

Changes in Teachers' Conceptions of Critical Thinking

by

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ABSTRACT

This study investigated the changes in teachers' conceptions of critical thinking as they implemented a new curriculum resource that was based on a critical thinking approach. It described the teachers' ideas about the purposes for, benefits of, problems encountered while, and conditions requisite to teaching critical thinking. It also took into account the changes in teachers' conceptions of critical thinking within the unique context of a faith-based independent school. The school was located in a large metropolitan district in British Columbia.

Three intermediate teachers (grades five and six) in one elementary school were interviewed at the beginning, middle and end of the implementation period to gather their perceptions about teaching critical thinking while using the new materials. The interview transcripts were analyzed for indicators of change for each teacher's conception of teaching critical thinking, and then analyzed for similarities and differences between the teachers' reported experiences.

It was found that the first year teacher, who was very knowledgeable about the new resource through her university training, experienced change by way of disappointment from unmet expectations and struggled to implement the critical thinking pedagogy and curriculum content due to various complexities associated with being a beginning teacher. Another teacher with a dozen years of classroom experience enthusiastically implemented the new unit and was highly focused on the execution of the lessons. She, however, did not invest time in

reviewing the introductory information where the critical thinking conception and pedagogical approach were explained. Consequently, her conception of critical thinking and pedagogy did not change significantly. The third participant had twenty-six years of experience in the study school and possessed a basic understanding of critical thinking. She was hesitant to be involved in implementing a new curriculum resource because she anticipated being stretched professionally. Ultimately, she experienced ongoing changes in her conception of critical thinking that affected various aspects of her work as a classroom teacher. All three participants indicated the value of teaching critical thinking in tandem with the faith perspective that is integrated into all aspects of the curriculum at this particular independent school.

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CHAPTER ONE

Purpose

Teachers naturally have an interest in how their students think, and most of them seek to use effective strategies that support improvement in their pupils' cognitive processes. Critical thinking is a term that is familiar to educators—familiar enough that they would be able to readily supply a description of what it is, and offer examples of the ways that they employ it in their classrooms. However, a closer examination of those definitions would reveal that there is in fact a considerable range of teachers' conceptions of what critical thinking is that may include, for example, descriptions of creative thinking or problem-solving skills. And from this range of descriptions of critical thinking flows an even greater diversity of classroom applications representing each individual teacher's conception of critical thinking. Of interest to this qualitative case study was the unfolding of three teachers' conceptions about critical thinking as they began to work with a new curriculum resource that exemplified a conception and methodology of teaching critical thinking that was different from their currently held definitions and classroom practices.

The purpose of this study was to examine the ways in which teachers' conceptions of critical thinking changed as they used *Critical Challenges*, materials published by The Critical Thinking Consortium (Case & Misfeldt, 2002; Case, 2004). The question and sub-questions were as follows:

How do elementary teachers' conceptions of teaching critical thinking change while teaching a unit that exemplifies a new critical thinking pedagogy?

- What are teachers' conceptions of teaching critical thinking prior to using new critical thinking materials in their classrooms?
- What are the teachers' reactions to the new materials while using them in their classrooms?
- What are teachers' conceptions of teaching critical thinking after having used the new materials for six to eight weeks in their classrooms?
- In what ways does the learning community context (a faith-based independent school) interact with the teachers' conceptions of teaching critical thinking?

Aspects of teachers' conceptions of teaching critical thinking that were of interest in this study included the following: the purposes for, benefits of, problems encountered while, and conditions requisite to teaching critical thinking to elementary school students.

The primary reason why I did this study stems from my deep interest in *learning*. I believe that teachers who fully engage in professional learning are more motivated to enhance the quality of the learning experiences they provide for their students. Regrettably, teachers sometimes resist making changes in their pedagogy, often due to a decision that the costs of time and effort overrule the potential benefits. Sometimes, it takes a "conversion experience" in the way a teacher conceptualizes an aspect of his/her teaching in order to venture out with

something new. The conundrum that interests me is the dialectic way in which a new teaching practice may nudge a new way of thinking, or the way in which a new conception of teaching may prompt new pedagogy.

In the twenty-first century, teachers, educational leaders and parents agree that critical thinking is vital to teach our students—even during the primary years. And yet, the misconceptions of critical thinking abound and what gets credited by teachers as a “critical thinking lesson” are often incidental or accidental learning events in the classroom, or perhaps a “thinking exercise” done in isolation. Will teaching critical thinking lessons using a new approach reboot and re-route a teacher’s conceptions and pedagogy? This question is worth pursuing.

The findings of this study will be beneficial to researchers interested in understanding the process of change as teachers encounter new critical thinking curriculum. Aside from some anecdotal feedback from public school districts and teachers, there is a lack of research on the *Critical Challenges* curriculum materials; this study will be of interest to The Critical Thinking Consortium. The selection of a faith-based independent school as the site for this research is also relevant. The philosophical context of the school—the school publicly states that its mission is to educate students from a biblical worldview perspective—provides insight into the ways teachers reflect on their teaching practices with regard to their personal and communal beliefs about education (in this case, from an evangelical Christian perspective.) Finally, for the benefit of the numerous

independent schools in British Columbia, and faith-based schools across North America, this study contributes to the lack of research done in these distinctive learning communities.

CHAPTER TWO

Review of the Literature

This chapter sets a context in light of two current literatures relevant to the research question. First, selected literature on teacher change with a specific focus on factors affecting implementation of an innovation is presented.

Secondly, the conception of critical thinking espoused by The Critical Thinking Consortium (TC2) is summarized.

Factors Affecting Implementation

An innovation refers to something “new” related to a potential user. This may include, for example, a new curriculum policy, instructional strategy or teaching materials. For the past fifty years, researchers have searched for factors that explain why teachers use innovations in the ways in which they do. Although these lists of factors are varied, authors have used them to build theories of implementation (Evans, 1996). One of the best known and most influential theorists is Michael Fullan from the University of Toronto.

Fullan (2007) defines implementation as the user’s process of developing meaning for an innovation around what it is, why it is important, how it differs from current practice, what it implies for the user, etc. The initial meanings that teachers give to curriculum materials will affect the nature and extent of further implementation. “The crux of change involves the development of meaning in

relation to a new idea.... Meaning has both cognitive (knowledge) and affective (moral) dimensions. Both must be cultivated and connected” (Fullan, 2007, p. 104).

Fullan’s theory of implementation identifies nine factors associated with the development of meaning; four focus on the innovation, and five relate to the context in which the innovation is used. The first four are defined from the point of view of a user: perceived need, perceived clarity, perceived complexity, and perceived practicality (Fullan, 2007, pp. 87-92). Of the five factors related to context, four local factors pertain to the social conditions in which the changes occur, namely the actions and attitudes of the teacher, administrator, school community, and district. The role of the government is an external factor. “The more factors supporting implementation, the more change in practice will be accomplished” (2007, p. 86).

Because my study focuses on teachers’ perceptions of a new conception of critical thinking as carried by curriculum materials, Fullan’s first four factors provide an important framework for interpreting the teachers’ reactions to implementation. There are several considerations to be mindful of when looking at a user’s perceived need for an innovation. Whose need is it? Whether an innovation is mandatory or voluntary has implications for its desirability. The priority or “degree” to which an innovation is needed over and against other perceived needs also affects the implementation process. Further, one must be

aware that the perceived need may change over time, either increasing or diminishing its relevance as the costs and benefits of the innovation unfold during its use. The felt need is in constant interaction with the evolving perceptions of clarity, complexity, and practicality of the innovation. In particular, need is dependent on the degree of clarity one has about the innovation itself.

Clarity is a constant problem in the change process. Teachers may or may not be clear about what is to be changed—how the materials and methods are different and supposedly an improvement to what is currently in place. As the innovation is implemented, things may become more clear or unclear. Lack of clarity can surface around the materials themselves, the teaching methods required and the goals and purposes for them. When a proposed change is interpreted in an oversimplified way, there is “false clarity” and the user will be unaware that there is substantially more to the innovation than is realized. As problematic as clarity is to achieve, both conceptually and procedurally, it is essential to “work on it” if change is to occur in the intended direction.

Complexity refers to the nature of the change process—the difficulties encountered and the extent to which things are different. “The actual amount depends on the starting point for any individual or group, but the main idea is that any change can be examined with regard to difficulty, skill required, and extent in alteration of beliefs, teaching strategies, and use of materials” (Fullan, 2007, p. 90). The amount of complexity experienced is affected by how much change is

being attempted; Fullan reports that although complex reforms hold more promise for change than simpler innovations, they require considerably more focus and energy during implementation (2007, p. 91).

The fourth factor affecting implementation is perceived practicality: teachers must feel that the innovation is feasible. It needs to be seen as appropriate and carry the potential for improved student learning (Evans, 1996, p. 85). The tempo and pressures of daily life in the classroom affect teachers' receptivity to an innovation; if it is not perceived as doable, change is unlikely. To be feasible, the proposed change must address teachers' perceived needs, be focused and clear and seem manageable in scope and complexity.

The major means for developing meaning in the direction of the four factors include collegial talk while teachers are attempting to put an innovation into practice. Through this combination of "planning" and "doing," the factors of perceived need, clarity, complexity, and practicality can be addressed:

New meanings, new behaviors, new skills, and new beliefs depend significantly on whether teachers are working as isolated individuals or are exchanging ideas, support, and positive feelings about their work. The quality of working relationships among teachers is strongly related to implementation. Collegiality, open communication, trust, support and help, learning on the job, getting results, and job satisfaction and morale are closely interrelated. (Fullan, 2007, p. 97)

The Critical Thinking Conception

Critical thinking has received a significant amount of attention by teachers and principals, curriculum specialists, teacher educators, and school reform advocates for decades. There is little controversy over the value of teaching critical thinking as a goal and means for student learning. But as Case and Wright point out, "There is a rather depressing irony: thinking critically is much valued and yet inadequately addressed in the classroom" (Case and Wright, 1997, p. 179). Part of the reason lies in the perennial questions—"what is it?" and "how do we teach it?"—voiced by practitioners and scholars alike.

In the quest for determining what critical thinking means, the field of social studies has hosted its share of quarrels. Sears and Parsons (1997) briefly outline two examples: "content versus process" debates reflect teacher uncertainties between "covering the content" and teaching students "how to" address issues and value questions, and "strategy versus ethic" debates assume that critical thinking is either a "series of steps or planned exercises" or a "way of living in and addressing the world" (pp. 171-173). Unless teachers are "extremely committed to critical thinking," the outcome of these debates and uncertainties is likely a path of least resistance: cover the curriculum content and inject some isolated "higher order thinking" techniques in their methodology (Sears and Parsons, 1997). But adhering to an ethic of critical thinking demands the adoption of a conception of critical thinking that can become part of one's philosophy of life.

Critical thinking as an ethic implies several fundamental principles that cannot be learned, but must be experienced. It is incumbent on teachers at all levels to embody an ethic of critical thinking in their own teaching if they seriously expect to prepare thoughtful, independent-minded citizens (p. 177).

There are five foundational principles developed by Sears and Parsons (1997)

which support the ethic:

1. Knowledge is not fixed, but always subject to re-examination and change.
2. There is no question which cannot, or should not be asked.
3. Awareness of, and empathy for, alternate worldviews is essential.
4. There is need of tolerance for ambiguity.
5. There is a need for a skeptical attitude towards text.

They conclude that: "Only those educators committed in this way to a social studies program that supports critical thinking will persevere in the face of the considerable obstacles" to implementation (p. 173).

Essentially, the ethic of critical thinking involves two things: a set of beliefs and a personal commitment to them (Sears and Parson, 1997; Case and Wright, 1997; Paul, 1993). This represents ownership of a conception. Many authors have articulated competing conceptualizations of critical thinking, particularly since the 1970s (e.g., McPeck, 1990; Norris, 1990; Paul, 1993; Lipman, 1988). They all agree, however, that promoting critical thinking involves much more than some teaching techniques. It represents a broader conception. Richard Paul rightly asserts that until a substantive conception of critical thinking is imparted to teachers, things will not change.

Few faculty recognize what it takes to transform instruction so that students routinely use their thinking to take ownership of course content. Few faculty know or use learning strategies that enable students to think analytically through content. Few understand critical thinking as a set of tools for acquiring knowledge. Few understand what it means to teach content as thinking (2005, p. 36).

The Critical Thinking Consortium materials, however, do take up this challenge. They begin with a complex conception of what critical thinking is, what it is not, and how it is to be taught (Bailin, Case, Coombs, & Daniels, 1999a; Bailin et al., 1999b). A foundational document developed for the Ministry of Education in British Columbia, *A Conception of Critical Thinking for Curriculum, Instruction and Assessment* (Bailin et al., 1993), was written to make “the teaching of critical thinking clear and manageable” for teachers and curriculum developers (Darling and Wright, 2004, p. 249). A concise definition was also offered: “Critical thinking involves thinking through problematic situations about what to believe or how to act where the thinker makes reasoned judgments that embody the qualities of a competent thinker” (Case and Daniels, 2003). Classroom implementation of this definition entails four tasks for the teacher:

1. “Build a *community of thinkers* within the school and classroom.”

Nurturing a classroom where reflective inquiry is valued is considered the most influential factor in supporting the development of students’ critical thinking. A commitment to ongoing opportunities alongside self- and peer-evaluation and teacher modeling are necessary.

2. “Infuse opportunities for critical thinking—what we call *critical challenges*—throughout the curriculum.” There are four criteria that determine what

constitutes a critical challenge: the question or task must require a reasonable judgment based on the assessment of options; it must be meaningful or relevant to the students; it must incorporate the curriculum content in a substantial way; and, it must provide support for students as they utilize the intellectual tools in working through the challenge.

3. "Develop the *intellectual tools* that will enable students to become competent critical thinkers." The five major tools are defined as follows:

Background knowledge—the information about the topic required for thoughtful reflection;

Criteria for judgment—the consideration or grounds for deciding which of the alternatives is the most sensible or appropriate;

Critical thinking vocabulary—the range of concepts and distinctions that are helpful when thinking critically;

Thinking strategies—the repertoire of heuristics, organizing devices, models and algorithms that may be useful when thinking through a critical thinking problem;

Habits of mind—the values and attitudes of a careful and conscientious thinker. They include: open-minded, fair-minded, independent-minded, and inquiring or "critical" attitude.

4. "On a continuing basis *assess students' competence* in using the intellectual tools to think through critical challenges." Students will come to understand the importance of critical thinking if a focus on "how well" they exhibit the qualities of a competent thinker is sustained. (Case, 2004, pp. viii- xi).

To help teachers understand these tasks, the Consortium produced curriculum materials that exemplify the pedagogy of critical thinking within various subject

areas and grade levels. The two salient features of the materials are their embedding critical thinking within curriculum content, and their explicit focus on teaching students appropriate “tools” for thinking through problems. For example, the introductory section of these exemplars state that:

Critical Challenges Across the Curriculum is an ongoing series of teacher resources focused on infusing critical thinking into every school subject. Two features distinguish this series from many other publications supporting critical thinking—our *content embedded* approach and our emphasis on *teaching the intellectual tools*.

Our approach is to embed critical thinking by presenting focused questions to challenges that invite critical student reflection about the content of the curriculum. We do not see critical thinking as a generic set of skills or processes that can be developed independent of content and context. Nor do we believe that critical thinking can adequately be addressed as an add-on to the curriculum. Rather, critical thinking is profitably viewed as a way of teaching the content of the curriculum. Teachers can help students understand the subject matter, as opposed to merely recall it, by providing continuing opportunities for thoughtful analysis of issues that are central to the curriculum.

The second distinguishing feature of this series is its emphasis on systematically teaching a full range of tools for critical thinking. Much of the frustration that teachers experience when inviting students to think critically stems from students' lack of the relevant intellectual tools. No doubt some students will figure things out for themselves, but most of the rest will perform at higher levels if they have the requisite tools for the job. For this reason, every critical challenge is accompanied with a list of the tools needed to respond competently, and considerable attention is paid in the suggested activities to detailing how these tools may be taught and assessed (Case and Misfeldt, 2002, p. iv; Case, 2004, p. iv).

In short, the *Critical Challenges Across the Curriculum* materials are intended to make “critical thinking ‘a way of life in the classroom’” (Evans and Hundey, 2004, p. 226). To this end, there has been a project to have resources developed by

teachers and delivered to classrooms in several provinces during the last decade. (There are 22 *Critical Challenges* available according to the online catalogue; <http://tc2.ca/pdf/Forms/catalog11-06.pdf>, retrieved September 2007). To date there is no published research examining the implementation of these resources. This study is among the first to explore the transmission of a conception of critical thinking through these materials.

CHAPTER THREE

Research Design

This chapter describes the study's research design including methodological orientation, selection of the school, selection of the participants, role of the researcher, data collection, data analysis, and limitations.

Methodological Orientation

This study was orientated within an interpretive paradigm that did not attempt to predict or control the outcome, but rather, allowed for meaning to be constructed by the participants in the natural school setting as the study proceeded. The ontological assumption of this paradigm was that "reality is subjective and multiple" (Cresswell, 1998, p. 75), thereby implying that the research data would consist of participants' quotes that exemplify their understanding of critical thinking.

I chose to conduct this research as a collective instrumental case study (Cresswell, 1998, p.62). It was collective in that it focused on three teachers (or cases) within the same school context for their personal perspectives on teaching critical thinking. It was an instrumental case study because it focused on the "object" being studied, namely the process of changing conceptions. In the tradition of case studies, this research was bounded by a core time frame (eight weeks) in which the critical thinking lessons were being taught, but with the

exception of one follow-up interview at the end of the school year to ascertain if the findings still held true. Because of the dominant use of interviews, this investigation had strong overtones of a phenomenological study; indeed, this research sought to “get inside people’s heads” (Palys, 2003, p. 433) to understand change as it was actually experienced and not how change might have been intended (Fullan, 2007, p. 8). The purpose was descriptive as opposed to explanatory.

Selection of the School

The criterion used in selecting an elementary school was unfamiliarity with the Critical Thinking Consortium’s conception of critical thinking. The likelihood that participating teachers had never heard of this particular approach to teaching critical thinking or had not seen the *Critical Challenges* materials increased when an entire school community was unaware of it. Since the consortium had been network-building in public schools across the province for several years, a search among independent schools found several potential sites that fit the criterion. Administrators of these sites were contacted to determine the feasibility of this project. Since the study would be using materials from *Critical Challenges Across the Curriculum* series as its “new” teaching materials, I needed to know if the teachers had used any of these materials. Additionally, I needed to know whether the teachers’ existing conceptions of critical thinking were “different” from the practices that are promoted in the materials.

The study school was favoured over others because of the value it placed on teaching critical thinking as published in their vision statement. The fact that it was a faith-based school was circumstantial and not a criterion for selection; it subscribed to a protestant evangelical Christian worldview. Every effort in selecting the school was focused on the contextual conditions that rendered the innovation as “new” as possible.

The administrators permitted me to briefly introduce my proposal and conduct a survey during a staff meeting in June 2006 (Appendix G). The survey asked teachers the following two questions:

- What is critical thinking?
- In what ways have you incorporated critical thinking into your lessons this past year?

The written responses (n=27) to these two questions confirmed the wide range of definitions and classroom practices held by the teachers, and that the school would be a suitable choice for my research. The administrators were very supportive of this study and voiced a keen interest in the findings.

To understand the local context of this study, a description of the school begins with the school’s vision statement which is published as follows: “[Our] school nurtures students in Christ-like living, critical thinking and joyful service, to become effective members of the Christian community in God’s world” (emphasis added). Although no precise date of when this statement was adopted by the

school community could be attained, the best estimate was 1992-1993. Since that time, the school had offered little professional development around the teaching of critical thinking.

The principal, who was not at the school when the vision statement was penned, stated that it was communally developed by staff, parents and board members. The statement was also featured in his address to the students in their school handbook; he felt it "served as a reference point" and desired it to be "a constant reminder as to our purpose." The 2006-2007 "devotional theme" selected by the staff was based on the Bible verse, "Choose for yourselves this day whom you will serve" (Joshua 24:15). He pointed out that because this theme highlighted the notion of choice, it demonstrated the integration of all three aspects of the vision statement, including the necessity of critical thinking. The weekly chapel assemblies were student-led and all the homeroom classes took turns developing this theme in their presentations.

The school is located in a large metropolitan district in British Columbia, Canada, and has been in existence for forty-five years. At the time of this study, it offered education programs from preschool through to grade twelve; on the elementary campus there were 550 students enrolled from preschool to grade seven, representing various ethnic backgrounds and special needs. The teaching staff in the elementary school numbered thirty-nine; an additional sixteen special education assistants plus twenty-seven other support workers brought the total to

sixty-six. The school had a friendly atmosphere and it was evident in the staff lounge that mutual respect and appreciation existed between “all the team players.” The administrators appreciated the professionalism of their teachers, and described themselves as a “close” community where parents demonstrated their dedication to the school in their willingness to help. The school hallways were marked by positive interactions between students and adults; “it’s not necessary to patrol,” quipped the principal.

The entrance to the school featured a display of a school in Africa. A recent longer-term project undertaken by their staff and families had resulted in the construction of a brand new school in Zambia; the principal had just returned from “cutting the ribbon.” This example is one of many which indicate that the school’s “life-style policy” is actively in effect: it supports the vision statement by advocating student participation in projects that reflect local and global citizenship. The policy views critical thinking as an integral part of the process because seriously exploring the real issues in their world will foster students’ sense of “Christian responsibility” and motivation to serve. In their city, this school has a reputation for “making a difference” because its environmental conservation projects were reported in the local newspaper.

Selection of the Participants

Because the study required volunteers to implement *Critical Challenges* materials in the social studies series, they needed to be teaching social studies

to students in grades one to seven. As mentioned earlier, the resource also needed to be “new” to the participants. In June, a letter of introduction outlining the purpose of the research was sent to the school for distribution to all the teachers (Appendix A), followed by a consent letter/form (Appendix B) that provided expectations regarding data collection.

Opportunity was given to greet teachers and explain the research proposal at a staff meeting in June, 2006. The administrators then promoted this project by promising classroom release time for the interviews and explaining that the piloting of these critical thinking materials would fulfill teachers’ annual professional development requirements. The potential participants were informed about the curriculum topics available but not given opportunity to peruse the *Critical Challenges* before giving consent. They chose their teaching materials later on. Of the four teachers who volunteered, three were able to participate.

Role of the Researcher

In keeping with an inductive approach, I viewed my role as an active learner, attempting to understand and “tell the story” from the participants’ perspective. I made every effort to represent the participants’ responses with accuracy and respect. It was incumbent on me to exercise reflexivity, that is, to be sufficiently mindful of my own beliefs and biases so that I could execute this study with integrity (Glesne, 2006, p. 6).

Aspects of my background that helped lessen the distance between myself as researcher and the participants included the following:

- I was an elementary school teacher for two decades in several faith-based independent schools and therefore was equipped to understand the values, perspectives, language, and practices in this distinct learning community.
- I had not taught the *Critical Challenges* lessons before, and therefore did not hold preconceptions about how materials should be integrated and used.
- Due to my work as a curriculum developer in the past six years, I had a collegial relationship with a few teachers in the school; however, I had no former association with the three participants.

During the interviews and focus group sessions, any explanations or clarifications given to the participants regarding the conception of critical thinking were minimal and done with caution since the purpose of the study was to investigate the impact that the stand-alone materials were having on their understandings and teaching practice. Guiding and supporting their thinking about the materials occurred through probing questions and rephrasing their comments.

Data Collection

The following list outlines the data sources I used to conduct my investigation:

1. A written survey consisting of two questions were asked of all the teachers in the study school in June, 2006 (Appendix G). Its purpose was to gather data about teachers' definitions and practices of critical thinking to determine if the materials to be implemented would be new.
2. Two identical questionnaires were administered, one prior to teaching the unit (September) and then after completion (December) (Appendices C and D). The data were transcribed and incorporated into the case summaries. The nine interviews (across three participants at the beginning, middle and end of the implementation period) were anchored by the same five questions thus ensuring data collection consistency while looking for the indicators of change in the teachers' conceptions of critical thinking over time. The purpose was to gather data about each teacher's conception of critical thinking in written form.
3. Three semi-structured audio-taped interviews with each of the volunteers occurred during the beginning (September or October), middle (October or November) and end (November or December) of the teaching unit (Appendices E and F). Each 45-minute interview was transcribed, summarized, and given to the participant for approval. The purpose was to collect data about each teacher's conception of critical thinking through dialogue with the researcher.
4. Two focus group meetings were held (September and November) in order to facilitate collegial discussion among the participants (Appendix I). The semi-structured discussions were audio-taped, transcribed, summarized,

and made available to each participant for approval. Their purpose was to gather further data about the participants' conceptions of critical thinking.

5. A follow-up interview (May, 2007) was audio-taped, summarized and made available to each participant. It was also semi-structured but did not repeat the same questions asked in the earlier interviews (Appendix H). The purposes were to attain teacher profile information, gather data that would verify the information that had been collected during the previous three interviews and collect any new data about each teacher's conception of critical thinking.

Data Analysis

The process of individual or "within case" analyses of the three participants (chapter four) went as follows:

1. The survey was used to establish each teacher's definition and practice of teaching critical thinking prior to the study.
2. The two identical questionnaires (pre and post) were qualitatively analyzed for indications of change in regards to teachers' reported purposes for, benefits of, problems encountered while, and conditions requisite to teaching critical thinking.
3. Each audio-taped interview was transcribed and then analyzed for indicators of change in the same manner as the pre and post questionnaires. The data also included teachers' ideas about teaching critical thinking within the context of the school's philosophy of education.

4. Anecdotal notes taken during the two focus meetings were also analyzed for indicators of change.
5. Following “within case” analyses of the three participants, a cross-case analysis was done for similarities and differences among the cases (chapter five). Criteria for comparing the extent of change were: perceived need, clarity, complexity, and practicality (Fullan, 2007).

Limitations

This study focused only on initial implementation, that is, the very early stage of understanding and using an innovation. For all three participants this investigation reported only on their “first time” use of the materials. Given the short length, an eight week teaching time frame, the study did not look for indicators of sustainability which would be appropriately considered had I monitored changes over multiple attempts of using the materials.

Ideally, the teachers would have implemented the unit simultaneously and therefore undergone the beginning, middle and end phases of the unit’s instruction side by side. In reality the start dates were staggered by about three weeks. The frustrated first year teacher felt isolated because the experienced teachers were not yet implementing the program, and this limited timely conversation among the teachers.

CHAPTER FOUR

The Cases

This chapter gives separate accounts of how three teachers' conceptions of critical thinking changed during the three months while they used the *Critical Challenges* social studies curriculum resources in their classrooms. The cases are sequenced from the teacher with the least to the one with the most years of teaching experience, namely Mrs. Smith (first year), Mrs. Black (twelve years), and finally Mrs. Jay (twenty-eight years). Provided in the teacher profiles are descriptions of each teacher's background and their perceptions of their relationship to change, followed by a summary of the classroom contexts in which they were implementing the new critical thinking unit. Next are the individual teacher's definition of critical thinking and some examples of learning activities that exemplify incorporation of critical thinking into the classroom prior to this study. This is followed by descriptions of the interview comments relevant to the purposes for, benefits of, problems encountered while, and conditions requisite to teaching critical thinking. Attention is then given to each teacher's views of critical thinking within the context of the study school. Following these descriptions is a brief summary of the indicators of change.

Interview quotes are referenced to indicate when they occurred. For example, (2O) refers to the second interview held in the month of October, and (3N) refers to the third interview, which occurred in November. Quotes taken from a focus group session appear in the following manner: (FG1S) references focus group

session number one which occurred in September. Unless otherwise referenced, all quotes cited within the introductory paragraphs (re: teacher background, relationship to change and classroom context) were recorded in May 2007.

Mrs. Smith

This summary documents the experiences of Mrs. Smith, a grade five teacher who implemented the *Critical Challenges* curriculum materials for the first time while negotiating the complexities of being a first year teacher. Unlike the other two teachers in this study, Mrs. Smith's familiarity with *Critical Challenges* through her university training afforded her a solid theoretical understanding of the critical thinking approach and an enthusiasm for teaching the *Managing our Natural Wealth* unit. Her excitement about *Critical Challenges* was evident in a staff meeting in September when she endorsed the critical thinking curriculum and was thereby instrumental in encouraging the other two colleagues to participate in this study. Although she remained positive about *Critical Challenges*, her experience with the social studies unit became laborious, eroded her enthusiasm and resulted in disappointment.

Interviews were scheduled as follows:

1. September 28, 2006 (1S)
2. October 18, 2006 (2O)
3. November 14, 2006 (3N)

4. May 28, 2007 (4M)

Focus Group sessions:

1. September 28, 2006 (FG1S)

2. November 14, 2006 (FG2N)

Teacher profile and classroom context

Mrs. Smith is a first year teacher launching her career in the study school. Her previous teaching experience is limited to practicums while in the professional training year at the local university. Significant is the fact that she is a graduate of the study school; after an interlude at university to achieve her teaching credentials she was warmly welcomed back into the school community as a colleague.

Thinking back on her recent practicum reports, she described herself as an organized, fun and nurturing teacher. When asked about her teaching style, she replied, "organized but flexible; I like to try new things but obviously everything is new right now." She stated that her tendency to be structured and organized equated to a more traditional style but hastened to add that she prefers a balance between some traditional and some less traditional approaches.

It totally depends on my energy level. Like at the beginning of the year I tried to do as many of the different and on-the-edge and hands-on stuff as I could. And then there are times when my energy is low and the kids are a bit crazier and then I return to the traditional approach—more of a (I don't want to say note-taking), but more worksheets, because I need to bring [the students and the lessons] back on track. (4M)

Mrs. Smith recognized that her teaching style is highly experimental because it was her first year of teaching.

Although she was not able to comment about the nature and range of changes that have happened in the short span of her career, there are some relevant pieces of information regarding her perceived relationship to change. "I am very open to change, just because everything is all so new! I know that I'll be changing things that happened this year that I didn't like and I'll be changing them for next year." When thinking back on her first year of teaching, she commented that she was unsatisfied: "I am never going to be fully satisfied. I want to keep changing and making things better constantly. I'm using the word 'unsatisfied' in a positive way. I don't want to settle for being mediocre." Not unlike many beginning teachers, she felt that she was enthusiastically embracing and seeking out change. "I already have three units in mind that I am going to try to make better. That's my summer homework. And this past year there were some units that I took [from colleagues] that I will replace with something else because I didn't like the way it was done." The implementation of new curriculum is a built-in expectation for this teacher young in her career. "Highly experimental" aptly described her first year of teaching.

Mrs. Smith teaches in a self-contained building (portable) adjacent to the elementary school with twenty-six grade five students—twelve boys and fourteen girls—in her charge.

The students all get along very well so it's really a community in the classroom. There aren't any cliques that stick out, even though there are a couple of kids that have been best friends like forever. But I can put any kid anywhere and know that they'll be able to talk to someone. Sometimes I have to move them so that they won't talk to people.... It's great that they're all friends and that they're comfortable in the room. Even girls and boys, there's no problem between them. It's quite cool.

Academically speaking, she reported that about five students are severely struggling in a certain area—failing a subject area. At the other end of the spectrum there are three noteworthy students; according to Mrs. Smith, one is definitely exceptional and two could be successful in grade six. “Then there's a real mix in the middle too.” But Mrs. Smith, with her organizational abilities, is able to use the academic abilities and the positive social dynamic in her class towards achieving her learning objectives.

The students are good, get-along working partners; collaborative learning through group work is fine. It naturally happens that kids go off task too, being friends and all. I'm very careful with group work. I make the groups. I don't normally let them choose. For bigger projects, I pick. I like to put my stronger students mixed together with those who are struggling. And there's always one in the group who is the leader who will get everyone to task. They're pretty good about getting back to task.

Purposes for teaching critical thinking

At the outset of this study, Mrs. Smith submitted the following definition:

“Critical thinking is the thinking through of a problem (using various tools such as background knowledge and open-mindedness) in order to seek/reach a judgment about what should be done.” (Sept. 20, 2006) When asked to give examples of

ways that she had incorporated critical thinking into lessons during the past year (2005-2006), she cited two curriculum resources that were part of her teacher education program at university: *Critical Challenges* and *A Case of Red Herrings* (to improve skills). (survey, Sept. 20, 2006) The *Critical Challenges* books were closely examined during a Curriculum and Methodology course; she completed an assignment which involved developing her own lesson that utilized the critical thinking approach and lesson design of the published materials used in this study. Because Mrs. Smith did not have the opportunity to teach a *Critical Challenges* social studies unit in her student teaching experiences, she was motivated to begin during the first week of school using the resource book she had purchased. In her practicum, she taught *A Case of Red Herrings*, a series of learning activities designed to improve students' inferential and deductive reasoning.

In response to the question, "What are your purposes for teaching critical thinking?", Mrs. Smith provided the following sentence: "I don't feel like I received enough instruction in critical thinking when I was in school." (Questionnaire 1)

Mrs. Smith's conviction that critical thinking is a valuable "life skill" was based upon her personal experiences over the past decade. Having been a student at the study school, she believed that critical thinking was lacking in her education despite the fact that the existing vision statement was introduced when she entered high school. "I was always taught to believe what I was being taught.

Not to question. Not to analyze—even in elementary; just believe it is true. Then I went to university—this is when I was challenged and I realized I needed critical thinking.” (1S) Stemming from a belief that critical thinking is necessary for life, she stated: “I like that *Critical Challenges* puts the onus on the kids to do the critical thinking work... providing students with the opportunity to formulate their own thoughts and opinions.” (1S) In each interview she offered comments about teaching critical thinking that pointed directly toward her purposes for teaching the actual *Critical Challenges* lessons—an indication of her heavy reliance on the curriculum resource as the conduit of the critical thinking.

In October, she believed that students needed to “know what they stood for” and that the critical challenges were leading to a culmination in which students would make independent choices regarding their personal ecological footprint. (2O)

When asked if she noticed any evidence that her purpose for teaching critical thinking was being realized, she speculated more generally that students had a greater awareness of critical thinking than she did when she was a student in the school.

But when the unit was completed in November, a disappointed Mrs. Smith made the following comments:

I still think that critical thinking is important; I know that I can't do everything in a *Critical Challenges* style. I've learned that my teaching style and approaches need to be varied. Some of this cutting-edge stuff might make me lose my sanity. Right now, not every unit can be this intensive. I need to have a balance.... I will

do this unit again because it is valuable and important for the kids.
(3N)

While the value of teaching critical thinking remained intact, the problems encountered had drained her sense of purpose.

The results didn't meet my expectations for how things were going to go. I thought they would be able to do more. Maybe it was too early in the year? Or they're not ready for this level of work yet? I thought it would be easier to get them to participate more and enjoy themselves. Instead I got too much of "It's too hard." They did enjoy parts of it, but overall I thought that I was pulling. And because it was hard for the kids, it was hard for me. It was especially hard for me to *want* to do it, my desire to teach *Critical Challenges* lessons. (3N)

Her stated purposes for teaching critical thinking on the second questionnaire demonstrated Mrs. Smith's ongoing commitment to the students and the school:

- it is something that I felt I lacked in my schooling so I wanted my students to have critical thinking skills
- it is a valuable part of the mission statement at the school so I wanted to be sure to include it in my teaching

Benefits of teaching critical thinking

"My hope is that students will develop their abilities to think through problems and discern right from wrong, rather than just accept everything they're told."

(Questionnaire 1)

In the September interview she listed the following aspects of critical thinking as beneficial for her students: intellectual growth due to thinking through a problem, discernment when evaluating right from wrong, not accepting everything they are

told, deeper thinking when defending one's decision or position, and the ability to work collaboratively in a group while maintaining an independent opinion. (1S) By way of example, she reported that these aspects were embedded in the lesson in which the students were required to determine which natural resource was the most important resource in the province.

When asked about benefits a few weeks later, she reported that she had "not seen anything new" (2O) and was hoping that the upcoming student presentations would reveal some of the benefits that she expected. She also mentioned that she had not explained the "intellectual tools" part of the learning materials to her students and wondered if doing so would have heightened the benefits. As in her statements about the purposes of critical thinking, Mrs. Smith's comments about the benefits revealed her disappointment due to high expectations.

By November, her comments about the benefits related to the small group work. "It is excellent that they have group work, even if there are problems.... The kids like working with their peers." (3N) She went on to talk about the critical thinking tools and strategies used in a learning activity a few weeks after the social studies unit was completed. She thought the students "did really well" in this activity—which included justification of individual choices—and this led her to believe that "the more challenges they get, the more they improve. In this lesson, the kids seem to connect better to the problem" (as compared to the

lessons in the prior unit). (3N) This positive experience assured her that students would transfer critical thinking, and restored her confidence in the conception of critical thinking.

I see benefits as helping students learn to think for themselves through a problem, rather than to have someone solve it for them. Kids seem to think that everything will be done for them, but through *Critical Challenges* I think they begin to realize that they are more capable than they think. Hopefully students will learn the process and skills—such as weighing options—that they can take out into the world for the rest of their lives. (Questionnaire 2)

Problems encountered while teaching critical thinking

She anticipated correctly that a chief problem of teaching critical thinking is that it is difficult for the students. “Students are unaccustomed to doing critical thinking—this is tough for them!” (Questionnaire 1) In September she felt that students expected social studies to be much easier (e.g., “colouring maps”); consequently, they were not “fired up” about the critical challenges. “We’re nearly finished the second challenge and the kids are getting more comfortable with the critical thinking approach, though it’s not getting easier for them.... They’re showing a bit more interest in this second challenge; it’s not so much of a “chore” for them.” (1S) She also pointed out that the two challenges were taught quite differently: the first had more “teacher talk” compared to the second one that had the students “doing research.”

In October, it was evident that the problems in teaching critical thinking were escalating for both the students and the teacher. She discovered that the students needed much more support in research gathering and recording skills than anticipated. A trip to the computer lab to gather data from the suggested on-line encyclopedia was not successful because the task was “above the abilities” of the students. As some of them struggled with the course content, it negatively affected the small group dynamics and bogged down their progress in getting through the tasks. Consequently, she was kept very busy adapting student resources on the fly, giving mini-lessons on researching skills, assisting students in the comprehension of the content materials, and coaching small groups to work cooperatively. “I feel like I’m on a roller coaster sometimes.” (20) Another stress was the issue of time—she found that the completion of each challenge was running into overtime and throwing off the desired pace.

After the unit was completed, she concluded that it was not the difficulty of doing critical thinking that was most problematic for her students—they can do critical thinking if “it is packaged in a way that is very applicable to their lives.”

(Questionnaire 2) “It was such a new approach—they were doing something so new to them and they were not used to it.” (3N) She maintained her view that students like things that are easy. “The [intellectual] tool of background knowledge was the toughest for the kids, and therefore tough for the teacher.” (3N) Mrs. Smith candidly stated that they were all tired and it was a relief for the class (teacher included) to be done with the unit.

Group work takes time and energy; it takes a lot of effort for me to deal with all the groups and the kids with their hands up. The group members can help each other—unless all of them are saying, “We don’t know what to do.” (3N)

Although six months later, her memory of the experience was “paperwork, paperwork, paperwork;” she intended to look back at the unit and figure out why it suddenly became so burdensome. (4M)

Conditions requisite to teaching critical thinking

On Questionnaire 1, Mrs. Smith acknowledged that the first requisite condition is “an understanding of what critical thinking is.” In the September interview, she elaborated that it is helpful not just for the teacher but also for the students to understand what is meant by critical thinking and recognized that the term is used carelessly or over-generalized to mean various kinds of thinking. She felt that students needed to know the purpose for their work and illustrated her point with an example: “Today our challenge is to figure out which is the most valuable resource in BC. We will gather information with this goal in mind so that we can make a good decision.” (1S)

In addition to a clear conception, Mrs. Smith cited good curriculum resources.

It would be hard for me to teach critical thinking without these resources; it’s much easier once you’ve had some exposure to *Critical Challenges* lessons which show you step-by-step how to teach a critical challenge. I had to make a critical challenge in university and it was a challenge! It’s so much easier to open the resource and deliver the lesson!

Due to problems with using learning resources such as the on-line encyclopedia and the lack of recommended books in their school library, Mrs. Smith thought that reference materials that support the execution of the lessons were also important. The problems she encountered with student materials prompted her to suggest that the teacher's ability to be flexible and adapt lessons as needed was also a condition that is requisite for successful critical thinking lessons.

In October, she reported that students needed adequate literacy skills to negotiate the lesson content. She referred to a critical challenge as a "double whammy" because students had to work hard on reading and writing skills while continuing to make and justify their judgments. A second condition she mentioned was group work; she felt that lessons went better when there was a balance between small group work and independent assignments. (20)

At the end of the unit, Mrs. Smith determined that the next time around, adjustments would be made regarding the students' abilities to manage the information. She wanted to ensure that her students would be academically ready and capable for the challenges. (3N) Her second questionnaire offered further thoughts about the conditions requisite to critical thinking that had not surfaced during the interviews. Mrs. Smith wrote:

I think you need to be a teacher who is willing to be challenged and to challenge the minds of your students. If you're someone who isn't willing to challenge yourself and your students, then critical thinking may not be something you are willing to dive into. You need good curriculum and you need colleagues to share with and support you. (Questionnaire 2)

Critical thinking within the school context

As already discussed, Mrs. Smith was highly motivated to teach critical thinking for a twofold reason: first, because it is her duty as a teacher to fulfill this part of the school's vision statement and secondly, because she felt that this component was not taught during her years as a student there. Beyond her sense of obligation, she expressed her personal convictions about the value of critical thinking which indicated that she “buys into” the vision statement. “I want my students to think for themselves and evaluate what they believe.” (1S) She went on to describe the relevance of critical thinking in the “curriculum of daily life” referring to classroom or playground problems, and mentioned her intention to integrate critical thinking into other subject areas during the coming year—“but I can't do everything right away!” (1S)

By October it was clear that she was making headway in applying critical thinking elsewhere. For example, she had offered her students several higher level thinking opportunities in the following areas: literature circles, mystery stories, inference skills, math problem solving, and science activities (non-renewable resources unit). Although she did not consider all of these examples to be critical thinking (according to her definition), she specified that the problem solving approach which introduces the new chapters in the *Math Makes Sense* curriculum was close to her conception. (20)

Connections between the critical thinking and Christian perspective aspects of the school's vision statement surfaced in the November interview. She recognized that the natural resources topic lent itself to discussions about stewardship from both the critical thinking and the biblical worldview perspectives. The students decided that they would select "creation care" as the subject for their class presentation at their upcoming chapel (an all-school assembly in which the class is responsible for the feature lesson). Moreover, they used their presentation to challenge the entire student body with a project that would "make a difference" in their school. Thus "Litter-less Lunch Day" was established for every Tuesday; the aim was to challenge every student to bring a lunch that would use composting and recycling alternatives to the trash bin once a week. (3N) This example of a student-initiated project demonstrates the convergence of the two aspects of the school's vision statement.

Not surprisingly, according to Mrs. Smith, critical thinking and Christian perspective are not in conflict.

i guess my own experience is that we have this biblical background and Christian perspective, but at the same time we need that moral backbone to be evaluating our world at all times—thinking about what we are allowing ourselves to take part in or support. I think that we need both. I think that when I went to school, I was getting the Christian perspective but not necessarily the tools to evaluate the world as well—just being taught to accept that "this is the way that it is."

So one of my goals for my students is that I don't tell the students just to accept it, but to take what they KNOW and to think about it.... I think that it's very important that students have the Christian backing.... They can't have either—they have to have both together. I don't want them only to have their critical thinking skills,

because, in my opinion, you need to have your moral backing before you can appropriately assess a problem. Well, that's my belief. (4M)

Summary

Mrs. Smith exhibited a high sense of need for teaching critical thinking and an exceptional clarity about the *Critical Challenges* conception. Her lack of procedural clarity as indicated by the various problems she encountered during the implementation process exposed her delusions about teaching critical thinking. The complexities of the innovation coupled with the challenges accompanying a first year teacher resulted in discouragement over unmet expectations. Despite her disappointment, she upheld a deep conviction in the need and value of critical thinking and did not waver from her sophisticated conception of it. The fact that the experience was so "burdensome" for her underscores the importance of supporting conditions during the implementation process.

Mrs. Black

Mrs. Black is an experienced teacher who has worked at incorporating critical thinking into various areas of the grade five curricula. She welcomed the opportunity to participate in this research study because she enjoyed piloting new material and because she would be released from generating her own critical thinking component to the natural resources unit. In contrast to Mrs. Smith, Mrs. Black was unfamiliar with the conception and pedagogical approach promoted in

Critical Challenges and admitted that in her lesson preparations she had skimmed and skipped the introductory pages of the teacher's manual. While allowing for some minor adaptations, she thought she was successfully able to implement the unit. She consistently used references to specific learning activities and concrete examples to note any changes in her teaching. While her comments during the series of interviews added some temporary contour to aspects of her conception of critical thinking, there was no significant change in her established understanding of it.

Interviews were scheduled as follows:

1. September 28, 2006 (1S)
2. October 18, 2006 (2O)
3. November 14, 2006 (3N)
4. December 12, 2006 (4D)
5. May 28, 2007 (5M)

Mrs. Black had an additional interview. The interview on September 28, 2006, designed to capture Mrs. Black's first impressions of the *Critical Challenges* unit, revealed that she had not yet taught the first lesson but was becoming familiar with the lessons. The interview in October documents Mrs. Black's experiences teaching the new critical thinking materials.

Focus Group sessions:

1. September 28, 2006 (FG1S)
2. November 14, 2006 (FG2N)

Teacher profile and classroom context

Mrs. Black is in her twelfth year of teaching and her third year in the study school. Her career began with three years as a teacher-on-call in several coastal districts in British Columbia where she accepted temporary teaching assignments ranging from kindergarten to grade twelve in both public and private schools. After a three month position in an international school in the Philippines, she taught for six years in a small faith-based independent school not far from the study school's location. Within the past nine years while employed in the independent schools, Mrs. Black has taught grades five and six, and has done specialist assignments in primary French and intermediate science. She describes herself as an enthusiastic, creative teacher, and in terms of teaching style, considers herself as intuitive, flexible, and go-with-the-flow by nature. For example, "If I see that the kids are really learning, but their activity is moving us in a new direction (but that they're still really learning), I would rather go their way than bring them back to the lesson right away." Because Mrs. Black is sensitive to where her learners are, she finds it natural to involve the students in curriculum choices, even the impromptu lessons as she just described.

Mrs. Black regards herself as a teacher who enthusiastically embraces change and often seeks out new ideas. "Every year I think back about what I want to change and how I want to make it better. My curriculum units are never the same two years in a row." As an example of seeking out change, she related how she had been interested in piloting a new French curriculum in the study

school. Not only did she attend a course during the summer to prepare herself, she persuaded another colleague to join her. Currently all the grades three, four and five classes are using this new French program, and she noted that the students found this new curriculum engaging and enjoyable. Mrs. Black is motivated to take some initiative in curriculum planning for something she believes in; not only is she willing to put in the time and effort to prepare something new, but she also enlists partnership with colleagues. She feels rewarded when she witnesses the benefits for her students.

This year Mrs. Black has been teaching a class of twenty-six grade five students—fourteen girls and twelve boys. The class composition represents a broad range of academic abilities and social behaviours. She reported that within the academic mix, some students receive “general” learning assistance, some for specific subject areas, one student has an Individualized Education Plan (IEP), and yet another group of students leave the classroom for enrichment activities. She finds that some students are very quiet and some are very talkative and “a bunch in the middle” or “normal.” Over the year she has counseled the students through “friend issues” due to their level of social and emotional maturity. Mrs. Black determines that things are better now and credits the students for their growth in empathy for one another.

Purposes for teaching critical thinking

Mrs. Black defined critical thinking as: “the ability to think through problems, to analyze all of the data, the pro’s and con’s and to come up with the best solution.

It is the ability to go beyond, to dig deeper, and come up with your own ideas instead of just taking other people’s ideas as fact.” (survey, June 2006) When asked to describe ways that she had incorporated critical thinking into lesson plans within the past year, she wrote the following list:

- The students have come up with a “platform” to present to the class prior to voting for a class president.
- Through class discussions we have delved deep into a problem. I have students come up with solutions to problems, i.e., world hunger, where they have to go beyond themselves.
- Having students come up with questions to ask a panel of immigrants (beyond the “basics”).
- Helping students think beyond themselves, i.e., the problems of others.
- In Math, problem solving through several steps.

Prior to, during and after teaching the new unit, Mrs. Black consistently asserted that her first purpose for teaching critical thinking was that it was “an important lifelong skill.” In September, she noted that students needed this skill in order to negotiate the problems and decisions of daily life and added that weighing the pro’s and con’s, considering both sides and “working through the issues” were all aspects of critical thinking. (1S and Questionnaire 1) These comments align very closely to the definition of critical thinking that she provided on the survey quoted above. Mrs. Black also observed that there are varying levels of competency in critical thinking abilities. “I think there are some people who are very good critical

thinkers but I don't think that it is natural in everybody.... Therefore you want critical thinking to be a skill kids get used to." (1S)

Some comments need to be made about the nature of Mrs. Black's October, November and December interviews which occurred while she was actually teaching the unit. It became increasingly apparent in the course of these interviews that she is a concrete thinker; frequently, responses began with generous summaries of the lesson plan or detailed descriptions of what the teacher or the students had done. The direct answers that I sought were embedded as key words and phrases within her narratives of classroom experiences, and often the answer was the example itself. Consequently, a greater degree of inferential work by the researcher became necessary.

During the October interview, Mrs. Black was asked if she had any new purposes for teaching critical thinking now that she had begun to implement the *Managing our Natural Resources* lessons and had formulated some first impressions. She responded that focusing the unit around a critical challenge question was a good idea and that she was discovering how class discussions "went beyond what the teacher manual predicted." The kids' ideas about school resources went "around the world" and they talked about Zambia. Mrs. Black then mentioned how the students were making choices about "what they could live without" as a result of a homework assignment assessing the importance of resources found in their houses. From there she noted that she had witnessed good social skills in their

small groups even when kids were not with their friends. "The students didn't always agree but they kept discussing until they reached a consensus." The final point in the discussion about new purposes for teaching critical thinking was that she saw that students were "thinking beyond themselves." (2O) In summary, Mrs. Black's grade five students had been involved in making choices based on their investigations and discussions, and that doing critical thinking activities within a small peer group had expanded their capacity for managing alternate points of view.

Interview discussions in November and December yielded several identical comments. In consistently repeating herself, Mrs. Black reinforced that her conception of critical thinking was anchored to the following phrases: critical thinking is a *lifelong skill*, it is the ability to *think through* problems and it means *not being passive* about one's learning by expecting answers to be given to you. (3N and 4D) She seemed most passionate about student passivity and therefore one of her purposes for teaching critical thinking was tightly bound to her notion of the problem of teaching it. In every interview she commented that students constantly needed to be challenged to question things for themselves, to pursue their own understanding and to avoid being vulnerable to what is "not true." On several occasions Mrs. Black said what she hoped her students reason as follows:

I want them to be able to look at something and say, "Hey! I wonder about this" and be able to work through the developing of a full science experiment or determine the most important natural resource in Canada and "how am I going to figure that out? Is it

just because of what I have in my house, or what the whole class has in their homes?" It's not just sitting there and waiting for knowledge to be poured into you, but thinking through things and being an active learner. (4D)

On the second questionnaire (May 2007) she wrote virtually an identical comment about the purposes for teaching critical thinking as her first questionnaire statement: "It is an important task for students to be able to perform in life and on the job." In short, there was little evidence of change in her conception.

Benefits of teaching critical thinking

Initially, she contended that the benefits of teaching critical thinking were identical to its purposes. She wrote on the first questionnaire: "The same as number 1" meaning that her answer for the purpose of critical thinking ("It is an important skill for the students to learn; they will need this skill throughout their lives!") also applied to question two. When asked to expand on the comment, she added that critical thinking was beneficial to students because it offered them opportunities to improve their "decision-making skills." (1S)

Prior to the implementation of the *Critical Challenges* resource, Mrs. Black's comments were general and vague. But once she began teaching the lessons, she reported a variety of learning experiences that illustrated specific benefits. For example, although in the past she had students who demonstrated good critical thinking, during the first *Critical Challenges* lesson there were more kids enabled and engaged in the critical thinking—even those who were usually more

reluctant to participate. The lesson motivated the students and they did not want to stop. A second observation made by Mrs. Black highlighted the students' collaborative small group work. She witnessed them conducting "on-task discussions—not noisy, but talkative. I saw kids including each other in the conversation." (20) A third unanticipated benefit was the positive feedback received from parents who had appreciated the recent critical thinking homework assignment.

In November the descriptions of the critical thinking activities continued to be positive and pointed towards beneficial learning experiences. Mrs. Black appreciated that the students' "knowledge (such as capital cities or plotting coordinates on the map) could be more meaningful since it was being 'used'." (3N) She described, for example, the way in which a group game required students to rotate their responsibilities frequently thereby "forcing" a high level of at-task behavior. She also recounted an incident when the students were surprised at what they evaluated as the most important natural resource. "They thought that forestry would be high and then they discovered metal." After examining their information, they realized that new evidence caused them to change their minds from their "original and obvious answer." (3N)

Once the unit of study was completed, Mrs. Black underscored the enjoyment and motivation observed in her students. In the December interview, she referred to the success of the lessons:

The activity was really neat and I would definitely do it again. They had to think of their familiar objects as natural resources—resources that need to be taken care of.... I will definitely do the mapping activities again. The game was so good that they played it twice and begged for more. They loved it.... It also taught them latitude and longitude. (4D)

At the end of the day, the things cited as successful critical challenge lessons—activities that were “neat” and “good” and worthy of “doing again”—were not justified in terms of criteria consistent with *Critical Challenges* materials.

According to the pre- and post- questionnaire responses, her notion of the benefits of critical thinking moved from “an important life skill” to “a skill that will help students to question and research.” (May 2007)

Problems encountered while teaching critical thinking

In September, Mrs. Black had some well-established suspicions about the problems she would be encountering while teaching critical thinking and it was evident that these anticipated difficulties were rooted in past experiences. She used the phrase “lack of maturity” in two distinct ways: to describe students’ reluctance to think independently and in reference to their inability to exhibit appropriate behavior during class discussions. Based on the frequency of her comments on the topic over the duration of the study, it was clear that she held a deep conviction that students today “would rather be told the answers than have to think for themselves.” (Questionnaire 1) And despite the presence of positive students who desired to learn and participate, Mrs. Black knew that there were others who hindered class discussions by making comments to draw a laugh.

“To discourage class clowns, I’m trying to encourage the kids to understand that

everyone's ideas are important and we can learn from them." (1S) A second struggle was the lack of good resources for teaching critical thinking in the study school. She explained that so far, she had generated her own critical thinking activities to insert into the curriculum. In conjunction with the need for good resources was the time factor; Mrs. Black disliked teacher guides that required extra time to "figure out the lesson" and would rather spend her preparation time gathering the lesson materials. (1S) "Lack of good materials can affect the teaching, that is, a busy teacher needs materials that don't take hours to prep!" (Questionnaire 1) As a consequence of her preference for concrete lesson materials, she did not read the extensive explanation of critical thinking provided by the *Critical Challenges*. All that mattered to her was the provision of student activities.

During the October interview, an enthusiastic Mrs. Black launched into a description of how the first critical challenge lessons had turned out. She reported that discussions in small groups had been successful: the students exceeded her expectations of their intellectual ability (quality of their ideas) and also their social skills (active listening, moving from disagreement to consensus). She noted that in the first lesson there had not been problems with domineering students in a group because each pupil had a worksheet and every contribution was required for the challenge. The structure of the lesson plan thus averted what she believed to be a potential problem. She acknowledged that "the motivation of the task made the teacher's job easier." Furthermore, she

experienced no concerns regarding the time it took to prepare the lessons. In fact, with the students doing the critical thinking work in a student-centered approach, she enjoyed “being a fly on the wall.” “The time concern now is that the children don’t want to stop!” Interestingly, Mrs. Black did not offer any comments about the fact that the problems she associated with teaching critical thinking which she had mentioned in September had not materialized. When this was pointed out to her, she said that she was still curious to see if these anticipated problems would surface with a different class of students since “this is a talkative group.” (20)

Midway through the *Critical Challenges* in November Mrs. Black reported that the high degree of student engagement in the critical thinking lessons was waning for some pupils. “Critical thinking is hard. Some kids are really good at critical thinking, and I have some kids—less—that still want me to tell them the answer. Those that are good at it, really take off. The kids that struggle with critical thinking want me to tell them everything.” (3N) This observation triggered a series of comments about her view of the learner and the difficulty of teaching critical thinking. For example, she stated that “babies and toddlers are curious, but then they lose that” and so she hoped that critical thinking will help retrieve the children’s loss of “learning through inquiry and curiosity.” She felt that kids today were not challenged enough in “everyday” critical thinking—solving the day-to-day problems on their own. “I think that lots of kids have lost their imagination—they’re so busy watching TV and playing video games.” “I just

don't want students to think that everything gets handed to them because that's how society is." Mrs. Black referred to the hectic pace of family life that included fast food restaurants and busy moms "running kids to everything and then they come home and 'veg' in front of a screen. They don't play. No time." During the second half of the interview, she made ten comments about her belief that students expected to have answers provided for them without thinking for themselves with references to their home life, the playground, and a variety of school subjects. In contrast, the first half of the interview contained numerous comments indicating that the students (with only minor exceptions) were applying themselves to the learning activities and that she was proud of their efforts. "I'm exciting at seeing how the kids are developing." It's good that each critical challenge begins with a question because "kids are naturally inquisitive." When writing their assessment paragraph, "they all tried." In the Canada game, the kids helped each other interpret data but not give the answer. Students encouraged the reluctant participants. Kids were excited. It was a lot of fun. "It's interesting to see what kids come up with." (3N) All told, the November interview was riddled with discrepancies between positive reports of successful classroom activities in October and November and her conception of the purposes, benefits and problems involved in teaching critical thinking. One final note: other than the reported waning interest of a few students in critical thinking lessons, Mrs. Black cited the self-assessment paragraph as a challenge since the students needed guidance in their writing skills. She acknowledged that her students were "good at verbalizing ideas" but needed reminders about topic sentences with supporting

details. As an experienced teacher, she was taking this problem in stride: “we’re working on it.”

The December and May interviews along with the second questionnaire continued to yield concerns about the immaturity of students as her priority, indeed her solitary, problem with teaching critical thinking. It became very clear that her view of the learner was the foundation upon which she built her conception of critical thinking. On December 12, 2006 she was asked, “What is your definition of critical thinking here and now—today?” to which she responded:

(pause) Critical thinking is—the kids want us to tell them the answers; they want us to treat them like the open vessel and we just pour it all in. But that’s not critical thinking, that’s knowledge acquisition.... Kids need to work through things on their own,... seeking out the knowledge and being willing to say “what about this?” or “can I lock up this?” It’s not just “teacher tells me” but “I have a role to play in my learning” and it’s OK to have questions and to look for answers and to work out things and to struggle through things and to find answers that don’t always come right away....” So maybe part of their learning is to struggle through things and learn that [struggling] is good. (4D)

Therefore, the problem with teaching critical thinking for Mrs. Black is overcoming the perceived problem that students would rather be told “what to think” rather than taught “how to think.” Since class discussion was the format she most often used when teaching critical thinking, the immaturity issue was problematic for her when students misbehaved by calling out, being inattentive to the ideas of others, or by monopolizing the conversation. (5M and Questionnaire 2) Within the interviews, there was no explicit report that a discussion time had gone poorly due to inappropriate student behavior.

Conditions requisite to teaching critical thinking

According to the first questionnaire and interview, her principal conditions were: the teacher's willingness to teach critical thinking, the students' willingness to engage in critical thinking (and in their own learning) and finally, the establishment and maintenance of classroom discussion behaviors. Naturally, extra time in September was devoted to classroom expectations and standards. Regarding class discussions, Mrs. Black said, "Kids are learning to wait their turn; they're doing a great job. They come up with great ideas and when we discuss them they come up with more and more and more. So many hands up! Sometimes I have them write things down because we're at the end of the lesson." (1S) She was also working at curtailing the "calling out" because she felt that quieter students were being discouraged from entering into the discussions. As she was getting to know her new students, Mrs. Black remarked that this group had several avid readers among them and asserted that well-read students "tend to have a broader viewpoint, plus they tend to listen to the viewpoints of their peers better." (1S)

In October, she extended the notion of good discussion behavior to include respect for one another's ideas. She hoped that by personally modeling how every student's idea was important, her students would share that value, "even if they don't agree with the idea." (2O) The fact that the students "didn't care so much about who was in their group and got along as working partners" contributed to the success of the first lesson.

In November, with the natural wealth unit in top gear, Mrs. Black recognized that the learning activities in *Critical Challenges* lessons had built-in mechanisms for maximizing students' level of participation. She remarked that they were meaningfully involved with the course content (e.g., location of capital cities, plotting coordinates on the map) while strategizing to win the game. "Kids remember the activities that are hands-on and fun." (3N) While implementing the challenges in October and November, she continued to report success in terms of what the students were doing. By and large her descriptions pertained to the small group work and it is not known how much whole class discussion was occurring. One can infer that the shift from teacher-guided to student-centered critical thinking activities could account, in part, for the absence of any interview comments about students' discussion skills during these months. Based upon her narratives, Mrs. Black's essential conditions requisite for teaching critical thinking (willing teacher, engaged learners, and discussion skills) seemed to be functioning quite well.

In the summary interview in December, Mrs. Black reiterated that the primary condition requisite for teaching critical thinking is willing students who do not sit back and let information be poured into them, but rather, take responsibility for their own learning. (4D) The second questionnaire rounded out the other two essential conditions: "A class that is respectful of one another and considers what each member says as important, and a teacher willing to teach critical thinking instead of reading from a text."

Critical thinking within the school context

One of the reasons Mrs. Black was motivated to participate in this project was because of the perceived lack of critical thinking resources within the school. As exemplified in her pursuit of new French resources, she thrives on a variety of teaching materials and is very interested in exploring them. She also mentioned that critical thinking “is important from the top-down. The principal is very supportive of professional development and encouraged teachers to participate in this critical thinking study.” (1S) There was also an optimistic sense that if some teachers participated in this research, it would generate an interest in critical thinking among colleagues.

Mrs. Black experienced positive support and appreciative comments from parents in October and November. The “natural resources at home” assignment made a positive impression because this homework exercise went beyond “busy work.”

Like Mrs. Smith, she interpreted the school vision statement to mean that critical thinking should be applied across the curriculum. On several occasions she referred to the “deeper thinking” that occurred through class discussions during novel studies. Additionally, her list of critical thinking activities recorded on the June 2006 survey was representative of efforts to have students “delve deep” and solve problems in a variety of subject areas.

She was highly aware of infusing Christian perspective into her lessons throughout each day, and believed that “Christ-like living on a daily basis” was a top priority at the school. She challenged her students to think, “What would Jesus do?”, and felt that critical thinking and her Christian perspective were not ideologically opposed.

I think they belong together. As you read and as you pray, you are trying to become more Christ-like, which then turns on your critical thinking because then you’re not going to take everything that the world throws at you as gospel truth. One ends up saying, ‘Hey, wait—that doesn’t quite sound right. I’d like to do some research on this. I’d like to learn more about this myself.’... There are some kids in my class who are good—they’re getting it, and there are still some who are fighting it and they want me to just tell them the answers. What I’m trying to get them to understand is the [importance and effort involved in] thinking critically and thinking through things. If you look at Christ—He would tell stories and I think He was teaching [critical thinking—thinking for oneself] to us right then.

If you become legalistic, then you become really closed-minded. There are always new things happening and the kids are being bombarded with information.... They need to be able to think through things from a Christian perspective—from “who they are.”
(5M)

Summary

Mrs. Black did not experience any change in her conception of critical thinking as is evidenced by the relatively static nature of her pre- and post- study comments. Because she is highly motivated by the practicality of teaching resources, she implemented the lessons and reported successful experiences of student engagement in critical thinking activities. The innovation, however, was not a new teaching resource but an underlying conception and pedagogical approach

to teaching critical thinking; these theoretical aspects were overlooked by Mrs. Black. Consequently, she exhibited some selected procedural but no conceptual clarity. Her relative ease in delivering the lessons indicated that the complexities associated with change were not existent and therefore her experience in implementing the innovation was one of false clarity.

Mrs. Jay

This summary documents the case of Mrs. Jay, a grade six teacher who has taught for nearly three decades. With an impressive length and diversity of classroom experiences, she acknowledged that there were many aspects of teaching that she did intuitively—the incorporation of Christian perspective ranking at the top. Recognizing that critical thinking placed “a distant second”, she volunteered to participate in this study with a curious mix of hesitation and intentionality, expecting that she would be “stretched” in some way. During the two month period that she taught the *Critical Challenges: Caring for Young People’s Rights* lessons (Case, 2004), she experienced the discomforts of the stretching process affecting both her teaching practices and her conception of critical thinking.

Interviews were scheduled as follows:

1. October 18, 2006 (1O)
2. November 14, 2006 (2N)
3. December 12, 2006 (3D)

4. May 28, 2007 (4M)

Focus Group sessions:

1. September 28, 2006 (FG1S) Mrs. Jay was not present.
2. November 14, 2006 (FG2N)

Teacher profile and classroom context

Mrs. Jay is the most experienced teacher among the research participants. Her teaching career began with two years in the public system in northern British Columbia, followed by twenty-six years in the study school. The total twenty-eight years of teaching consist of assignments in the following grades: kindergarten, two, three, four, six, and seven, with the largest concentration of thirteen years experience in kindergarten. She is also a parent and therefore her years of teaching experience are a mix of part and full time employment.

When asked to name some attributes that describe herself as a teacher, she mentioned gentleness and creativity. In terms of teaching style, she feels that she is in a transition away from a traditional style, becoming more “go with the flow” and moving from a structured approach to “not having a whole agenda mapped out.” At this point in her career she values “seeing where the kids are and then going along with where they’re at.” These changes are an indication of a conscious effort to keep current with the teaching profession. She noted that

some changes are unavoidable because new textbooks demand different pedagogical approaches.

Mrs. Jay regards herself as a person who is open to change. However, as the discussion about the implementation of new teaching ideas continued, she said, "When people ask me to try a new idea, I immediately think 'Oh, that's not a good idea and I know why it won't work.' And then I think, 'Oh, don't be like that! Maybe if I tried it again.... I'm better than this' [meaning the negative attitude]."

(4M) Her comments reveal an initial resistance which she then attempts to convert to a positive response. She became more comfortable in handling change as family demands decreased:

When my kids were younger, I didn't have as much energy to put into school. So I would go with the tried-and-true. I wasn't open to new styles [of teaching] because I didn't want to put the time and energy into it. It worked to a point, but it wasn't the best way to teach. But now that my kids are older, I have more time to think about [my teaching] and feel more confident to try a few other things. ... I used to be aware of new ideas and dismiss them because of my family. Now I pick up that book or journal and take the time to read and browse. I may not run with the idea, but at least I am taking the first step. (4M)

She also referred to the role of knowledge gained throughout years of teaching. She knows about the energy it takes to do the extra preparation when trying something new—time is a precious commodity. The maturity that comes from experience helps her filter the ideas and innovations she gives attention to.

Mrs. Jay's experience in this research study is integrally connected to her ideas and feelings about professional changes. Initially, she expressed hesitation

about participating because it would mean “doing something new”, that is, change. And yet she willingly volunteered, earnestly expressing desire to be as helpful as possible for the sake of this research, even though “something like this” was not something she would ordinarily do. (10) At the time of the concluding interview, she noted that participating in the study this past year had become a “biography” of her professional growth, and valued participation because it afforded opportunity to reflect upon her teaching career and evolution as an educator. There were new insights and epiphany moments that surfaced during the final interview as she gave voice to her thoughts. For this veteran teacher, conversations about professional identity as a changing practitioner clarified reflections on her growth. She recognized that the research experience helped her see what was vibrant in her teaching and the value of being attentive to it. “A gift.” (4M)

During the year of this study, Mrs. Jay had a grade six class of twenty-six students—fourteen boys and twelve girls. She commented that the group was academically on the low side:

Plodders. For about half the class, learning has always been a bit of a chore for them. Of the three classes in grade six in our school, I tend to get the lower students; administrators feel that my gifts—my patience—are better suited for meeting these students’ needs. The other two teachers are male and they absorb the students with behavioural challenges.

This is fine in her opinion; it’s a win-win situation. There are four or five kids who are described as “very bright” and these students receive extra challenges and work on projects independently; then she has more time for the plodders. The

two special needs students each have a fulltime Special Education Assistant.

Socially, the students are “subdued—pretty calm.”

Purposes for teaching critical thinking

Prior to working with the *Critical Challenges*, Mrs. Jay defined critical thinking in the following way:

- Don't take everything you hear as being ultimate truth. Think about it, become discerning, question it and find out if the facts are there.
- Look beyond the obvious answers; what is the author trying to convey; what can we learn about ourselves through a study of ___?
- Be properly informed about things.

To the question, “In what ways have you incorporated critical thinking into your lessons this past year?”, she wrote:

- reading articles from the newspaper
- reading books or reviews about Christianity
- class discussions about our lives and the influences of media/TV/advertising and how it affects us (survey, June 2006)

In September, Mrs. Jay supplied the following statements about her purposes for teaching critical thinking:

- To challenge students to think for themselves and not to believe everything they hear and read, especially in advertising, media, newspaper.
- To teach the students to ask “why” and “how” questions.
- To teach students to use the Word of God as the authority on spiritual issues. (Questionnaire 1)

These comments, along with her definition of critical thinking provided above, serve as a baseline for examining the nature and range of the changes experienced in her conception and practice of teaching critical thinking.

The October interview which was scheduled to capture first impressions of the *Critical Challenges* began with the question, "What's new?" This question permeated the entire discussion as indicators of change began to surface through comments about the purposes, benefits, problems, and requisite conditions of teaching critical thinking. At this point in time, she had familiarized herself with the resource and had completed the second lesson earlier that day. She repeated her fundamental understanding of the purposes of critical thinking (to encourage kids to ask deeper questions and to use Scripture as an anchor point) and then added a metacognition component to her original purposes.

When you ask "why" questions, you also have to think about *why you think the way you do*. For example, does money necessarily give you a better quality of life? What does the Bible say? I guess I always try to look at Scripture and see how it fits into the lesson and to how we think critically. (10)

Another thing that's new for me: in the past I've always just asked the "why questions" but I didn't have the kids discuss it among themselves. In today's lesson they had to look at their responses and find out if some of their responses were the same as their friends' and then discuss "why did you rate that 'quality of life' as a 3?" So they were arguing about it...thinking critically with their friends. In the past, it's just been a why question that they individually write on their page. This goes the extra step! *I'm not the filter for their ideas—the peers are*. I am experiencing a new style of teaching [with *Critical Challenges*], but it's good for me to be stretched. With critical thinking, I'm used to being teacher-directed. Today the bell rang for lunch and they were not finished talking yet and wanted to continue. I went "whew, that's nice!" They were on task too. (10)

By November, she revised her purpose yet again for teaching critical thinking: "to enable students to exercise deeper levels of thinking (judging, evaluating, justifying reasons) in peer groups." She continued by stating that critical thinking

encompassed more than just social studies and that the tools outlined in the materials were transferable to many other subjects. A recent class discussion on the topic of Halloween illustrated her point, as she mentioned how this annual discussion had been injected with the new critical thinking vocabulary:

“What are the indirect consequences of trick-or-treating?” “What is the bias in this newspaper article I’m reading to you about Halloween?” And they’re really thinking about it—they realize the importance of sufficient background information in order to discuss the issue. (2N)

She said she “used to just be concerned about covering the content; now I can’t separate the critical thinking skills from the content coverage anymore.” (2N) Even more significantly, she now believed that her purpose for teaching critical thinking at this school included providing the opportunity for students to honestly explore and question their faith and beliefs in a safe and respectful context.

In December, comments about the purposes of teaching critical thinking exposed how new ways of thinking had begun to affect daily teaching habits. “I think I’ve changed.... I’m looking for answers to ‘why’ *and* the supporting evidence for the answer.” (3D)

I’m giving them more time to think. Instead of just immediately getting responses from kids that have their hand up, I’m waiting. “Stop and think before you answer,” because part of the waiting is letting students think about the evidence they have for their idea, and trying to get those kids who are [reluctant to think to participate]. (3D)

The second questionnaire later in December captured the two distinguishing features of The Critical Thinking Consortium’s definition, that is, critical thinking embedded in content rich curriculum and the teaching of the intellectual tools:

The purposes for teaching critical thinking are:

- to teach children how to understand deeply and think beyond basic recall
- to give the students the tools to do this... so that they will be able to make wise choices in their adult lives.

The follow-up interview in May revealed that changes in her thinking and teaching had been sustained. Moreover, her attitude toward teaching critical thinking had changed in a very positive way.

I would consider critical thinking far more necessary now than I would have thought before. To be a good teacher I feel that it's necessary that I work on the critical thinking skills, not just because it's in our vision statement, but because that's what students need to survive in society—that they need to be able to think.... The need for critical thinking has been intensified by the nature of today's culture and society. I think that's true for both public schools and faith-based schools, but in a way even more for us, so that we really know why we believe what we believe. (4M)

Because of her experience with the materials, Mrs. Jay placed much greater value and priority on teaching critical thinking, deeming it as necessary for life. Therefore, she had become more intentional about including critical thinking in her teaching. One example of this: from January to May, she revised the unit tests used over the recent years so that her evaluation of pupil progress reflected the "deeper" critical thinking now expected of her students. (4M)

Benefits of teaching critical thinking

Prior to implementation of the social studies unit, Mrs. Jay said that teaching critical thinking provided students with opportunities to think for themselves, draw their own conclusions, debate constructively, and become better equipped to be

effective citizens in God's world. (Questionnaire 1) When she began teaching the new lessons in October, she reported that the students were exceeding her expectations and noted that the *Critical Challenges* required less of teacher and more of kids' input.

I didn't think some of these kids had opinions that they could verbalize just because they are very low academically, and I didn't think that they would be able to put it down on paper.... But with *Critical Challenges* I have evidence that the learning is still happening. They wrote paragraphs in partners and the kids really "got their teeth into it." (1O)

She was pleased to witness the level at which the students were engaged and succeeding. In contrast to her former approach to teaching, these lessons were more inclusive of all students and her anticipated problem of "opinion-less kids" had not surfaced.

During the second interview in November, Mrs. Jay had more pleasant surprises to report—surprises because these benefits of critical thinking were so unexpected. She was amazed at how highly motivated her students continued to be in social studies class. One parent had remarked, "My child is keen about school because of the *Critical Challenges* lessons." (2N) This parent was especially appreciative of the long-awaited breakthrough that occurred in her son's positive attitude toward learning. Mrs. Jay discovered that the students were also extending the lessons; for example, they wanted to know more about the connections between their religious beliefs and human rights. Through their engagement in the lessons, students were "teaching the teacher" about critical thinking. (2N) Finally, she commented briefly on the beneficial aspect of the

students' critical thinking abilities being exercised *through* the social studies course content.

I used to be so concerned about teaching the content and I'm still concerned about it, but adding critical thinking to it [doesn't mean I've stopped] teaching the content. I mean, I'm still teaching the content, but it's not one or the other now. And I guess I'm seeing that more. (2N)

In December, she talked about the development of social skills within a focused working situation:

The kids have become more talkative in that "they have things to say." In other years when I put kids in groups, they would be talking but I don't think they could "hear each other" as well as they are doing now with this unit and the accumulation of group work experiences they have had. They've had more "microphone time" as individuals, plus they're feeling freer about sharing ideas. It's on-task talking—they're more engaged with the notion of "testing their ideas" with their peers. (3D)

A second benefit referred to the progress students were making in reporting and communicating their critical thinking work. Greater use of graphic organizers, Venn diagrams and continuums were beneficial in two ways: "they're learning how to organize their answers to questions... and secondly, I can see that their answers/thoughts are in fact moving in the right direction. It comes back to the importance of the critical thinking tools—but it's the talk that precedes the organization and expression of the ideas that matters too." (3D) The second questionnaire response illustrated how the conception of critical thinking had become more precise over three months regarding the use of intellectual tools:

- share ideas and thoughts about things, especially in discussions.
- enriched by hearing others' points of view
- learn how to support their views with evidence and reason

- learn how to evaluate resource material as to whether it is a good reliable source, e.g., internet websites
- learn how to draw reasonable/sensible conclusions.

Problems encountered while teaching critical thinking

In September, Mrs. Jay wrote that the problem with teaching critical thinking is that some grade six students seem to be opinion-less.

They seem to take and believe things at face value—perhaps they have not been challenged to ask why. On the other hand, sometimes I have been frustrated with kids continually challenging the validity of things—for example asking “why do we have to do this?” and “What’s the value?” I feel like they need to find a balance; there is a place to challenge, but also a place and time to accept that this is just the way it is. (Questionnaire 1)

She found problems with two groups of students: those who were seemingly gullible and didn’t challenge ideas, and those who needed to find a balance in what/who to challenge. When her questionnaire comments were discussed in the October interview, she acknowledged that, developmentally, her grade six students were in an important phase of life when they are establishing more independence, and that students who frequently challenge parents or teacher may not necessarily be demonstrating critical thinking. When asked about her anticipated problem of opinion-less students, she immediately replied that this was not a difficulty at all with the *Critical Challenges* materials. She also had no problems to report about the preparation or delivery of the lessons; relying on experience, she found it easy to make adaptations and select appropriate lesson options.

During the midpoint interview in November, she talked about her concerns about student assessment. She was hesitant about grading the written assignments because she knew that the “paperwork” from her students was usually weak and did not expect that their paragraphs would reflect the critical thinking witnessed in their group work. At this juncture, it was evident to her that discrepancies between students’ oral and written work necessitated a reframing of her system of student evaluation. So she continued to make adaptations as necessary when the *Critical Challenges* lesson plans were not an ideal fit for her class, skipping portions of a lesson and choosing some shorter information passages. Although the “trial and error” aspect of piloting a new curriculum resource was not problematic to this experienced teacher, the most significant problem encountered while teaching critical thinking was exposed in the November interview. The cumulative impact of one month’s work with multiple viewpoints, justifiable opinions, reliable sources, and biblical authority had come to a head.

I’m unraveling. The students ask me questions, about Scripture too, that I can’t answer. I find it a little scary because I’m being pushed out of my comfort zone. But I like it because I actually find it challenging. I’m on the edge thinking it’s easier to be here. I’m not going to ruffle anyone’s feathers, but when I’m moving here to the edge with difficult questions, I’m wondering about what the kids are hearing me say and what they’ll go home and say. But then, no-one has given me any negative feedback so I guess I’m doing OK. (2N)

Mrs. Jay said she felt prepared and confident to respond to any parent concerns should they come her way. Her comments indicated that although she was being challenged by her students’ critical thinking and was wrestling with her changing conception of it, she still welcomed this problem. (More about this problem will

be discussed within the “school context” because her difficulties with critical thinking are intertwined with her Christian perspective.)

In December, Mrs. Jay reported how she had resolved her problem with student evaluation. “I looked at the rubric so that I knew what I was supposed to be looking for. But in the end, I went with my anecdotal assessments and observations of the critical thinking evidence done in small groups and class work.” (3D) For the first time, she had made comments about each student’s critical thinking abilities on her report cards. With regards to the *Critical Challenges* unit, she said that two months had been a bit too long. “At the end, I found it a little tedious and the kids were losing their pizzazz... however, I think that when we move to another topic, all the enthusiasm will come back again.” (3D) She also noted that in one particular lesson her groups were too large and the students were “jockeying for leadership position”; in her opinion, groups of three or four students were always fine. In her closing comment, she summarized her personal change:

Critical Challenges has moved me out of my comfort zone. It’s made me stop and think about what I’m doing and why I’m doing it. It took a bit of energy—I was taking the book home and thinking it through because I wanted to do a good job; also, put more effort into it because I knew I was doing it for the research too. When I do it next year, it’ll be much easier. (3D)

Remarks in the follow-up questionnaire focused on the group work as the context for learning, and raised a new challenge that had not been mentioned in the interviews. She wrote that although the size of groups was critical, so was their

composition: "I had to be careful how I grouped kids: some wouldn't let others talk and wouldn't listen." (Questionnaire 2)

Conditions requisite to teaching critical thinking

Coming into this study, she felt strongly that "a safe environment where kids dare to question, dare to give opinions, and be given respect by the teacher and fellow students when doing so" was the one essential condition that would support the teaching of critical thinking. (Questionnaire 1) During the first interview, she gave an in-depth description of what she did to create a trusting and respectful classroom climate. This included modeling an attitude of openness to others' ideas, giving examples of opposing yet valid viewpoints from her own family, establishing guidelines for classroom discussions, and sometimes, creating an ambience for "heart-to-heart conversations" with a lit candle. "I do a lot of work in my class on feeling safe. 'Nobody will be laughing at you; we will listen and respect.' Some may love to speak out loud more than others *but we all* have something important to say." (10) A respectful classroom climate was a priority because she valued the "voice" of each student and the necessity of meaningful dialogue in the light of today's pluralistic society.

From her comments in the November interview it was apparent that she continued to be vigilant about maintaining a respectful tone in the classroom insisting on students "taking turns, no laughing and no put-downs." (2N) She assessed that the students were doing well and noted that their discussion was

getting deeper into the issues and values at hand. “They do say what they think, and the other kids are responsive—but we’ve worked on that in other areas too.”

(2N) She also cited the value of small peer groups as a working condition that supported students in developing critical thinking.

In December, Mrs. Jay reported that the materials had moved her further away from the traditional transmission of information style of teaching—from “content coverage to coverage of meaningful information.” (3D) Based on the experience, a condition requisite to teaching critical thinking meant that she had to let go of some old habits (pedagogical style) and perspectives on covering the curriculum.

A few days later, her ideas about conditions requisite to teaching critical thinking were summarized in Questionnaire 2.

- The teacher needs to be interested in the subject material.
- Kids need to feel that they are in a safe secure environment where their contributions to discussions are respected and listened to.
- Kids also need to be given adequate background information on a topic in order to think critically about it and draw conclusions about it.
- Students also need to be taught how to think critically....use tools like continuums, Venn diagrams....to organize the information they are given and to be able to draw conclusions from it.

In addition to her original priority on a positive classroom climate, she extended her list to include some of the strategies and tools fundamental to the *Critical Challenges* resource.

Critical thinking within the school context

“To tell you the truth, I never really thought that much about the critical thinking part of our mission statement.... My focus has been on the Christ-centred teaching.” (10) Mrs. Jay began to reflect back on her twenty-six year history in the study school. Having arrived during the 1980’s from the public schools in the north she said, “I didn’t really know what I was getting into when I came to this Christian school.” She recalled that her focus was on “trying to bring Christianity into my teaching.” When the mission statement with the critical thinking was brought in (“at least ten years ago”) she remembered thinking, “well, what does that mean? And I haven’t— (*pause*). I don’t know if I really got into the critical thinking stage. I think that some of it comes out naturally, but not as much as it should.” (10) When asked if there was staff development days devoted to teaching critical thinking she replied: “I don’t feel like I’ve had any formal training on how to teach critical thinking. I’ve talked with colleagues. Generally we ask ‘why questions’ at the end of the test.” Nor, according to Mrs. Jay, did there seem to be any school criteria for defining or testing critical thinking, and then she added, “I think that my definition of critical thinking is changing already as I work with *Critical Challenges*.” (10) She did feel that, in light of challenges for kids growing up in the twenty-first century, the inclusion of the critical thinking component in the vision statement had been necessary and timely.

As mentioned earlier, her concern over religious authority issues while teaching critical thinking occurred halfway through the unit. What triggered her “unraveling” as a teacher is unique to Mrs. Jay in this Christian school context:

The kids are asking more questions. I say, “This is the inspired Word of God,” and the kids ask, “What does that really mean? How do you know this is absolute truth? And what about the stuff in this article or text or internet—is that really true?” They’re looking at the “slant” in the magazine and now they’re questioning the sources. I feel good about the discussions but I wonder what the kids say when they go home. (2N)

The students were truly asking the difficult questions and they were, indeed, teaching their teacher about critical thinking. In spite of her personal disturbance regarding the implications of critical thinking, she declared: “But this is such a huge part of learning! What do we want our graduates to leave with? An education! We want them to be critical thinkers, to make good decisions using these tools....” She had been speaking slowly and paused to ask if she was being clear. “We want them to make decisions that lead to responsible living.” These words indicated not only a deeper intellectual understanding of the purposes of critical thinking, but also a deeper value and ownership of those purposes.

During the December interview, she talked about her “do you think this is true?” approach to teaching that had been part of her questioning for quite some time; it had evolved over the years as one technique for incorporating Christian perspective into lessons. She asked this question more frequently now, but more importantly, the context for discussing it included critical thinking terminology and

strategies. She illustrated with an example from a lesson earlier that day. She had been reading to the students something about the Magi in the Christmas story. Beyond asking the solitary “is this true?” question, she challenged them with : Do we accept this information? Should we consider the point of view of the author? There isn’t much about the Magi in the Bible, so where should we look for reliable information? She had also pointed out that this article had several resources referenced within the text and reminded her pupils that references are not what they usually see on websites. Even though the critical thinking unit was completed, she continued asking students the tougher questions and they, in kind, were still asking plenty too. “It’s OK for me not to have the answers. And I tell the kids that I don’t know. I’ve said ‘I don’t know’ to the kids more times this fall than I used to.” (3D)

When asked in May what she now considered to be the relationship (if any) between Christian perspective and critical thinking, she cautiously responded, “Well, as Christians we need to think critically.... [Using a Venn diagram model,] I think that ideally, they would be overlapping. For me, they’re not. I’m not there yet. About half. Often times, the Christian perspective comes out when you are thinking critically.” (4M) She concluded with the following comment: “The need for critical thinking has been intensified by the nature of today’s culture and society. It’s true for both public schools and faith-based schools, but in a way, even more for us, so that we really know why we believe what we believe.” (4M)

Summary

Mrs. Jay experienced profound change. She demonstrated a remarkable disposition of openness to change and was realistic in expecting the discomforts of “being stretched”; this attitude emerged as a condition that supported evolving conceptual and procedural clarity during the implementation period. Her perceived value and need for teaching critical thinking rose sharply and her definition of it moved from vague ideas to specific details about the “intellectual tools.” In tandem with her growing understanding of the conception were several significant changes in her teaching practices.

CHAPTER FIVE

Analysis of the Cases

This chapter answers the research question, “How do elementary teachers’ conceptions of teaching critical thinking change while teaching a unit that exemplifies a new critical thinking pedagogy?” by providing a case analysis of Mrs. Smith, Mrs. Black and Mrs. Jay respectively. Having outlined their purposes for, benefits of, problems encountered while, and conditions requisite to teaching critical thinking in chapter four, the indicators of change in each teachers’ conceptions of critical thinking will now be examined and interpreted in terms of factors related to the characteristics of change: need, clarity, complexity, and quality/practicality of the innovation (Fullan, 2007). This interpretive account also takes into account the school context in which these teachers implemented the critical thinking resources. Chapter five concludes with a cross-case summary highlighting commonalities and differences among the cases.

Mrs. Smith

“At the beginning I thought critical thinking was important and now I still do. At the beginning I thought it would be easy but now I think not.” (3N) Those were Mrs. Smith’s final words in the interview that marked the completion of her *Critical Challenges* unit; they neatly scaffold the following analysis of her experience of change. The statement about the importance of critical thinking demonstrated the stability in her perceived need and conceptual clarity of it; her

realization that teaching critical thinking was not as easy as she expected indicated the changes she experienced in procedural clarity, complexity and practicality within the implementation process.

In contrast to her two colleagues participating in this study, Mrs. Smith exhibited a high sense of perceived need for teaching critical thinking. There are a few aspects of that “need” which should be elaborated upon. First, it functioned as a “readiness factor” (Fullan, 2007) in that she did not require any persuasive arguments regarding the merits of the innovation, and therefore her choice to promote critical thinking in her classroom was a voluntary and internally motivated change (as opposed to a mandated or externally motivated one.) A second aspect of need is priority—the issue was not merely that critical thinking was important, but rather, *how important*. Mrs. Smith explicitly justified her high degree of priority on the basis of her personal experience—the lack of instruction in critical thinking she received as a student. Evans (1996) points out that:

Desirability depends crucially upon dissatisfaction and relevance. To even begin to be open to a change, people must first be unhappy with the status quo in some way and must then find the change relevant to their concerns. Innovation, in other words, must meet a perceived need in a promising way. (p. 80)

Certainly Mrs. Smith's dissatisfaction fueled her obligation and desire to fulfill the school's vision statement by delivering critical thinking opportunities to the students. Furthermore, her dissatisfaction was rooted in a sense of personal loss—a factor which would likely contribute an increased emotional intensity to the relevance and desirability of the innovation.

There is one more aspect of Mrs. Smith's perceived need that merits exploration: her personal awakening to the value of critical thinking. "I was always taught to believe what I was being taught.... Then I went to university—this is when I was challenged and I realized I needed critical thinking." (1S) By her testimony, university was the pivot point where her journey as a critical thinker began; it influenced the formation of both her perceived need and conceptual clarity of critical thinking. In contrast to the other two teachers, Mrs. Smith is a product of a twenty-first century teacher education program and she mentioned that several of her university courses had taught and even promoted a critical thinking orientation for instruction. (4M) More specifically, her Social Studies Curriculum and Methodology course used *Critical Challenges Across the Curriculum* (1998) and *The Canadian Anthology of Social Studies* (1997) as required textbooks—both of these books were co-edited by Roland Case, one of the founders of TC2. She also confirmed that her professor had specialized in critical thinking in her master's thesis and doctoral dissertation. Not surprisingly then, Mrs. Smith's exposure to critical thinking was comprehensive, a fact that was repeatedly born out in comments that revealed her clarity of the conception. Beyond an intellectual understanding of critical thinking, the anthology text featured chapters that promoted critical thinking as a "way of life" ("Principles of an Ethic of Critical Thinking", Sears & Parson; "Taking Seriously the Teaching of Critical Thinking", Case & Wright). Given the concentrated and comprehensive exposure to critical thinking at university, it can be safely assumed that Mrs. Smith had "bought into" the conception as a teacher and as an individual and that she "owned" the

sophisticated understanding, pedagogical approach and underlying beliefs.

Since deeply-held understandings are the most difficult to change, the stability of her purpose for and conceptual clarity of critical thinking was a logical outcome.

One must consider if Mrs. Smith's recent convictions about critical thinking were too idealistic and that the university training, in part, contributed to unrealistic expectations. She admitted that she was expecting "a bed of roses" (4M) and instead, she became entangled in the thorns of the implementation process. Fullan noted that "innovations—even promising-looking ones—turn out to be burdens in disguise" (2001, p. 24). Mrs. Smith's experience of "unmet expectations" indicated her changing ideas and ideals regarding the procedural clarity, complexity and practicality of teaching critical thinking. Despite her disappointment, her intent to figure out why it became burdensome indicated that she had not abandoned her underlying beliefs.

The following quotations from the September and October interviews illustrate the progression in her attempt to ascertain procedural clarity regarding the intellectual tools: "What about the info at the beginning of the *Critical Challenges* guide—the tools, etc.? Do I teach that? Do we talk about that *before* the lesson happens or *as* the lesson happens? That was something that was never fully clarified. I'm not sure." (1S)

One change is that [teaching critical thinking] turned out to be a lot more challenging for the students than I thought it would be....
Next time I might approach it a different way—start off with teaching the tools first. Develop my own simple challenge that would simply

get them to practice the tools before getting into the content of the unit. In that way, I would be expecting to change my practice compared to this first time teaching the unit. (20)

These comments demonstrated that Mrs. Smith's lack of clarity was propelling her forward—to make pedagogical decisions that would sustain her abiding purposes for teaching critical thinking.

Aspects of complexity and practicality relevant to Mrs. Smith's difficulties occurred in her struggles with the teaching strategies and use of materials. (Fullan, 2007) Certainly the fact that she was a beginning teacher weighed significantly; the reported problems cited in chapter four provided ample evidence that she became bogged down by students' lack of abilities in managing reference materials, their waning interest and the unexpected extra time required to cover the unit. One specific example of a "rookie mistake" came up in a discussion about student assessment. Mrs. Smith realized that she should have looked at the evaluation rubric prior to teaching a lesson and explaining the assignment; she knew in hindsight that she could have prevented her disappointment in the students' work had she been clearer when communicating the expectations. (20)

Whether encountering the mundane practical problems or the larger theoretical issues associated with implementation of an innovation, research indicates that the benefit of peer support can influence the individuals' experience in a positive manner. Mrs. Smith noted this:

It would have been helpful to have done it with more colleagues so that we could discuss and share our experiences. There are more

variables to look at—learn from one another. For example, how are students in other classes reacting to the program? Mrs. Black and I talked about the challenges we both did. (20)

Unfortunately, Mrs. Smith was four weeks ahead of Mrs. Black in the delivering of the program and their collegial conversations ended up serving Mrs. Black more favourably. The focus group sessions did not appear to have an uplifting effect on Mrs. Smith either. This was due to that fact that Mrs. Smith and Mrs. Black were polarized in their conceptual understanding of critical thinking. For example, when Mrs. Smith referred to the “habits of mind”, Mrs. Black responded with a comment about undesirable habits in students that “we have to overcome.” (FG1S) When the discussion turned to the evaluation of students and the use of the rubrics, the experienced teacher briefly described the anecdotal system she had developed for herself. This proved to be unhelpful in Mrs. Smith’s deeper issues with the unmet expectations she was experiencing in her class. Also during that focus group session, the chief point of agreement for the two teachers was on the difficulty of teaching grade five students who want to be supplied with the answers rather than becoming independent thinkers.

Returning to the fact that Mrs. Smith was a recent university graduate, it must be said that there was no teacher in the school, including the administrators, who were “on the same page” in terms of teaching critical thinking according to the TC2 model. While there is no reason to doubt that Mrs. Smith had the support and encouragement of principals and colleagues, the nature and level of that support did not have sufficient “presence” in order to offset her sense of isolation,

frustration with the trial-and-error lessons, the physical and emotional “roller coaster” including the tyranny of the urgent, and the deeper disappointment that the *Critical Challenges* unit had not met her “perceived need in a promising way.” (Evans, 1996)

Mrs. Smith started off with enthusiasm, commitment and confidence. Her personal investment translated into high expectations that melted away as she encountered the complexities of implementing a sophisticated conception. In her case, the phenomenology of change is based on her realization that teaching critical thinking contradicted her expectation that “it would be easy.” Although it was painful to wake up to this new reality, Mrs. Smith sufficiently indicated that the lessons learned through experience will guide her future endeavors teaching critical thinking.

Mrs. Black

We know that the implementation of an innovation is a process of change charged with complexity and that the individual undergoing change will experience discomfort due to lack of clarity regarding the innovation itself, the implementation of it, or both. Therefore, the clarification process in the actual “doing” of the innovation—troublesome and uncomfortable in its very nature—is at the heart of change. Fullan says, “not everyone experiences the comforts of false clarity.” (2007, p. 90) In chapter four, the descriptions of what appeared to be successful, student-engaged critical thinking lessons were framed by Mrs.

Black's post-study comments that reiterated and only minutely extended her pre-study beliefs about the purposes for, benefits of, problems encountered while, and conditions requisite to teaching critical thinking. Virtually no change happened; ultimately, the innovation—a rich and complex conception of critical thinking—was not clear to her, nor did she realize that there was “more to it” during the implementation process.

Because Mrs. Black had not explored the TC2 model of critical thinking, and due to her inclination toward the practicality of a new resource, her false clarity and “surface level” adoption of the materials are the prominent features of her case.

In a quest for indicators of complexity (that is, the experienced difficulties or extent of change), the following excerpt from the December interview demonstrated my efforts to get below the surface and access Mrs. Black's thoughts about how she may have changed. I probed using three different questions:

Researcher: We've talked about the students' activities and their engagement with the critical challenges. But *who is Mrs. Black* in all of this? In what way has participating in this study been a professional learning experience for you?

Mrs. Black: I remember when the kids recorded all the products made from natural resources in one room of their house. When it came to the evaluation part, I know that Mrs. Smith said that this was really hard so I went through it thoroughly to make sure I knew what I was doing.... This activity is really neat and I definitely want to do it again.... And I will definitely do the mapping activities again. The game was so good....

Researcher: Deeper than just “what to teach again,” what have you been learning about yourself as a teacher teaching critical thinking? Talk about what you were thinking, not what the kids were doing.

Mrs. Black: I've always tried to bring critical thinking into my teaching because I think it is important.... I think that even in grade five kids still look up to their teachers and what you say sometimes is "law"... I've always tried to teach critical thinking and this experience has given me another way to do it—implement it—and it's given me more tools to use which is really helpful. Like I said before, you've got so much to do. So much marking, so much prepping.... I need time for other things. So *Critical Challenges* gave me another valuable tool. I think I can take the ideas, even if I wasn't teaching social studies, and naturally adapt them to other things and that, for me as a professional, is really important. I like resources that I can use.

Researcher: Was there ever a point in time when you felt uncomfortable with teaching critical thinking? Anything that made you go "hmm"? Anything that felt fuzzy or unclear in your mind?

Mrs. Black: I don't recall feeling uncomfortable. When I read something and I don't quite get it, I always go back and reread it because I think it's important that if you're going to teach something, you have to know what you're teaching.... I don't remember anything in particular that made me go "huh?"... I can't think of anything in particular that I thought was unclear. (4D)

The response to the third question verifies the absence of complexity in

Mrs. Black's experience and thus confirms that no change in her conception of critical thinking occurred while she used the *Critical Challenges* materials.

The interview excerpt above is rich with indicators of false clarity, that is, Mrs. Black's oversimplification of the innovation. Fundamental to the teaching of critical thinking according to the TC2 model is the teaching and assessing of the intellectual tools. In her response to the second question, she referred to the new tools she acquired through teaching the challenges; although she did not specify what she meant by valuable

tools, it appears to be new lesson “ideas”, the merits of which are apparently in their ease of use and transferability to other subjects. From this example it is safe to assume that she was not referring to the intellectual tools, the cornerstone of the conception. Unlike her colleagues, the essential terms used in the TC2 materials (background knowledge, thinking strategies, criteria for judgment, etc.) were conspicuously absent in Mrs. Black’s vocabulary throughout all the interviews. What was “not said” coupled with the many general comments, vague in describing the concrete connections between the learning activities and the critical thinking conception (Fullan, 2007), revealed her oversimplification of the innovation.

Sometimes false clarity is evidenced when teachers respond to an innovation by saying “we are already doing that” (Fullan, 2007, p. 89). This is indeed the case with Mrs. Black who stated twice that she “always tried to teach critical thinking.” By asserting that critical thinking was a pre-existing feature of her teaching, her perception of the potential change latent in the innovation is comparatively small and “is based only on the more superficial goal and content aspects of the [resource] to the neglect of beliefs and teaching strategies.” (Fullan, 2007, p. 90) In May, it was evident that the false clarity had been sustained:

Researcher: Would you say that you have a new way of thinking about critical thinking this year?

Mrs. Black: I think so. It has always been important to me. Through these resources, it has reinforced that what I have been teaching [with critical thinking] in the past has been important. It has given some more ways that I can teach it. (5M)

There is no new way of thinking. According to her reason, the present experience validated the past and a new resource equipped her with fresh alternatives to add to future units.

As noted earlier, Mrs. Smith possessed conceptual clarity and ran into difficulties with procedures. In Mrs. Black, we see the reverse. Procedural clarity trumps conceptual clarity from the very beginning:

When I opened up the *Critical Challenges* book, I started reading and then I skipped to the next part because it was just too much. Sometimes when it talks about how the book is laid out, it's too much and it goes on for page after page after page, and after I'm on the fifth page, *I just want to see what it is*. I don't want to read any more. (1S, emphasis added)

She is typical of many teachers who, when introduced to new curriculum, are more interested in answering "what will I have to do?" than "what is it?" (Evans, 1996; Fullan, 2007) A critical distinction must be made: procedural clarity can only be partially achieved if it is truncated from conceptual clarity. According to the statement above, the "it" in her desire to know "what it is" was the lesson plan. Consequently, she delivered the lessons without being cognizant of the underlying meaning of the pedagogical approach, a highly significant oversight on her part.

As someone guided by experience and observation rather than by theory, Mrs. Black's sense of practicality of the innovation was limited to the pragmatic aspects of the lessons. As the interview excerpt revealed, she valued user-friendly resources, particularly time-efficient ones. She praised the *Critical Challenges* materials on account of their step-by-step procedures that were easy to follow and blackline masters from which she could pick and choose. (1S)

Bussis researched the distinctions between superficial and deeper meaning of change and found that "some teachers operated at the level of surface curriculum, focusing on the lesson and seeing that the students were 'busy'" (Fullan, 2001, p. 42). Indeed, Mrs. Black considered her critical thinking lessons successful according to the fact that students were highly engaged; benefits that fed her notion of success included on-task group process work and the positive feedback from parents.

Evans points out that practicality and need are "close companions. Teachers must not only want to implement a change, they must feel that they can achieve it" (Evans, p. 85). Mrs. Black's sense of need, in contrast to Mrs. Smith's "up close and personal", seemed distant and general. As was mentioned in the previous chapter, the problem of "kids these days" who just "want the answers poured into them", whether in her classroom or in society at large, is a prominent theme that tracks its way through her statements about the purposes for teaching critical thinking. Given that she is disturbed by the problem that students resist being independent thinkers and learners, her hopes for kids to latch on to critical

thinking are not high. Will this critical thinking unit feasibly begin to address the need? Here again, her shallow understanding of the conception deprived her of seeing the evidence of critical thinking that was happening before her eyes as she enjoyed being “a fly on the wall”. When she spoke of students who naturally “get it” she hastened to comment on the intellectual or behavioral immaturity of others. Even when it was pointed out that the students were not exhibiting the negative behaviours she had anticipated as problematic while teaching critical thinking, she was not convinced and suggested that the lesson may not have fared so well with a less talkative group of students. (3N) With the innovation reduced in her mind to the piloting of a new resource, a few new lesson ideas were not sufficient to “meet a perceived need in a promising way” (Evans, 1996).

In this study, “change” on Mrs. Black’s terms was about variety in her teaching materials and methods and had very little to do with deeper professional learning.

I like the *Critical Challenges*, however, it could get redundant, that is, lots of paper (photocopying) and a lot of discussion. I would like to teach a unit and implement different tasks, discussions etc. “as they fit” so that they don’t seem forced. It also takes longer to teach as you need to teach students how to behave in discussions.
(5M)

I’d like to bring critical thinking into everything and I’m trying. That’s my goal. I also think that the longer you teach, the better you get at it. And you have experience with what works and what doesn’t. You keep changing things and making it better as you go along.
(5M)

Mrs. Jay

For Mrs. Jay, change began with vulnerability. Hesitant yet willing, she knew the cost of her decision to participate in a professional learning opportunity would be a personal stretch. During the process, she came to know the rewards for her risk-taking when the benefits for her students outweighed the costs for herself.

The benefits were there for her also, to the extent that she was able to describe her involvement in this study as “a gift”. The description of her experience in chapter four demonstrated that she progressed from a general to a more complex conception of critical thinking in terms of its purposes, benefits, problems, and requisite conditions. In addition, there was congruency between what she was “learning” and what she was “doing”. Two quotes will bookend the analysis of her change in terms of need, clarity, complexity, and practicality.

Before the study: “To tell you the truth, I never really thought that much about the critical thinking part of our mission statement.... My focus has been on the Christ-centred teaching.” (10) After the study: “*Critical Challenges* has moved me out of my comfort zone. It’s made me stop and think about what I’m doing and why I’m doing it. It took a bit of energy—I was taking the book home and thinking it through because I wanted to do a good job....” (3D)

Mrs. Jay’s experience reads like a success story because there was evidence of growth in her perceived need, conceptual and procedural clarity, complexity affecting deeply-held beliefs and practices, and a grasp of the practicality and quality of the innovation. Furthermore, this case illustrates how these four

characteristics of change operate like a system of sympathetic vibrations, each one setting off the other in dynamic interactions. It is also helpful to bear in mind Fullan's wide angle view of "change in practice" and the three dimensions involved: new materials, new teaching approaches, and altered beliefs (Fullan, 2007). Although an eight week study is a mere sliver of time in the process of change, the complicated nature of it surfaces immediately.

As we noted with Mrs. Smith, the understanding of critical thinking that existed before implementing the resource affected the starting point, expectations and process of change. Mrs. Jay's starting point was not characterized by confidence or enthusiasm but by a disposition of openness to change. By her admission, she was never really clear—for over a decade—about what critical thinking meant at her school. For her, the vision statement was an external motivation device which did not generate any real sense of need to pursue improving her ability to teach critical thinking, even though she recognized that it was important that students receive instruction in it. Prominent advocates of critical thinking have for decades bemoaned the reality that critical thinking is valued in rhetoric and widely ignored in practice, largely due to the lack of direction in how to teach it effectively. (Paul, 1993; Case & Wright, 1997) As Fullan observed, many schools initiate reform and fail to follow through with implementation (2007). Recall from chapter four that Mrs. Jay felt she lacked any formal training in teaching critical thinking and so she and her colleagues typically used "why" questions on tests to demonstrate that critical thinking existed in their units.

Without a sense of definition or direction on what critical thinking *is* and *how we teach it* at the school, she relegated it as a “distant second” and focused on Christian perspective as her top priority need. Given that she did not know enough about critical thinking, it follows that her sense of need would be correspondingly low.

The questionnaire statements about the purposes and benefits of teaching critical thinking offer some insights into how her sense of need evolved neck-on-neck with her increasing clarity. An interesting trade-off seems to occur. Early on, these statements included references to Christian perspective, however these ideas were not present in the post-study questionnaire. For example, at the beginning she envisioned students as being independent thinkers, skeptical of the information they received but able to use the Bible as their authoritative guide for responsible living/citizenship. (Questionnaire 1) Later, she defined critical thinkers as students who understood issues deeply and were able to make wise choices in life as a result of being equipped with the intellectual tools such as empathetically hearing alternate viewpoints, evaluating reliability, supporting with evidence, and drawing well-reasoned conclusions.

(Questionnaire 2) Perhaps her amorphous notion of critical thinking over the years had allowed her to blend it into her Christian perspective “why questions” in an effort to challenge students to think more deeply. “I guess I always try to look at Scripture and see how it fits into the lesson and to how we think critically.” (10) At the end of the study, a much more developed description of critical thinking

emerged, no longer entangled with Christian perspective. This is not to say that religious truth and authority were no longer important to her. Rather, it demonstrates what her new conception of critical thinking *is* (a process of thinking) and what it *is not* (an apologetic, that is, a justification of the truth). In May, she asserted that students are best served if they know “why they believe” as opposed to “what they believe.” This understanding led her to a conviction that critical thinking is “far more necessary now than I would have thought before” and essential for students to “survive in society.” A significant change in her perceived need and purpose for teaching critical thinking indeed. Surely, however, her greater sense of need would not have occurred if it had not been for the increasing clarity of the conception.

“Change in practice” (Fullan, 2007) in all three dimensions was evident after Mrs. Jay delivered two lessons in her first critical challenge. She recognized that these materials *demand more of her students*—not only to answer “why” but then to provide quality reasons to support their views—“the extra step!” (10) This seedling notion that critical thinking involved justification of opinions, supporting evidence or well-reasoned conclusions steadily grew throughout the implementation process. By the end of the study she was definitely establishing a new standard in her instruction which included intentionally allowing students greater “think time” and automatically calling on them to qualify their answers. In this second example, she realized that the critical challenges *demand more of her*. “I’m not the filter for their ideas—the peers are. I am experiencing a new

style of teaching, but it's good for me to be stretched." (10) The benefits of small group work that she witnessed in the second lesson were such a positive revelation that they outweighed the cost of relinquishing her control. By December she was praising the advantages of increased small group work because it had given all students increased "microphone time." (3D) Both these examples illustrated the power of a positive first impression when a teacher attempts something new and, more importantly, the likelihood that the change will be sustained if the immediate reward is the proof and/or potential of improved student learning. (Evans, 1996; Fullan, 2007) These two examples also show how conceptual and procedural clarity interactively evolved. The catalyst for the change was the new book that nudged this veteran teacher out of her "comfort zone." But as was evident in Mrs. Black's case, the implementation of a lesson alone does not go the distance; the second essential ingredient for "change in practice" is the teacher's reflective thinking about what is being done. "*Critical Challenges* has made me stop and think about what I'm doing and why I'm doing it." (3D) The self-evaluation she was engaged in indicated that changes were occurring in her beliefs about critical thinking. Over the course of eight weeks, the key words of critical thinking became part of the classroom vernacular, extending beyond the boundary of social studies lessons. Then it dawned on Mrs. Jay that her assessment of students' progress would need to keep pace with the changes the class was experiencing; for the first time in her career, she included a comment about each student's progress in critical thinking in the report cards. During the winter and spring following the study, she revised her

unit tests since “the typical why question” no longer reflected her new understanding of critical thinking. Clearly, the source for the changes she made in assessment was the innovation, not the *Critical Challenges* book.

Complexity has to do with the nature and extent of the change as it is experienced by the individual. The discomfort of deeper change is felt when core beliefs are being challenged; there were three issues that hit a nerve for Mrs. Jay. The first comfort zone to encounter disruption was the move from teacher-guided to student-centred lessons; as already mentioned, she was forced to weigh the costs and benefits of sacrificing her usual role of control in critical thinking discussions. A second inner battle had to do with curriculum content: her well-established priority of covering the course material was threatened by the additional time needed to deliver the unit with a critical thinking perspective. She concluded that critical thinking did not displace a content-rich unit, but rather, heightened the meaning of the knowledge. Thirdly, she said, “I’m unraveling” when she reached the midpoint of the study. While discussing the reliability of information sources, the students questioned her core belief regarding biblical authority. “When I said, ‘This is the inspired Word of God,’ the kids asked, ‘What does that really mean? How do you know it is absolute truth?’” Her response was “I actually find it challenging. I’m on the edge but thinking that it’s easier to be here.” (2N) Resolution to this inner conflict was not swift and sure and she chose to live with ambiguity, honestly answering her students’ questions, even if the answer was “I don’t know”. What liberates her to hang in the balance is her

vision for students who raise the difficult questions: "It's such a huge part of learning! ... We want them to be critical thinkers." (20)

There is also complexity to be found in the practical, everyday outworking of the innovation. For Mrs. Smith, it was the seemingly small wrinkles that wreaked havoc, but for Mrs. Jay and Mrs. Black experience comes to the rescue. All three teachers had issues with pacing the unit, waning student interest and group process. The way in which Mrs. Jay negotiated the problems of practicality demonstrated mutual adaptation with regards to the materials and her teaching practices (McLaughlin, 2004). That is, the decisions and adjustments she made over time revealed a two-way process of the materials changing her teaching and her modifications of the materials. For example, she altered student reference materials and chose to do more activities with chart paper and markers because this enabled academically struggling students to participate more successfully. In her student assessments, she chose to rely more heavily on the evidence of critical thinking she witnessed in their oral work rather than the use of written work and evaluation rubric as the final test. Excellent examples of how the materials changed her are the acquisition of the critical thinking language and the inclusion of "wait time."

Highly unique to Mrs. Jay was her capacity for change. The costs and benefits were constantly being weighed and, remarkably, she opted for the tough choices. The research regarding the extent of professional change in experienced

teachers shows the opposite outcome (Evans, 1996; McLaughlin & Marsh, 1990) and therefore her case stands out conspicuously as a refreshing and optimistic story. This analysis would not be complete without a glance at what would account for the success in this narrow window of time. She was conscientious in doing her homework. When the resource stopped her in her tracks, she took the book home. Certainly her expectation of personal change became a self-fulfilling prophecy. By being open to change, her vulnerability led to a series of relinquishments in her practice and some beliefs. One belief in particular was challenged and suspended (i.e., questioning the authority of the Bible), and there did not appear to be angst over this, but rather, exhilaration about being on the edge of growth. There was one belief that went unchallenged—Mrs. Jay deeply values “the voice of the child.”

Sometimes I shut the blinds, light a candle, get comfortable with feet up on our desks and we have “conversations” and anybody can say what they want; it’s quiet and dark—the kids respond. They request “light the candle” times. (10)

Unlike her colleagues who also noted the importance of a respectful class climate, her priority on establishing a safe environment for honest dialogue motivated her to go the extra mile. There was ample evidence of this in chapter four regarding conditions requisite for critical thinking. The difference between her first and second questionnaire responses is significant enough to recapitulate. Prior to the study she cited a socially, emotionally and intellectually secure classroom climate as the sole condition; after the study, her list of conditions maintained her former point and added the explicit teaching of thinking

strategies and intellectual tools. Therefore, as she learned more about teaching critical thinking, she saw its potential for extending the voice of her students. The following quote illustrates the dissatisfaction that drove her need for the students to be heard in conjunction with the need for critical thinking:

My parents were very authoritarian; we weren't asked our opinions. We just did what we were supposed to do and there wasn't that level of communication. Our generation is different and these kids are in the next one—heading into a postmodern, pluralistic society—and that does make critical thinking necessary. (10)

The final anecdote alludes to one more distinctive aspect of Mrs. Jay's case, one that begins to show signs that, under supportive conditions, the classroom can become a critical thinking learning community:

I spend more time just discussing things with the kids. I used to think this was just a waste of time. Just talking with them and letting them have a voice. But when I do that, I'm always amazed at the richness that's there. And I know that years ago when I was at this school, there was this teacher who was close to retiring and he always talked about the discussions he had with his children. And I thought, "Well, you need to teach antonyms and synonyms and all those things." And he said, "They will create their own path of their own learning to that which is more meaningful to them." But now I can see what he was saying: that there are those things that are so meaningful that they are worth the time. We're so bound by covering of the curriculum. *But to teach critical thinking is to allow them the freedom to explore their ideas.* (4M)

Conclusion

The three cases of change were distinct in and of themselves. For Mrs. Smith, little change was experienced in perceived need and conceptual clarity. Her changes in procedural clarity, complexity and practicality come as no surprise because she was

a beginning teacher. Inhabited by false clarity, Mrs. Black adopted some practical ideas but encountered negligible change in her perceived need, clarity and complexity of the innovation. Mrs. Jay encountered a complicated process because she faced changes in perceived need, clarity, complexity, and practicality simultaneously. Of the four factors affecting implementation of an innovation, the dominant characteristic of change that wielded its force throughout the cases was clarity. And while the aspects of conceptual and procedural clarity were vital to these cases, the role of the other three characteristics of change was not diminished. All four are interactive; it was the coupling of clarity with need, complexity and practicality that positioned clarity as the prevailing force in the teachers' experienced changes. As Fullan rightly contends, the development of clarity in relation to a new idea is the crux of change (2007, p. 104). Each teacher needed greater definition and direction on what critical thinking *is* and *how to teach it* at their school. An understanding of what it *is not* would have also been beneficial in their context.

Over time, changes in these four factors occurred through two means: attempts to use the innovation and discussion. First, clarity-by-doing. Fundamental to the teachers' evolving understanding of the critical thinking conception were the routine activities of reading, planning, lesson execution, and reflecting. The extent to which each teacher engaged in these tasks accounts in part for the variation in conceptual and procedural clarity between them. For example, Mrs. Jay took *Critical Challenges* home to read and plan, whereas Mrs. Black did not

read the theoretical information provided in the introduction. Teachers come to know something by doing it, that is, through experimenting in their practice. Secondly, clarity-by-conversation. Discussion enables those encountering change to identify with, support and learn from one another. Mrs. Smith had much to offer her colleagues in terms of theoretical understandings of the innovation and much to gain from the others' experiential knowledge. Mrs. Black, in need of enlightenment regarding the innovation, would have benefited from hearing the progressive revelation that was occurring for Mrs. Jay. For the veteran teacher, modeling her reflective thinking through discussion would have been useful for her colleagues. The simple act of verbalization afforded her increasing clarity and the consolidation of ideas. Only Mrs. Smith cited collegial conversation as a condition that supported teaching critical thinking; to figure something out, it helps to talk it through with someone who is in the same process. In this study, however, the teachers did relatively little talking about their experiences among themselves. They began their units at different start times, roughly three weeks apart. An orientation workshop prior to the implementation of the materials was not held and the focus group sessions had mixed results. Talking to the researcher was the foremost way in which the teachers were free to conversationally work through the "highs and lows" they were encountering in the *Critical Challenges* unit. Research bears out that the optimal way for teachers to undergo change is to talk their way through it while they are doing it. (Fullan, 2007)

Another theme that emerges from the cases is that a teacher's motivation to change is shaped by ongoing perceptions of costs and benefits. All three teachers were pleased with the resource from a practicality standpoint and declared that they would definitely use it again. Therefore, the motivation to continue with the materials/innovation implies that their understanding of the costs involved in implementation had been superseded by benefits experienced thus far. Some of the costs that emerged in this study were: a lack of time, feelings of confusion, apprehensions about parent reactions, declining student interest, unmet expectations, working alone (isolation), monitoring group process, and relinquishing control. The benefits that contributed to their understanding that the change was worthwhile included: student learning, interest and engagement, the interest and support of parents, and a deepening value for the school's vision statement.

The school context cannot be ignored. All three felt the impact of the vision statement in their own unique ways, however Mrs. Jay felt that she encountered potentially colliding worldviews. Is it possible for critical thinking as an "ethic" or way of life (Sears and Parsons, 1997)—the underlying belief of the TC2 model—to coexist with biblical worldview? Mrs. Jay was on her way to building a classroom community of critical thinkers without compromising her deep conviction that her classroom is a Christian learning community. Her question about the fit of critical thinking in relation to apologetics, though, is a matter that needs to surface in constructive collegial dialogue within the school. With such a

rich conception of critical thinking, the ongoing task of clarifying its implications is paramount at both the individual and community level.

CHAPTER SIX

Summary and Discussion

This chapter briefly summarizes the purpose, method and conclusions of the study and then discusses some implications for curriculum materials and further research.

Summary

The purpose of this study was to answer this question: "How do elementary teachers' conceptions of teaching critical thinking change while teaching a unit that exemplifies a new critical thinking pedagogy?" Three intermediate teachers in one school responded to pre and post questionnaires, and participated in a series of individual and focus group interviews held at the beginning, middle and end of the unit's implementation period (September to December, 2006). Data regarding indicators of change were collected in each teacher's descriptions of her perceived purposes for, benefits of, problems encountered while, and conditions requisite to teaching critical thinking over an eight week time frame. Attention was also given to context because it was a faith-based independent school which incorporated teaching critical thinking into its vision statement.

It was found that teachers experienced change along four criteria: perceived *need* and priority for teaching critical thinking, *clarity* in both conceptual and procedural aspects of the conception, the nature and extent of *complexity*

experienced while using the resource materials, and the *practicality* of the materials and methods in which the critical thinking conception was embedded. The three cases were distinct: the enthusiastic first-year teacher who possessed a sophisticated understanding of the conception changed in her understanding of practicality and complexity as she encountered practical problems and unmet expectations; the experienced teacher did not attain clarity of the critical thinking conception resulting in superficial change regarding the practicality and complexity of the resource; the veteran teacher experienced change along all four criteria which consequently altered her definition, teaching practices and beliefs about critical thinking. Of the four interactive criteria which affected the change process, clarity emerged as the dominant factor; means of achieving clarity were attempted through the use of the materials and some discussion. For all three, the motivation to use the resource again was shaped by their perceptions that the benefits for students outweighed the costs for teachers. They also shared the value that teaching critical thinking in tandem with their faith perspective was highly beneficial in promoting students' lifelong learning.

Evidence of successful change was also seen in the use of intellectual tools in other subject areas. The most overt signs were the inclusion of critical thinking vocabulary within classroom discussions and the requirement that the criteria underlying judgments be made explicit. The latter was evidenced by allowing students more "think time" before voicing an answer or opinion and then pursuing the justifications for their ideas. For one teacher, increased time spent on critical

thinking triggered new perspectives on student assessment across the subjects and her testing practices were modified. One of the habits of mind that was valued and focused on by all the teachers was sensitivity to the feelings of others.

Barriers to the desired change were also present. For all three teachers, the lack of discussion with others during the process contributed to feelings of isolation. Further, prior conceptions of critical thinking were powerful enough to obstruct changes in understanding; in two cases, the resistance to giving up prior ideas contributed to lack of clarity around the new conception.

Discussion

Even though this study occurred in an independent school, the findings are relevant to both public and independent schools. Currently the *Critical Challenges Across the Curriculum* series is of interest in the broader context of British Columbia and other jurisdictions. During the past decade, the Critical Thinking Consortium was the birthplace of an updated and upgraded view of critical thinking that then became incorporated into Ministry of Education documents in British Columbia (Darling and Wright, 2004, p. 249). For example, new curriculum for social studies to be implemented in all public and independent schools commencing September 2008 contains a sharpened focus on the teaching of critical thinking (Ministry, 2006). This indicates that the *Critical Challenges* will continue to be viewed as favoured resources enabling teachers,

schools and districts to meet the curricular goals for student learning, and will come into the hands of more teachers at all grade levels—teachers who represent a wide range of preconceptions about what critical thinking is and how to teach it. Some will have the opportunity to explore the materials and the embedded conception of critical thinking through professional development seminars, but many will not. The ideal conditions prior to and during the implementation of this particular conception are often beyond a Ministry's or school district's control. Yet, unless a teacher becomes aware of the conception of critical thinking embodied in the materials, she will remain oblivious to its implications (i.e., complexities). The *Critical Challenges* require much of a teacher if there is to be growth in the intended way. Obviously there must be a willingness and open-mindedness to experiment with the materials and teaching methods, and a tolerance for ambiguity which inevitably appears when "something" is unclear or unexpected. But more demanding still, the *Critical Challenges* require a commitment to thoroughly study the materials for the embodied conception; the materials are not intended as immediate lesson plans and student activities so much as exemplars of a conception.

This study therefore raises an important question about the approach to fostering teacher change implicit within the TC2 materials. They are designed to convey to teachers an understanding of critical thinking in two ways: the conception is first explained in each book's introductory paragraphs followed by an extensive exemplar of an instructional unit. The foreword provides the conceptual

foundation for the exemplar, and the exemplar illustrates what the conception means for classroom practice. The underlying belief is that through studying and using the stand-alone materials, teachers can acquire the conception. The point of the materials is teacher development rather than the provision of pre-made teaching lessons. But how realistic is this approach to change? The cases of Mrs. Black and Mrs. Jay suggest that further support is necessary. Some TC2 publications such as *Critical Challenges in Social Studies for Junior High Students* (Case, Daniels & Schwartz, 1996) included an introductory essay and diagrams to assist teachers' understanding of the conception and its pedagogical approach. However, the abbreviated version of the introduction found in one of the books used during this research study limited the at-hand reference information participants could turn to for clarification. Unfortunately it cannot be assumed that teachers (such as Mrs. Black) who receive these materials will read the introduction to acquaint themselves with the conception or that they will have an opportunity to attend an orientation workshop. The common front-loaded professional development approach which consists of information seminars prior to implementation of the materials may be more helpful but is also flawed by its detachment of theory and practice. The case of Mrs. Smith compellingly suggests that even with extensive knowledge about the conception prior to using the materials, further clarity about the conception evolves when theory and practice meet, thus making ongoing and just-in-time support necessary. A rich conception of critical thinking is not adequately conveyed

through using the materials alone; an ongoing teacher learning process must be anticipated and supported.

This study raises a caution about a generalization in the literature on teacher change: the more experienced the teacher, the less likely she may voluntarily engage in significant instructional change (MacLaughlin and Marsh, 1990; Evans, 1996). But the teacher of twenty-eight years emerged as the most changeful in the intended way and it is worthwhile to attend to some factors that may account for the anomaly. The initial gate to change is *willingness* to discuss and experiment with the new materials. The more advanced one may be in her career, though, the less appealing the commitment may be because it implies walking away from the comforts of familiarity, forfeiting favourite materials and methods and then facing the practical costs of working harder and longer. What were some pre-existing “first step factors” that appear to have motivated willingness in Mrs. Jay? The list includes: a disposition of openness to consider change, including an internal dialogue “routine” whereby she systematically combats her resistance to new ideas; a hesitation to participate based on her “realistic projections”, including an expectancy of discomfort and a conviction that being stretched is a good thing; a belief that she teaches to serve the best interests of her students and a trust in the administrators who endorsed this project; a realization that her capacity for change has increased in recent years and a greater commitment to exploring new ideas through professional reading due to availability of time in the evening now that her children are young adults;

knowledge (and some guilt) that she had not given the teaching of critical thinking the priority she felt it deserved for over a decade and an admission that she had never been very clear on what critical thinking entailed; and prayer as part of her deliberations before consenting to participate in this study. This list suggests that there may be more variables than the finding of the Rand study which claimed that the most powerful attribute of experienced teachers that stimulated their participation in professional growth was self-efficacy (MacLaughlin and Marsh, 1990, p. 224). Mrs. Jay's classroom context (a larger proportion of students with lower academic ability), and her perception that student benefits outweighed the costs, demonstrated the presence of self-efficacy. Logically, self-efficacy would be a positive motivator during the implementation and sustaining phases of change when the teacher perceives the potential for or begins to witness student benefits. But does it have the same motivational force as a "first step factor" to convert a weak sense of perceived need into action? Arguably, other factors alongside self-efficacy contribute to a veteran teacher's willingness to engage in change. The case of Mrs. Jay calls attention to admirable virtues cultivated over time that mark her maturity as an educator: humility, honesty, trust, and most notably, her courage to choose change.

There is an implication for faith-based independent schools. The TC2 conception of critical thinking promotes an ethic consisting of principles that potentially pose challenges for faith-based learning communities. For example, the principles that

knowledge is not fixed and is subject to change or that critical thinking necessitates a skeptical attitude may threaten a community's beliefs about the nature of truth and authority; the promotion of empathy for alternative worldviews may also initially be perceived as confrontational (Evans and Hundey, 2004, p. 230). As one might assume, independent schools place considerable emphasis on "underlying beliefs", primarily because these beliefs are what motivated them to become alternatives to public schooling in the first place; however, teachers' beliefs about critical thinking in this study did change—most evident in the reshaping of their perceived needs and purposes for teaching critical thinking. All three felt that their faith and critical thinking were complementary but to varying degrees. The isolation felt when one teacher initially perceived incompatibility between her religious beliefs and critical thinking points to the need for ongoing discussion within her school context. A collective understanding of what critical thinking is, what it is not, and how to teach it could offer much more than clarification. It has the potential of providing collegial support through an ongoing process toward shared meaning.

Further research could examine the role of language in facilitating and hindering how teachers come to interpret and implement a conception of critical thinking. Two of the teachers initially spoke of critical thinking in terms of "skills" whereas the third referred to thinking "tools." The former focused on students knowing "how to" do something (e.g., procedures for conducting an inclusive group discussion) rather than on the conception. The latter had a sophisticated

understanding of critical thinking which enabled her to differentiate it from “general thinking” or “deeper thinking.” To some degree, word choice is the issue, but it is more than semantics and it seems especially pertinent to elementary teachers. In the same way that the term “critical thinking” is sometimes used as a catch-all for describing thinking-very-hard, the word “skill” is also a victim of false clarity and over-generalized by teachers at the lower grades where the transition to a more process-minded approach to educating students has popularized a nebulous notion that learning is predominantly a continuum of skill development. Consequently, words such as memory, observation and evaluation lose their status as stand-alone concepts and have the word “skills” tacked onto them. The intentionality of the Critical Thinking Consortium in articulating what critical thinking *is not* in relation to the word “skill” opens a door for further investigation regarding the “de-skilling” of critical thinking and, more generally, an accounting for the proliferation of “skills talk” in elementary schools today (Case and Wright, 1997).

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Appendix A: Letter of Introduction

--UBC letterhead--

The changes in teachers' conceptions of critical thinking

[Date]

[School]

Dear teachers:

I am writing to ask if you would consider participating in my Master's degree study on the changes in teachers' conceptions of critical thinking. My teaching career consists of 20 years of experience in four Christian schools. During the past two decades I have been challenged to grow professionally in my view of the aims of education in general and, more specifically, in the discerning of curriculum materials and methods that maximize students' learning with short-term and long-term goals in mind. I describe myself as a lifelong learner and an educator who is passionate about the congruence of my beliefs and practice as a teacher of students and as a colleague among professionals.

The purpose of my master's degree research is to study the nature of the changes that occur in teachers' conceptions of critical thinking and their corresponding changes in classroom practice. My main research question is: How do elementary teachers' conceptions of critical thinking change while teaching a new unit that exemplifies a new critical thinking pedagogy?

I am contacting you because [your] school values critical thinking, as demonstrated in your school vision statement. There are two levels of participation that I am offering. You may volunteer to take part in this study by attending the professional development session, choosing your curriculum unit and implementing it during the given time period, attending four focus group sessions, and completing two brief questionnaires. Any anecdotal comments in oral or written form will be gratefully received throughout the duration of the research project. At the second level, I am seeking teachers who, in addition to the activities just mentioned, would volunteer to participate in three interviews. The interviews will be tape recorded by me for purposes of analysis.

If you agree to participate in this study, the teaching of a six week critical thinking Social Studies unit will begin during the week of Monday, September 18, 2006 and conclude no later than Friday, November 3, 2006. Curriculum guides will be provided and the orientation session will occur at an appropriate time prior to the study. Three focus group sessions will take place at the beginning, middle, and end of the project, approximately two weeks apart. The group members will be involved in establishing a convenient time and location. The teachers involved in the three interviews (beginning, middle, and end) will be able to arrange an appointment time and place at their convenience. The focus group discussions and the interviews will be semi-structured and guided by your experiences as a teacher working through a new curriculum unit based on a critical

Appendix B: Consent Letter

--UBC letterhead--

The changes in teachers' conceptions of critical thinking

[Date]

[School]

Dear teacher:

Thank you for your interest in my Master's thesis research project on critical thinking. This letter will explain the purpose of my research, how I will conduct it, and how I will ensure that I represent you and your ideas correctly. At the end of this letter is a consent form which I need you to sign.

I chose [this school] for this study because the school recognizes the value of critical thinking in its Vision Statement. In addition, I am inviting the elementary teachers to participate in this study because you have not used the *Critical Challenges* curriculum materials prior to this study. My main research question is: How do elementary teachers' conceptions of critical thinking change while teaching a new unit that exemplifies a new critical thinking pedagogy? Sub questions that will help me nuance this are:

1. What are teachers' conceptions of teaching critical thinking prior to using the new curriculum materials in their classroom?
2. What are teachers' reactions to the new materials while using them in their classroom?
3. What are teachers' conceptions of teaching critical thinking after they have used the new curriculum materials for six weeks in their classroom?

Aspects of teachers' conceptions of teaching critical thinking that are of interest in this study include the following: the purposes for, benefits of, problems encountered in, and conditions requisite for teaching critical thinking to elementary school students;

The professional development component to this study will include the distribution of new Critical Thinking curriculum materials and an orientation workshop. The lessons will be taught between the dates of Sept. 18, 2006 and Nov. 3, 2006. The choice of units and lessons, as well as the classroom timetable regarding the critical thinking instruction, is left to your professional discretion.

To conduct my research I will be collecting information from you in a variety of ways: 2 questionnaires, 4 focus group meetings for all participants (not tape-recorded), and 3 tape-recorded interviews (optional). Therefore, I am requesting your permission to use your questionnaire responses, the anecdotal notes taken during the focus group meetings, and the audio taped interviews for the purpose of analysis.

Please be aware that I cannot guarantee confidentiality in the focus group setting. The following sentences describe how I am able to ensure your identity is kept confidential. I

Appendix C: Questionnaire #1 and #2

--UBC letterhead--

The change in teachers' conceptions of critical thinking

QUESTIONNAIRE #1

Name: _____

Date: _____

1. What are your purposes for teaching critical thinking?

2. What do you regard as the benefits of teaching critical thinking?

3. What, if any, are the problems you have encountered while teaching critical thinking in your classroom?

4. What do you consider as conditions requisite to teaching critical thinking?

5. Are there any other concerns you have or comments you wish to make about teaching critical thinking or using the *Critical Challenges* materials?

--UBC letterhead--

The change in teachers' conceptions of critical thinking

QUESTIONNAIRE #2

Name: _____

Date: _____

1. What are your purposes for teaching critical thinking?

2. What do you regard as the benefits of teaching critical thinking?

3. What, if any, are the problems you have encountered while teaching critical thinking in your classroom?

4. What do you consider as conditions requisite to teaching critical thinking?

5. Are there any other concerns you have or comments you wish to make about teaching critical thinking or using the *Critical Challenges* materials?

Appendix D: Letter Accompanying Questionnaires

--UBC letterhead--

The changes in teachers' conceptions of critical thinking

[Date]

[School]

Dear [Name]:

Thank you for choosing to participate in my Master's thesis research project on critical thinking. This letter will explain how your identity, and the information you provide on this questionnaire will be kept confidential.

For my research project, I am exploring the ways in which teachers' conceptions of teaching critical thinking change while implementing new curriculum materials that exemplify critical thinking pedagogy. Because you have volunteered to teach a series of *Critical Challenges* lessons with your students, I am asking you to provide me with some information by way of two questionnaires. The first questionnaire will provide me with your ideas prior to the teaching of the unit. The second questionnaire will be taken after the critical thinking unit is completed. Because I am interested in the ways that your conceptions of critical thinking may change during the six weeks that you are implementing the new curriculum materials, I anticipate that your responses on the questionnaires will be useful in my analysis. The questionnaire should take about 15 minutes to complete.

I want to explain how I will make sure your identity is kept confidential. I will keep your completed questionnaires in a locked filing cabinet in my office. Computer files will be password protected. The only other individual with access to this questionnaire will be my research supervisor, Dr. Walter Werner. Your name and the name of the school will not be used in my thesis. Your participation in this study is entirely voluntary and you may omit any questions on the questionnaire or withdraw from the study at any time without jeopardizing yourself or the research.

If you have any concerns about this study, please feel free to contact me, or my research supervisor Dr. Walter Werner. If you have any concerns about your treatment or rights as a research subject, you may contact the Research Subject Information Line in the UBC Office of Research Services at 604-822-8498.

By completing and submitting this enclosed questionnaire, it is assumed that you have given me your consent to use the information for my research purposes. So thank you once again for deciding to become part of my research work and for making the time to complete this questionnaire.

Appendix E: Interview Questions

The change in teachers' conceptions of critical thinking

QUESTIONS TO GUIDE THE INTERVIEWS

1. What are your purposes for teaching critical thinking?
2. What do you regard as the benefits of teaching critical thinking?
3. What, if any, are the problems you have encountered while teaching critical thinking in your classroom?
4. What do you consider as conditions requisite to teaching critical thinking?
5. In what ways does your context [the name of school] interact with your conceptions of teaching critical thinking?
6. Are there any other concerns you have or comments you wish to make about teaching critical thinking or using the *Critical Challenges* materials?

Appendix F: Letter Accompanying Focus Group/Interview Sessions

--UBC letterhead--

The changes in teachers' conceptions of critical thinking

[Date]

[School]

Dear [Name]:

Thank you for choosing to participate in my Master's thesis research project on critical thinking. This letter will explain how your identity, and the information you provide during focus group meetings and interviews will be kept confidential.

For my research project, I am exploring the ways in which teachers' conceptions of teaching critical thinking change while implementing new curriculum materials that exemplify critical thinking pedagogy. Because you have volunteered to teach a series of *Critical Challenges* lessons with your students, I am asking you to provide me with some information regarding your experiences by way of four focus group meetings and three interviews. The group meetings and interviews will take place at your school and will occur at the beginning, middle, and end of the six-week time period in which you will be using the critical thinking curriculum materials in your classroom. (Exact dates and times of the meetings and interviews will be arranged at your convenience.) The four focus group meetings will be one hour each for a total of 4 hours, and the optional three audio taped interviews will be 45 minutes in length for an additional 2 ¼ hours. Your critical thinking instructions period will begin during the week of Monday, Sept. 18, 2006 and end no later than Friday, Nov. 3, 2006. The fourth focus group meeting is designed to follow up on any long term changes in your conceptions of critical thinking, and therefore it will take place in early March 2007.

I want to explain how I will make sure your identity is kept confidential. I will take anecdotal notes during our focus group meetings. I request that you regard the information shared at the focus group meetings as confidential and respect the privacy of the other participants. After each audio-taped interview, I will transcribe all the tapes myself and will keep them, as well as all anecdotal notes from the focus group meetings, in a locked filing cabinet. Computer files will be password protected. Your name and the name of the school will not be used in my thesis. You will be given the option of a pseudonym. You will have the opportunity to read the transcripts of your interviews and the sections of my thesis that refer to you so that you can make sure I do not misrepresent you. (This task may take about 2 hours of your time.) The only other individual with access to the meeting notes or interviews will be my research supervisor, Dr. Walter Werner. Your participation in this study is entirely voluntary and you may decline to make a comment during the meetings or interviews, or withdraw from the study at any time without jeopardizing yourself or the research.

Appendix G: Survey

--UBC letterhead--

The changes in teachers' conceptions of critical thinking

To insure your privacy, any information you provide in the following two questions will be kept confidential (hard copies in a locked filing cabinet and transcriptions password protected). Any comments cited in my research thesis will appear without your name or the name of the school in order to eliminate all identifiable data thereby preserving your privacy.

Please print.

Name _____

Grade you teach _____

1. What is critical thinking?

2. In what ways have you incorporated critical thinking into your lessons this past year (2005-06)?

Please indicate consent to release your responses to the two questions above with your signature. Thank you.

Appendix H Follow-up Interview Questions

The changes in teachers' conceptions of critical thinking

Teacher's Background

Name:

Date:

Pseudonym:

This is your ____ year teaching.

Past schools? Where? # of years?

Years at study school?

Any other noteworthy career history information: (grade changes/leave for raising kids)

On a resume, you would describe yourself as a _____ teacher.

Describe your teaching style:

Relationship to Change

Professionally speaking, you are _____ to change.

(closed and resistant, hesitant or reluctant about, usually open, very open, enthusiastically embrace and seek out)

Classroom Context for 2006 - 2007

Grade:

of students:

boys:

girls:

Distinctive characteristics of classroom/students:

- tone/climate
- academic mix of strong/weak
- social mix—behavior, personality
- inclusion of special needs students

Critical Thinking since December 2006: Any indicators of subsequent change or sustainability of previously stated changes in conception or practice of critical thinking

Any more TC2 curriculum materials used in terms 2 or 3?

Any changes in your pedagogy? Esp. child-centred approach as opposed to teacher-directed ct activities.

Regarding your awareness of ct:

On a scale of 0 – 5, how often would you say that you think about and incorporate critical thinking?

0 never

- 1 rarely; once a month
- 2 about once a week
- 3 a few days a week
- 4 every day
- 5 multiple times a day; in different subject areas

Using the same scale, how often would you say that you think about and incorporate Christian perspective?

Regarding the school's vision statement, do you think that there is a relationship between critical thinking and Christian perspective? Explain.

Reflecting back, as a teacher who participated in this study with a heightened awareness of critical thinking, have you noticed any personal changes? For example: "I used to think/feel/behave like this, but now I ..." Any changes made last fall that have been sustained?

Cognitive understandings (intellectual insights? Re-reading the *Critical Challenges* materials?)

Attitude changes/emotional reactions (despair, optimism, intensification of values/beliefs)

New behaviours in your teaching practice (beyond pedagogy--group work, lesson planning, evaluation of students)

Appendix I: Focus Group Questions

The changes in teachers' conceptions of critical thinking

September 28, 2006

Talk about your first impressions.

The Intellectual Tools: what comments do you have regarding the opening pages of the resource book?

Assessment: Have you looked at the assessment rubrics? Have you tried to assess what you are seeing in the students' critical thinking as they participate in the learning activities?

November 14, 2006:

What's hard about teaching critical thinking for students? (i.e., the "learning" of critical thinking as they see it for their students.)

What's hard about teaching critical thinking for teachers? (i.e., their experiences in implementation)