. These improvements appeared to be due to enhanced Teacher understanding of the place of conceptual understanding in social studies and the ways in which specific thinking skills contribute to this understanding. This new understanding was demonstrated not only in teachers' plans but also in the way the teachers in the team were able to explain what had now become their models to other teachers.

As will be evident in the next chapter, these findings should be accepted with some caution. Establishing causality is difficult even under experimentally controlled conditions. In this study no effort was made to control factors such as time or variables extraneous to the study. However, changes in behaviour were so close to what was being mooted in the first intervention that it is fair to conclude that there was a relationship. The enthusiasm of the teachers described in Chapters Eight and Ten also justifies the general conclusion that the changes related to the intervention. The next chapter considers Lewin's (1948) seventh stage. In Chapter Twelve the researcher draws some conclusions about the change in teacher behaviour and discusses the implications of these.

Chapter Twelve

Conclusions and Implications

Critical thinking should not be an add-on, nor should it interrupt the pursuit of other curriculum goals. Rather we should encourage students to think critically about matters that are at the very core of the curriculum. The key to infusing critical thinking into curriculum is to recast the core elements of the subject matter in the form of critical challenges (Case and Wright 1997 p. 17).

Introduction

The findings of this project indicate that improvement in the teaching of higher order thinking can result from improved teacher understanding of the place of higher order thinking skills in social studies education and the reasons for using these skills in units of work. In this project improved teacher understanding was achieved through the provision of a model of thinking skills which grouped specific thinking skills into analogous sets and demonstrated connections between higher order thinking and conceptual understanding. This model improved teacher understanding by providing the teachers in the research team with a purpose for using higher order thinking skills, a framework within which to use these skills and a system which facilitated their application.

The project set out to answer a number of questions, namely -

- (1) To what extent do teachers provide learning activities which are likely to encourage higher order thinking in their students ?
- (2) Are higher order thinking skills used in activities to achieve particular goals? What are these goals and how appropriate are they ?
- (3) What aspects of teacher behaviour or understanding limit opportunity for students to engage in higher order thinking in primary school social studies ?
- (4) What intervention programmes can be developed which are likely to lead teachers to adopt behaviours likely to lead to improved higher order thinking in social studies classrooms ?

A series of observations indicated that the teachers in this small sample already designed and applied learning activities which encouraged some higher order thinking. All of the lessons observed in the first observations included student centred activities which provided opportunities for students to process information. The data indicated in fact, that New Zealand teachers were apparently more likely to use these kinds of activities than their counterparts in some other countries (Goodlad, 1984; Newmann, 1991). However, while higher order thinking skills were included in most activities, there were no instances in which skills were consciously taught and assessed even though the national curriculum indicated that this should be the case. None of the teachers in the research team had any plan which provided for sequential, systematic teaching of higher order thinking. Thinking skills were chosen at random or not chosen at all. Teachers in the team selected learning activities which they “knew they would work with these kids,” or “because they were fun.” Thinking skill objectives which matched the skills in these activities were then written up in unit plans.

Higher order thinking skills were not used systematically to help students attain social studies goals, but selected at random. Indeed, the teachers initially seemed unsure of appropriate goals either for social studies or for higher order thinking. In particular, classroom observations indicated that team members were unaware of the central place of conceptual understanding in social studies.

In this thesis conceptual understanding was taken to mean the end result of processing factual data to form concepts, understandings and generalisations. “Concepts and generalisations organise and make sense of large bodies of facts and convey what people see as significant about their society” (Ministry of Education of Victoria, 1988, p.11). In social studies, a concept may be regarded as an abstraction which pulls together a number of facts. Concepts can be used to group certain facts together, organise them and try to make sense of them by revealing patterns of similarity and difference. Concepts must be constructed by the learner not provided by the teacher. In an effective social studies programme a number of examples are presented by the teacher until the student develops a prototype of the concept. Thereafter the prototype may be defined and redefined. A number of concepts can be combined to build broader ideas or “understandings.” Once formed, the students’ ideas can be refined and used again and again, each time with greater clarity and analytical power. Concepts and understandings developed for one situation can be reapplied in other situations to develop major generalisations. Higher order thinking skills are important in social studies because they are the means by which the construction of concepts, understandings and generalisations occurs. This process was explained in more detail in Chapter Three and shown diagrammatically in Table 7:8.

In some instances social studies unit objectives were not designed to encourage conceptual understanding at all. Where they were, most objectives were at an inappropriate level of generality, and in most cases simply copied verbatim from the national curriculum. In many respects the fault lay not with the teachers but with the national curriculum in use at the time the study took place. Although this document indicated that social studies teaching and learning should be directed towards achieving conceptual understanding, it provided no model which demonstrated how this could be achieved, nor did it illustrate the relationship between higher order thinking and conceptual understanding. As a consequence, teachers were left to interpret the document as best they could.

A possible reason for lack of understanding, therefore, was the absence of a clear model of thinking processes as they applied to conceptual understanding in social studies. This view is consistent with international literature. Presseisen (1991), for example, claims “in planning for thinking skills in the curriculum, few [tasks] are more critical than determining what is meant by thinking or developing a model of the thinking process” (p.56). The classroom observations indicated, and discussion with the teachers in the research team confirmed, that the most effective intervention programme was likely to be one

that improved teacher understanding of the nature and purpose of social studies and the contribution of higher order thinking skills to the achievement of the goals of social studies.

The researcher sought to improve teacher understanding by providing the kind of model that research indicates is necessary to improve the teaching of thinking skills generally (Presseisen, 1991) and thinking skills in social studies in particular (Fraenkel, 1973). The model was developed from the writer's many years of experience in social studies education in New Zealand, recent research on teaching thinking, and on teaching social studies. It was based in particular on the work of writers like Bloom, (1956), Guilford, (1967), Marzano, Brandt, Hughes, Jones, Presseisen, Rankin and Suhor, (1988), Costa, (1991), Presseisen, (1991), Newmann, (1991), and Newmann and Wehlage (1992). The principal features of the model were the way it grouped skills into analogous sets and the way it demonstrated the relationship between specific thinking skills and conceptual understanding.

This model was modified and extended later in the project by members of the research team. An extension of the original model related thinking skills and conceptual understanding to the structure of the national social studies curriculum. The team then developed planning formats which allowed them to apply the model in units of work in their classrooms. Although the model was initially derivative, it combined material from a number of disparate sources and it was extended and modified to suit the needs of the New Zealand curriculum and New Zealand classroom practice. The model proved successful in enhancing teacher understanding as evidenced by improvement in the quality of teachers' lesson and unit plans and greater use of higher order thinking skills in lessons. The reasons for the model's success and some implications of this success for teacher development programmes and for curriculum development and design are discussed in the sections which follow.

Research Findings

This project demonstrated that providing teachers with an appropriate model can lead to enhanced teacher understanding of conceptual understanding and the relationship of specific thinking skills to that understanding. This was apparent in the way teachers constructed instructional plans and in what occurred when these plans were put into practice. In this project using such a model led to some improvement in the teaching of higher order thinking. There was an increase in the number and variety of higher order thinking skills in social studies lessons. Probably more important, was the way in which lessons taught using the model and the planning format derived from it, increased focus, direction and purpose in units of work. The lessons which followed the first intervention had clear and appropriate objectives. They included a few specific skills which were related both to unit objectives and to learning activities. The teachers made provision for teaching, revising and assessing these skills. In these respects the series of lessons observed after intervention met Newmann's (1991) requirements for "thoughtfulness" in that they were concerned with sustained examination of a few topics in depth and demonstrated structure, sequence and continuity.

In a recent article Case and Wright (1997) argue that one reason that higher order thinking is taught ineffectively in social studies lessons is because teachers and curriculum designers regard thinking as “a series of discrete skills or operations which can be generalised across a range of contexts” (p.17). Case and Wright argue that in social studies, this artificial distinction between knowledge, skills and attitudes “separates knowledge from the teaching of critical thinking, relegating thinking to something that is undertaken from time to time if teachers have the time” (p.13). The findings of this research project support Case and Wright’s conclusion that teachers will teach social studies more effectively if they view the subject holistically. Teachers need to consider components of the social studies curriculum separately, more importantly, they need to understand how each relates to others and how all contribute to a common goal. Understanding the nature and structure of social studies and the place of higher order thinking within this structure, provides teachers with a reason for teaching higher order thinking and a framework within which to teach it. A new national social studies curriculum issued to schools after this project was completed (New Zealand Ministry of Education, 1997), represents social studies as a woven “whariki” or flax mat. The mat comprises five “content strands” interwoven with three “skills strands.” The completed mat requires all eight strands to be in place. Earlier New Zealand social studies curricula had suggested such connectedness (See for example New Zealand Department of Education, 1977, p.4) but none provided teachers with a model which demonstrated the relationship between content and skills.

The development of a model of thinking processes and conceptual understanding helped the teachers in this project to alter their teaching approaches in a way that encouraged higher order thinking. What were the elements of structure and design that made it so? Firstly the model had a base in educational theory. The initial model was derivative in that it was based on overseas research. However, it can be reasonably claimed that this derivation gave the model the theoretical base and credibility it needed if it was to be effective. Further, the information on which the model was based was derived from a number of disparate sources. The model drew on well established research on thinking by writers like Bloom (1956), Guilford (1967), and Beyer (1979). It drew on more recent research by writers like Costa (1991), Presseisen (1991) and Newmann and Wehlage (1992). It combined material on thinking with work on social studies curriculum design (Barr, Barth & Shermis, 1977; Fenton, 1967, 1991; Hartoonian & Laughlin, 1989; Kaltounis, 1987; Marsh, 1991; NCSS, 1989, 1990, 1994; Taba, 1966, 1967). While the model was based on overseas research, primarily because relevant research on social studies in New Zealand is rare, it was designed to suit the needs of the New Zealand curriculum and the way that the curriculum has developed.

Another feature of the model was its structure. New Zealand teachers were dissatisfied with the way that thinking skills were presented in Social Studies in the New Zealand Curriculum (Draft) claiming that this presentation was difficult to understand and

easy to misinterpret. They argued too, that the thinking skills section of the national curriculum was badly worded, showed overlap between categories of skills, and failed to adequately emphasise the inquiry process (Keown, 1995, p.6). This problem was exacerbated by a lack of recent teacher inservice education. Apart from one teacher's attendance at a local social studies association day some three years before the study took place, none of the teachers in this project could recall their last social studies inservice programme. The Brightmeadows Model sought to provide the structure and coherence that teachers asked for by organising the seventy six separate specific thinking skills in the national curriculum into six groups of similar skills. This grouping allowed teachers to consider skills in categories and to apply them in a way which allowed them to monitor their use more effectively.

What was probably more important was the way that the Brightmeadows Model linked the groups of thinking skills to conceptual understanding. Social studies goals are expressed conceptually as ideas or understandings. Higher order thinking is important in social studies because it is the means by which students achieve conceptual understanding. Thus, if higher order thinking skills are not part of social studies programmes, or if these skills are used ineffectively, students cannot achieve the goals of the national social studies curriculum. Apart perhaps from a model designed by Hubbard (in Zepke and Sommerville, 1976), the Brightmeadows Model is the only model which attempts to show the centrality of conceptual understanding in New Zealand social studies. It is certainly the only model which relates specific thinking skills to conceptual understanding. Finally, the model is simple and easily understood. In fact, the research team resisted attempts to complicate the model in the first intervention arguing that its simplicity was a major advantage. It is of course difficult to establish with any precision the degree to which the teachers in the research team understood the process illustrated in the model. However, their discussion during the intervention and their explanation of the model to other teachers suggests that their level of understanding not only helped them to improve their own teaching, but also enabled them to verbalise their knowledge of the model.

Although the model's primary purpose was to provide a framework which would help teachers understand the relationship between higher order thinking skills and conceptual understanding, it also proved a useful tool for identifying thinking skills in lessons. Identifying and enumerating specific skills in a classroom setting has always been difficult. This is one reason Newmann and Wehlage (1992) give for opting to consider higher order thinking in terms of their generic "thoughtfulness" rather than trying to deal with specific skills (p.8). The structure of the Brightmeadows Model and the way it was used in this project proved useful in two ways. Categorising thinking skills into groups or categories of similar skills, provided teachers with improved systems of planning and assessment. Using the model to analyse lesson transcripts proved considerably more effective than the skills check lists used in the pilot.

It has to be acknowledged that grouping skills together may hide or submerge some of the complexities that exist between even the individual skills. Reducing the number of skills could therefore lead to oversimplification. Nevertheless, from the point of view of teachers or researchers seeking to identify thinking skills in lessons, there is no doubt that considering skills in groups has important benefits. The researcher was not required to differentiate between specific skills as similar as predicting and inferring, or interpreting and explaining. On the other hand, the model's groups were considerably more specific than "critical thinking" and "problem solving" the generic categories used in Social Studies in the New Zealand Curriculum (Draft). Considering thinking skills in terms of the skill emphasised in a learning activity and in terms of other skills evident in the activity, also proved both realistic and practical. This does not mean that this system is a complete answer. While it proved useful in this exercise and might well prove useful in similar projects, higher order thinking in social studies is complex; much more research time than was available in this project is needed to develop a comprehensive system of identifying higher order thinking skills in classrooms.

Just as important as structure, was the way that teachers in the research team assumed ownership of the model. From the first intervention the model became "our model" and changes to the model and decisions on its use were made on the basis of consensus. This was partly because the researcher made a conscious effort to facilitate the project rather than lead it, but also because the teachers in the team saw a need for change in their social studies programmes. Brady (1995), Fullan (1991) and Ramsay (1991) point out that effective curriculum change involves a strong perception of the need for change, clarity about the goals of change and the means of implementing them, the involvement of users in the change, the existence of a supportive environment, provision of adequate resources, and avoidance of attempting too much.

The project's goals were clear and they had practical application in the classroom. While the team appreciated the theoretical base of the model, they were primarily interested in the end result of the exercise in their classrooms and in their school. As a result of the first intervention they agreed that the national curriculum required them to teach conceptual understanding. They conceded that they were not achieving this aim in their units to the extent that they should have been. If the model was to provide a solution, an important next step was to relate it to the structure and goals of the national curriculum. This process moved the model from the purely theoretical towards the kind of practical application that the team wanted. A second model showing levels of conceptual understanding in the national curriculum was developed. This model served to relate the levels of conceptual understanding discussed by writers like Beyer (1971, 1979, 1985) and Taba (1966) to the structure of a document which defined national policy in social studies education for classroom teachers. The final step in the intervention process moved the model even further towards practicality. Both earlier models were used to develop a planning format which allowed the teachers in the

team to plan and teach units which would achieve the goals they had discussed, more effective conceptual understanding and the effective and methodical use of specific thinking skills to achieve this understanding.

Implications for Curriculum Design

The Brightmeadows model and the planning models derived from it proved successful for the reasons outlined above. In summary the success factors in the model were that it had credibility, clear goals and practical application, and because its development and application involved the whole project team. The teachers in the team demonstrated their understanding of the model by applying it not only in their own classrooms but by explaining it to teachers in other schools. The application in other schools was actually less successful than that at Brightmeadows. This is an important finding because it illustrates that effective application of models like the Brightmeadows Model is dependent on teachers working through the total process of model development. Teacher understanding in the new schools was not as great because the teachers did not regard the Brightmeadows Model as “their model,” coming as it did from an explanation by the Brightmeadows teachers.

The relative success of the Brightmeadows model in enhancing the understanding of the Brightmeadows teachers, argues the case for similar models in national social studies curricula. Curricula in New Zealand have seldom provided such models; when they have, for example the thinking skills model in Social Studies in the New Zealand Curriculum (Draft), they have been difficult to understand and poorly received by teachers (Keown 1995). The failure to provide clear models may well be the reason why observers of social studies in New Zealand have complained that too often teachers have focussed on content to the detriment of conceptual understanding (New Zealand Department of Education, 1987 pp. 42 - 52).

A major problem in the past has been what kind of model to provide. Cohen and Manion (1994) claim that school-based action research should contribute not only to practice but also to a theory of education. One of the strengths of this project was that it linked classroom practice to educational theory in a way which curriculum designers might need to consider. If they are to teach higher order thinking skills effectively, teachers need to know why they are teaching them. The draft curriculum provided a model of thinking skills and it pointed out the centrality of conceptual understanding. What Social Studies in the New Zealand Curriculum (Draft), and earlier New Zealand social studies curricula failed to do, was to link the two. Higher order thinking is important in social studies because without it students cannot reach the conceptual understanding which is the primary goal of social studies. Social studies curriculum models need to make this relationship clear. If this relationship is not demonstrated teachers can see no purpose or reason for teaching higher order thinking, and learning to think becomes simply “a series of discrete skills or operations which can be generalised across a range of contexts (Case & Wright, 1997 p.17).

While the link between theory and practice must be clear, models which illustrate the relationship must be simple, at least in the initial stages of teacher development. The teachers in this project preferred simple, diagrammatic models and resisted any attempts to make models too complicated. Models also need to be readily applicable. The Brightmeadows Model facilitated understanding by organising higher order thinking skills in manageable groups and illustrating the links between these groups and the central goals of social studies. If this understanding was to be applied successfully in classrooms, the model needed to be extended in a way that made it readily applicable. The second model prepared by the team demonstrated links with the national curriculum while a planning format derived from both models allowed the team to relate the ideas in the model to real classroom practice.

In the opening chapters of this paper the author pointed out that social studies education has two related goals, understanding the world, and educating students to take their place in that world as confident informed and responsible citizens. This thesis has primarily dealt with the role of thinking skills in helping students to achieve conceptual understanding. While this is important, conceptual understanding is not an end in itself. Conceptual understanding is part of a larger social studies goal, the development of confident, informed and responsible citizens. In the same way that teachers need to understand the place of conceptual understanding before they can teach and apply it, they need to understand the central goal of effective citizenship before they can help their students achieve this goal. This paper has shown that providing a model of conceptual understanding can help teachers to help their students to reach such understanding. Teacher educators and curriculum designers need to provide similar models to demonstrate the next step, that is, to show how higher order thinking and conceptual understanding contribute to effective citizenship.

A small scale research project in the Waikato region (Barr, 1996) indicated that New Zealand primary school teachers are confused about what citizenship education is and uncertain how social studies contributes to responsible citizenship. If informed, confident and responsible citizenship is the primary goal of social studies it would seem appropriate that teachers were aware of this goal and knew how best to help their students to reach it. If, as this project suggests, models can help teachers understand the nature and purpose of conceptual understanding, models should be able to help them understand the nature and purpose of citizenship.

The models should demonstrate that a good citizen is not one who blindly accepts state edicts and decisions. Effective citizens need to be informed but they also need to have mastered a range of skills, acquired a defensible system of values and be able to utilise skills of critical analysis. Citizens need to learn how to pose questions, gather and classify data, make generalisations, test hypotheses and reach conclusions. They need to be able to avoid logical fallacies, distinguish fact from opinion, recognise appeals to emotion and

master forms of proof. Where conflict cannot be resolved through careful and patient application of inquiry and critical thinking, effective citizens need to learn tolerance and respect for difference. Social studies should not involve just the inculcation of particular values. It should incorporate what Engle and Ochoa (1988) call “counter socialisation.” Social studies aims to make students aware of the complexities and dilemmas involved in various issues, consider the costs and benefits to both sides involved in an action, and develop reasoned positions consistent with basic democratic, social and political values.

This, of course, may be problematic for those who prefer more compliant citizens. Freeman - Moir (1997) has argued that the powerful socialising forces of the school are more often used to produce citizens who are employable and quiet. Other writers have argued similarly about people entering the work force (see for example Codd, (1990) and Ramsay, (1990). As far as social studies is concerned, the argument is perhaps best summarised in the Canadian Glassford - Chamberlin debate (Chamberlin, 1992). The present writer would argue that producing graduates unprepared and unwilling to challenge the system runs counter to the aims of social studies education.

Implications for Teacher Development

There has been little teacher development in social studies in New Zealand in the recent past though no doubt the introduction of the final version of the national curriculum will see a good deal more if government policy follows recent trends. This project indicates that such development should involve teachers in considering the principal goals and structure of the total social studies curriculum as well as focussing on planning, learning activities and resources at particular grade levels. The teachers in this study improved their social studies teaching because they came to understand the centrality of conceptual understanding as a goal of social studies. It was this understanding that allowed them to develop appropriate objectives and to organise the teaching of higher order thinking in a way which allowed them to meet these objectives. The Brightmeadows project also reinforced the idea that teacher development needs to be intensive, long term, and based on clear models which relate learning theory to classroom practice.

This project indicates that teacher development programmes need to include the “why” as well as the “how.” Teachers frequently assert that they cannot be bothered with theory. The Brightmeadows project suggests that an understanding of some theory is important. But this theory should not be overly complex, at least in the early stages of teacher development. In the Brightmeadows Model, principles of theory were reduced to a basic form and represented diagrammatically as well as verbally. Teachers were not overwhelmed with theoretical material but they had sufficient grasp of the essential components of social studies education to provide their units with direction and purpose. And of course, understanding is part of ownership. Writers like Brady (1995), Ramsay (n.d.) and McGee (1997) point out that successful curriculum change is dependent on teachers having

ownership of that change. Part of this ownership derives from sharing in decision making about the change, but ownership also involves understanding. Teachers cannot accept change unless they understand the reason for that change and the nature of the change. In this project participants commented "In our minds we knew where we were going. I felt that much more in the second lessons than in the first (Teacher T6)." "I felt much more confident in where I wanted to go and what I wanted my kids to do and I think my plans show this" (Teacher T1).

Beyond the early stages of teacher development, teachers can gradually be introduced to more complex issues as they build upon acquired theory and practice. This project was limited to the early phases of what could become a long term programme. But the point that needs to be emphasised is that the evidence from this project indicates that action research should help teachers identify their needs, then progressively undertake development, beginning with less complex matters and moving on to those which are more complicated.

Implications for Research

As Openshaw (1992) has pointed out, the body of scholarly literature on New Zealand social studies is small and research in social studies learning and teaching in New Zealand has been minimal. While there is evidence that this situation is changing, there is enormous scope for further research in this field. The findings of this project suggest a number of avenues for further work.

At the beginning of this project two possible reasons for ineffective teaching of higher order thinking were identified, teacher effectiveness and teacher understanding. While data on some aspects of teacher effectiveness were collected and recorded in both sets of observations, this aspect of the project was effectively abandoned after the first intervention so that the team could focus on teacher understanding. A good deal of educational research has been concerned with identifying those general characteristics which make some teachers more effective than others in developing children's learning (Brophy & Porter, 1988; Costa, 1992; Ramsay, 1993; Rosenshine & Furst, 1973). But although there is considerable agreement about the characteristics of effective teachers in general terms, research in the specific area of social studies is less common (Stanley, 1992; Openshaw, 1992). Moreover, while researchers are able to identify the generic characteristics of a good teacher, many comment that in their research they have only infrequently observed teaching for higher order thinking (Stanley, 1992). There are, at least in New Zealand, enormous gaps in our knowledge about the ways in which teacher effectiveness enhances or limits the development of higher order thinking in social studies classrooms.

In both sets of observations in this project time allocation to classroom activities and teacher questions were recorded as measures of teacher effectiveness. There was however, no attempt to consider methods of improving questioning and no detailed analysis of time allocation. There is certainly scope for further research in both these areas. Data from this

project suggest that the amount of time allocated to teacher led discussion and group activities in New Zealand classrooms is considerably greater than that reported in classrooms in other countries. Comparative study in this area could be worthwhile, particularly as some of the findings in this project seem to at least partly contradict the findings of some overseas studies (Goodlad, 1984; Newmann, 1991; Newmann & Wehlage, 1992).

In this project there appeared to be little relationship between time spent in discussion and group activities and the degree of higher order thinking taking place in learning activities. This suggests that the quality of the discussion is more important than the time spent on it. It also suggests that a good deal of what New Zealand social studies teachers call “discussion” might be the kind of pointless repetition of factual data that Dillon (1982, 1984) terms “recitation.” If this is the case, research is needed which would help identify those elements of classroom discussion which best encourage higher order thinking.

Most writers on higher order thinking point out that thinking skills need to be taught consciously and in conjunction with content (see for example Beyer, 1991; Case & Wright, 1997; Costa, 1991; Lipman, 1988; Marzano, 1993; Paul 1991). This project demonstrated that planning and teaching for higher order thinking improved when teachers understood the centrality of conceptual understanding in social studies and the relationship of specific thinking skills to that understanding. Further projects could be designed which would enhance higher order thinking by improving teacher understanding of other aspects of students’ thinking. Work on higher order thinking in other countries indicates that students’ thinking skills can be enhanced for example, when teachers encourage metacognition through effective task design and through modelling appropriate behaviour.

Richard Paul (1991) argues that because an open society requires open minds, thinking should be dialogical and dialectical. Dialectical thinking involves making decisions on the basis of considering different points of view. Dialogical thinking is considering something from a point of view other than your own. In order to encourage dialogical and dialectical thinking teachers need first to understand, and be able to identify between, monological and multilogical issues. They need to understand Socratic method, to teach using this method, and learn to assess dialogical and dialectical thought. Beyer (1991) also advocates this approach and it is a major component of Matthew Lipman’s (1988) Philosophy for Children Programme.

As important as method is disposition. Case and Wright (1997) claim that the most important aspect of teaching thinking is encouraging appropriate attitudes. Paul (1991) makes the same claim. He asserts that to think critically students need traits of mind which employ intellectual and moral commitment. Developing these requires intellectual curiosity, courage, humility and perseverance. These traits can be taught by providing appropriate models and by providing activities which promote curiosity and encourage examination of evidence.

Identifying thinking skills in the lessons observed in the Brightmeadows project proved difficult. Evidence in overseas research indicates that this is a common problem. Newmann, Secada and Wehlage (1995) devised their programme of assessment for authentic instruction in the way that they did, at least partly because of the difficulty of defining thinking skills with any exactitude. Considering thinking skills in terms of skills emphasised in an activity and skills evident in the activity may provide a partial solution. This was the case in the Brightmeadows project. However, the sample was small and although the procedure was validated by university social studies education staff, it needs to be refined and expanded.

This project was concerned with teacher development and for this reason the whole question of what students do in social studies was not considered. Apart from the valuable work of Alton Lee and Nuthall (1991) on children's attitudes and values, children's thinking in New Zealand social studies has been largely ignored. While the Brightmeadows project indicated the extent of teacher led discussion and student centred activities in social studies, it did not attempt to explore the dynamics and interaction that occurs in groups of students or to analyse the ways in which task design, teacher direction and student interaction contribute to higher order thinking.

Finally, there is scope for research in the area of assessment and evaluation of higher order thinking. Social Studies in the New Zealand Curriculum (New Zealand Ministry of Education, 1997) indicates that higher order thinking must be taught as part of social studies. This final version of the national curriculum statement even provides such specific thinking objectives as students will "make a valid generalisation supported by evidence" (p.53), and "communicate a logically developed position or argument" (p.55). If teachers are required to teach higher order thinking they are presumably required to assess the effectiveness of their teaching and their students' learning. Simple and effective means of accurately assessing "a valid generalisation" or "a logically developed position or argument" still need to be devised.

Limitations

Action research was the most appropriate methodology to use in this project because it involved "the application of fact finding to practical problem solving in a social situation with a view to improving the quality of action within it" (Burns, 1991, p.252). Because it was a case study, concerned with a specific problem in a defined context, the project was necessarily small in scale and concerned with the effects of intervention on the functioning of a particular group in a particular social situation. Thus, while the results of the research are important, there is danger in applying the findings too broadly. Nevertheless, it is reasonable to claim that providing a model which links theory to practice is an effective way of enhancing higher order thinking through changing teacher behaviour. The Brightmeadows Model and the methods derived from it worked well on this project. While they could provide the basis of future models, they are not necessarily directly applicable in other situations.

Another major limitation was time. The field work in this project involved forty hours of observation in classrooms and the subsequent transcribing that this required. Even given this amount of time and the relatively small group of teachers, it was possible to observe no more than three lessons in any one classroom in each of the two series of observations. Some of the units observed were up to eight lessons long. This meant that in almost every classroom only part of the unit was observed. While the observations provided a good general picture of skill use, it was not possible to obtain an accurate view of the use of those skills which tend to be concentrated in one part of the unit. This was particularly the case with presenting skills. The structure of most social studies units means that presenting skills are the end result of data processing and in most cases a feature of the final lessons in the unit. A more accurate picture of skill use would require detailed observation of every lesson in a unit of work.

Conclusions .

The project set out firstly to explore the extent to which teachers in one school provided social studies learning activities which encouraged higher order thinking in their students. It was found that teachers in this exercise put a good deal of effort into planning exciting student centred lessons which involved students in activities which allowed them to practise some higher order thinking. However, most of the thinking skills in the lessons observed were those in the less complex skill groups of the Brightmeadows Model. Furthermore, while some higher order thinking skills were used in learning activities, there was no occasion when thinking skills were consciously taught and no provision was made for assessment of higher order thinking. Skills were chosen on an ad hoc basis. No teacher in the team had any programme which provided for systematic and sequential teaching of thinking skills.

The second research question considered the degree to which higher order thinking skills were used in activities to achieve particular goals. The national curriculum in use at the time this project took place indicated that "understanding" was central to effective social studies. Social studies learning and teaching should therefore have been directed toward this goal. Higher order thinking skills should have been used to process factual data in order to achieve understanding. Most of the teachers' units of work had knowledge objectives which were expressed in terms of conceptual understanding, but these were invariably too broad and in most cases simply copied from the national curriculum. All of the teachers in the study listed "skills objectives" in their unit plans, but the skills practised in learning activities bore little relationship to those listed as objectives. Some teachers wrote "skills objectives" which were overly broad and general, others provided long lists of specific thinking skills, far too many to teach and assess in one unit of work. None of the units showed a clear relationship between the central objective and the secondary skills objectives.

The third research question concerned those aspects of teacher behaviour or understanding that limited opportunity for students to engage in higher order thinking in social studies. Two avenues were explored, teacher effectiveness and teacher understanding. In the first intervention the research team decided that inadequate teacher understanding was the primary obstacle to teaching higher order thinking in social studies. It was agreed that teachers needed to be clear about why they were teaching social studies and clear about what they needed to do in their classrooms to help their students reach curriculum goals. They needed to understand the centrality of conceptual understanding in social studies and they needed to understand the relationship between specific thinking skills and this understanding.

The final research question asked about the kind of intervention programmes likely to lead teachers to adopt behaviours likely to lead to improved higher order thinking in social studies classrooms. The answer was a model, one which provided an overview of the social studies curriculum, which ordered or sequenced skills in a systematic way, which related specific thinking skills to the conceptual understanding which is central to good social studies and which was developed by the teachers in the research team.

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