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Ontario Teachers' Understanding and Practices of Reform Instruction: A Case Study of Constructivism

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A thesis submitted in partial fulfillment of the requirements for the Master of Education degree in Education

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Abstract

Since the development of the theory of constructivism from the work of educators Piaget, Brunner, and Vygotsky, constructivism has also influenced pedagogical practice. Unlike the traditional approaches of teaching, constructivism encourages learners to construct their own knowledge and take control of their own learning. Although constructivism is widely accepted among teachers, teachers may have a misunderstanding/misinterpretation of constructivism, which leads to teaching practices that devalue students' prior knowledge and experiences. This qualitative study examined elementary school teachers' understanding and practice of constructivism. Data were collected from semi-structured interviews, classroom observations, and analysis of teachers' lesson plans. Findings from the interviews showed that teachers understood constructivism as one of many theories that guide their teaching. Classroom observations showed that teachers practiced many approaches including teacher-centered. Teachers also had different understandings and interpretations of constructivist principles, such as knowledge collaboration, problem solving, and teachers' role as coaches. Constructivist principles such as metacognition, apprenticeship, and exploration were absent from the teachers' practices. Consistencies and inconsistencies were also noticed among teachers.

Keywords: Constructivism, teaching practices, misunderstanding/misinterpretation, consistency/inconsistencies.

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Chapter 1: Introduction

Different from traditional approaches that emphasize memorization and acquisition of knowledge, constructivism claims that knowledge is developed and constructed by individuals and not to be discovered or imposed (Fosnot & Perry, 2005). Since the development of the theory of constructivism from the work of educators Piaget, Brunner, and Vygotsky, “constructivism increasingly has been applied to learning and teaching” (Schunk, 2012, p. 229). North American schools have integrated curricula, forms of assessment, and techniques to develop professional practice guided in large part by constructivism (Fosnot, 2005b; Richardson, 2003; von Glasersfeld, 1995). Constructivism will be discussed in-depth in Chapter 2.

Although I am interested in constructivism, I am also interested in its research and application in a social studies classroom. This is mainly because I am specialized in social studies and social studies is my area of interest; in addition, I have been teaching this subject for several years. I wanted to know how other colleagues in the field understand constructivism and how their understanding translates into practice in real-life classrooms. Incorporating constructivism transforms passive and transmission learning into interactive and engaging learning. According to Richardson (2003), it is a “shift from considerations of how individual students learn to ways of facilitating that learning, first in individual students and then in groups of students found in classrooms” (pp. 1625–1626). Constructivism as a learning theory has been researched for decades in the West. It has guided curriculum revisions in several countries, and it is common for teachers in North America to self-identify as constructivist teachers. As a social studies teacher from the Middle East, where constructivism is a relatively new concept, I wanted to explore how social studies teachers in North America, specifically in Canada, understand and enact

constructivism—essentially, how they bring constructivism to life in their classrooms. It should be noted that in Canada the term “social studies teacher” is not commonly applied in elementary schools. However, homeroom teachers in elementary schools teach a variety of subjects including social studies (for example, math, science, language, and art). Even though constructivism is considered somewhat outdated in North America, I still consider it a valuable teaching methodology, not to be discarded in favour of newer trends in teaching, especially since current methodologies such as problem-based learning, inquiry-based learning, and discovery learning are closely related to, and arguably directly stem from, constructivism (Krahenbuhl, 2016).

Much of the available research has focused on teachers’ beliefs and/or practices of constructivism across many school disciplines, such as science (Lew, 2010; Mahmood, 2013; Savasci & Berlin, 2012), mathematics (Baştürk, 2016; Chiu & Whitebread, 2011; Sapkova, 2011), or other subjects like chemistry (Niaz, 2008; Uzuntiryaki, Boz, Kirbulut, & Bektas, 2010) and literacy (Courtland & Leslie, 2010). However, little attention has been given to constructivist beliefs and practices of teachers who teach social studies, and research that is available has mostly focused on either pre-service teachers (Doppen, 2007; Martell, 2014; Molebash, 2002; Wright & Wilson, 2009) or on post-primary teachers (Blaik-Hourani, 2011; Lane, 2015). Therefore, this study examined how practicing elementary school teachers who teach social studies understand constructivism and how their understandings influence their classroom practice. I also wanted to understand the school structures (school-based conditions) that support or constrain teachers’ implementation of constructivist teaching.

Research has shown that translating constructivism into teaching practices is challenging (Cleaver & Ballantyne, 2014; Dangel, Guyton, & McIntyre, 2004; Hyslop-Margison & Strobel, 2007; Richardson, 1997; Tubić & Hamiloğlu, 2009). Cleaver and Ballantyne (2014) argue that “it is often difficult for teachers who claim to be constructivist to teach constructively all the time, when dealing with the realities in the classroom” (p. 237). Hyslop-Margison and Strobel (2007) echo this statement, noting that “a genuine concern arises with the concept’s application because many teachers and teacher educators claim that knowledge is constructed, without appreciating the epistemological and pedagogical implications such a claim entails” (p. 72).

Teachers are among the few actors positioned at the core of the educational process—they are the link between the curriculum and the pupils (Toh, Ho, Chew, & Riley II, 2003). As Dewey (1933) notes, “Everything the teacher does, as well as the manner in which he does it, incites the child to respond in some way or other, and each response tends to set the child’s attitude in some way or other” (p. 59). The future of countries and children “depends on the quality of teaching and learning in schools” (Labaree, 2003, p. 16). It follows that the curriculum will be well delivered if teachers are sufficiently prepared and equipped (Toh et al., 2003). As Brooks (1987) states, the “success of constructivist approaches to curriculum development and delivery is contingent on the thoughtful mediation of the teacher” (p. 66). Therefore, considering that constructivism is a complex theory that requires “greater demands on teachers” (Prawat, 1992, p. 357), it is crucial to accurately determine teachers’ understanding and implementation of constructivism.

Constructivism has a positive impact on students’ learning (Altun & Buyukduman, 2007; Bolton-Gary, 2013) and supports students’ problem-solving,

reasoning, questioning, and comparing and contrasting skills (Educational Broadcasting Corporation, 2004). However, some critics of using constructivism within social studies classrooms note that teachers find it difficult to implement constructivism because social studies deals with facts and concepts that require memorization (Bisland, O'Connor, & Malow-Iroff, 2009; Stemhagen, Reich, & Muth, 2013; VanSledright, 2008), which may contradict the constructivist approach that seeks to minimize the use of lecturing and recall of information and focus on enhancing students' ability to construct knowledge and make their own meaning.

1.1 The Research Problem

Constructivism is the foundation of most current curricula, and it has shifted teaching practices from focusing on instruction to focusing on students' activities. Constructivism is a theory of learning not teaching, but it provides teachers with a different lens on learning and how they might teach differently. In this way, constructivism is not a "cookbook teaching style," but it provides a framework for teachers to design a learning environment where students can ask questions, find patterns, explore possibilities, discuss ideas, and engage in cooperative activities (Fosnot & Perry, 2005, p. 33).

According to Krahenbuhl (2016), constructivism is "frequently misunderstood, has diverse meanings ascribed to it, and is often used by advocates to caricature other approaches inaccurately" (p. 97). Despite its widespread adoption, educators still misunderstand concepts of constructivism and often confuse them with other approaches such as discovery and hands-on learning (Fosnot, 2005b). Misunderstanding and misinterpreting constructivist teaching leads to "learning practices that neither challenge students nor address their needs" (Gordon, 2009, p. 737). Therefore, this study sought to examine how elementary teachers understand

constructivism and how these understandings inform their instructional practices. The study also considered the conditions that teachers claimed enabled or constrained their teaching and examined how teacher characteristics, such as teacher beliefs, interacted with how they interpreted and used any school reform.

1.2 Research Questions

The research questions were as follows:

1. How do practicing teachers understand constructivism?
2. How do they enact constructivism in their teaching?
3. What conditions enable or constrain teachers' practices of constructivism?

1.3 Significance of the Study

Since the constructivist approach has largely influenced the educational field and practices, instructional practices of teachers warrant further consideration. In Ontario, there are currently around 1,280 private elementary and secondary schools (Ontario Ministry of Education, 2018). Yet, not much is known about teachers' beliefs and practices of contemporary theories of teaching and learning in private schools. With the need to identify teachers' pedagogical beliefs (Fosnot, 2005a; Uzuntiryaki et al., 2010), this study aimed to highlight how practicing elementary school teachers understand and bring constructivism to life in their classrooms, and what conditions enabled or constrained their implementation in this unique setting. Moreover, this study sought to add to the literature in the field of teachers' beliefs, teachers' change, elementary teachers in private schools, educational reform, and professional development.

This study will allow practicing elementary teachers to gain understanding from real classroom contexts concerning how their beliefs of constructivism influence their teaching practices, what supportive elements exist that can help them implement

constructivism, and more insight into the challenges that discourage them from fostering constructivism. This study gave the four participating teachers the opportunity to reflect on their own understanding and practice of constructivism and enabled them to be more aware of their pedagogical instructions. When teachers are provided with opportunities to reexamine and evaluate their deeply held beliefs and pedagogical practices, it allows them to be more critical about their instruction and helps them to further improve and develop their teaching practices.

Following Chapter 2 on the theoretical underpinnings of constructivism is the literature review followed by chapters on method, findings, and discussion of the study.

1.4 Definition of Terms

Constructivism: A learning theory that allows individuals to construct their own meaning and make their own understanding of the world around them, constructivism has roots in psychology and recently has been accepted as pedagogical practices. According to constructivist theory, teachers take the role of coaches and facilitators (Abdal-Haqq, 1998) who provide learning opportunities that support exploration, collaboration, and problem solving, and that generate activities related to students' lives. Students' prior knowledge and alternative viewpoints are valued in constructivist classrooms.

Student-centered: This term refers to teaching practices that are based on constructivist pedagogy (Krahenbuhl, 2016; Richardson, 2003).

Inquiry-based learning: This approach has roots in constructivism. It involves "open-ended investigations into a question or a problem, requiring them to engage in evidence-based reasoning and creative problem-solving, as well as 'problem finding'" (Ontario Ministry of Education, 2013, p. 2).

Group work: Group work means the interaction between a number of members. It allows each member to view the problem differently and to “constantly ‘negotiate meaning’ during the classroom activity to adjust to the developing solution of the problem. The product evolves and changes as a result of the interaction between group members” (Alesandrini & Larson, 2002, p. 118).

Higher-order thinking: This also refers to critical thinking and “occurs when a person takes new information and information stored in memory and interrelates and/or rearranges and extends this information to achieve a purpose or find possible answers in perplexing situations” (Lewis & Smith, 1993, p. 136). It also includes skills such as making decisions and predictions, creating ideas, and solving problems (Lewis & Smith, 1993).

Teacher-centered: This approach can be viewed as the opposite of constructivism. In teacher-centered classrooms, “the teacher as an expert selects, determines, and evaluates the educational process on the behalf of students, who lack the capacity to know what they need to learn,” and students, on the other hand, “accept, receive, memorize, and repeat what their teachers teach” (Duru, 2015, p. 283).

Chapter 2: Theoretical Underpinning

Richardson (1997) defines constructivism as “a descriptive theory of learning (this is the way people learn or develop); it is not a prescriptive theory of learning (this is the way people *should* learn)” (p. 3). As mentioned, constructivism is rooted in the work of Piaget, Brunner, von Glasersfeld, and Vygotsky. Several teaching and learning theories preceded constructivism such as behaviourism and cognitivism; and several other theories related to constructivism, such as connectionism, which focuses on technology (Siemens, 2014), have since emerged, although constructivism is much more widely researched. Ertmer and Newby (2013) discuss features of behaviourism, cognitivism, and constructivism. Table 1 summarizes the comparison between the three theories.

Table 1

Comparison Between Behaviourism, Cognitivism, and Constructivism

	Behaviourism	Cognitivism	Constructivism
Learning occurrence	Knowledge is an external process	Knowledge is an internal process	Learners create their own meaning
Role of memory	Emphasis on memory to recall facts and habits associated with drill, practice, and reinforcement	Emphasis on memory to store new information	De-emphasis on memory
Students' role	Passive role	Active role	Active role
Structure of instruction	Arranging learning conditions in which learners respond correctly to “presented stimuli” (Ertmer & Newby, 2013, p. 53)	Making learning meaningful and supporting students in relating new information to previous knowledge	Supporting students in constructing and collaboratively discussing knowledge and applying knowledge in relevant contexts

According to Ertmer and Newby (2013), “constructivism is considered to be a branch of cognitivism” (p. 55) as they both view learning as a mental process, but what distinguishes constructivism from cognitivism is that in constructivism learners make meaning instead of acquiring it. Von Glasersfeld (1995) explains that “constructivism does not claim to have made earth-shaking inventions in the area of education; it merely claims to provide a solid conceptual basis for some of the things that, until now, inspired teachers had to do without theoretical foundation” (p. 15).

Although “constructivism is a theory of knowledge with roots in philosophy, psychology, and cybernetics” (von Glasersfeld, 1989, p. 162), it also has implications within the field of education as “the dominant pedagogical theory in contemporary educational circles” (Krahenbuhl, 2016, p. 98). As Richardson and Placier (2001) explain, constructivism has “become a significant element of the educational policy and practice scene. Constructivist approaches are reflected in national- and state-level policy documents, such as the national standards documents, that are designed to influence the curriculum and pedagogy in American classrooms” (p. 913). In fact, a constructivist perspective, as described by Fosnot and Perry (2005), is the foundation of the development of current reforms. In fact, over the past decades, constructivist education has been recognized as a major movement. Cognitive constructivism was the first constructivist theory of learning that widely informed instruction, followed by radical constructivism, and then by social constructivism. This study is based on radical constructivism (which emphasizes the individual learner actively creating meaning) and social constructivism (which emphasizes the creation of meaning within a group of learners) (Namukasa, 2008).

Constructivism “[is] regarded as producing greater internalization and deeper understanding than traditional methods” (Abdal-Haqq, 1998, p. 2). Knowledge,

according to the constructivist model, “is not a mere *copy* of the external world, nor is knowledge acquired by passive absorption or by simple transference from one person (a teacher) to another (a learner or knower)” (Phillips, 2000, p. 7). Tenets of constructivist theory as well as the foundation of constructivism are beyond the scope of this thesis; however, some of the constructivist principles of teaching directly draw from tenets of constructivist learning such as knowledge construction and previous knowledge. Several characteristics/principles of constructivism are explored in the literature. This chapter is organized by the characteristics that are listed in the template/checklist, adopted from Murphy (1997), for observing a constructivist approach to teaching (see Appendix B). I return to discussing the template in Chapter 4.

Knowledge construction: Constructivism is a theory of learning and knowledge that is based on the idea of development. Knowledge is a connection of concept structures that cannot be transmitted using language, but it should be constructed by individuals (von Glasersfeld, 1991). As Brooks (1986) states, “We come to know our world by interacting with it and using our operative cognitive structures to ‘explain’ what we have perceived” (p. 64). Fosnot and Perry (2005) add that “rather than behaviours or skills as the goal of instruction, *cognitive development* and *deep understanding* are the foci; rather than stages being the result of maturation, they are understood as *constructions of active learner reorganization*” (pp. 10–11). Students, therefore, “acquire new knowledge through an active process of assimilation and accommodation, where new as well as existing knowledge is transformed as students construct more inclusive schemas of understanding” (Gadanidis, 1994, p. 93). Learners within constructivist learning perspectives are responsible for their

own learning (Brooks & Brooks, 1999b; von Glasersfeld, 2005), because “knowledge does not exist outside a person’s mind” (von Glasersfeld, 2005, p. 3).

Knowledge collaboration: Bruner (1986) emphasizes that learners not only need to construct knowledge on their own but need to construct their own understanding within a community in which they belong. He highlights the importance of “negotiating and sharing” (p. 127). Bransford, Brown, and Cocking (2000) label the classroom as a community in which students are engaged in cooperative and collaborative inquiry. This type of inquiry has proven to be an effective strategy of learning in which group members help each other to negotiate the problem and reach a solution. Teachers guide group discussions and communications in order for students to reach a “shared understanding of a topic” (Richardson, 2003, p. 1626) and not “demonstrat[e] their knowledge of subject matter” (Wilén, 2004, p. 33). Brown and Palincsar (1989) note that in group discussions and conversations, the members must provide solutions and interpretations to the problem, and the teacher has to back up group arguments with valid data. Fosnot (2005b) adds that classrooms based on constructivist pedagogy become workshops where learners discuss and communicate with each other.

Previous knowledge: Unlike the traditional approaches of leaning that neither promote the connections between previous and new experiences nor the internal dialogue that is crucial to acquire deep understanding, constructivism as a theory of learning suggests that learners generate new understandings according to previous knowledge and experiences (Richardson, 1997). To facilitate the learning process, teachers should have some idea of the concepts the learners are familiar with and how learners are able to connect them to new material (von Glasersfeld, 1991). Bransford et al. (2000) highlight that learning further improves when teachers pay attention to

the previous knowledge and beliefs students bring into the classroom and use this knowledge as a point of departure for new learning and teaching.

Student-directed goals: Children, in particular, are interested and motivated to know the world around them (Brown & Palincsar, 1989). Constructivist classrooms should employ student-centered approaches where teachers are mindful of students' knowledge, beliefs, background, attitudes, and interests. Teachers should also monitor each student's learning progress and plan tasks that are suitable and appropriate based on information from students (Bransford, Brown, & Cocking, 2000; Richardson, 2003).

Learner control: Teachers can negotiate ways to improve students' learning, but they can never control students' learning because "learners control their learning. This basic tenet lies at the heart of constructivist approach to education" (Brooks & Brooks, 1999a, p. 21). Bransford et al. (2000) illustrate that active learning involves helping students take control of their own learning. Students have to decide when they understand particular information and when they need further explanation and information. What might help them to understand the meaning of what someone said? What information do they need in order to believe a claim? How do they create their own hypothesis of a situation and examine it effectively? Curriculum goals and objectives are acquired from or negotiated with the learners (Murphy, 1997).

Metacognition: Bruner (1985) defines metacognition as the "reflection upon or monitoring of those acts that have to do with achieving, storing and retrieving, or using information" (p. 603). Bruner (1986) goes on to elaborate that "Self rises out of our capacity to reflect upon our own acts, by the operation of 'metacognition'" (p. 67). Metacognition "requires a master routine that knows how and when to break away from straight processing to corrective processing procedures" (Bruner, 1986,

p. 130). Supporting students' meta-awareness is essential to enhance their learning development (Richardson, 2003). Metacognition is often an internal process; students may think it is not important unless the teacher gives attention to the process (Bransford et al., 2000). Because coming to one correct answer is less emphasized in constructivist learning (Abdal-Haqq, 1998), when asking students to reflect on their understanding, teachers should look for responses or actions that are suitable but that may not exactly match the teachers' understanding (von Glasersfeld, 1991).

Multiple representations: Bruner (1966) explains three systems of representations: "enactive," "iconic," and "symbolic." Enactive representation is based on actions and iconic representation depends on visual images (p. 11). Symbolic representation takes the form of language or words (p. 16). Bruner emphasizes the uniqueness of the symbolic model as it is "based upon the translation of experience into language," but what makes the real difference is not the language itself but "the use of language as an instrument of thinking that matters, its internalization, to use an apt but puzzling word" (p. 14). Bransford et al. (2000) emphasize that "knowledge that is taught in a variety of contexts is more likely to support flexible transfer than knowledge that is taught in a single context" (p. 236). They explain that knowledge presented in a specific context can become "context-bound" (p. 236), whereas knowledge presented in multiple contexts allows the learners to abstract the appropriate features and develop a broader understanding that can be employed generally. Cultures have different ways of representing meaning through "symbol, music, myth, storytelling, art, language, film, explanatory 'scientific' models, and/or mathematical forms" (Fosnot & Perry, 2005, p. 30). Multiple perspectives may correspond or may even contradict one's constructions (Fosnot & Perry, 2005).

Primary and secondary sources: Bruner (1977) introduces several ways that can assist teachers in their teaching practices. For instance, “devices for vicarious experience” such as films, TV, and even books can be useful in some ways. Another strategy that can help teachers in their instructions is “laboratory experiment or demonstration . . . to give visible embodiment to ideas” in the discipline (Bruner, 1997, p. 81). Bruner explains what he calls dramatizing devices:

The historical novel that is true in spirit to its subject, the nature film that dramatizes the struggle of a species in its habitat, the exemplification of an experiment executed by a dramatic personality, exposure to greatness in government by a documentary. (p. 82)

All can lead students to observe the phenomenon more closely. Learning can also be acquired from laboratories and field trips, but because it is sometimes difficult to include these resources in schools, technology—according to Bransford et al. (2000)—can bring “real-world problems into the classroom for students to explore and solve” (p. 207). They add that scientists and other practitioners are another great tool for learning; students can gather data from them in order to understand global issues. Brooks and Brooks (1999b) suggest that teachers encourage students to use raw data along with other learning materials. For instance, instead of asking students to read books about the political issues faced by African-Americans in the 1980s, students can look at census records that allow them to “generate their own inferences about social policies” (p. 104).

Consideration of errors: Teachers need to perceive mistakes as “a result of learners’ conceptions, and therefore not minimized or avoided” (Fosnot & Perry, 2005, p. 34). Von Glasersfeld (1991) said “misconceptions are a good indication of how the students think at the moment” which may also indicate areas where teachers

could change their manner of instruction (p. 6). Teachers have to provide students with a learning environment that is “challenging, open-ended investigations in realistic, meaningful contexts” that allows students to discover and create possibilities, “both affirming and contradictory” (Fosnot & Perry, 2005, p. 34). Contradictions, Fosnot and Perry explain, need to be discussed and explored.

Alternative viewpoints: Bruner (1986) argues that

as we grow to adulthood (at least in Western culture), we become increasingly adept at seeing the same set of events from *multiple* perspectives or stances and at entertaining the results as, so to speak, alternative possible worlds. The child, we would all agree, is less adept at achieving such multiple perspectives . . . the human capacity for taking multiple perspectives must be present in some workable form in order for the child to master language. (p. 109)

In constructivist classrooms, students’ alternative views are valued and respected. The important message that teachers should share with their students is that “the world is a complex place in which multiple perspectives exist and truth is often a matter of interpretation” (Brooks & Brooks, 1999b, p. 22). Multiple viewpoints help individuals generate new meanings and become aware of their actions in order to acquire new knowledge to act upon (Fosnot & Perry, 2005). Exposing students to cooperative and collaborative learning allows them to experience different viewpoints (Murphy, 1997).

Exploration: Alesandrini and Larson (2002) explain that constructivist learning stems from discovery and exploration. They describe learning as a set of activities based on exploring and constructing knowledge and, more importantly, connecting previous knowledge with new approaches. Schools should provide time to fulfill students’ curiosity, inquiry, and exploration (Brooks & Brooks, 1999b). It is

important to support students' sense of discovery, especially "discovery of regularities of previously unrecognized relations and similarities between ideas, with a resulting sense of self-confidence in one's abilities," which also leads students to discover themselves (Bruner, 1977, p. 20).

Apprenticeship learning: Collins, Brown, and Newman (1989) discuss six methods for cognitive apprenticeship learning: (1) modelling, (2) coaching, (3) scaffolding, (4) articulation, (5) reflection, and (6) exploration. Modelling is where the expert performs the task so the learners can observe the process. In this method, the expert explains the procedures and the process of the targeted task.

Coaching includes observing the learners while they carry out the required task and providing them with "hints, scaffolding, feedback, modeling, reminders, and new tasks aimed at bringing their performance closer to expert performance" (p. 481). Additionally, the expert assists learners by bringing their attention to steps that have been missed in the previous performed task or reminding the learners of steps that they know but unintentionally overlooked. The focus of coaching is on the learners' simulation, on incorporating the skills during their attempts at carrying out the task, and on offering immediate feedback.

Scaffolding is when the teacher offers help to the learners during their attempts to enact the task. I further elaborate on the scaffolding step when I discuss scaffolding as an aspect of the in-depth understanding principle.

Articulation is when the learners describe and "articulate their knowledge, reasoning, or problem-solving processes in a domain" (p. 482). In this method, students describe their thoughts about the process of the task.

Reflection is a method that allows learners to think about their own products and compare them to experts' and other students' products.

Exploration involves encouraging students to explore and solve problems by themselves. For example, the teacher generates a general goal or problem and encourages the learners to set their own specific goals that they are interested in. However, students should have some basic investigation experience.

Authentic activities: Activities in constructivist classrooms should be “characterized by active engagement, inquiry, problem solving, and collaboration with others. Rather than a dispenser of knowledge, the teacher . . . encourages learners to question, challenge, and formulate their own ideas, opinions, and conclusions” (Abdal-Haqq, 1998, p. 2). Activities are designed to be relevant to students’ lives since students would be more interested in activities that they experience in their daily lives (Brooks & Brooks, 1999a). Resnick (1989) states that when activities such as memorizing a text or summarizing a passage are learned separately and abstractly from students’ lives, it is more likely that such activities will not be used by the students; however, when activities are relevant to their lives, or at least to the subject matter, it is more likely that students will use such activities.

Problem solving: A student should be introduced to “problems and events one encounters outside a classroom” (Bruner, 1977, p. 11). Constructivist learning is acquired from activities and solving problems that one might encounter in real life (Alesandrini & Larson, 2002). Weiss, Kinney, and Hurst (1980) identified several characteristics of creative problem solving that involve the following: accept, analyze, define, ideate, select, implement, and evaluate. However, von Glasersfeld (1995) argues that solving problems by correct answers and rote learning is inefficient, noting that it is important to understand “that whatever a student does or says in the context of solving a problem is what, at this moment, makes sense to the student” (p. 15) even though it might not make sense to the teacher.

Conceptual interrelatedness: One other characteristic of constructivist classrooms is that they provide learners with opportunities to gain in-depth understanding of a topic and to “develop complex cognitive maps that connect together bodies of knowledge and understandings” (Richardson, 2003, p. 1628). Without facilitation from the teacher to enhance conceptual interrelatedness, students may struggle to connect related concepts of the subject matter (Bransford et al., 2000).

Scaffolding: Teachers support the learner through his/her learning journey with “hints and props that allow him to begin a new climb, guiding the child in next steps” (Bruner, 1986, p. 132). Scaffolding, according to Collins et al. (1989), involves the teacher demonstrating the required task that the learners cannot yet carry out. In this way, the teacher guides students’ learning efforts and supports them in their beginning stages of learning (Brown & Palincsar, 1989). Scaffolding consists of a cooperative component between the teacher and the learners; that is, scaffolding allows both the teacher and the student to work collaboratively to make meaning and solve problems. It also includes “fading” (Collins et al., 1989, p. 482); i.e., the teacher gradually reduces the supports when support is no longer required, so the learners can rely on themselves. Bransford et al. (2000) further outline several ways of scaffolding: teachers engage students with the activity, simplify the steps to accomplish a task, remind the students of the task goal, provide directions and hints, indicate the critical differences between what a student has done and the ideal product, motivate and control any frustrations that might occur, and perform the idealized product.

Authentic assessment: Assessment should not merely be based on traditional methods of tests and examinations. Formative assessment, as Bransford et al. (2000) discuss, “helps make students’ thinking visible to themselves, their peers, and their teacher” (p. 19), which can offer suggestions and feedback for further modification

and improvement. From a constructivist standpoint, “teachers assess students’ learning in the context of daily classroom investigations, not as separate events” (Brooks & Brooks, 1999a, p. 21). Von Glasersfeld (1991) notes that “if a student merely repeats what the teacher or the textbook have said, this is of course no indication of a conceptual fit” (p. 5).

Teachers as coaches: Within a constructivist approach, the role of the teacher is to be a “guide, facilitator, and co-explorer who encourages learners to question, challenge, and formulate their own ideas, opinions, and conclusions” (Abdal-Haqq, 1998, p. 2). Students may bring to the classroom incomplete or incorrect beliefs or knowledge that need to be modified or altered (Abdal-Haqq, 1998; Bransford et al., 2000). Teachers should give learners the opportunity to ask questions, create hypotheses, defend their ideas, and discuss them in groups (Abdal-Haqq, 1998; Fosnot & Perry, 2005).

2.1 Critiques of Constructivism

Despite educators’ enthusiasm for practicing the constructivist approach, criticisms of constructivism should also be mentioned. In traditional education, educators tend to believe that “moral values are eternal and universal,” prioritizing values like obedience, discipline, and direct behavioural guidance; whereas constructivists tend to believe that moral values are “variable, dependent on social context” (Goodman, 2000, p. 37). These beliefs may contradict aspects of religious education (Christian and Islamic) that prioritize such values.

A second critique comes from MacKinnon and Scarff-Seatter (1997) who argue that constructivism is similar to discovery learning. The argument is that the discovery approach, which had its movement in the 1960s, fulfills children’s natural curiosity and willingness to discover and investigate their world by creating a suitable

environment and posing questions, and that this is no different than constructivism. Advocates of constructivism such as Fosnot (2005b), however, consider this critique a misunderstanding of the constructivist approach.

A third critique is that learners are usually provided with partial or minimal information or instruction within a constructivist approach in order to give them the opportunity to make their own meaning and construct their own understanding. However, critics like Kirschner, Sweller, and Clark (2006) argue that there is no solid evidence proving that students learn better when partial or minimal guidance is presented to them, rather that “learners must construct a mental representation or schema irrespective of whether they are given complete or partial information. Complete information will result in a more accurate representation that is also more easily acquired” (p. 78). Further, Kirschner et al. (2006) add that teachers who employed a constructivist approach “end up providing students with considerable guidance” (p. 79). The critique suggests that students’ learning and engagement will be more effective if they are provided with direct information, particularly during web-based learning (Kay, 2013). Richardson (2003) states that direct instruction can be a part of constructivism and that learners can also construct knowledge from direct instructions.

Research shows that putting theories into teaching practices can be challenging for some teachers (Cleaver & Ballantyne, 2014; Dangel et al., 2004; Hyslop-Margison & Strobel, 2007; Richardson, 1997; Tubić & Hamiloğlu, 2009). Constructivism allows teachers to create an effective and vibrant learning environment. In order to alter teachers’ pedagogical practices to be aligned with a constructivist approach, teachers’ beliefs toward students, learning, and teaching should also be considered.

Chapter 3: Literature Review

3.1 Introduction

The literature search for this study involved an extensive search of ProQuest, CBCA Education, ERIC, PsycINFO, and Google Scholar international online databases as well as searches of the catalogue and shelves of the University of Western libraries for books on constructivism specifically related to teachers' understanding, beliefs, and perceptions and the variety of ways of implementing constructivism. I also searched for literature on teacher learning, practices, development, and educational change. As well, I browsed the reference sections of the articles I read to further identify articles of interest. I used key terms such as constructivism, beliefs, and implementation and their variations as well as truncations such as constructivis*. I limited the advanced searches, in which I combined search terms, to post-1999 and to scholarly journals as I was most interested in research reports carried out in the 21st century. The results of the PsycINFO database searches yielded 133 studies. I browsed the titles of all articles to select relevant articles, for which I reviewed the abstracts and then selected articles that were pertinent to my study. I reviewed these in detail and annotated in the literature review. Of the studies investigating constructivism beliefs, implementation, and structures, only nine focused on practicing elementary school teachers, and only one was of a study carried out in Canada.

I reviewed research on beliefs and practices of both pre-service and in-service teachers on related research on constructivism. I reviewed teachers' beliefs and practices of constructivism/student-centered and other related approaches such as problem-based learning and inquiry-based learning. I also reviewed the work on

consistency and inconsistency in teachers' beliefs and practices, teacher change, and educational reform.

In reviewing the literature, I found that when referring to constructivism, the term student-centered was also used as well as other common labels such as learner-centered and child-centered. In this research, I referred to both constructivism and student-centered as constructivist pedagogy, which Richardson (2003) notes “could also be described as student-centered” (p. 1626).

3.2 Constructivism and Social Studies Practices

For decades social studies classrooms have been increasingly taught from traditional pedagogical perspectives (Winitzky, 1991). Recently, Canadian social studies curricula has been influenced by constructivist reform (Gibson, 2009). The focus has changed from knowledge acquisition to knowledge construction. That is

the search for knowledge within the social studies consisted of the search for “truth”; that is, the acquisition of knowledge that mirrors or corresponds to a singular “reality.” Constructivism, however, employs a more flexible, culturally relativistic, and contemplative perspective, where knowledge is constructed based on personal and social experience. (Doolittle & Hicks, 2003, p. 77)

Many studies that were carried out in the US, Australia, and other countries have shown that social studies classrooms are still influenced by the teacher-centered approach (Blaik-Hourani, 2011; Hutton, Reagan, & Burstein, 2006; Kovačević, 2017; Lane, 2015). Yet, not much is known about how Canadian teachers who teach social studies practice constructivism in their classrooms based on their beliefs.

3.3 Beliefs and Practices of Constructivism

As teachers move from behaviourism to cognitivism to constructivism, “the focus of instruction shifts from teaching to learning, from the passive transfer of facts and routines to the active application of ideas to problems” (Ertmer & Newby, 2013, p. 58). It is crucial for teachers willing to adopt constructivism to not only shift traditional beliefs but move away from traditional practices that emphasize drill, practice, and correct answers toward adopting constructivist beliefs and practices that support active learning where the learner controls goals and constructs meaning.

Studies on pre-service and in-service teachers’ beliefs and practices of constructivism have shown that constructivism is often carried out by teachers (Akyeampong & John Pryor Joseph, 2006; Beck, Czerniak, & Lumpe, 2000; Lui & Bonner, 2016; Myagmar, 2010; Tang, Wong, & Cheng, 2012; Yildirim & Kasapoglu, 2015). However, the limitations of some of these studies are self-reported data and teachers not being observed in their classrooms. In this context, teachers may have reported data that is favourable or revealed beliefs that are inconsistent with their practices, which makes it hard to determine the consistency between professed beliefs and beliefs in action. Other studies have shown that teachers carried out approaches that aligned more with traditional teaching models (Aydogdu & Selanik-Ay, 2016; de Mesa & de Guzman, 2006; Kaymakamoglu, 2017; Tsai, 2002). Research has also demonstrated that teachers incorporated both traditional and constructivist teaching models (Cleaver & Ballantyne, 2014; Ng & Rao 2008; Garrett, 2008; Sapkova, 2011), and that some teachers are in the process of transitioning from more a traditional to constructivist approach (Dole, Bloom, & Kowalske, 2016; Gunel, 2008; Moloney & Xu, 2015; Niaz, 2008).

The literature review has also revealed that teachers have some misconceptions or misinterpretations about constructivism/student-centered (Courtland & Leslie, 2010; Duru, 2015; Howe, Jacobs, Vukelich, & Recchia, 2011; Lane, 2015; Ray, 2000; Uzuntiryaki et al., 2010) or related approaches such as inquiry-based learning (Bisland et al., 2009; Gilbert, 2009).

3.4 Consistency and Inconsistency in Beliefs and Practices

Literature on consistencies and inconsistencies in teachers' constructivist beliefs and practices has reported different results. Some studies reported consistencies in teachers' beliefs and practices (Beswick, 2005; Obenchain, Pennington, & Orr, 2010). Other studies reported inconsistencies in teachers' beliefs and practices (Haser & Star, 2009; Shi, Zhang, & Lin, 2014; Tamimy, 2015). Others still have reported both consistencies and inconsistencies in teachers' beliefs and practices (Mansour, 2013; Ng & Rao 2008; Ogan-Bekiroglu & Akkoc, 2009).

Although teachers may strongly believe in constructivism, "they are conscious that they lack the design capacity to craft constructivist oriented" teaching (Dong, Chai, Sang, Koh, & Tsai, 2015, p. 167). As Cleaver and Ballantyne (2014) note, "while the process of turning theoretical principles into embodied actions is highly subjective, the ways that individuals take charge of this process is an important professional step for teachers" (p. 229).

Certain issues have hindered teachers from implementing constructivist practices. Teachers frequently cited issues like limited classroom time (Beck, et al., 2000; Bisland et al., 2009; Blaik-Hourani, 2011); classroom control (Haney & McArthur, 2002; Martell, 2014); the pressure to cover the content and timetables (Cleaver & Ballantyne, 2014; Porcaro, 2011); test-based curriculum (Zhang & Liu, 2014); the need to prepare for standardized state-wide tests (Bisland et al., 2009;

Talbert & McLaughlin, 1993); or large class sizes (Blaik-Hourani, 2011; Ng & Rao, 2008), which constrain teachers from implementing constructivist practices.

Moreover, the time that is required to prepare instructions based on a constructivist approach is considerable for many teachers (Blaik-Hourani, 2011; Phillippi, 1998).

Several studies focused on pre-service teachers' beliefs about the constructivist approach (Haney & McArthur, 2002; Jones, Lake, & Dagli, 2005; Uzuntiryaki et al., 2010). My study, similar to Ray (2000), Niaz (2008), and Savasci and Berlin (2012), filled a gap in the literature by exploring practicing teachers' beliefs about constructivist theory and observing its practices in their classrooms. Additionally, my study explored factors that support or constrain teachers' practices. Similar to Ray (2000), who studied practicing teachers' understanding and implementation of constructivism in the United States, my study instead focused only on practicing teachers and was on a smaller scale, studying four elementary teachers in one private school in an urban area in Canada. My research question was, How do teachers understand and enact constructivism, and what factors are important for implementing constructivism in their classrooms? Specifically, I asked:

1. How do practicing teachers understand constructivism?
2. How do they enact constructivism in their teaching?
3. What conditions enable or constrain teachers' practices of constructivism?

3.5 The Nature of Teachers' Beliefs

Dewey (1933) discusses thought as synonymous with belief, defining belief as "something beyond itself by which its value is tested; it makes an assertion about some matter of fact or some principle or law" (p. 6). He emphasizes the necessity of belief because "it covers all the matters of which we have no sure knowledge and yet which we are sufficiently confident to act upon and the matters we now accept as

certainly true, as knowledge, but which nevertheless may be questioned in the future” (p. 6). Richardson (1994) describes belief as an “individual’s understandings of the world and the way it works or should work” (p. 91), asserting that beliefs “may be consciously or unconsciously held, and guide one’s actions” (p. 91).

Researchers recognize the difference between early held beliefs and newly obtained beliefs. Pajares (1992) explains that previously held beliefs are combined with the belief structure and become difficult to change; therefore, these beliefs greatly influence one’s perceptions and how one addresses new information. As a result, newly obtained beliefs are more “vulnerable,” but over time they become “robust” (Pajares, 1992, p. 317).

Many researchers argue that the transition to new beliefs is difficult. Kagan (1992) explains that “the transition to a new personal understanding of any concept or event is particularly problematic, because preexisting beliefs are tenacious, even in the face of contradictory evidence” (p. 76). Pajares (1992) argues that beliefs are difficult to replace because individuals tend to stick by a belief derived from incomplete or incorrect knowledge despite sufficient evidence introduced to these individuals, to the point that changing beliefs is considered the last option. He adds that people frequently hate to take part in discussions that refer to their “most deeply held belief” (p. 317). If beliefs are challenged, one is likely to resist. Dewey (1933) notes that it is common for individuals to “continue to accept beliefs whose logical consequences they refuse to acknowledge. They profess certain beliefs but are unwilling to commit themselves to the consequences that flow from them” (p. 32).

Pajares (1992) explains that “teachers’ attitudes about education—about schooling, teaching, learning, and students—have generally been referred to as teachers’ beliefs” (p. 316). Kagan (1992) defines teachers’ beliefs as “a particularly

provocative form of personal knowledge that is generally defined as pre- or in-service teachers' implicit assumptions about students, learning, classrooms, and the subject matter to be taught" (pp. 65–66). Pajares (1992) further notes that "all teachers hold beliefs" (p. 314) about their profession, pupils, subject matter, and responsibilities.

Research on this topic highlights the crucial relationship between teachers' beliefs and classroom practices. Nelson and Hammerman (1996) state that "knowledge and beliefs become meaningful only in practice; practice in turn shapes knowledge and beliefs" (p. 8). Richardson (1994) explains that, psychologically, if one holds a position that directs one's actions, it is a belief. Teachers' beliefs are an important element in understanding classroom practices, and are therefore important to consider in designing staff development programs meant to alter teachers' practices. He suggests that staff developers should be aware of beliefs held by teachers and of teachers' practices, noting that "the process should involve discussing these teacher-held beliefs and practices, and relating them to the practices and underlying theories that staff developers are discussing" (p. 101). Little will be accomplished to effect change, Richardson (1994) argues, if staff development focuses merely on teaching practices without examining deeply held beliefs as well. Pajares (1992) explains that educational practices are derived from teachers' beliefs. He agrees with Richardson's (1994) position that only examining teachers' practices and overlooking teachers' beliefs may be unsuccessful at effecting change. Kagan (1992) describes the relationship between teachers' beliefs and behaviours as "self-evident" (p. 66)—that "personal knowledge lies at the very heart of teaching" (p. 85). Mansour (2009) clarifies that beliefs can contradict, have indirect but powerful impact on teaching practices, and often depend on context; therefore, the strength of beliefs varies based on context.

Mansour (2009) discusses different sources of teachers' beliefs, and that some beliefs are fostered directly from the individual's culture whereas others are affected by experiences and formed by culture. Other sources of teachers' beliefs, according to Mansour, include "personality factors, prior learning or teaching experiences, teacher education, teaching contexts, an apprenticeship through observation, and related reading of either research findings or other materials" (pp. 36–37).

Teachers hold beliefs beyond their profession that directly affect their classroom instructions. Pajares (1992) indicates that teachers, having beliefs about matters beyond their career that surely impact their practice, "should not be confused with the beliefs they hold that are more specific to educational process" (p. 316). He also emphasizes that because teachers' educational beliefs are part of a larger belief system, it is important for researchers to distinguish between teachers' educational beliefs and teachers' broader belief system. For experienced teachers who have been accustomed to teaching in certain ways, it might be difficult for them to shift their approach.

The following section introduces the literature on teachers' change and what facilitates this change, as well as the barriers teachers encounter in their attempts to change.

3.6 Teacher Change and Teacher Learning

Scholars see change as the norm (House & Mcquillan, 2005; Sikes, 1992), and because societies around the globe change, education is expected to respond to this change (Sikes, 1992). Teachers are agents of change, and educational change depends upon teachers' beliefs and practices (Eisner, 2002; Fosnot, 2005a; Fullan, 2016). Since teacher change "[has] become particularly significant during the current reform era" (Richardson & Placier, 2001, p. 907), supporting teachers' efforts regarding

reform and improving educational practices becomes necessary (Ramberg, 2014). Change is often perceived to be positive, and the outcome of change in teachers and teaching can be very rewarding because it results in development to the educational system that likely will have a positive impact on student learning (Richardson & Placier, 2001).

Research on teachers' change has shown disagreement. Prawat (1992) discusses the fact that teachers are unwilling to change their beliefs unless a crucial change in their thinking has occurred. Kagan (1992) concurs that it is highly unlikely for any in-service teaching program to change teachers' behaviours without first changing their beliefs, noting that it is difficult for experienced teachers to alter their belief structure in the absence of "some dramatic disequilibrium" (p. 78). Whereas, on the other hand, Richardson and Anders (1994) argue that "teachers change all the time. They reorganize their classrooms, try different activities and texts, change the order of topics in the curriculum, attempt different interpersonal skills" (p. 200).

Teachers' active enrolment in professional development programs that are based on group work, discussion, and team planning can also support teachers' change (Arce, Bodner, & Hutchinson, 2014; Brand & Moore, 2011; Howe et al., 2011; Namukasa, Gadanidis, & Cordy 2009; van Velzen, Bezinna, & Lorient, 2009). Kagan (1992) clarifies that collaboration among teachers should be the norm and teachers will become more certain about their practices and "begin to merge their subjective belief systems, and a common technical culture emerges [sic]" (p. 84). Schools should provide teachers with a supportive environment in which they can openly discuss and elaborate upon their own beliefs and practices. Teachers in schools where collaboration is encouraged are more likely to seek their colleagues' and principal's suggestions when trouble arises, which means that teachers have "greater

confidence and commitment to improvement” (Fullan & Hargreaves, 1996, p. 46). Nelson and Hammerman (1996) similarly posit that the speed of change is considerably improved when teachers take part in collaborative work within a supportive school environment.

The literature reviewed above indicates the complexity involved in changing teachers’ beliefs and practices and the great effort required to shift their approach from traditional to constructivist. The general absence from the literature of studies exploring change in beliefs and practices of elementary teachers’ who teach social studies was the basis for this qualitative research examining how elementary school teachers in the field understand and practice constructivism, along with the conditions that enable or constrain their practices during social studies lessons.

3.7 Educational Reform

After World War I, the Department of Education in Ontario established a series of educational reforms for both elementary and secondary schools (Milewski, 2012). Ontario schools, like other North American public schools, witnessed a significant movement of progressive education and learner-centered pedagogies in the mid-20th century (Cavanagh, Ellingson, & Spencer, 2012). Civil rights movements were great pressure for reform in the 1960s, and the focus of many national initiatives around the world was on the disadvantaged—“the education system was thought to be one of the major societal vehicles for reducing social inequality” (Fullan, 2016, p. 6). North American schools, in turn, had been affected by these movements.

Levin (2008) mentions a list of school interventions that have been tried by many schools in North America, for example, “open-area classrooms,” “individualized instruction,” “parent involvement,” “data-based instructional planning,” “community schools,” “assessment for learning,” “small schools,” and so

on. Despite decades of educational reform movements, productive school practices are still debatable. The problem is that these changes “have not brought the desired effects or have not been sustained” (Levin, 2008, p. 64). Levin points out that the main issue is the organization of schools, arguing that “schools as buildings, full of classes of children, organized by age, with a subject-based curriculum are a century old. Even many classroom practices around teaching, student assessment, and organization of the day are remarkably stable” (p. 64).

Some barriers to successful adoption of reform persist. Fullan (2016) discusses some reasons behind the lack of implementing new innovations, such as “rejection of the values embodied in the change . . . inadequate resources to support implementation, poor capacity, insufficient time elapsed [sic], and the possibility that resisters have some good points to make” (p. 91). Grossman (1996) describes two main regularities of schools that the reformers have attempted to change. The most commonly cited critical barrier to reform cited by teachers and administrators is time. The second common barrier is the content. Grossman argues that the organization of the current content into different school subjects may inhibit learners from making connections between subjects or from applying their understanding in real-life situations. He suggests rethinking this barrier by creating curricula that combine two or more learning fields.

Two other main reasons that make implementing constructivist pedagogy difficult for some teachers are content coverage and tests (Zahoric, 1995). The necessity of covering the syllabus is one of the difficulties that constrain teachers from implementing successful constructivist practices. Teachers are expected to cover the content of each subject. Bruner (1977) suggests “giving students an understanding of the fundamental structure of whatever subjects we choose to teach. . . . The

teaching and learning of the structure, rather than simply the mastery of facts and techniques” (pp. 11–12). Zahorik (1995) also explains how standardized tests used in many jurisdictions at different grade levels and education departments are another such obstacle, although mainly in other subjects such as mathematics, languages, and sciences. For social studies, most international tests such as PISA do not assess students’ achievement in social studies, but in some national areas such as in Canada, provincial tests in social studies are required (for example, in Alberta and British Columbia). Standardized tests generally “require students to reproduce on machine-scored forms the facts and abilities they have acquired. Their emerging knowledge structures and metacognitive skills are neither examined nor evaluated” (p. 39), and this communicates to teachers and students that knowledge constructed by students is not valued.

The practice of reforms is crucially linked to teacher professional development programs. Fullan and Hargreaves (1992) discuss that because effective change involves learning “how to do something new,” in short, the implementation process is itself a learning process; therefore, when it comes to particular innovations, “teacher development and implementation go hand in hand” (p. 1). Fullan (2016) points out that “significant change in the form of implementing specific innovations can be expected to take 2 or 3 years; bringing about institutional reforms can take 5 or 10 years” (p. 90).

Teacher professional learning in Ontario illustrates the effort put in by professional programs in establishing programs that endorse collaboration with the Ministry of Education and creating approaches that enable teachers to be professionals, developers, and leaders (Lieberman, Campbell, & Yashkina, 2016). Several initiatives in Ontario are taking place, such as professional learning

communities and collaborative teacher inquiry, that support collaboration among teachers. However, Fullan (2016) notes that teacher education in Canada does not seem to receive enough attention; although there are some attempts to improve it, the issue is that these efforts are not sustained. Fullan suggests that the partnerships between university, district, and schools should be central.

As the system of education is subject to change by new reforms in curriculum, pedagogy, and assessment, teaching practices should reflect these changes in order to develop students' learning. Teachers who are familiar with certain teaching implementations should prepare themselves to respond to the reform agenda and shift their instructions accordingly. Support from policy makers, professional development, administrators, researchers, colleagues, and parents is crucial to empower teachers throughout their transition.

Chapter 4: Method

4.1 Case Study Research

The main purpose of this study was to examine how elementary teachers understand and bring constructivism to life in their classrooms. To that end, I asked the following research questions:

1. How do practicing teachers understand constructivism?
2. How do they enact constructivism in their teaching?
3. What conditions enable or constrain teachers' practices of constructivism?

This research project used a qualitative methodology because this type of approach provides deep understanding of the phenomenon. The rationale for using qualitative research in this study can be illustrated as follows. First, according to Creswell (2014), qualitative methodology allows researchers to

collect data in the field at the site where participants experience the issue or problem under study. . . . This up-close information gathered by actually talking directly to people and seeing them behave and act within their context is a major characteristic of qualitative research. In the natural setting, the researchers have face-to-face interaction, often over time. (p. 185)

Second, the form of the research questions determines what research methods ought to be used (Yin, 2014). Yin describes three situations where qualitative case studies are most likely to be used: (1) when the researcher tries to answer “how” and “why” questions that require explanation and detailed information; (2) when the researcher has little or no control over the phenomenon; and (3) when the research focuses on contemporary events and investigates the phenomenon within a real-world context. Yin (2014) explains that “case studies arise because phenomenon and context are not always sharply distinguishable in real-world situations” (p. 17). These three

situations apply to this research. First, the main research question is how elementary school teachers understand and implement constructivism in their classrooms. Second, the researcher has no control over teachers' beliefs or their implementation of constructivism. And third, the research will investigate a current phenomenon in real classrooms. Moreover, since the aim of this project was not to draw generalizations from the case, a qualitative approach is suitable (Merriam, 1988). Yin (2003), nonetheless, maintains that qualitative researchers may still make theoretical generalizations. In this study, the results might shed light on how teachers of similar demographics understand and enact constructivism in a private school that is religiously affiliated.

A case study is “an empirical inquiry that investigates a contemporary phenomenon (the ‘case’) in depth and within its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident” (Yin, 2014, p. 16). In this study, the phenomenon is teachers' understanding and practices of constructivism.

In addition, the research question (i.e., how teachers understand and actualize the theory of constructivism) was addressed using qualitative case studies, a popular way of conducting qualitative inquiry (Stake, 2005) and an “ideal design for understanding and interpreting observations of educational phenomena” (Merriam, 1988, p. 2).

The case in this project consisted of four practicing elementary teachers in one private school. This case has spatial and temporal boundaries (Yin, 2014). The spatial boundaries were the school in which the teachers work and classrooms where the teachers were observed. The temporal boundaries were one school year and a three-week period of investigation and data collection.

Using collective case studies of four teachers enabled me to make sense of teachers' performances of constructivism in their classrooms and to draw patterns among the participants. Stake (2005) states that in collective case studies, the researcher attempts to find similarities and differences between the cases, which leads to better understanding of the condition. I chose the cases to be teachers and not the single case of a school because I wanted to conduct an in-depth investigation into practicing teachers' beliefs and understanding of constructivism as well as their teaching practices of constructivism, particularly in social studies lessons in elementary grades. This study might also be seen as a single case study when the school is taken as a case, in which case the teacher participants would be taken as sub-units of analysis.

Three primary connections exist between constructivism, the framework for this study, and the qualitative case study methodology. First, constructivism can be defined as "a descriptive theory of learning" (Richardson, 1997, p. 3). Similarly, the case study methodology focuses on "developing an in-depth description and analysis of a case or multiple cases" (Creswell, 2013, p. 104). Second, because this research explored teachers' understanding of constructivism, the case study method is a good fit since it enables the researcher to examine "an individual, such as a teacher" (Ashley, 2012, p. 102). Third, from the constructivist point of view, reality is a network of relationships (von Glasersfeld, 1995, p. 7), which means "there is no representation of reality that is privileged, or 'correct'. There are, instead, a variety of interpretations that are useful for different purposes in differing contexts" (Richardson, 1997, p. 8). The constructivist perspective acknowledges the existence of multiple perspectives and accepts students' multiple viewpoints (Brooks & Brooks, 1999b). Likewise, researchers who adopt constructivism as a research paradigm seek

to “capture diverse understandings and multiple realities about people’s definitions and experiences of the situation” (Patton, 2015, p. 122). As can be seen, this approach to research is connected to an understanding of learning from a constructivist perspective. Case studies, as Yin (2014) explains, “can excel in accommodating a *relativist* perspective—acknowledging multiple realities having multiple meanings” (p. 17). Yin gives an example.

If you want to assume a relativist perspective, your theory in designing a case study may very well concern the way that you will capture the perspectives of different participants, and how and why you believe their different meanings will illuminate your topic of study. (p. 17)

In qualitative research, researchers commonly use multiple sources of data, such as interviews, observations, and documents (Creswell, 2014). Merriam (1988) notes, “Humans are best-suited for this task—and best when using methods that make use of human sensibilities such as interviewing, observing, and analyzing” (p. 3). Thus, case studies were provided for each participant in order to find themes of convergence and divergence in teachers’ understandings and practices of constructivism.

4.2 Participants and Settings

The aim of this research was to obtain an in-depth understanding of how practicing elementary teachers understand and bring to life constructivism in their classrooms. To gain in-depth, thick insight, a small sample of four teachers was taken. Creswell (2013, 2014) mentions that a researcher should select “no more than four or five cases” (Creswell 2013, p. 101). Stake (2005) corroborates this claim, stating that one can “learn a lot from an atypical case than a little from a seemingly typical case” (p. 451). Selecting the sample is where we can learn the most (Merriam, 1988). Therefore, it was important to limit the number of teachers in this study. This number

of teachers, nonetheless, allowed me to explore an in-depth analysis of their professed and observed beliefs.

The school principal circulated the invitation letter to the teachers in the school. The four teachers who were interested in this research emailed me and arranged meetings for the interview and classroom observations. Three of the four teachers who participated in the study were females with teaching experience of 15 years or more, and one teacher had been in the field between 1 and 5 years but was willing to participate. Thus, in order to expand my data set, I included her in my data collection (see Table 2). The teachers were interviewed individually in a semi-structured interview that lasted for about 45 to 60 minutes. The participants were interviewed before they were observed. During a three-week period participants were interviewed and observed as they became available.

Table 2

Participants' Demographic Information

Pseudonym	Education degree	Range of teaching experience	Current teaching grade
Courtney	Bachelor's Master's	15–20 years	An upper elementary grade
Emma	Bachelor's Master's	20–25 years	A lower elementary grade
Gabriella	Bachelor's*	15–20 years	A lower elementary grade
Samantha	Bachelor's	1–5 years	A lower elementary grade

* Gabriella was doing her Master's by the time the data were collected.

* Because this study was carried out in a private school, which is considered a small population, for reasons of ensuring anonymity, I do not specify the exact years; instead, I use ranges of years of teaching experience.

I contacted several private schools in April 2017, and only one school agreed to participate in my study at the time of the year requested. The study was carried out in a private school located in an urban area of Southwestern Ontario. The 2016–2017 student enrolment of this private school, serving preschool to Grade 8, was 244 students. This school is ranked highly by third parties on the EQAO (Education Quality and Accountability Office) exam in Ontario by third parties based on Grades 3 and 6 provincial test scores in reading, writing, and math. It appears that parents voluntarily enrol their children in this school. Because private schooling in Ontario is not funded by the government, parents pay full tuition to the school. Parents, thus, might have a big influence on the curriculum and teaching at the school. The average socioeconomic status of the families served might also be higher than in publicly funded schools, some of which are similarly identified by religious affiliation. Although there were a mix of teachers in the school who identified with the religious affiliation of the school, from my interaction with teachers, it appeared that there were also other teachers with different religious affiliations. The population of the students and the teachers appeared to be less diverse than in publicly funded schools in the area. Students' beliefs, as surmised from the religious affiliations of their parents, in particular, closely aligned with the religious philosophy of the school. Also, although I could have requested permission to conduct research in a school within a public school board, this would have significantly delayed the commencement of data collection in a school due to the process of first requesting permission to carry out research at the school board office before contacting school principals. Private schools do not often receive attention from researchers, yet it might be feasible to carry out research in private schools rather than large school boards when only a few participants are needed.

4.3 Assumptions of the Study

There were no hypotheses in this study; however, a few assumptions were identified at the outset of the study:

1. Teachers have an overview of constructivism but have varied understandings of it.
2. Teachers demonstrate many aspects of constructivism in their classrooms.
3. The Ontario curriculum supports a constructivist approach in many ways.
4. Ontario school boards and schools support a constructivist approach in many ways.

4.4 Data Collection

Data were collected during a three-week period in May 2017. Each participant was interviewed first and then observed. Observation involved eight class periods for the four teachers, two periods per teacher. Teachers selected the date and periods that worked best for them. Document analysis data were obtained from teachers' planner books to get a clear idea of how teachers design their classroom activities and how their activities are related to a constructivist approach. Lincoln and Guba (1985) explain that documents are "singularly useful sources of information, although they have often been ignored" (p. 276). To respond to the question of how teachers understand the theory of constructivism, I interviewed them to learn more about their understanding; I then observed their classroom practice to see their understanding in action. To respond to the question of how they enact constructivism in their classrooms, I observed teachers in their classrooms as well as photocopied their lesson planner books. To answer the question about the conditions that enable or constrain teachers' implementation of constructivism, I interviewed and observed teachers. To answer all the research questions, I interviewed and observed the

teachers, and photocopied their planner books. I asked the following data collection questions:

1. What aspects of constructivism do teachers in the study say guide their practice?
2. In what ways do teachers' understanding of constructivism come to life in their classrooms?
3. What are the supportive elements (e.g., school-based conditions, teachers' characteristics, and context) that help teachers implement constructivism?
4. What are the barriers and tensions that discourage teachers from fostering constructivism?

Data were collected using various instruments: (1) a single audio-recorded semi-structured interview with each participant lasting approximately one hour; (2) raw field notes and a checklist developed by the researcher from observations of classroom practices (see Appendix B); and (3) photocopies of teachers' planner books for document analysis. Yin (2014) points to the uniqueness of case studies and their ability to use many sources of evidence, especially observations and interviews. All interviews and classroom lessons observed were audio-recorded since recordings fully capture "what was seen and heard" (Lincoln & Guba, 1985, p. 274) and capture interviews more accurately than field notes (Yin, 2014).

The transcripts together with the field notes, observation checklists, and photocopied teaching plans formed the data to be analyzed.

The interview questions were adapted from Ray (2000) (see Appendix A for the interview protocol). In addition to the participants' demographic information, the interview questions focused on the following pre-existing themes:

1. Teachers' professed beliefs, *understandings*, and perceptions of constructivism
2. Teachers' professed *reflections* on how they enact constructivism in their classrooms
3. Teachers' experiences enacting constructivism
 - a. What they see as the *supportive* elements (e.g., school-based conditions, teachers' characteristics, and context) that help teachers to implement constructivism
 - b. What they see as *challenges* to fostering constructivism

A template covering the following themes was used during the classroom observations. See Appendix B for the observation template (Murphy, 1997).

1. Observed beliefs/perceptions/understandings of constructivism
2. Observed principles of constructivism in action
3. Observed supports and constraints concerning the implementation of constructivism

4.5 Validity and Trustworthiness

To increase the internal trustworthiness of the study, I followed six basic procedures outlined in the work of Merriam (1988).

(1) I triangulated the data gathering by using three data sources: interviews, observations, and document analysis of teachers' lesson plans (Yin, 2014).

Triangulation of data collection provided me with detailed information about how teachers practice constructivist pedagogy in their classrooms. Additionally, triangulation increases the credibility of the researcher (Stake, 2005) and "determine[s] the consistency of a finding" (Yin, 2014, p. 241).

(2) I integrated member checking because member checking is crucial to establishing validity (Merriam, 1988). Participants in the study are key factors. They can provide critiques, interpretations, or suggestions that support the data (Stake, 1995). I shared the interview transcripts with the teacher participants and gave them the opportunity to reflect on them and suggest changes. Stake (1995) states that member checking is helpful in triangulating the researcher's interpretations.

(3) I used repeated observation to further help increase the trustworthiness of the study (Merriam, 1988). Gathering the data from multiple instances of in-classroom observation ensured the credibility of the findings.

(4) I incorporated "peer examination" (Merriam, 1988, p. 169) by sharing my data and findings with my supervisor to obtain her feedback and reflections. Sharing the findings with colleagues helps to avoid bias (Yin, 2014). Nonetheless, my biases of being a social studies teacher from the Middle East who is interested in constructivism as well as my experience in observing social studies teachers were the lenses that I brought to this research.

(5) I sought to involve the study participants at all stages of the research (Merriam, 1988); however, this was not possible due to teachers' limited time as this study was carried out close to the end of the academic year. I provided sufficient time to observe and interview each participant—about 45 to 60 minutes for the semi-structured interview as well as two class periods of observation per teacher. Merriam (1988) encourages researchers to carry out repeated observations. In addition, my observation was as a detached observer who did not collaborate with the teacher in the teaching and did not participate with the learners. Merriam (1988), nonetheless, notes that there is no defined amount of time that should be spent collecting data, and that

each observer has his/her own preference. Interviews were held in locations of each teacher's preference and availability.

(6) Lastly, with regards to researchers' biases, I sought to indicate my assumptions and tendencies at the outset (Merriam, 1988).

4.6 Ethical Considerations

Studying “a contemporary phenomenon in its real-world context” is different from studying the “dead past” (Yin, 2014, p. 78). Dealing with human subjects requires protecting their confidentiality and privacy. In this research, I ensured that participants' rights and confidentiality were protected. A recruitment email inviting teachers to participate in the study was shared with the school principal during my meeting with him, who in turn (after permitting me to carry out the study) forwarded the email with a letter of information and a consent form to teachers in the school (see Appendix E). Teachers who were interested in taking part were asked to consent to participate in the study. I explained in the letter of information that participants can decide whether to take part in the study (Creswell, 2014). Teachers were given the option to withdraw and opt out of the research at any point. Neither the teachers' names nor the school's name were revealed in the thesis; instead, pseudonyms were used. All lesson plans, audio records, transcripts, and field notes used pseudonyms as well. A hard copy file matching participants' names with their pseudonyms was kept separately in a locked cabinet. Interviews were held at a location and time based on teachers' preference and availability. I offered thank-you gifts of \$30 to each teacher in appreciation for their contribution to the study. All the data were collected in line with the approved ethics protocol from the university research ethics board (see Appendix F), and with permission from the school administration and consent from each of the teacher participants; the data will be kept in a secure place until five years

after the thesis is submitted, after which time it will be destroyed by shredding the documents and permanently deleting the electronic files.

4.7 Data Analysis

As mentioned, data were gathered through interviews with the teachers, observations of classroom practices, and analysis of teachers' planner books. The interviews were audio-recorded and then transcribed. The approximate length of time needed to transcribe all four interviews was 13 hours. The lessons that were observed were also audio-recorded. Additionally, teachers' planner books were photocopied. A cross-case analysis method was used in this research (Patton, 2015; Yin, 2014). Each participant's data was assembled into one set in what Patton (2015) calls a "case record," which "includes all the major information that will be used in doing the final case analysis and writing the case study" (p. 537). Patton notes that a case record is only used when a good deal of unanalyzed data are collected from interviews. Observations and documents should be edited and arranged before the final case study is written. Creswell (2014) explains that the researcher chooses either a qualitative software analysis or "hand code[s] the data" (p. 195).

In my analysis of the interviews, observations, and planner books, I was mainly looking for commonalities and similarities among the participants. Cohen, Manion, and Morrison (2013) elaborate on how this is done:

The researcher can also identify common themes in and across the case studies, or, if a theme has been decided in advance (pre-ordinality) or indeed responsively when reading through all the case studies . . . then materials from case studies can be used selectively to illustrate specific themes. (p. 552)

The next phase was coding and labelling data manually into categories according to the research questions, followed by convergence analysis and "figuring out what

things fit together” (Patton, 2015, p. 554). Patton (2015) explains that analyzing the content involves “identifying, coding, categorizing, classifying, and labeling the primary patterns in the data” (p. 553). The analysis is confirmed by the divergence step analysis by “going deeper into the patterns and themes already identified” and “making connections among different patterns and themes” (Patton, 2015, p. 555). By doing this, the data were organized into high-level inductive themes, presented in detail in Chapter 5.

Chapter 5: Findings

5.1 Chapter Overview

The main purpose of this study was to examine how elementary school teachers understand and bring to life constructivism in their classrooms. The study specifically inquired into perceptions and understanding of constructivism that informed the teachers' practices, how they enacted this approach in their classroom, and what conditions teachers said enable or constrain their practices of constructivism in the classroom. The main research question was: How do teachers understand and enact constructivism, and what factors are important for putting theory into action in classrooms? Specifically, I asked:

1. How do practicing teachers understand constructivism?
2. How do they enact constructivism in their classrooms?
3. What conditions enable or constrain teachers' practices of constructivism?

Four teachers—Samantha, Courtney, Gabriella, and Emma—participated from one private school in an urban area of Southwestern Ontario. The data were gathered during a three-week-period starting in Spring 2017 where the participants were interviewed individually for approximately 45 to 60 minutes before being observed in a teaching/classroom setting for approximately 35 to 45 minutes. I also collected participants' lesson plans to further triangulate the data from the interviews.

5.2 Data Analysis

In this chapter, I share findings from the participants' interviews, teaching observations, and lesson plans. I organized findings from the interview and observation by participant and by three pre-existing themes reflected in the research questions: (1) teachers' beliefs, understandings, and perceptions of constructivism that inform their practices (hereafter referred to as teachers' understandings), (2) teachers'

enactment of constructivism in classrooms, and (3) conditions that enable or constrain teachers' enactment of constructivism in classrooms. I organized the emergent sub-themes under these three pre-existing themes.

The process of analyzing the interview data began with re-reading, reading, and colour-coding teachers' responses from the interview questions. I then read and re-read the initial coded data to group related codes under more general categories of codes, sub-themes. The third phase involved reading the categories of codes to fit them under the three pre-existing themes (see Appendix C). For example, in the first pre-existing theme, teachers' understandings, I included the following emergent sub-themes: teachers' views or understanding of: (i) classroom arrangement, (ii) planning of instructions, (iii) teachers' role, (iv) theoretical orientation, (v) learning, (vi) social interaction, (vii) students' role, (viii) students' mistakes, (ix) social interaction, and (x) assessment method. The fourth phase involved reading and re-reading the emergent sub-themes to group them under much broader categories. For example, the emergent sub-themes of the first pre-existing theme, teachers' understandings, were then grouped into four broader categories on teachers' understanding of: (a) teaching, (b) theory, (c) understandings of students, and (d) assessment (see Appendix C).

For the lesson plan documents, I analyzed the lesson plans in order to understand how teachers planned to enact constructivism in their classrooms. Three of the four teachers provided me with copies of two lesson plans for the two lessons I observed, and one teacher, Samantha, instead provided me with copies of four readings, or "information cards" as Samantha referred to them, two readings per lesson. Teachers also provided me with copies of the worksheets that they handed out to the students during the lessons observed.

In the process of analyzing observation data, I focused on each participant's observed beliefs, perceptions, and understandings of constructivism as observed in teaching and learning—beliefs in action, enactment of constructivist approach in their classroom, and the conditions that appeared to enable or constrain their beliefs in action in the classroom component. I organized the observation based on three pre-existing themes (see Appendix D), which reflected the research questions: (1) observed beliefs, understandings, and perceptions of constructivism (hereafter referred to as observed understandings), (2) observed constructivism in action, and (3) observed supports and constraints—enactment of constructivism. Theme 1 and 2 from the observation are not mutually exclusive. To analyze the data from classroom observations for Theme 2 (observed constructivism in action), I drew from the 18 principles of enacting constructivist theory in a classroom summarized in the observation template (see Appendix B) adopted from Murphy (1997). The original template includes 18 constructivist principles. During the process of reading and re-reading my field notes on the observation template, I further grouped the 18 constructivist principles under nine broader principles, such as principles on (a) knowledge, (b) the learner, (c) multiple contexts, (d) diversity and understanding, (e) discovery, (f) activities, (g) in-depth knowledge, (h) assessment method, and i) the teacher's role (see Appendix D). This process was done for the purposes of clarity.

I organized the findings from participants based on how their beliefs and practices came close to the observation template (see Appendix B). In the main text of this chapter, I present data for two teachers—Samantha and Courtney—who in the interview, observation, and lesson plan exemplified more principles from the observation template. The data sets of the other two teachers—Gabiella and Emma—are provided in Appendix G and H. In the following analysis, I italicize words and

phrases to add emphasis. Some data were not available for analysis because I either did not get the opportunity to discuss a specific aspect with a participant or I was not able to observe a particular aspect during the two classroom observations of a participant. In the next section, I organize the presentation of the findings by participants, i.e., the cases. The findings on each participant are presented by form of data, that is to say, findings from one interview presented first, followed by lesson plan and then observation. Findings from the interview and observation are categorized by the three themes and their respective sub-themes. Findings from the lesson plans are categorized following the templates used in the teachers' lesson plans. All four teachers, except Samantha, followed similar organization of the lesson plans, with columns that included the following: main objective and learner outcome, general and specific outcomes, a hook, resources, and assessment. They also had columns for learning activities, which referred to what was going to be done in the classroom, and another column for instructional strategies in which they appeared to name approaches such as inquiry-based learning. In this thesis, I use the terms learning activities and instructional strategies in the ways the participants used them. For Samantha, the findings are presented in the format they appeared in the information cards, and that included columns for readings, drawing, and questions.

5.3 Ms. Samantha

As shown in Table 2 in Chapter 4, Samantha is a new teacher with 1 to 5 years of teaching experience. She has previously taught English to Grades 7 and 8.

5.3.1 Samantha's Interview

When I interviewed Samantha, she was teaching a lower elementary grade as a homeroom teacher, teaching all subjects except French. The interview took place in

the afternoon in a different classroom while the students were having French with another teacher.

5.3.1.1 Theme 1 Teachers' Understandings of Constructivism

This subsection describes Samantha's beliefs, understandings, and perceptions of constructivism that, from her responses to the interview questions, appeared to inform her practices.

Sub-Theme 1a) Samantha's Understandings of Teaching and Learning

Samantha's understandings of classroom arrangement: groups of four and use of rotation centres. In the interview, Samantha described two methods that she uses for classroom arrangement—organizing students' desks “always in *groups of four*” using “*rotation centres*”—mainly because she likes group work. She explained how she sets up the activity centres.

So one [activity centre] would be a math workbook. The next one would be a game. The other one would be computer time in math. So it would be based on a subject, and they would rotate every 10 to 15 minutes. And this helped the classroom management a lot.

She said she does not mind if students are chatting with each other as long as they are attending to their tasks, adding that “they know at a given time, they can talk to their friends while doing their work; and then when it's time for silent work, they'll do their silent work.”

Samantha's understandings of planning instructions: according to curriculum objectives. Samantha explained that when she plans her lessons, she refers to the curriculum objectives. “I go through the *curriculum* on what they're supposed to be learning.” In math, for example, Samantha used three different resources, focusing on the area where students need improvement.

If they're in fractions, I'll go through their Math Nelson [one of the ministry-approved textbooks] . . . Jump Math [a practice book] and their textbook. And then, using all three, I would see what areas or points they need help on; some of them they can do by themselves without me teaching them.

I asked Samantha how she usually plans her instructions, particularly for social studies, and she replied that “the problem with Grade [x] [a lower grade] social studies is that there's no textbook, so I have to follow the curriculum of Ontario.” In the interview, Samantha repeatedly mentioned that she *lacks resources* for social studies.

Samantha's understandings of a teacher's role: as a supporter. Samantha mentioned that her role as a teacher is to be a helper who assists students during their learning journey. “I'm just a *supporter*. I don't think I should be up there all the time, you know, forcing them to learn.” She clarified that a teacher does not have to fully support the students because, as a result, students will not learn to rely on themselves. Samantha explained that “as a teacher we're supposed to *help them develop*, not spoon-feed them.”

Samantha shared that she organizes her students' desks in groups of four, uses activity centres, and usually revisits the curriculum objectives when planning instructions, and she views her role as a supporter.

Sub-Theme 1b) Samantha's Theoretical Understanding

Samantha's theoretical orientation: student-centered, hands-on learning, group work, and problem-solving teaching. Samantha embraced several approaches: student-centered, hands-on learning, group work, and problem solving. “I am very keen to these theories especially the *student-centered* and *hands-on learning*. . . . I am glad I live in a time where the education system is changing and

allowing the students more freedom for *creativity* in class.” Samantha elaborated on how she implements group work in her classroom:

I use learning centres in my class and a lot of hands-on learning. For social studies, I let students learn by themselves by giving them a worksheet and together in a *group* they figure out the answers. Doing this, not only are the students engaged but they are *working as a team*, each student taking the lead for a question. . . .

My favourite teaching strategy is *group work*. I like to give the students basically no information in the beginning and hand them a piece of paper, and they have to, in a group, *solve* it by themselves. And then after I would do a lesson. So I like the students first *trying and attempting* themselves, then I do the lesson after.

Samantha’s views of learning: students learn in different ways. Samantha expressed her belief that children learn in different ways, noting that “they all learn *differently*. During a lesson, I know I have to do visual, I have to do talking, I have to do reading, or hands-on.” She gave examples of how her students learn differently, such as the student who needs more time to understand a concept.

The first time you teach her something, she will not understand. She needs maybe the second or the third, and *hands-on*. . . . Another student blanks out when I teach him. He can’t focus and listen to me. But when I put a *video related to the subject*, he’ll get it right away . . . and some can *just listen to me* one time and they’re like we got it.

Samantha continued to explain how she uses games, such as worksheet games, to motivate her students to learn. She elaborated that when she has the students “answer

worksheet questions in group work . . . the first group to answer all the questions correctly . . . wins. And that motivates them like crazy.”

Samantha has adopted several approaches in her classroom; she mentioned student-centered, hands-on learning, and problem-solving teaching with a preference for group work. Samantha noted that students learn in different ways including via fun and competitive “*games*.”

Sub-Theme 1c) Samantha’s Understanding and Beliefs About Students

Samantha’s beliefs about students’ roles: as learners. Samantha identified the students’ role as “*learners*,” highlighting her belief that “school is not meant [for students] to just sit there and just dull a student’s head and brain with information; it’s to *watch them grow* as a person.” For Samantha, group work serves to help students “*develop relationships* with their teammates and their classmates, [to develop] manners, etiquette.”

Students’ mistakes are fine except mistakes made “purposely.” Samantha mentioned that she does not mind if students make mistakes, but she confided that she would be upset if students did not pay attention to their work.

It’s fine. We all make mistakes. I make mistakes as a teacher. They always correct me . . . if they’re making mistakes *purposely*, like if they’re not focusing on their work, I know some students who are smart enough not to make those mistakes, then I get a little bit *annoyed*.

Samantha reported that she handles students’ mistakes by having them repeat the problem over and over until they understand where they made their mistake, or “they get to take it home and *get external help* from either a parent.” Samantha gave an example that if a student was rushing through and his handwriting was “messy,” she

would return the paper to the student. “So I go and erase all his things and I’m like, ‘You need to rewrite.’ And then he writes it neater. So now he’s learned.”

Social interaction: through engaging activities. Samantha explained that she is big on engaging students with activities in the classroom.

I don’t like the common sitting down and doing your work. It’s a boring thing. I like *activities*. I like doing things in games, engaging them. Like for science, I do a lot of *experiments* for them to learn. . . . And they do a lot of *projects*; they have monthly projects.

Samantha commented that she includes engaging activities for social studies, which she finds particularly well-suited for projects.

Social studies I keep going back to because *there’s a lot [of activities] you could do*. They made, recently, aboriginal housing, like teepees, wigwams, and long houses and all that . . . and it *incorporated to the science* as well. So, social studies is my favourite for projects.

To sum up, Samantha talked about the role of school going beyond giving students information and moving toward supporting them in growth and learning how to interact with other students; how genuine mistakes are okay; and how she is big on engaging students in activities including projects, experiments, and integration of other subjects in the activities.

Sub-Theme 1d) Assessment

Assessment method: tests, games, group work, and projects. Samantha shared some assessment methods that she commonly uses such as tests, games, group work, and projects.

Usually, in all the *workbooks* that they have, there’ll be a certain, they don’t really know this, but there’s a certain page where it’s mostly *review or a test*,

and that's when I know how well they did in the whole chapter. And we also *play jeopardy* [a competitive game modelled after a daytime TV show] before a test usually.

Samantha explained that she uses group work as another way to assess her students.

In *group work*, you sometimes just copy the person beside you or you're not really contributing as much as you should. So, I need to know what level you're still at and then encourage you in a different way.

Samantha also mentioned that she uses tests in her assessment but not regularly. "I have *projects* every month and *tests* usually every two weeks." But because Samantha was leaving the school temporarily for health leave the same month that I was observing, she mentioned that she had conducted tests once a week during that particular month.

When assessing students, Samantha noted that she uses tests from workbook pages and lets the students play a game to prepare for a test. She explained that she uses tests to diagnose where individual students are after they work in groups for two weeks and considers monthly group projects as a form of assessment.

To summarize, Samantha's classroom arrangement of students in desks of four, her use of rotation centres, and her way of assessing students in many ways including games and projects all appeared to be in line with her theoretical orientations toward hands-on learning, group work, and problem solving. Samantha's understanding of her role as a supporter, her belief in giving students more freedom for creativity, and her view of diversity in how students learn all reflected her theoretical orientation toward student-centered learning. The fact that Samantha mentioned that social studies is her "*favourite subject for projects*" appears surprising

given that when talking about teaching she mentioned the problem of lacking resources especially textbooks for social studies.

5.3.1.2 Theme 2 Teachers' Enactment of Constructivism in Classrooms

In the section below, I introduce how Samantha enacted constructivism in her classroom. This includes Samantha's reflection on her teaching practices, tension about teaching practices, change in beliefs, and change in philosophy.

Sub-Theme 2a) Reflection on Teaching Practices

Satisfied but can do better and would feel good when students exceed in their achievement. Samantha expressed feeling satisfied with the way she teaches but that she can improve her practices even further.

I feel *confident* with it. I feel like they're succeeding in the way I want them to. I know that *I could do better*, everyone can, and I'm hoping to do better.

But I think within the [numbers of years I have taught] I've learned a lot, and I think there's so much room to learn.

Samantha reflected that she would feel good about her teaching practices when she sees improvement in her students' academic achievement. "I think the *improvement in their marks and their social skills . . . it's always good to see a student increase in their level of education.*"

Sub-Theme 2b) Tension About Teaching Practices

Lacking materials, when giving students tests: Samantha revealed that she does not feel satisfied with her teaching practices when she lacks materials and resources. She pointed out that

the only time I have felt "tension" was when I do *not have sufficient materials* for teaching a subject. For example, Grade [x] does not have a social studies

textbook or resources. The lack of this causes teaching the subject to be more difficult.

Samantha explained that she copes with this issue by purchasing the materials that she needs or by making the materials on her own.

I resolved it [the challenge of lack of resources] by approaching the principal and asking him to allow me to *purchase, many teachers made resources* for social studies. I also *create stuff* on my own; it takes time and effort, but it's better than not having any resources.

Samantha added "*I am not a fan of tests,*" but she "know[s] they need to be done" and gives tests to the students two or three times per month. Samantha added, "And I hate – and you know what's funny? Because there's one student, she's a very good student, but when it comes to tests, she doesn't do as well as [on] a project."

Samantha's tension about teaching practices stems from a lack of resources, which she also spoke about when responding to the question on planning instruction. Her tension about giving tests aligned with her perspective that teaching is more than giving information as well as her experiences that some students do better on other assessment activities than on tests.

Sub-Theme 2c) Change in Beliefs

From lecturer to supporter. Samantha noted that when she started teaching oral English a few years ago, she used to lecture her students, but when she started teaching as a homeroom teacher, she began to change her beliefs.

I was just there *in the front of the class the whole time*, teaching them how to speak. . . . But, after coming to this school and realizing that and teaching all the other subjects, there's many ways to teach certain subjects. Certain subjects don't need that 'standing up teacher'.

Samantha expressed that her role in the classroom used to be authoritative, but now she tends to be more of a helper to her students.

Rather than being an *authoritative* figure in the class, I have lessened my role to *let students take charge in subjects*. I *allow students to grow* by letting them figure a lesson out by themselves before I step in. I have become more of a *support* for the students over the years rather than the authority and leader.

Samantha also changed her beliefs regarding the amount of homework that she assigns to students, reporting that this year she has assigned less homework to students. Samantha explained,

I remember last year when I taught, I *would give regular homework* because I thought that's expected as a teacher. But most of the students wouldn't even do it, or they would get someone else to do it, or if they do it, they don't want to do the work I give them at school. . . . And *this year, I rarely give homework*. It's worked great.

I asked Samantha what motivated her to change her behaviour. She recalled her motivation for becoming a teacher.

Realizing myself as a student, because that's the one thing, the reason I wanted to be a teacher was, when I was a student, some of the ways the teachers were and acted was *something I wanted to change*.

Samantha added that professional development programs have influenced her teaching practices. Samantha provided examples of two programs. One program was on taking lessons into an outside environment, which she felt was useful, and "ever since that professional development, *I try to go outside more often*, and it has clearly affected the students much better." The other program was about *inquiry-based*

learning, which she said she incorporated into her social studies more than any other subject.

Sub-Theme 2d) Change in Philosophy

Understanding students' feelings. Samantha responded that her philosophy changed because she started to better understand and empathize with students' feelings.

When I became a teacher, at first I was the same teacher that I used to be. . . . And then I started *to put myself in their shoes*, and I'm like, "If I was a student, would I like that? Is that what I want? Do I want to come to school and just sit there writing? Do I want that?" No, I want to go to school. This is my day. I want to have fun. And with that, I have fun in my job, too. As a teacher now I'm having fun because we get to work together, we get to build things together, and they're still learning.

In summary, Samantha's change in adopting the role of a supporter, her understanding of students' feelings, her feeling of satisfaction when students excel, and her tension around giving students tests aligned with her belief in student-centered learning. Samantha's feeling of tension around lacking materials or resources supported her inclination toward hands-on learning.

5.3.1.3 Theme 3 Conditions That Enable or Constrain Teachers' Enactment of Constructivism in Classrooms

The following section outlines some examples reported by Samantha in the interview of conditions that either support or constrain her enactment of constructivism in the classroom.

Sub-Theme 3a) Supports

From the school principal, colleagues, and parents. Samantha spoke about the support she receives from the school principal with respect to professional development programs she requests, the autonomy she is given in the classroom, and even assistance with certain issues with students. She mentioned that the principal supports teachers if they express interest in joining a professional program and sends teachers to teaching events in other cities, such as in Toronto. Samantha said that the principal “in the beginning was *sending us to teaching resources [sic] and learning about teaching better,*” which Samantha noted “was very helpful, because every time we went we would come back as better teachers.” I asked if that was a program suggested by the principal or brought forward by the teachers, and she replied that she was the one who had suggested it in a meeting with the principal and other teachers. Samantha explained that “some of my points were learning how to do learning centres better, because I like learning centres.”

Samantha elaborated on the support she has received from the school principal regarding the freedom and autonomy teachers are given in the school. “*We’re given so much freedom to work the way we want to. . . . I have never had [the principal] come in and say, ‘I want you to do it this way.’*” Samantha noted that she would ask for help from the principal if she had an issue with a student, and that “when a student is in trouble, [the principal] will take it upon himself to talk to the parents.”

Samantha talked about the support from her colleagues in the school, describing them as “*supportive*” co-workers from whom she can ask for guidance, if needed.

The Grade [x] teacher, if I have a problem, they’ve had my students before. So if I have an issue with a student, a certain behaviour or educational issue that’s

occurring regularly, I would go up to her and I would say, “How did you deal with this?” And they would give me points on how they dealt with the student’s behaviour or issue. So that’s very beneficial.

Samantha stated that she also gets support from students’ parents. She gave an example of a mother of a student in her class who “does have behavioural issues toward educational systems. So we work together with this mother and *she’s in full support* of what I do, and she always gives me ways to help her child to be more invested into the classroom.”

Sub-Theme 3b) Constraints

In the content, resources, materials, and limitations in the school.

Samantha reported that she sometimes struggles with the social studies content and materials, noting that “the problem is *the content in social studies can be very boring*. Extremely boring, even for me.” Samantha elaborated on how she uses textbooks that are challenging in order to make the lessons more interesting.

We have to make it more interesting. Maybe a textbook might help them. You know, *a textbook with more fun information* for them. The things I find online are just things that have *been there for a while*. And the book that I’m using for them is actually *a higher level of content than what they need*, but that’s the only thing I found for them.

Samantha revealed that she can easily find resources and materials for subjects like math and science, but finding resources for social studies, including interactive videos, is more difficult. She noted that “the topics are just a little bit dull” and she “[does] struggle with *materials*,” which “frustrates” her when it limits what she can do in her lessons.

Samantha mentioned two other limitations in the school, namely, classroom tables and lack of outside benches for outdoor teaching. For instance, Samantha would like to have long tables where students can sit and work together instead of the regular tables. “I just want *a normal desk with no, like a long one* where they can all sit together. But that’s not possible, as I said. It’s a private school. We don’t have the money for it.” Samantha shared that she would like to have outside benches for “the new lessons of me going outside,” but noted that “it’s difficult because there aren’t *any picnic benches* for them to sit and actually do their work. They have to sit on the ground.”

Samantha noted that she receives support from the school principal, students’ parents, and colleagues. Samantha reported encountering limitations such as students finding the social studies content and materials less interesting as well as limitations in the school such as the nature of the classroom tables and the lack of outside benches.

In summary, Samantha shared her understanding of teaching and learning, how she arranges her classroom and plans her instruction, as well as her understanding of the teacher’s role. She also discussed her theoretical orientation and views of learning. Samantha also elaborated on her beliefs concerning the students’ role, students’ mistakes, social interaction, and methods of assessment. Samantha reflected upon her teaching practices, tensions about teaching, and changes in beliefs and philosophy. Lastly, Samantha talked about the supportive and challenging conditions that enable or constrain her enactment of constructivism in the classroom.

5.3.2 Samantha’s Lesson Plan

I was not able to obtain Samantha’s lesson plans; instead, Samantha provided me with the materials that she had available, which were the readings and worksheet

activities for the lessons I observed. The four readings (two readings per lesson), “information cards” as Samantha referred to them, were about pioneer farming, butter and cheese, cooking and preserving, and early pioneer food. They included several *drawings* related to the lesson. Each worksheet also included a variety of questions related to the lesson. The four activities in the worksheets involved, for instance, *matching words* to the suitable sentences, *numbering the sentences* in the correct order, *choosing* whether the sentences were true or false, or *listing* the ways the animals were useful creatures to the pioneers. The “information cards” appeared to reflect visual learning approaches as evinced in drawings of the pioneers’ farming, food, cooking, and preserving. The formats of questions on the worksheet such as matching words, numbering the sentences, choosing true or false, or listing seemed geared toward improving students’ problem-solving learning.

5.3.3 Samantha’s Classroom Observation

Samantha had 17 students in her classroom. The classroom had a smart board (which showed the profile of each student using the classroom management app), two white boards, two computers, and a mini library at the back of the room. The students’ desks were organized in groups of four, with the teacher’s desk located at the back side of the room and a shelf for students’ textbooks on the left side. There were several posters on the wall about caring and friendship. I observed the first lesson in Samantha’s class during the first learning block and the second lesson during the second learning block two days after the first observation.

The organization of students’ desks in groups of four, with the teacher’s desk at the back (not front) side of the room as well as the presence of several posters on the wall appeared to support Samantha’s orientation toward group work and her beliefs that group work should help students “*develop relationships* with their

teammates and their classmates.” In the interview, Samantha referred to rotation centres as a method of classroom arrangement, which I did not have a chance to see during the classroom observation.

5.3.3.1 Theme 1 Observed Understandings of Constructivism

The following section reports the classroom observations of how Samantha enacted her beliefs, understandings, and perceptions of constructivism. I paid attention to Samantha’s actions, interactions, activities, and the resources she included in her lessons.

Sub-Theme 1a) Teaching Practices/Constructivism in Action

I examined Samantha’s practices in the classroom in order to identify what approaches she commonly adopts. Note that this theme, 1 a, and the following theme, 1b, on what I observed based on principles of constructivism in action indicated on the checklist are not mutually exclusive.

Adopted hands-on learning, group work, problem solving, student-centered, discussion approach, and visual learning. I observed two social studies lessons in Samantha’s classroom. During my observation, Samantha enacted hands-on learning, group work, problem solving, student-centered, discussion approach, and visual learning. Here, I provide brief examples of Samantha’s classroom practices, which will be discussed in detail in the subsequent section.

Samantha’s observed lessons indicated that she embraced hands-on learning. This was mainly seen in the second lesson when Samantha included an activity about making and tasting butter. Group work and problem solving were also seen in Samantha’s classroom. Samantha’s practice of group work appeared in group activities such as *group presentation and group discussion*; problem solving appeared in tasks such as *presentation and making the butter*.

Samantha supported a student-centered approach by providing *autonomy* to her students within their groups to *share* and *discuss* their opinions with each other. Samantha enabled students to *decide* what type of performance they wanted to present to the rest of the class during the first activity. Students within their groups *assigned* roles for each member of the group to complete the activity. Students were able to *move around* the classroom during the activity time.

Additionally, Samantha's teaching practices seemed to reflect a discussion approach. She arranged her class into groups to have group discussions about the activities they were doing. Students were also observed asking Samantha questions related to the lessons. She asked students questions related to the lesson and her students could ask her questions. Samantha also provided drawings to accompany her lessons in order to help the students see and understand the concepts, indicating that Samantha supported visual learning. One drawing was on the topic of pioneers' farming, food, cooking, and preserving.

It appeared to me that Samantha's enactment of hands-on learning, group work, problem solving, student-centered, discussion approach, and visual learning in her lessons reflected the theoretical inclination toward student-centered, hands-on learning, and group work that she shared in the interview. I also observed a method that Samantha briefly mentioned in the interview, the discussion approach, when she said, "I have to do talking [classroom discussion]." This method was evident when she gave her students opportunities, within their small groups, to *share* and *discuss* their opinions with each other. The other approaches I noticed in Samantha's class, which she had also mentioned in the interview, were problem solving ("I like the students first *trying and attempting* themselves," which appeared in tasks and

projects) and visual learning (“I have to do visual,” which appeared in her use of pictures).

5.3.3.2 Theme 2 Observed Principles of Constructivism in Action

This section is organized by the nine broader principles of constructivism indicated in the checklist (see Appendix B).

Sub-Theme 2a) Knowledge

Knowledge construction: built on students’ existing knowledge. Samantha attempted to *build on students’ existing knowledge*. For example, *she helped students build on their current understanding of how animals are used, that they know and are familiar with, to obtain a new meaning of how pioneers used animals, such as how they used the lard of the pig for lighting candles and goose feathers for writing.*

In the second lesson, Samantha and the students used a bottle of whipping cream to make butter. This activity *built on students’ current knowledge of cream and butter*, which they probably have eaten previously, to obtain new knowledge of how to make butter out of cream.

Knowledge collaboration: presentation, modelling, discussion. I observed social interaction in Samantha’s two lessons as *students’ desks were arranged into groups of four*. In the first lesson, *each group prepared a presentation* about the farm animals that pioneers used. Some students created skits and others acted out the character of the pioneers’ animals. During the presentation, if a student missed some information, Samantha would encourage the student to *discuss* with their group. Samantha also gave students a worksheet on pioneer farming and farm animals to individually complete. They *helped each other* while filling in the worksheets.

In the second activity, students took turns shaking the can of whipping cream to make butter. Once a student shook the can a few times, they would *hand the can to*

the next classmate. In both lessons, *students in their groups filled in worksheets.* *Students could chat, discuss, and help each other* during the activity's allotted time. Students also asked Samantha questions related to the lessons and Samantha asked students questions.

Samantha supported knowledge collaboration in her lessons through group presentation, modelling, and discussion, which aligned with her belief that students should be "*working as a team*" and with the teaching practice of group work.

Previous knowledge: reviewed previous information, students shared previous knowledge. Samantha began her lessons by reviewing the worksheets given to students as homework in the previous lessons. She sometimes *asked the students about the meaning of a new word* in the lesson, for example, the word "lard," and students shared their understanding of the word. Samantha *asked if they had seen butter or cream in their houses or at the store, and if they had seen salted and unsalted butter.* Students *discussed in groups their previous knowledge* of butter and the types they used at home. Samantha also *reviewed previous information* before giving a test.

Samantha assigned homework in both lessons observed, which seemed to go against her professed belief of wanting to give less homework.

Sub-Theme 2b) Learner

Learner control and student-directed goals: autonomy, students asked questions. During the first activity, students were split into groups. Each group *decided how to represent the information* given in the reading cards. Some groups gave a presentation, some created skits, and others acted out the characters of the animals. The groups were asked to assign the character of an animal to each member of the group. *If a student wanted to join another group, Samantha let the student do*

so. In the second activity, students were *allowed to take as much time as they wanted* to shake the whipping cream. When Samantha *gave students a choice to taste the butter*, she said, “If you do not want it, you do not have to have it.” Within their groups, *students were able to discuss and express their thinking and divide their roles for the activity. Students discussed together and helped each other* to fill in the worksheets. Samantha did not share the learning goals with the students, but before each activity she shared what activity they would be doing and how they would do it.

Students in Samantha’s class *asked critical questions*. For instance, one student wondered about the tense of a particular sentence and why a past tense was used. Another student asked Samantha about the type of cream that was used to make the butter. The student asked whether the teacher used heavy or light whipping cream. Students were able to *move around* the classroom during the activity.

Samantha’s strategy of giving her students autonomy to present the information the way they liked seemed consistent with her belief that it is important to give “more freedom for *creativity* in class,” “*let students take charge in subjects*,” and “*allow students to grow* by letting them figure out a lesson.”

Metacognition: the teacher asked students questions, students reflected on their thinking in their groups. I did not observe metacognitive learning in Samantha’s class. However, I observed that Samantha supported *students’ metacognition* particularly in the second lesson. She *asked the students* about the information provided in the readings (for instance, if they had seen butter or cream before). She also asked them about the butter they made and let the students express their impressions. Students were able to *discuss and chat within their groups and reflect on the lesson*.

Sub-Theme 2c) Multiple Contexts

Multiple representations and primary and secondary sources: used several ways to represent a concept. Samantha included different sources in her lessons. For each lesson she used *reading sheets* (“*information cards*” as Samantha referred to them), which provided information about the pioneers’ farming, butter and cheese, and cooking and preserving. The reading cards included *drawings* that showed the pioneers’ farm, barn, animals, and food. In addition to the reading cards, Samantha used *worksheets* that contained questions about the lessons. During the first lesson, students were divided into groups, and each group was responsible for *representing* certain animals used by the pioneers. That Samantha brought whipping cream for the second lesson to show students *how to make butter* is also evidence of using primary sources of data. Samantha also included pictures in both lessons observed, which reflected her belief in using visuals (“I have to do visual”).

Sub-Theme 2d) Diversity and Understanding

Consideration of errors: encouragement to review their mistakes and ask the teacher or their groups for help. Samantha encouraged her students to *go over their answers, ask the teacher* if they were missing any answers, and *compare their answers* within their group. During the presentation activity, if a student in the group had missed some information, Samantha *asked the student to discuss with their group* about the missing information.

Alternative viewpoints: students were introduced to alternative perspectives and represented the information given in the reading in multiple ways. Multiple viewpoints were recognized in Samantha’s class. In the first lesson, students were *introduced to the life of pioneers* by reading about pioneers’ farming, food, cooking, and preserving. They were also *introduced to the difficulties* faced by

the pioneers in taking care of the animals during the winter. The fact that Samantha allowed students to represent the pioneers' animals *the way they wanted*, and that students' performance *varied* from presentations, to skits for their animals, to acting out the animals' characters, showed an acceptance of alternative perspectives in the lessons. In the second lesson, students learned that they *can make butter at home instead of buying it from the store*. After they made butter, Samantha spread the butter on slices of toast and offered them to the students who chose to taste the butter; some students liked it and others did not. She explained that "*everyone has a different taste.*"

Sub-Theme 2e) Activities and Tasks

Authentic activities: variety of activities. Samantha included different activities in her lessons. In the first lesson, students *read* the information given on the cards about the different ways pioneers used their animals and then students presented this information to the class. One group of students gave a *presentation* about how the pioneers used hens, ducks, turkeys, and geese to produce eggs, meat, and feathers. A group of students *acted out* the character of animals such as dogs, oxen, and horses in pulling sleighs, wagons, and plows. Another group *made a skit* of sheep that supplied the pioneers with cheese, butter, and meat and of cats to scare-off rats. In the second lesson, Samantha and the students *read* about and practiced how pioneers *made butter*. Samantha first poured the cream into a can and closed it tightly. Then she showed the students how to hold the can carefully and how to shake it without twisting the lid. Samantha *moved around* the classroom with the can, repeating and demonstrating the instructions to each group. She let each student shake it, one after another, until the cream turned into butter. Samantha observed as each student took their turn to shake the can. Samantha spread the butter on toast and offered it to the

students who chose to eat. Further, Samantha included *reading*, *group discussion*, and *discussion with the teacher* as other forms of activities.

Samantha's strategy of incorporating authentic real-life activities seemed to be in harmony with her belief in including engaging activities for social studies lessons, as she described in the interview. Additionally, including different forms of activities, like hands-on, problem solving, and presentations, reflected Samantha's espoused belief in diversity in learning ("I have to do visual, I have to do talking, I have to do reading, or hands-on").

Problem solving: activities support students' in using selection, making decisions, imagination, creativity, and evaluation. In the lesson, I observed problem-solving skills such as *selection*, *making decisions*, *imagination*, *creativity*, and *evaluation*. Students worked in groups and assigned an animal to each member of the group. They *tried to figure out how to use the information given* in the readings in the form of a presentation, skit, or acting. This activity allowed students to *select suitable roles* for each student and *make a decision* as a group. I also observed that the presentations and performances supported students' use of imagination and creativity.

As described earlier, Samantha provided students with worksheets for each lesson with varied formats of questions, which supported students' problem-solving skills of identifying, selecting, evaluating, and making their answers.

Samantha's enactment of problem-solving teaching in her classroom appeared to be consistent with her theoretical orientation toward this approach, as discussed in the interview where she shared that she likes to see students "*trying and attempting themselves.*"

Apprenticeship learning: simulate animals' characters, modelling. The lessons I observed supported apprenticeship learning by enabling students to *simulate*

the character of the animals as well as by *modelling* the pioneers' method of making butter. Samantha asked each group to present pioneers' animals to the class. After reading the information card provided by Samantha, students were asked to present the importance and uses of these animals. The butter making activity during the second lesson (as described above) was also an example of modelling and simulation.

Exploration: modelling the animals and making butter. Samantha supported exploration learning by letting students *model* the animals used by the pioneers as well as *make* real butter out of whipping cream. Students also *modelled* the animals' characters in different ways. They were able *to present and see* other groups' presentations.

Sub-Theme 2f) In-Depth Knowledge

Conceptual interrelatedness: connected concepts to the lesson. Samantha tried to connect different topics within her lesson. For instance, she *compared the life of Canadian pioneers to the life of Canadian Aboriginal people*, particularly with respect to the practice of farming. Another example was when Samantha described how pioneers used to make butter and mold it into shapes, and she *connected this to the butter/cheese currently available in stores* that are molded into different shapes.

Samantha mentioned that children of pioneers were commonly responsible for making butter, and she *related it to the students* by saying "just like you guys!" She also *asked the students if they had seen salted and unsalted butter at home*.

Scaffolding: included authentic activities, pictures, explained new words, gave time and instructions, moved around the class, and reviewed the answers.

Samantha supported student learning in many ways and employed scaffolding strategies in her lessons by including *real-life activities* such as presentation and modelling. Samantha also *used visuals* such as pictures in both lessons to help

students understand the concept. Samantha *explained the definition of the new words* of the lesson and *allowed enough time* to let students prepare themselves for the presentation or during their turn to shake the can of whipping cream. Samantha *gave instructions and suggestions* to the students during the activities, and she *walked around* the groups during the activities. After the students had completed the worksheets, Samantha *reviewed the answers* to make sure they were correct. At the end of the class, Samantha verbally *summarized the information* about each animal.

Sub-Theme 2g) Assessment Method

Authentic assessment: questions at the beginning and end of the lesson, worksheets, and tests. At the beginning of the lesson, Samantha *went over the questions* in the worksheet from the previous lesson. Before the lesson ended, Samantha also *went over the questions* in the worksheets and reviewed the answers with the students. She wrote the answers on the board so students could copy them. Samantha *asked the students* if they understood everything or needed further clarification. Samantha *asked students several questions about the lesson* and summarized the main information of the lessons. Samantha also used *group discussion* as another form of assessment. In the two lessons I observed, she reminded the students that they should have the correct answers because they will be *tested* on the material.

Samantha practiced many methods of classroom assessment, which aligned with the assessment methods she described in the interview (group work, projects, and tests). However, games were not used as an assessment method, as Samantha had described in the interview. Instead, she used assessment methods that she had not mentioned such as posing questions at the end of the lesson and using worksheets.

Sub-Theme 2h) The Teacher's Role

Teachers as coaches: Samantha as guide. During the observation, I noticed that Samantha took on the role of a guide. She *reminded* the students what to do and how much time was left. She *moved around* and provided *instructions* and *suggestions* before the activities and *reminded* the students to be quiet and respectful of their classmates. Before the lesson ended, Samantha *summarized* the main information of the lesson.

Many of the observed principles seen in action in Samantha's classroom reflected the beliefs she shared in the interview such as knowledge collaboration, learner control, student-directed goals, original sources, authentic real-life activities, problem solving, and varied assessment methods. The differences between Samantha's professed beliefs and teaching practices were only noticed in the method of assessment, in which Samantha used questions at the beginning and end of the lesson. I observed that Samantha used discussion approach and worksheets extensively in her classroom, giving her students opportunities within their small groups to share and discuss their opinions and fill in worksheets, but she had only mentioned discussion and worksheets briefly in the interview.

5.3.3.3 Theme 3 Observed Supports and Constraints, Enactment of Constructivism

The following section describes the supports and constraints that I observed during the classroom observation of Samantha's lessons.

Supports: from the principal. The school *principal* was present during the second lesson to observe Ms. Samantha. He also moved around the classroom during the activity, discussed with the students, and participated in the butter making lesson by shaking the whipping cream and eating the buttered toast.

Constraints. I did not notice any constraints during Samantha's lessons. Observed support from the school principal corresponded to what Samantha had reported in the interview. However, I did not notice any other support conditions such as support from colleagues and students' parents or limitations in the content and materials, as mentioned by Samantha in the interview.

To sum up, the classroom observation revealed that Samantha practiced several approaches closely aligned to constructivist principles. Samantha's way of including activities such as presentations and modelling reflected her inclination toward hands-on learning and problem solving. Samantha's way of giving her students autonomy to share and discuss within their groups and to divide the roles between them for their performance as well as allowing them to move around the classroom during the activity time all reflected a student-centered approach. Samantha's method of arranging her classroom in groups and using posters on the wall of caring and friendship as well as including group activities such as presentation, discussion, and group assessment all aligned with her tendency toward group work. Moreover, Samantha used pictures in both lessons, which indicated her support of visual learning. Samantha's practice of these approaches in her classroom reflected her interest toward contemporary theories of teaching and learning: "I am very keen to these theories especially the *student-centered* and *hands-on learning*."

5.3.4 Summary

Samantha shared that she believes students learn in many ways and that her role as a teacher is to be a supporter. She preferred to arrange her classroom into groups and used rotation centres for activities; she planned her instructions according to the curriculum objectives. Samantha adopted several teaching approaches that reinforced her role as a supporter: student-centered, hands-on learning, group work,

and problem solving. Samantha expressed that students are learners and she accepts students' mistakes, but she noted that she gets upset if students make mistakes on purpose through inattentiveness. Samantha provided opportunities for social interaction and used activities in her classroom. She also used a variety of assessment methods.

Samantha reflected that she is satisfied with her teaching but can always do better. She noted that she feels good when students excel in their achievement. However, Samantha noted that she feels tension about her teaching practices when she does not have sufficient resources or when she has to give tests to the students. Samantha said that she has changed her beliefs since she began teaching and has become more of a supporter than a lecturer, which has allowed her to better understand students' feelings.

Samantha received support from the principal (who was observed participating in the second class), but I did not directly observe support from parents and colleagues during the lessons because they were not present. Samantha reported constraints in terms of the content and materials available in social studies, but this was not directly evident in my observation of the lessons.

From the four readings and the two worksheets I analyzed, Samantha's observed beliefs in action showed that she embraced visual learning (i.e., in her use of drawings of the pioneers' farming, food, cooking, and preserving). The questions on the worksheet—such as matching words, numbering the sentences, choosing true or false, or listing—appeared to support problem-solving learning.

Samantha's classroom of 17 students was arranged in groups of four and had posters on caring and friendship on the walls. Samantha's observed beliefs showed that she adopted hands-on learning, group work, problem solving, student-centered,

discussion approach, and visual learning in her classroom. Samantha's observed principles of constructivism in action showed that Samantha supported students' knowledge by helping them build on their existing knowledge. She also supported students' social interaction by supporting group work through presentations, modelling, and discussion. Samantha reviewed previous information and allowed students to share their prior knowledge. Students were able to model, to ask questions, and to choose the type of presentation to deliver. Also, student-directed goals were observed in that students were given autonomy. Samantha asked her students to reflect on their own thinking and allowed them to share their understanding within their groups. Samantha used multiple representations and resources in her lessons and encouraged students to revise their mistakes and ask her questions (or ask their groups for help). Alternative viewpoints were supported in the lessons by introducing students to different perspectives and allowing them to represent the information given in the reading in many ways. In this way, Samantha included authentic activities in her lessons and used many methods to assess student learning, acting as a guide throughout. She also included problem-solving skills such as selection, decision making, imagination, creativity, and evaluation. She supported apprenticeship and exploration learning and connected different topics to the lessons. Moreover, she scaffolded student learning by including activities, pictures, explaining new words, giving time, instructions, moving around the class, and reviewing answers.

Differences between Samantha's professed beliefs shared in the interview and her classroom practices were identified only in her assessment methods. Her use of the discussion method in teaching was also more extensive than she had mentioned in the interview or indicated in the lesson plan.

5.4 Ms. Courtney

As shown in Table 2 in Chapter 4, Courtney is an experienced teacher with 15 to 20 years of teaching experience. As a homeroom teacher, Courtney has taught different subjects like math, English, science, social studies, and French to Grades 3, 4, 5, and 6. She has a Master's degree in Education.

5.4.1 Courtney's Interview

When I interviewed Courtney, she was teaching an upper elementary grade as a homeroom teacher (teaching all subjects except French). The interview took place in a classroom following students' dismissal.

5.4.1.1 Theme 1 Teachers' Understandings of Constructivism

This subsection describes Courtney's beliefs, understandings, and perceptions of constructivism that, from her responses to the interview questions, appeared to inform her practices.

Sub-Theme 1a) Courtney's Understandings of Teaching and Learning

Courtney's understandings of classroom arrangement: according to students' projects. Courtney arranged her classroom based on students' projects. She noted that "sometimes we do the U-shape. Sometimes we do the groups. Sometimes we do it individually. *It depends on what I want from the students.*" She added that in the past few weeks her class has been doing independent projects for social studies, so she arranged her class in rows of ones because her focus was on assessing students' individual ability to complete the project by themselves. She explained that she wanted to see if the students "are comfortable talking in public. So it's not just social studies per se, but it is everything. Like are they using the right terminology? Are they pronouncing words properly? Do they have proper sequencing for the projects?"

Unlike Samantha who arranged her students' desks in groups of four and used rotation activity centres, Courtney arranged her students' desks based on the nature of the project.

Courtney's understandings of planning instructions: used teacher resources, textbook, internet, colleagues, and a hook. Courtney explained that she uses four different ways to plan her instruction: teacher resources, the textbook, the internet, and consulting colleagues. "I go through *teacher resources or teachers guide*. I read what the students have in their *textbook*." Courtney also mentioned that she uses the *internet* to get an "idea of what I want to do" and sometimes asks her colleagues for guidance in planning her instruction. "I ask my *friends*, too. I ask them, 'Do you have any idea? Can you tell me? Can you guide me?'"

In planning instruction, Courtney noted that she usually uses a hook as an introduction for her lesson, noting that "that's my main . . . to have a hook for my lesson and then I go from there." Courtney elaborated on the benefits of beginning with a strong hook:

Usually the students do not even notice that I have a hook for that. I will say, for example, "Okay, I need this person, this person, this person. I want them to come to the front of the class." . . . And they will ask, "Oh, are we in trouble?" [laughs] This is what they think. "This person, to the front of the class, please."

Courtney's way of using teacher resources, the textbook, the internet, colleagues, and a hook when planning instructions is different from Samantha's way of revisiting curriculum objectives.

Courtney's understandings of the teacher's role: as a guide, director, facilitator, and learner. In the interview, Courtney discussed two roles for the

teacher: a guide and a facilitator. She described the teacher as a guide who “need[s] to actually kind of channel [students’] learning and you *guide* it.” Her responsibility as a teacher is to “direct what I want [the student] to learn during that year.” She also described the teacher as a facilitator as well as a learner and director.

I facilitate the way that they learn. I’m not the one that knows everything. And *I learn with them*, and this is what I tell them. “You know what, guys? I don’t know everything. . . . We learn together. I learn from you, you learn from me. But I facilitate. I make it easy for you to actually see what you can learn.

Courtney’s view of the teacher as a guide, director, and facilitator seemed akin to Samantha’s view of the teacher as a supporter.

To summarize, Courtney shared that she arranges her classroom desks based on the nature of the students’ project; uses “teacher resources or teachers guide,” “textbook,” “the internet,” and consulted her colleagues when planning instructions; and views the teacher’s role as a guide, director, facilitator, and learner.

Sub-Theme 1b) Courtney’s Theoretical Understanding

Courtney’s theoretical orientation: hands-on learning, visual learning, and a student-centered approach. Courtney indicated that she adopted three theoretical approaches for her classroom: hands-on learning, visual learning, and a student-centered approach. She mentioned that “I like to incorporate *hands-on*, I like to incorporate *visuals* for the kids . . . I try to do *hands-on* as much as it allows me. Because sometimes it’s not everything you can be able to have hands-on.” When I asked Courtney how she felt about implementing this approach, she replied that

“hands-on has to be hands-on. I have to have hands-on, otherwise the kids will not be as engaged as I want them.”

Courtney explained that she also adopted student-centered approaches in her classroom. “When I started teaching, I noticed that I’m doing teacher-centered because it’s easier . . . and until now, I still have to catch myself not doing *child-centered*.” She mentioned that using a student-centered approach engages her students more.

I saw when the children are doing the things, when it comes from them. It’s easy for me to actually plan my lesson. I know, for example, my students love to have games. . . . Then I will make sure that my lesson has that game. Let’s say they like to play . . . soccer or basketball or something like that. I will make sure that, okay, can you tell me what’s the field, what’s the size of a basketball court? How high is the basket?

She articulated that a student-centered approach gives the feeling that the classroom is “very alive,” but it requires her as a teacher to make an effort to engage the students in her classroom.

Both Courtney and Samantha professed that they use hands-on learning and student-centered. Unlike Samantha, who mentioned approaches such as group work and problem solving, Courtney mentioned visual learning (“I like to incorporate *visuals*”).

Courtney’s views of learning: students learn in many ways. Courtney indicated that children can learn in many ways and noted that the “*old way*,” where “the teacher is talking and students are listening,” is one possible way, but there are other ways children can learn: “You have *hands-on*, you have by *example*, showing

by example. They learn from their *friends*. They learn by *playing*.” She concluded that “you tell them all kinds of *stories* and they will listen to you.”

Just like Samantha, Courtney’s belief that students learn in many ways consisted of the “old way” where “the teacher is talking and students are listening,” “hands-on,” “by example,” “from their friends,” “by playing,” and by “stories.”

Courtney shared that she embraces hands-on learning, visual learning, and a student-centered approach, and believes that students learn in many ways including the “old way.”

Sub-Theme 1c) Courtney’s Understanding and Beliefs About Students

Courtney’s beliefs about students’ roles: to select what they want to learn and build on it. The students’ role, from Courtney’s perspective, is “*to pick what he likes to do, what he likes to learn*” and what he or she is interested in and “*build on it* and in a way that they will learn all kinds of subjects, *all kinds of knowledge*.”

Courtney’s understanding of the students’ role differs from Samantha’s understanding of students as learners.

Students’ mistakes are fine except “silly” ones. Courtney mentioned that mistakes are a normal part of learning, unless these mistakes stem from students’ not being responsible enough about the task. Courtney explained that it is human nature to make mistakes: “I do mistakes myself. I’m not perfect. We are human. *So mistakes, that’s fine*. You learn from your mistakes.” Courtney, however, excluded mistakes that are “*silly*” or because students were “rushing through.” In that case, Courtney said that she would advise students to “slow down. Don’t go fast. Review your paper.” She explained that “if it is academic, so we learn from our mistakes. It means that he did not get that information. So we need to go and re-visit . . . Behaviourally

[sic], of course, we have to learn. We grow through mistakes.” Courtney ultimately perceived mistakes as personal growth opportunities.

Similar to Samantha, Courtney viewed mistakes as a normal part of learning, unless these mistakes were made because students were not responsible enough about the task.

Social interaction: through engaging activities. Courtney noted that she creates opportunities for social interaction using activities she feels students would like and be engaged by. She shared the example of an art activity involving tie-dyeing shirts.

The students, you can tell they were *100% engaged*; everybody was waiting for how to actually fold their shirt, how to put the rubber bands, what are the colours . . . and then you can see that the student is engaged. . . . You can tell they are engaged by asking you questions related to whatever you are doing.

To summarize, Courtney’s way of arranging students’ desks based on projects, her understanding of her role as a facilitator, her view of learning in many ways including “*playing*” and “*stories*,” her use of games and activities that students will likely be engaged by all seemed to align with her tendency toward hands-on learning and child- or student-centered learning.

5.4.1.2 Theme 2 Teachers’ Enactment of Constructivism in Classrooms

In the section below, I introduce how Courtney enacted constructivism in her classroom. This includes Courtney’s reflection on her teaching practices, tension about teaching practices, change in beliefs, and change in philosophy.

Sub-Theme 2a) Reflection on Teaching Practices

Satisfied but needs improvement, happy when students have positive experiences in class. Courtney shared that she always feels satisfied with her

teaching practices but mentioned that she still needs to improve her way of teaching. Courtney elaborated on the continual need to improve as a teacher.

I always feel good about my teaching practices. But I always feel that I'm not, I don't have enough, I always need to, not just improve . . . you don't want to be out of fashion. *You want to always improve. You want to evolve with the teaching practices.* . . . I have the basic knowledge probably, but you are not always satisfied. Honestly, as a teacher, you are not always satisfied. You always want to get more. . . . I need to engage my students more. My teaching today was not good because I lost this, . . . and I lost this student.

Courtney mentioned that when she sees the “*light goes on that student's face,*” then she would have a moment of professional “gratification.” Courtney concluded that “as a teacher, I think you will never ever be happy or satisfied. You are happy with your knowledge, but you are not satisfied; you are always *looking for more, more knowledge, so you keep your students engaged.*”

Like Samantha, Courtney shared that she feels good about her teaching practices and knowledge but still needs to improve her way of teaching.

Sub-Theme 2b) Tension About Teaching Practices

When teaching math in the old style, or when students do not understand a term in social studies or do not take the task seriously, or when not practicing student-centered. Courtney revealed that she feels tension between her beliefs and teaching practices when teaching math in the old style. “When you teach math, and you try to teach them *the old way*, like the old, old way, and they will say, ‘What are you talking about? We can't do the thing with calculators?’.” She explained that she sometimes likes to teach math in the traditional way and encourage students to use their “brain” instead of using calculators. Students would then complain about this

and start to ask questions. “So sometimes, yes, you feel that you are kind of retro,” Courtney said, explaining how she feels unhappy “when you do not get your information through. . . . It affects me big time.”

I asked Courtney if she felt tension between her beliefs and teaching practices in teaching social studies, and she replied she would feel tension “*if [students] don’t understand the term*” or sometimes “*they try to make fun of the way that people lived*. But otherwise, *social studies I think it’s more fun for the kids*.” Later, Courtney added that when students do not approach tasks as seriously as she wants them to, “I don’t like that and I feel that I’m missing on something. I’m not passing the right message to them.”

When responding to the question on theoretical orientation, Courtney replied that she adopted student-centered learning and, “until now, I still have to catch myself *not doing child-centered*. Because I still do that. I have to *catch myself and stop from deviating or going away from the student-[centered]*.” Courtney appeared to feel this tension in subjects other than social studies as well.

The source of their tensions differed between Courtney and Samantha. Courtney shared that she feels tension about her teaching practices when teaching mathematics in an old style, when students do not understand a term in social studies, when students do not take the task seriously, or when she is not practicing student-centered; whereas Samantha noted that she feels tension about her teaching practices when she does not have sufficient resources or when she has to give tests to the students.

Sub-Theme 2c) Change in Beliefs

From teacher-centered to child-centered approach. Courtney expressed that she has drastically changed her beliefs since she began teaching to adopt a more child-centered approach.

We teach as we are taught, right? And that is how we are teaching. The way that we, like years and years ago, it's teacher versus student. It's *teacher-centered*, it's not child-centered. So, when I started teaching, I noticed that I'm doing teacher-centered because it's easier . . . and until now, I still have to catch myself not doing *child-centered*.

Courtney explained that seeing how a child-centered approach embraced and involved students in instruction, which has made a “difference” in her classroom, motivated her to change her beliefs.

Courtney has adopted more contemporary theories of teaching and learning such as a student-centered approach just like Samantha, who changed her role from lecturer to supporter.

Sub-Theme 2d) Change in Philosophy

Involved the students in teaching. Courtney spoke about how her post-graduate studies affected her philosophy of teaching.

I did my *Masters in child-centered curriculum*. And it was a big, big difference, and I saw that. I saw that in my own teaching . . . and when it is child-centered you feel it very – very alive. So how has it changed? Me making an effort to always involve the students in my teaching.

Both Courtney and Samantha changed their philosophies to understand their students more: for Courtney it was to “involve the students in my teaching” and for Samantha it was to “*put myself in their shoes*.”

In summary, Courtney's change to embracing a student-centered approach and involving the students in her instruction as well as considering her students' positive experiences in the classroom all aligned with her professed belief in student-centered learning, but she still feels tension when teaching in "*the old way*" or when "*going away from the student-[centered]*."

5.4.1.3 Theme 3 Conditions That Enable or Constrain Teachers' Enactment of Constructivism in Classrooms

The following section outlines some examples reported by Courtney in the interview of conditions that either support or constrain her enactment of constructivism in the classroom.

Sub-Theme 3a) Supports

From the school principal, colleagues, and parents. Courtney explained that she could walk into the principal's office anytime she needed a consultation, noting that "*the principal has an open-door policy*" to come and talk to him about any problem, which, she commented, "is really good for us." He provided help and suggestions whenever Courtney needed support, such as when "at the beginning of the year, I told the principal . . . 'I want to see this, this, this, this.' And he said, '*By all means, yes*' . . . and he suggested other things."

Courtney talked about the additional support from her colleagues and even described her school environment as "having a kind of a family." Courtney highlighted that

as staff together, we feel that we are a family, one family, and I can rely on my colleagues to do whatever; if I need something, *if I need any resources*, anything, any help, I would go to my *colleagues*. I have . . . *a network* kind of that I can go and talk to them and they can help me. . . .When I encounter

anything with difficulties, I talk either to my colleagues – usually I go first to my colleagues. When I'm not satisfied, I go to the principal.

In addition to the support from the principal and her colleagues, Courtney mentioned that she receives support from students' parents, who "are really *supportive*, absolutely supportive. They are willing to . . . [give] feedback." A student in her class was struggling with his academic achievement, but with Courtney's and another colleague's help as well as parent support, he excelled in his academic achievement. Courtney noted that the experience was due to "a positive support from the parent, too." She expressed that she hopes to get even more support from parents.

Both Courtney and Samantha expressed that they receive support from the school administration, colleagues, and students' parents.

Sub-Theme 3b) Constraints

In materials, space, and money, students' behaviour, low-performing and students' learning difficulties, difficulties with parents. Courtney listed several constraints that she encounters with respect to limitations in resources, materials, space, and money.

We have all kinds of limitations. Even, for example, like when we have *materials*, things that we want to get, and not as easy as is possible for other schools. If I want to do a project that is hands-on or an experiment or whatever, I don't have – limitation in the sense of *space*, material, like *money*, things like that. All these things play a role.

Courtney reported that she has "encountered a lot of difficulties." She said, "I have *difficult students*. . . . I have [students with] *behavioural problems*, students that are *behind in academic achievement*. Students that have some kind of *learning difficulties*." Courtney indicated that "some of [the resources] are really, really good,"

but *some resources lack enjoyable and engaging activities* for the students and “the kids will say, ‘Oh, this is not really fun. We want some more fun.’”

Students’ parents were another difficulty mentioned. Courtney discussed that “*some parents, they put more pressure on their kids, so that’s more pressure on the teacher.*” Courtney gave an example.

If that child [gets] a low mark on one of the assessments . . . it’s a disaster and you don’t want a child – like, they will cry . . . That will shake the student’s self-esteem and we don’t want that because that also plays a role in his achievement or his acquisition of knowledge.

Courtney expressed that she receives support from the school administration, colleagues, and students’ parents. Courtney and Samantha both reported lacking resources and material in social studies. However, different from Samantha who faces limitation in the content of social studies and in the school, Courtney mentioned encountering limitations in space, money, students’ behaviour, low-performing students, students with learning difficulties, and difficulties with parents.

In summary, Courtney shared her understanding of teaching and learning, how she arranges her classroom and plans her instruction, as well as her understanding of the teacher’s role. She also discussed her theoretical orientation and views of learning. Courtney also elaborated on her beliefs concerning the students’ role, mistakes, social interaction, and methods of assessment. Courtney reflected upon her teaching practices, tensions about teaching, and changes in beliefs and philosophy. Lastly, Courtney talked about the supportive and challenging conditions that enable or constrain her enactment of constructivism in the classroom.

5.4.2 Courtney's Lesson Plan

Courtney provided me with her lesson plans for the two lessons I observed. In her lesson plans, Courtney included the concept of diversity as the main objective and learner outcome. She specified that she set general and specific outcomes that supported higher-order thinking such as interpretation, demonstration, and description. Courtney identified a hook for her lessons based on questions about students' prior knowledge, allowing them to share it with the class. She set learning activities that were focused on reading, questioning, and displaying "fun facts about ancient Rome." She identified instructional strategies mainly focused on discussion and asking students questions, and the resources identified in the lesson plans were the textbook, the internet, and handouts. However, the assessment method was not identified in Courtney's lesson plan. The lesson plan appeared to reflect a student-centered approach by using concepts such as diversity and previous knowledge. The lesson plan also appeared to reflect a discussion approach by using learning activities such as questioning and visual learning (in showing pictures of gods and goddesses of ancient Rome).

5.4.3 Courtney's Classroom Observation

Courtney had 24 students in her classroom. The classroom had a smart board, two white boards, two computers, and a mini library in the corner. The tables were arranged in a U-shape and there were desks in the middle arranged in rows of single desks. The teacher's desk was at the front side of the classroom in the right corner. Beside the teacher's desk, there was a storage unit for students' textbooks for several subjects. Courtney noted that she had removed most of the classroom posters and only left on display the motivational and attitude posters. I observed the first lesson in

Courtney's class during the second learning block and the second lesson during the third learning block a week after the first observation.

5.4.3.1 Theme 1 Observed Understandings of Constructivism

The following section reports the classroom observations of how Courtney enacted her beliefs, understandings, and perceptions of constructivism. I paid attention to Courtney's actions, interactions, activities, and the resources she included in her lessons.

Sub-Theme 1a) Teaching Practices/Constructivism in Action

I examined Courtney's practices in the classroom in order to identify what approaches she commonly adopts. Note that this theme and the following theme on what I observed based on principles of constructivism in action indicated on the checklist are not mutually exclusive.

Adopted student-centered, discussion approach, visual learning, and teacher-centered learning. I observed two social studies lessons in Courtney's classroom. It appeared to me that Courtney's theoretical orientation reflected a student-centered approach, discussion approach, visual learning, and teacher-centered learning. Here, I provide brief examples of Courtney's classroom practices, which will be discussed in detail in the subsequent section.

Courtney's observed lessons indicated that she also embraced a student-centered approach in practice. She allowed students to *share their previous knowledge* about the topics discussed, which gave students *autonomy* to express any question, comment, or interest. She also *shared with them the learning goals* at the middle of the lesson and *included stories* in both lessons. Courtney tried to include a word search game on the board in her second lesson, but this was done close to the end of the lesson and was cut short with the period ending.

Throughout the lessons I observed, Courtney supported discussion by *using questioning and discussion prompts; she asked* students questions related to the new lesson and encouraged them to *share* what they knew about the topic with the class. She also provided opportunities for *peer discussions*.

Courtney supported visual learning by having *painted pictures* of gods and goddesses of ancient Rome as well as *a map*. During the lessons, I noticed that Courtney *stood in front of the students while explaining and presenting* the lessons to them. This might be an indication that Courtney's practices reflect, to some extent, teacher-centered learning.

It appeared to me that Courtney's enactment of student-centered, discussion approach, visual learning, and teacher-centered learning in her lessons reflected the theoretical orientation toward visual learning and a student-centered approach that she shared in the interview. I did not observe in the two lessons any instances of hands-on learning, which Courtney mentioned in the interview was one of her theoretical approaches ("I like to incorporate *hands-on*"). Nonetheless, I observed Courtney use a teaching strategy that she had not directly spoken about in her interview: the discussion approach that was seen through teacher-student discussion and peer discussion. I also observed a method that Courtney had briefly talked about, visual learning ("I like to incorporate visuals for the kids"), which appeared more pronounced in action through her use of a map and pictures. That Courtney briefly spoke about using discussion in her teaching but utilized it extensively in her lessons is similar to Samantha's observed practices.

5.4.3.2 Theme 2 Observed Principles of Constructivism in Action

This section is organized by the nine broader principles of constructivism indicated in the checklist (see Appendix B).

Sub-Theme 2a) Knowledge

Knowledge construction: built on students' existing knowledge. In the lessons observed, Courtney helped students build on their existing knowledge by *connecting the new knowledge to the information they already knew or had heard of*. For instance, before she started her lesson about myths in ancient societies, Courtney asked her students to *share what mythic stories they already knew or had heard of*. Another example was when Courtney and her students were reading about laws and government in ancient Rome, Courtney referred to the current Canadian Senate and senators.

Knowledge collaboration: discussion with the teacher and discussion between students. Social interaction in Courtney's class was observed in two forms: *discussion with the teacher* and *discussion between students*. Courtney used *discussion prompts* such as "What can you tell me about . . .? In your own words, can you explain what does . . . mean?" or when *discussing* the pictures, she asked, "What can you see? What can you tell me?" The students then responded to these questions by *sharing their thoughts and ideas*. Sometimes, when students answered the questions, Courtney probed with further questions, "How can you tell, how do you know?" or "Can you give an example?" Courtney *listened* to the students and discussed the new lessons with them. Courtney also encouraged students to *talk with peers* about how myths influenced daily life in ancient societies. This was seen particularly in the first lesson observed. Peer discussion was not mentioned in the interview or in the lesson plan.

Previous knowledge: students shared previous knowledge. Courtney encouraged students to share their previous knowledge related to the lesson by asking questions such as "In your own words, can you explain what does myth mean?" and

“Can you give an example of myth?” Further, students in Courtney’s class *contributed their previous knowledge by sharing information that they had heard of or read about*. For instance, a student shared what people in early societies used for writing. Another student talked about the emergence of Christianity. Another student *shared* his strategy of finding literature by searching and using the internet.

Sub-Theme 2b) Learner

Learner control and student-directed goals: autonomy, teacher included student interests and shared learning goals. During my observation of Courtney’s class, I realized that Courtney *provided opportunities for students to ask questions, discuss ideas, express comments and interests, and share previous knowledge*. Students also asked Courtney critical questions. For example, a student asked if Romans borrowed their beliefs from Greeks, and where the Greeks originally got their beliefs from. Another student asked about how ancient societies thought about gods and goddesses in the first place and how they realized gods and goddesses have power over human beings. In addition, students in Courtney’s class asked her to elaborate if they wanted to know more about a topic or if they did not know the meaning of a word. For instance, a student asked, “What does goddesses mean?” and another asked, “What is atheist?” Another student asked the teacher where they could read more about myths of ancient societies. Additionally, students were able to share their previous knowledge, as described above.

These examples show that students in Courtney’s class took control of their own learning and were curious about the topic presented. Courtney also *included “fun facts about ancient Rome” in her second lesson*. Courtney shared the *learning goals* with the students, which was mainly seen in the first lesson.

Courtney's strategy of allowing her students to ask, discuss, comment, and share previous knowledge reflected the change in beliefs she shared in the interview about "involv[ing] the students in my teaching."

Metacognition: the teacher asked students questions, students reflected on their thinking with their partners. I did not observe metacognitive learning in Courtney's class. However, I observed that Courtney gave her students several opportunities to *express their thoughts and comments* on the lesson. For instance, in the lesson about myths in early societies, *students compared their lives nowadays, where they have technology and electricity, with life in the Middle Ages*. Courtney asked students questions and *gave them time to reflect on their own thinking*. Students were given handouts, and one of the questions appeared to support students' metacognition by *asking them to draw a conclusion* from the beliefs of early societies and religious practices. Students were encouraged to talk and reflect on their thinking *with their partners*.

Sub-Theme 2c) Multiple Contexts

Multiple representations and primary and secondary sources: used several ways to represent a concept. Courtney used different representations in her lessons. In the first lesson, Courtney had students read from their *textbooks* about myths in early societies, which included pictures of some gods and goddesses worshipped by people in ancient Rome. In the second lesson, Courtney presented and read information from the *smart board* about ancient Rome and showed a *map* of Italy on the smart board to teach the students where early Roman societies lived. At the end of the second class, Courtney handed out *worksheets* for the students to complete, which included questions about the lesson. The map of Italy was not mentioned in the lesson plan.

Sub-Theme 2d) Diversity and Understanding

Consideration of errors: corrected students' reading mistakes and misunderstandings. During the two lessons observed, I was only able to notice a few reading mistakes made by students as well as one misunderstanding of the information. Courtney corrected students when they read some words incorrectly. For instance, when a student pronounced a word incorrectly, Courtney *corrected the student right away*. Another example was when a student was about to read the text while the class was still chatting, and Courtney *stopped the student and reminded a particular student about the class rules*. Courtney also *corrected and explained* to a student when he shared incorrect information.

Alternative viewpoints: students were exposed to different beliefs.

Students in Courtney's class were *introduced to different beliefs of the societies of ancient Rome, Greece, and medieval England*. Courtney reminded them to *respect the beliefs of these societies* by saying "they did not know better" or "there is no reason to laugh." When students laughed when Courtney told them that Romans had gods for everything, even for doors, Courtney had to remind the class "please do not laugh."

Sub-Theme 2e) Activities and Tasks

Authentic activities: included different activities. Courtney included activities in her lessons. In the first lesson, students *read from their textbooks* and *discussed illustrations of gods and goddesses* of ancient Rome. Courtney allowed for *peer discussion* about how myth affected the life of early societies, and I noticed discussion with the teacher occurred throughout both lessons. In the second lesson, Courtney incorporated *reading from the smart board* about the different gods and

goddesses as well as *interesting facts about ancient Rome*. Courtney handed out *worksheets* with two questions (which will be described in detail in the next section).

As mentioned earlier, in her second lesson Courtney tried to use a word search game on the board but ran out of time at the end of the lesson period. Courtney's attempt to include a game in her lesson appeared to support her view of using games to engage her students more in the lesson. Courtney's strategy of including several different activities reflected her belief of learning in diverse ways including via games and stories. She mentioned in the second lesson plan that students would be asked to "summarize what they have learned," but this was not seen in action. Instead, she used the visual tool of the map, which had not been indicated in the lesson plan.

Problem solving: students compared and evaluated. I observed Courtney enact problem solving in the form of worksheet questions. For instance, at the end of the second class, Courtney handed out worksheets with two questions for students to complete at home. These worksheets had components that appeared to engage students in critical-thinking and problem-solving skills. As mentioned above, the first question asked students to *compare* the beliefs and religious practices between medieval England and ancient Rome. The second question asked students to *draw conclusions* by comparing their answers to the first question. This activity appeared to help students understand the similarities and differences between the belief systems of early societies. Additionally, the questions appeared to have the potential to enable students to *evaluate* what they had learned by asking them to reflect upon the beliefs and religious practices of early societies.

Sub-Theme 2f) In-Depth Knowledge

Conceptual interrelatedness: connected concepts to the lesson, connected technology to social studies. Courtney tried to relate her new lessons to many

concepts that students were already familiar with. For example, while Courtney and the students were discussing the painted pictures of gods and goddesses, she *referred to painted pictures shown in churches*. Another example was when she *connected the names of gods in Greek such as Mars, Jupiter, and Neptune to the names of planets* and explained that these planets were named after Greek gods. Moreover, Courtney related the lesson on myth to *technology*, explaining how fast information travels nowadays compared to the Middle Ages.

At one point during the first lesson, I noticed that there was a moment when students did not know what Courtney expected. While discussing Roman myths, Courtney displayed a map of Italy on the smart board and said, “This is the shape of the boot.” “What boot?” students said, apparently confused at first because they did not understand what country the map was representing. Then Courtney asked, “Have you not seen this map before?” and the students replied “no.” Courtney then explained that the map is of Italy and looks like a boot.

Scaffolding: provided visuals, examples, explained new words, moved around the class, and gave instructions. Courtney supported student learning in several ways, mainly through *visuals* such as *pictures* and *maps*. Courtney also provided students with *examples* to further support their learning. For example, when she explained that the place of worship in ancient Rome was called the temple, she referred to the synagogue in Judaism, church in Christianity, and mosque in Islam. Courtney also *provided definitions for new words* such as “atheist” and “senate.” Courtney was also observed *walking around* the class during discussion time to support students’ learning. During the two lessons observed, Courtney gave students *instructions* such as “raise your hands” or “put your hands down.”

Sub-Theme 2g) Assessment Method

Authentic assessment: questions, discussions, worksheets, and quizzes.

Courtney used *questions, peer discussions, worksheets, as well as a quiz* as methods of assessment. Throughout the lessons observed, Courtney asked students questions related to either the current lesson or their previous knowledge. She also asked students to *talk to their neighbours*. This was seen mainly in the first lesson. She also gave students homework *worksheets* that included questions related to the lesson. Courtney reminded students that they would have a *quiz* after the unit was covered.

Courtney did not identify her assessment methods in the interview and lesson plans.

Sub-Theme 2h) The Teacher's Role

Teachers as coaches: Courtney as guide and lecturer. During the observation, I noticed Courtney took on the role of a guide and a teacher. Her role as guide was exemplified in many situations. For instance, she supported students' learning by *providing examples and connecting different concepts to the lesson*. I noticed that Courtney *moved around* the classroom during students' discussion and tried to *answer questions* and *explain new words* to them. If students were not paying attention, Courtney would *remind them of the virtue of the month*, which was patience, and would *thank students* if they were being quiet and raising their hands. After the first lesson ended, Courtney *repeatedly asked if anyone had any questions*. While explaining the lesson, Courtney said, "This is my knowledge, maybe I can be wrong," which appeared to correspond to her role as a learner, as she had mentioned in the interview.

I also realized that Courtney seemed to have a tendency to practice the role of the lecturer, which was especially evident when she *stood in front of the class while*

presenting the lesson and answering students' questions. If students were chatting, Courtney remained silent until they became quiet and if they kept chatting, she *changed students' seating* arrangement. Standing in front of the students in this way partly reflected the tension Courtney described in the interview when she occasionally finds herself “*going away from the student-[centered].*” Being at the front of the room might also be a classroom management strategy to get students' attention.

Courtney taking on the role of a guide in her classroom was consistent with the belief she shared in the interview about the teacher's role. However, the roles of director and facilitator she had mentioned in the interview were not seen in action.

In summary, I noticed several differences between Courtney's observed principles and her lesson plan. The differences appeared in the knowledge collaboration, sources, activities, and assessment methods used in the lessons. For example, Courtney included peer discussion in the first lesson, but this was not mentioned in the lesson plan. In the second lesson, Courtney used a map of Italy to display the location of ancient Rome, but this was also not mentioned in the lesson plan. On the flip side, the second lesson plan mentioned, as a learning activity, that students would “summarize what they learned” in the lesson, but this was not noticed during classroom observation. Moreover, Courtney assessed students using questions throughout the lessons; however, the lesson plans did not clearly identify her assessment method.

5.4.3.3 Theme 3 Observed Supports and Constraints, Enactment of Constructivism

The following section describes the supports and constraints that I observed during the classroom observation of Courtney's lessons.

Supports: from colleagues. Courtney had an *assistant* in her classroom who helped her by *reading from the textbook, picking students to read, or even answering the door or the classroom phone.*

Constraints: students' behaviour, time. *Students* in Courtney's class *chatted* with each other. Courtney tried many times during the lessons observed to remind them to pay attention and show responsibility, and that if they were not quiet she would change the seating arrangement. I also noticed that *time* was a constraint as Courtney wanted to use a word search game in her second lesson but *ran out of time.*

The support observed from the assistant corresponded to what Courtney reported in the interview: "I can rely on my colleagues to do whatever." During the lesson, I was not able to see support from the principal or parents, as described in the interview, as they were not present. Additionally, I did not have a chance to observe any of the constraints mentioned regarding resources, materials, space, money, low-performing students, students with learning difficulties, or difficulties with parents. Nonetheless, I observed Courtney trying to address the challenge of students with behavioural problems speaking to each other instead of working on the learning task at hand, which she had mentioned as a challenge in the interview. Courtney addressed this by changing the students' seats. I also observed that time seemed to be a constraint in Courtney's class, a factor which she had not spoken about as a challenge in the interview.

To sum up, Courtney's classroom observation revealed that she practiced several approaches that corresponded with her inclination toward student-centered learning described in the interview: for example, allowing students to share their previous knowledge; giving them autonomy to express any question, comment, or interest; engaging them by using questioning and discussion prompts; sharing learning

goals with students; using stories; and her intention to include a game in her lesson. Courtney's way of asking students' questions, encouraging them to share their knowledge, listening and discussing with the students, as well as providing opportunities for peer discussions appeared to reflect her tendency toward a discussion approach. In terms of her professed support of visual learning, this was evident in her use of pictures of gods and goddesses and a map of Italy. Courtney was also observed standing in front of the students presenting the lesson, a possible indication of her tendency toward a teacher-centered approach (or perhaps used as a classroom management technique).

5.4.4 Summary

Overall, Courtney arranged her classroom according to students' projects. In planning instructions, Courtney used different resources ("teacher resources or teachers guide," "textbook," "the internet") and consulted her colleagues. Courtney said that she believes the role of the teacher should be as a guide, director, facilitator, and learner and indicated that her theoretical orientation is towards hands-on learning, visual learning, and child-centered. She supported students' social interaction by including engaging activities. Courtney also mentioned that students learn in diverse ways and that the students' role is to select what they want to learn and build on it. In terms of students making mistakes, Courtney explained that she would accept students' mistakes, except the "silly" ones.

Courtney explained that she is satisfied with her teaching practices and feels good when students have positive experiences in her class, but she feels that she still needs improvement and could always learn more. Courtney shared that she feels tension about her teaching practices when teaching mathematics in the traditional style or when students do not understand a term in social studies or if they make fun

of others' beliefs. Courtney reported that she changed her teaching beliefs and philosophy to adopt a more student-centered approach and to involve students more in her teaching.

Courtney shared that she receives support from the school principal, colleagues (seen in the form of help from an assistant), and students' parents; however, she encounters limitations in terms of resources, materials, space and money, students' behaviour, low-performing students, students with learning difficulties, as well as difficulties with parents. During the lesson observed, Courtney solved the challenge of students chatting and also encountered a challenge of limited time. I did not have a chance to observe any of the constraints regarding resources, materials, space, money, low-performing students, students with learning difficulties, or difficulties with parents, which Courtney had mentioned in the interview.

From the two lesson plans I analyzed, Courtney's observed beliefs in action showed that she embraces a student-centered approach, discussion approach, and visual learning (as well as occasionally employing teacher-centered learning). It was evident that Courtney planned for diversity and included main objectives and learner outcomes including those that supported higher-order thinking and students' prior knowledge; she also included learning activities focused on questioning and used picture resources.

Courtney's classroom of 24 students was arranged in a U-shape and had rows of single desks in the middle. The classroom had posters on motivation and attitude. Her observed principles showed that she supported students' knowledge by helping them construct knowledge by including their prior knowledge and through collaboration. I also noticed that Courtney supported learners by giving them control in the class and time to reflect on their own thinking at any time. She used different

methods and resources to represent the concepts of the two lessons (beliefs of ancient societies), incorporating activities that meaningfully related the topic to students' lives and beliefs. She also corrected reading mistakes or misunderstandings on the spot throughout the lesson and used different ways of assessing students' learning. She provided her students with a worksheet that seemed geared toward improving students' problem-solving skills. Courtney supported her students by providing visuals and examples, by explaining new words, as well as by walking around the classroom and giving additional instructions. The observed lessons showed Courtney's role as mainly a guide and a lecturer. In addition, there were some principles that I was not able to see during classroom observation such as exploration and apprenticeship learning.

Differences between professed beliefs shared in the interview and classroom practices were identified in Courtney' classroom. The differences appeared in terms of professed beliefs as Courtney practiced different approaches than the approaches she shared in the interview. Differences also appeared in terms of knowledge collaboration and the role of the teacher. I also recognized revisions between the lesson plan and teaching practices in terms of knowledge collaboration, resources, activities, and assessment methods used in the instruction.

Chapter 6: Results

To answer the research questions, the data from the participants' interviews, observations, and lesson plans were used. The three pre-existing themes from the interviews and observations were also used to respond to the research questions. For instance, results for Theme 1 (teachers' understandings of constructivism) from the interviews were used to answer the first research question. Theme 1 (observed understandings of constructivism) and Theme 2 (observed principles of constructivism in action) from the observations were used to respond to the second research question. Theme 3 (conditions that enable or constrain teachers' enactment of constructivism in classrooms) from the interviews and Theme 3 (observed supports and constraints, enactment of constructivism) from the observations were used to answer the third research question.

6.1 How Do Practicing Teachers Understand Constructivism?

In the interview, teachers shared their understandings of constructivism and other approaches they adopted. Teachers also shared their understanding of their roles, students' roles, students' mistakes, as well as their methods of arranging their classrooms and planning instructions. In the section below, I share teachers' understandings of constructivism that, from their responses to the interview questions, appeared to inform their practices.

The theory of constructivism and other theories such as behaviourism, cognitivism, and connectivism were not brought up by any teacher interviewed for this study. Instead, teachers used the term "student-centered" learning. "Piaget theory" was also mentioned by one teacher as a theoretical orientation. For the participants in this study, student-centered was one of many approaches teachers adopted. The teachers either had a preference or selection of approaches. Two

teachers, Samantha and Courtney, indicated that they prefer to use student-centered and hands-on whereas Gabriella and Emma mentioned that they do not have a specific preference; instead, they select from a variety of approaches.

Teachers shared different understandings of student-centered learning. Samantha understood *student-centered* in terms of using *rotation centres*, engaging students in *groups*, and having each *student take the lead* to accomplish a task. Courtney understood *student-centered* as incorporating what students want to know and are interested in into her lessons. She expressed that *student-centered* learning makes the classroom “very alive.” Emma understood *student-centered* as giving students the basic knowledge and *enabling them to use their critical thinking*. Further, Emma understood student-centered learning as *using centres* in her classroom. Gabriella did not mention *student-centered* learning during the interview.

Thus, the commonalities among the three teachers (except Gabriella) were *hands-on* and *student-centered* and the differences were *group work*, *problem solving*, *inquiry-based learning*, *scaffolding*, and *differentiated instruction*. All four teachers in the study shared a similar perspective that *hands-on* is one way of learning. Courtney expressed that *hands-on* learning is to include “visuals for the kids.” Gabriella’s idea of *hands-on* learning was through the “scientific way” of “touching, they can learn by hearing, or by viewing.” Emma expressed that *hands-on* learning “stay[s] in your memory more than with the lecture.” And Samantha believed that learning theories nowadays include “allowing the students more freedom for creativity in class.”

In addition to *student-centered* and *hands-on* learning, the teachers adopted other approaches. For instance, Samantha mentioned *group work* and *problem solving*. Her strategy is to “let students learn by themselves by giving them a worksheet and together in a group they figure out the answers.” She would also “give

the students basically no information in the beginning and hand them a piece of paper, and they have to, in a group, solve it by themselves.” Gabriella discussed how she uses *inquiry-based learning* and believes that it helps her to “test [students’] prior knowledge; you need to start with questions and to get feedback from them.” Emma articulated that she practices *scaffolding* and *differentiated instruction*. *Scaffolding* for Emma is when she partners students with students at the same learning levels. “I have two or three or four A+ students that I partner [with students in lower levels]. Why? Because I want them, they are at different levels. It’s *scaffolding*. I try to give them a little bit higher and *more challenging* things to do.” Emma saw the practice of *differentiating instruction* as giving students different tasks according to their learning levels: “Those ones will write a full page. The other kids will write like half a page. I have kids who will write three or four sentences because they have *learning difficulties*. So you need really to *differentiate* your instruction.”

When I asked the participants how committed they are to the approaches they practice, they replied differently. Samantha said, “I use learning centres in my class and a lot of hands-on learning.” Samantha named a preference for group work learning. Courtney responded, “I have to have hands-on,” noting that not all subjects are equally amenable to a hands-on approach. Gabriella said, “It depends on the lesson,” and later added, “I never stick to one way.” Emma, too, said, “For me personally sometimes I don’t follow it to the letter,” explaining that “you could implement all those theories at different times, different situations, with different kids. You cannot just stick to one theory.”

Teachers shared a similar understanding of their role. Samantha understood her role as a *supporter*. Courtney, on the other hand, identified four roles for her as a teacher, *guide*, *facilitator*, *learner*, and *director*. Gabriella interpreted her role as a

parental role. And Emma echoed Gabriella's belief in the *parental role*, but she also added two other roles: a teacher and a *facilitator*. Facilitator, parent, and teacher were roles common to two teachers. *Guide, director, and supporter* were similar but evoked different metaphors. *Learner and parental role* were distinct. This is because they drew from metaphors of school (learner), home (parent), other disciplines (director), and sports (supporter).

Teachers also viewed the students' role in different ways. Samantha believed that students are "learners." Courtney thought that a student "pick[s] what he likes to do, what he likes to learn" and "build[s] on it." Gabriella understood that the role of the student is "to work hard, but not to focus on themselves only." And Emma believed that students are "participants" in the learning process.

All four teachers noted that they accept students' mistakes. Samantha said, "It's fine. We all make mistakes." Courtney said, "So mistakes, that's fine." Gabriella said, "It's normal to make mistakes." And Emma viewed mistakes "as a normal thing." Courtney, Gabriella, and Emma thus understood mistakes as learning opportunities. Courtney said, "You learn from your mistakes." Gabriella said, "I'll remember this next time. I won't do it again." And Emma said, "They are just opportunity to learn."

The teachers shared different methods of arranging their classrooms. Samantha preferred to arrange her class desks *in groups*, noting that "it's always in a group of four" and that for "most subjects I'll have rotation centres." Courtney rearranged her desks according to *students' projects*, whether an individual or group project was the focus: "It depends on what I want from the students." Gabriella cared about classroom *routines, structures, and patterns*, noting "you keep on drilling what our system is going to be throughout the whole year" and for students "the main goal

is to be happy in the class.” Emma was big on having *patterns and rules*, emphasizing that “you need really to stick to the rules.”

In planning instructions, they shared different strategies including revisiting *curriculum expectations, varying to match lesson objectives, revisiting curriculum document and policy, consulting with colleagues, and using a hook as a theme for the lesson*. Two teachers, Samantha and Gabriella, said they referred to curriculum expectations. Samantha said, “I go through the curriculum on what they are supposed to be learning.” And Gabriella noted that she “start[s] by looking at the expectations.” Emma reported that “it depends on your objective” and plans her lesson accordingly. Courtney shared different strategies in planning her lessons such as reviewing “teacher resources or teachers’ guide,” “read[ing] what the students have in their textbook,” searching the internet to get an “idea of what I want to do,” and asking her colleagues and friends for guidance on planning her instruction. Courtney and Gabriella explained that they use a “hook” in the beginning of their lessons in order to attract students’ attention.

To sum up, none of the teachers in the study overtly mentioned the theory of *constructivism*. The most common theories mentioned were *student-centered and hands-on learning*. They referred to other approaches such as *group work, problem solving, inquiry-based learning, scaffolding, and differentiated instruction*. Two teachers, Samantha and Courtney, said they were committed to the theories they adopted and tried to practice them as much as possible. The other two teachers, Gabriella and Emma, attributed their commitment to the approaches they practice to different lessons, times, situations, and the students. Each teacher in the study expressed a different understanding of her role as well as the students’ role. They accepted students’ errors and viewed them as opportunities to learn. When planning

instructions, the teachers reviewed curriculum and policy documents such as objectives and expectations, used curriculum resources such as the teachers' guide and students' textbooks, searched the internet, and asked colleagues. Some teachers focused on lesson structures such as using introductions and hooks.

Samantha clearly named a preferred commitment. Courtney named a preferred commitment regarding lesson planning and selecting a lesson structure and selected from a variety of theories, teachers' roles, classroom space arrangement, curriculum resources that inform her practice. Gabriella mentioned that she uses curriculum expectations as a starting point for lesson planning and draws from a variety of teaching practices (with no opinion on seating arrangement). Emma mentioned that she employs a variety of classroom practices and eclectic theories as well as teachers' roles; she stated no preference on classroom seating arrangement but appeared to be committed/selective when planning a lesson based on expectations.

6.2 How Do They Enact Constructivism in Their Teaching?

This section outlines the teachers' roles observed in the classrooms, how the teachers began and concluded their lessons, what activities they included, and the social interaction that occurred in their classrooms. The observation template (see Appendix B) was used to find patterns across teachers' practices. Additionally, teachers' practices in the classrooms were examined in order to identify what theories the teachers commonly followed in their adopted practices. That is, attention was paid to common actions, interactions, resources, and activities that teachers used in their lessons.

6.2.1 Teaching Practices/Constructivism in Action

The following list comprises the common theories, besides constructivism, that were identified among teachers in this study.

Visual learning was observed across all teachers in the study. Pictures were the common tool used in all lessons. Courtney and Gabriella used maps, and Gabriella and Emma showed videos. Gabriella and Emma spent more time explaining, discussing, and asking questions about the maps and videos.

Discussion was another approach that all teachers practiced in each lesson observed. Discussions were mostly seen between the teacher and the students in the form of questions and answers. Samantha added group discussion and Courtney added peer discussion.

Teacher-centered learning was recognized in the lessons of Emma, Gabriella, and Courtney. They exhibited some tendency toward adopting a teacher-centered approach, which was seen in the extensive time spent lecturing and presenting the lesson. The teachers directed their classrooms in terms of the lesson instructions. In Emma's and Gabriella's classes, social interaction mainly occurred between the teacher and the students, and students worked individually during the activity time.

A *student-centered* approach was noticed in Samantha's and Courtney's classes in particular. Both Samantha and Courtney supported learner-directed goals. Courtney shared the learning goals with the students and Samantha shared the nature of the activity and how they were going to do it. Samantha and Courtney enabled their students to set self-directed goals by giving them autonomy to choose the type of performance they were interested in; to divide the roles among themselves (for Samantha); and to express any question, comment, or interest (for Courtney). Both Samantha and Courtney supported knowledge collaboration by group work and discussion. They also included engaging activities such as making butter (for Samantha) and stories and games (for Courtney).

Hands-on learning was mainly observed in Samantha's class, in which she enabled her students to model the animals' characters and make butter. In Emma's and Gabriella's classes, hands-on learning was limited to completing worksheet questions that asked students to engage with the everyday lives of Inuit peoples by dressing up an Inuit kid, drawing Inuit houses, and planning Inuit supper-time meals, as well as engaging with samples of Inuit houses.

Group work and problem-solving learning were only practiced by Samantha, who included group activities and group discussions in her lessons. Problem solving was observed through projects and tasks in Samantha's teaching.

Overall, the participating teachers practiced five approaches in their classrooms: visual learning, discussion approach, teacher-centered, student-centered, and hands-on learning.

Consistencies and inconsistencies were noticed between teachers' theoretical understandings shared in the interviews and the teaching practices/theories observed in classrooms. Samantha, Gabriella, and Emma were consistent when speaking about planning and in their practices toward *hands-on* learning observed in their teaching. Samantha and Courtney were consistent in their beliefs (regarding *student-centered and visual learning* expressed in their interviews), planning, and practice. Samantha and Gabriella were consistent in their beliefs, planning, and practice in their tendency toward *discussion approach*. Samantha was consistent in her orientation toward *group work and problem solving* in her professed beliefs, planning, and observed practices.

Courtney, Gabriella, and Emma exhibited inconsistencies between their theoretical understandings shared in the interview and the teaching practices/theories observed in their classrooms. Although Courtney mentioned the value of *hands-on*, Gabriella of *inquiry-based* learning, and Emma of *student-centered, scaffolding*,

differentiated instruction, and Piaget theory, classroom observations revealed that these approaches were absent from their practices. They also practiced approaches they had not discussed in the interviews: discussion approach for Courtney and Emma, and visual learning for Gabriella and Emma. Visual learning and discussion approach appeared to be adopted in practice by each teacher in the study, but only two teachers in the study referred to these approaches in their interview.

To sum up, teachers who shared their preference for student-centered had classroom practices that reflected this approach. However, teachers who shared that they did not have a specific preference tended to use a variety of approaches in their classroom practices.

6.2.2 Observed Principles of Constructivism

Classroom practices observed using the observation template revealed similarities and differences and patterns in how the teachers enacted constructivism.

All four teachers, Samantha, Courtney, Gabriella, and Emma, attempted to *build on students' existing knowledge*. They helped students to construct new understanding by connecting new knowledge to the knowledge that they already possessed.

All teachers in the study engaged students in *knowledge collaboration*. This was seen in two forms: (1) discussion in groups, like Samantha, or with peers, like Courtney, or (2) discussion between the students and their teachers, seen with all the teachers. Samantha included other ways to enable students' social interaction such as presentation and modelling.

In terms of supporting *previous knowledge*, Courtney, Gabriella, and Samantha asked students to share their previous knowledge and experiences related to

the new lesson. Samantha, Gabriella, and Emma reviewed previous lessons, topics, or units.

All four teachers provided *autonomy* to their students. They enabled students to participate in discussions, make comments, ask questions, and share previous knowledge. In Courtney's class, students were given lots of time to express their thoughts. Courtney was the only teacher who was observed sharing the learning goals with her students whereas Samantha shared details with students about the nature of the activity and how they would do it.

Metacognitive learning was not supported by all teachers. Teachers were only observed asking students questions and allowing them to reflect on their own thinking and responses. This was seen particularly in Courtney's and Samantha's lessons in which they allowed students to discuss and reflect on their own thinking with the teacher, groups, or peers. Additionally, one of Courtney's worksheet questions asked the students to draw a conclusion about the lesson.

The teachers used many *methods of representation*. All teachers used pictures in their lessons and handed out worksheets to their students. Samantha, Courtney, and Gabriella used textbooks or reading sheets to read about the new topics. Two teachers, Gabriella and Courtney, used maps in their classrooms; and two teachers, Gabriella and Emma, used videos and 3D samples in their lessons. Samantha was the only teacher to employ student presentations and modelling.

Textbooks or reading sheets were the primary *sources of data* for three teachers: Samantha, Courtney, and Gabriella. Videos and 3D samples were primary sources of data for Emma and Gabriella. Maps were mainly used by Gabriella and Courtney. Pictures related to the lessons, included in readings or worksheets, were used across all four teachers.

For *students' mistakes*, most teachers in the study were observed supporting students' errors. For instance, when students missed the answers, Samantha encouraged them to go over their answers and compare them with their groups. Courtney reminded a student about the class rules when he was chatting and also corrected and explained to a student when he shared incorrect information. Gabriella was seen asking a student "is it?" when he or she did not answer correctly, and sometimes she accepted the students' answers as an alternative. Both Gabriella and Courtney corrected students when they read words incorrectly. Emma was disappointed with a student's handwriting, which she considered not neat enough, and put a sad face on the student's work.

Diversity and multiple viewpoints were recognized among all four teachers. All teachers introduced their students to different perspectives and beliefs. For instance, Samantha introduced students to the life of Canadian pioneers; Courtney introduced the belief system of ancient Rome, Greece, and medieval England; and Gabriella and Emma discussed the lifestyle of the Inuit. Courtney and Emma reminded their students to respect the beliefs of others. Samantha also let her students represent the information given in the reading in many ways, such as in presentations, skits, or acting.

Two types of *activities* were observed among all four teachers: worksheets and discussion. The worksheets that teachers included were within a context that students were familiar with such as food, houses, clothing, and beliefs. The questions in Gabriella's and Emma's worksheets were about cutting, pasting/placing, and drawing different types of food and clothing as well as writing a story. Samantha also used worksheets in both lessons, which asked students to match words to their meaning, number sentences in the correct order, attribute "true" or "false" to the sentences

given, and list the ways pioneers used animals in their daily life. Courtney assigned one worksheet for students to complete at home in which students had to compare the beliefs of early societies. All teachers used teacher-student discussion in the form of questions and answers. Group discussion was unique to Samantha and peer discussion was unique to Courtney. Samantha added activities such as students' presentations and making butter. The worksheet activities described above showed that teachers practiced problem solving, but it was limited to questions in the worksheet (except for Samantha who added tasks in her lessons).

Only one teacher, Samantha, supported *exploration and apprenticeship learning* when she asked students to model the animals' characters and act them out, and when she and her students made butter out of cream just like the pioneers historically did.

All teachers attempted to *link their lessons to different concepts*. For instance, Samantha linked different social studies topics to each other; Courtney, Gabriella, and Emma connected social studies lessons to students' lives; and Courtney and Gabriella connected their lessons in social studies to other subjects like technology and math.

The teaching strategy of *scaffolding* was observed among all teachers in the study. Teachers used visuals such as pictures, maps, and videos to support their students' learning. All teachers except Emma were observed moving around the classroom to discuss with the students regarding the lesson, provide examples, and answer questions. All teachers were observed giving instructions to their students during the activity/lesson. Samantha and Emma reviewed the main points of the new lesson with their students. Teachers also gave students time to either do the activity, like Samantha, or to answer the teacher's questions, like Gabriella. In Gabriella's and Emma's classes, the teacher encouraged students by saying encouraging words such

as “excellent” when they answered the teacher’s questions or when they did well in the activities. Samantha and Courtney explained the definition of new words. Samantha included student presentations and modelling as additional forms of scaffolding.

There were two common *forms of assessment* observed in the classrooms: discussion between the teacher and the students, and worksheets. Discussion between the teacher and the students was noticed among all teachers in the form of questions regarding the new lesson or questions regarding previous lessons asked throughout the lesson (for Courtney, Gabriella, and Emma) or at the beginning and end of the lesson (for Samantha). Worksheets were another method of assessment used by all teachers in the study. All four teachers provided worksheets for each lesson observed except Courtney, who provided one worksheet at the end of the second lesson. Samantha used group work and discussion and Courtney used peer discussion as other types of assessment. Gabriella and Emma used sticks to ask students questions related to the previous lessons, and Samantha and Courtney included tests and quizzes.

Overall, teachers had common teaching practices in many constructivist principles, such as *knowledge construction, previous knowledge, multiple representations, primary and secondary sources, alternative viewpoints, authentic activities, conceptual interrelatedness, and scaffolding*. However, teachers’ practices were varied in many principles, such as *knowledge collaboration, learner control and student-directed goals, students’ mistakes, and assessment method*. *Metacognition* was limited to questions from the teacher or discussion with groups or with partners. *Problem solving* was limited to questions in the worksheet. Principles such as *exploration and apprenticeship* were present in only one teacher’s practices (Samantha).

Consistencies and inconsistencies were noticed between teachers' theoretical understandings shared in the interviews and teaching practices/theories observed in classrooms. All teachers were consistent on including many activities, which reflected their beliefs that learning happens in many ways. Three teachers, Samantha, Courtney, and Emma, were consistent on *giving learners control* as they were observed providing their students with autonomy in the classroom. Samantha was consistent in principles such as *knowledge collaboration, sources, and solving problems*. Both consistencies and inconsistencies were noticed among teachers in terms of the *method of assessment*. Samantha, Gabriella, and Emma were consistent in practicing similar *assessment methods* shared in the interviews and inconsistent in terms of practicing other methods that were not mentioned in the interviews or sharing *assessment methods* in the interview that were not seen in action. Three teachers, Courtney, Gabriella, and Emma, had common inconsistencies on *knowledge collaboration* and practiced different strategies than the beliefs they shared in the interviews. For instance, in their interviews, all teachers revealed that they provided opportunities for social interaction in their classrooms through group work. However, only Samantha included group projects in both lessons. Additionally, two teachers, Gabriella and Emma, mentioned using group assessment or peer assessment, but this was not seen in action. *Modification* in lesson plan was also noticed among three teachers, Courtney, Gabriella, and Emma, as they practiced different strategies than the ones mentioned in the lesson plan. This was mainly seen in principles such as *knowledge collaboration, sources, activities, and assessment methods*.

6.2.3 Teachers' Role

During the classroom observations, close attention was paid to the role teachers played, with a focus on how teachers organized their classrooms and

prepared their lessons/activities. How teachers interacted with their students and how students interacted with each other were also observed.

Each teacher in the study organized her classroom differently. Samantha's classroom was organized as *groups*, Courtney's was organized in both U-shape and rows of single desks, Gabriella's was arranged in *rows of twos*, and Emma's was in a U-shape.

Teachers used a similar strategy on how they began their lessons but a different strategy on how they concluded their lessons. Samantha, Gabriella, and Emma began their lessons by *reviewing* previous lessons. Gabriella and Emma began their lessons by *asking students* questions related to the previous lessons whereas Samantha began both lessons by *reviewing* the homework from the previous lessons. Different from the other teachers, Courtney started her lessons by *asking students* about their previous knowledge related to the new lessons. Samantha and Emma wrapped up their lessons by *summarizing* the main information whereas Courtney concluded her lessons by *responding to students' questions and comments* and Gabriella *let the students work on worksheets* for the rest of the class.

There were some similarities and differences between the activities teachers used in their lessons. Worksheets were the most common activities seen across the four teachers. *Reading* from the "information cards"/smart board/textbook was observed among Samantha, Courtney, and Gabriella. All four teachers *showed pictures* in their lessons. Two teachers, Gabriella and Emma, *displayed videos*. Only one teacher, Samantha, supported *group activities* in which she included student presentations and butter making.

Teachers also differed on how they spent their classroom time. In Courtney's and Gabriella's lessons the classroom time was mostly *spent on discussions* between

the teacher and the students; in Emma's lessons about half of the classroom time was *spent on watching videos*; and in Samantha's lessons the classroom time was mostly *spent on hands-on activities and group discussion*.

The observed lessons showed the teachers' role as mainly a *guide and a lecturer*. All four teachers appeared to act as a *guide* providing *instructions and suggestions*. For example, during the lessons, Samantha *reminded* the students to ensure they had the correct answers on their worksheet; Courtney *reminded* the students to respect others' beliefs and to be quiet and raise their hands; Gabriella *reminded* the students to give time to their classmates to participate and supported students by using praise ("good," "perfect," or "excellent"); and Emma provided *hints* during the activities and encouraged her students by saying "very good," "nice," or "I like that." Three teachers, Samantha, Courtney, and Gabriella, were observed *moving around* the classrooms. The teachers were also noticed taking on the role of a *lecturer*. Three teachers, Courtney, Gabriella, and Emma, were observed *presenting and lecturing* for a large portion of the lesson. Courtney also played the role of a *learner* as she responded, "I do not know" and "this is my knowledge, maybe I can be wrong" when students asked her questions, whereas Emma played the *parental role* as some students called her "mom" and Emma said "son" to some students. Courtney and Emma were consistent in practicing the role of a *guide and parent*, respectively, but inconsistent in practicing the role of a *director and facilitator*. Samantha was consistent in her role as a *supporter/guide* whereas Gabriella was inconsistent in her *role as a parent*.

To summarize, teachers had common methods of beginning *their lessons with review followed by new content and common type of activities* they included such as worksheets, reading, and discussion. They also enacted similar roles as a *guide* and a

lecturer. Teachers *organized their classrooms in a variety of ways and concluded their lessons in different ways*. In terms of activities and social interaction, teachers had similarities in *activities* they used such as worksheets, readings, showing pictures, and supporting teacher-student discussion, but they had differences in *activities* such as showing videos and supporting student-student discussion. Consistencies and inconsistencies were noticed between teachers shared theoretical understandings and the teaching practices/theories observed in their classrooms.

6.3 What Conditions Enable or Constrain Teachers' Practices of Constructivism?

Teachers in the interview reported several support conditions that enabled their implementation of a constructivist approach. All teachers in the study agreed that their *school principal* is very supportive, allowing interested teachers to join professional development programs. Samantha expressed that “Mr. [the principal’s name] in the beginning was sending us to teaching resources and learning about teaching better, and that was very helpful.” Gabriella agreed that if she suggests a certain professional development, “the administration . . . will definitely send me.” Samantha noted that the principal prioritizes teachers’ autonomy, noting that “we’re given so much freedom to work the way we want to.” Gabriella mentioned autonomy as well: “The administration never approached me about changing how I’m doing things.” Courtney mentioned that her school principal has an “open-door policy,” so teachers can walk in any time they want to consult with him. Emma concurred that the school principal “was so supportive” and helps her to assess her students.

Samantha, Courtney, Gabriella, and Emma shared that they also receive support from their *co-workers*. Samantha described her co-workers as “supportive.” Samantha mentioned that if she needs guidance “they would give me points on how they dealt with it.” Courtney said, “If I need any resource, anything, any help, I would

go to my colleagues.” Gabriella mentioned planning lessons with a fellow teacher: “I’m working as a team with my other Grade [x] teacher.” Emma described that she had proposed a fun program during June and “everyone is supporting me. All the teachers are coming to me and willing to [participate].” Both Courtney and Emma described their school environment as a “family” and network of colleagues.

Two teachers, Samantha and Courtney, stated that *students’ parents* are very supportive. Samantha described one parent as “in full support of what I do.” Courtney said, “There are parents that are really supportive, absolutely supportive.” She mentioned that “the feedback from them” is really beneficial.

Gabriella added that having discussions with her *students* is beneficial, noting that “communication with the students helped me a lot. It helped me in being a better teacher.”

All four teachers reported that they have encountered limitations in terms of *resources or materials in social studies*. Samantha articulated that she “[does] struggle with materials,” which “frustrates” her. Courtney indicated that “we have all kinds of limitations. Even, for example, like when we have materials.” She added that some of the resources she uses “don’t have enough fun activity for the kids.” Gabriella mentioned that “it’s even more work of finding these resources” for social studies. Emma, when asked about social studies resources, said, “We don’t have a certain book.”

Some teachers revealed that they face constraints with *students who have behavioural issues, low achievement, or learning difficulties*. For instance, Courtney reported, “I have encountered a lot of difficulties. I have difficult students. . . . I have behavioural problems, students that are behind in academic achievement. Students that have some kind of learning difficulties.” Gabriella described some of her students

as “systematic” in doing activities and some as “bossy” because they like to take the lead in group work. Emma identified the same constraints, adding that there is no “special place where the kids go and someone will help them. So they rely on you.”

Teachers discussed other limitations they experience daily in the classroom surrounding *school equipment, space, money, time, and students’ parents*. Samantha explained, “I just want a normal desk . . . like a long one.” Samantha also expressed that she would like to have outside benches in order to have outdoor lessons, because currently “there aren’t any picnic benches for them to sit.” Courtney mentioned “limitation in the sense of space, materials, like money.” Courtney expressed that some students’ parents might be a constraint, noting that “some parents they put more pressure on their kids, so that’s more pressure on the teacher.” Emma shared that her “classroom is small,” which limits her ability to do lots of activities. She added other limitations such as time to do rotation centres and a garden to plant seeds.

During the observation, support from *colleagues* was observed particularly in Courtney’s, Gabriella’s, and Emma’s classrooms. Courtney had an assistant who helped her with tasks such as reading for students from the textbook. Gabriella used a lesson plan and worksheets that were designed by a colleague. Emma used materials made by students in a lower grade (sample igloo and teepee), and the teacher provided Emma with these samples to use in her classroom. Support from the *principal* was observed in Samantha’s classroom. The principal was present during the second lesson to observe Samantha and to participate with the students.

Few constraints were observed in the teachers’ classrooms. *Students’ behavioural issues* were noticed in Courtney’s classroom when she reminded students who were chatting with each other to pay attention and show responsibility. She changed students’ seats a couple of times when they would not stop chatting. Taking

time to work with specific *students who appeared to have learning difficulties* was also noticed in Emma's class. Emma spent some time with a few students with learning difficulties, checking their planners and correcting them while the rest of the students were working on the lesson activity. *Time* appeared to be a constraint in Courtney's classroom as she wanted to use a word search game in her second lesson close to the end of the lesson period.

To summarize, all four teachers in the study reported receiving support from their *school principal and co-workers* whereas two teachers mentioned receiving support from *students' parents* and one teacher mentioned support from *students*. Teachers identified the principal's support in terms of allowing teachers to join professional development programs, providing autonomy to teachers in terms of their teaching practices, having an open-door policy, and even helping teachers with student assessment. Additionally, the four teachers recognized the support they receive from *co-workers*, which manifests as borrowing resources and materials from each other, providing guidance and lesson activities when needed, and even taking part in fun activities proposed by other teachers. During the classroom observation, only support from *colleagues and the school principal* was directly observed.

Teachers discussed some limitations in *resources or materials* that they feel constrain them from practicing their instructions, particularly in social studies. Some teachers recognized difficulties with students who have *behavioural issues, low achievement, or learning difficulties*. Teachers revealed other limitations regarding *school equipment, space, money, time, and students' parents*. During the classroom observation, only constraints in *students' behaviour and students with learning difficulties as well as limitation in time* were directly observed.

Chapter 7: Discussion and Conclusion

This study examined how elementary school teachers understand the theory of constructivism and how their understanding influenced their teaching practices. The teachers were from one private school in an urban area of Southwestern Ontario.

7.1 Constructivism as One of Many

The findings from this qualitative study showed that constructivism was one of many theories that teachers adopted. Besides student-centered learning, teachers mentioned hands-on learning, group work, problem solving, visual learning, discussion approach, inquiry-based learning, scaffolding, and differentiated instruction. Most teachers interviewed shared their understanding of student-centered learning, but classroom observation revealed that only two teachers actually practiced this approach in their classrooms. Classroom observation of teachers who practiced and did not practice a student-centered approach also confirmed that teachers enacted multiple approaches including teacher-centered. This finding differed from studies in the literature (Dangel et al., 2004; Garrett, 2008; Mahmood, 2013) that examined teachers' observed beliefs and practices and concluded that constructivism was often the only approach carried out by teachers.

The teachers' commitments to the approaches they practiced were different. Samantha and Courtney reported that they were committed to hands-on and student-centered learning and tried to practice as much as possible. Gabriella and Emma, on the other hand, mentioned that their commitment to the approaches they practice varies with different lessons, times, situations, and students. This is in contrast to Ray's (2000) findings that most of the teachers studied were committed to practices related to constructivism. Garrett (2008) found that teachers who are committed to student-centered learning are most likely to plan their lessons "on a basic set of

assumptions about the way children learn and what they need in the classroom” (p. 34). Schunk (2012) found that practitioners “often think that they are supposed to believe in one theory and adopt the views of those theorists” (p. 3). His advice is that “there may be one theory that you like better than the others, but maybe that theory doesn’t address everything you want it to. So then you can borrow from other theories” (p. 1).

Although the term constructivism was not cited by any teacher in the study, even though I brought it up several times during the interviews (instead they used the term student-centered), teachers supported many characteristics of constructivism. This was evident in how teachers understood their role in the classroom and students’ mistakes. All teachers stated that they accept students’ mistakes and viewed them as learning opportunities. Teachers understood their role as a supporter, guide, and facilitator, which showed their inclination toward constructivism. Additionally, teachers practiced many characteristics of constructivism. They supported (at various levels of emphasis) principles of knowledge construction, connections to previous knowledge, learner control, use of multiple representations and resources, consideration of learner’s error, embrace of alternative viewpoints, authentic activities, demonstration of conceptual interrelatedness, use of scaffolding, and inclusion of authentic assessment tasks. Murphy (1997) supports this finding: “No doubt there are many teachers who, without knowing of the term, without having been informed of the theory, without following a prescriptive design, are providing the students in their care with opportunities for constructivist learning” (p. 15). Even though the findings of this study are based on interviews and observations of teachers’ classroom practices, it is possible that the teachers who practiced most or all of the pedagogical approaches of constructivism might not consider themselves

constructivists. It is also possible that teachers who practiced most or all of the pedagogical approaches of constructivism might still be missing the central tenets or beliefs of constructivism.

The three experienced teachers in this study tended to practice a teacher-centered approach compared to the new teacher. This was evident in the absence of student-student interaction, the limitation of group activities and problem-solving to worksheet questions, and the role of teachers as lecturers presenting the lesson and directing the class. This aligns with Aydogdu and Selanik-Ay's (2016) findings that less experienced teachers tended to practice principles of constructivism compared to more experienced teachers. One interpretation might be that experienced teachers tend to teach as they were taught when they were students. De Mesa and de Guzman (2006) found that teachers are influenced by their formative education and transferred these early experiences when they teach others. A second interpretation might be that teachers are willing to teach in a constructivist way, but they need to be informed through professional development, peers, administration, and further education and resources on how to teach based on a constructivist learning model. Despite the fact that constructivism has been an approach of practice since the early 1990s (Richardson, 2003), teachers in this study might not have been familiar with it yet when they first started their profession in the late 1990s.

Regarding conditions that enable teachers to practice a student-centered approach, all four teachers reported receiving support from their school principal and colleagues, and two teachers added that they receive support from students' parents. Talbert and McLaughlin (1993) argue that conditions such as school community (including principal support and encouragement, and networks of colleagues) and students' parents (including parents' educational values) play a powerful role in

influencing teachers' practices. Teachers also reported constraints surrounding resources/materials in social studies as well as other constraints related to students' attitude, low achievement, and learning difficulties. This finding aligns with findings from previous studies, in which teachers reported lack of resources and materials in social studies (Bisland et al., 2009; Blaik-Hourani, 2011) and constraints around students' behaviour and ability (Savasci & Berlin, 2012), which limited their practice of student-centered teaching and learning.

7.2 Variety in Understanding and Practice

Teachers had varied levels of commitment as well as varied understandings of the students' role, classroom arrangement, and planning instruction. This variety was evident in their common understanding of student-centered as one of many approaches they might adopt; in their role as supporter, guide, and facilitator; and in how they viewed students' errors as learning opportunities.

Teachers also shared different (but constructivist) beliefs about the role of students. They mentioned students as learners, as decision makers who select what they want and build on it, who are aware of other classmates, and who are participants in the learning process. These beliefs show the general tendency of the teachers in this study toward constructivism, because a constructivist approach emphasizes greater involvement of learners in the teaching-learning process (Bransford et al., 2000).

Regarding classroom arrangement, the teachers were clearly influenced by both student-centered and teacher-centered teaching. One teacher preferred to arrange her class in groups, one organized her class according to students' projects, and the other two stressed the importance of consistent rules and routines. Winitzky (1991) discusses different types of classroom organization in social studies classrooms. She found that group structures "promote higher achievement through helping students to

forge stronger cognitive links between new knowledge and old” (p. 533). In planning instruction, two teachers mentioned that they revisit curriculum expectations; one teacher referred to teacher objectives; and one teacher shared many strategies such as referring to teacher resources and guides, students’ textbook, internet resources, and asking for help from colleagues. Eisner (2002) notes that teachers, in how they engage in planning instructions, have a “range of options that they can exercise in the selection, emphasis, and timing of curricular events” (p. 126). Eisner explains that even though teachers are expected to act according to the curriculum guide, in which content and activities are predetermined, teachers have freedom with respect to what and how materials will be used and what and how skills will be taught.

Teachers had varied understandings of their role as teachers. Different from a constructivist view of the teacher’s role as a guide and facilitator (Abdal-Haqq, 1998), two teachers shared an understanding of the role of the teacher as a parent. Their description of the motherly role, and being a mom themselves, seemed to be referring to the caring role of teachers of younger children.

7.3 Different Understandings/Interpretations of Constructivism

Data analysis from the teachers’ lesson plans and classroom practices revealed moments when they misunderstood or misinterpreted approaches such as discussion, hands-on, and inquiry-based learning. The analysis also showed that certain constructivist principles were absent from teachers’ instructions.

Teachers in this study valued classroom discussion and student participation; however, classroom observations showed that two teachers had a different interpretation of the discussion approach. Classroom discussions were primarily observed in the form of quick questions, where teachers asked questions and students raised their hands to answer. Wilen (2004) notes, “A recitation does consist of a

teacher asking questions and students answering them, but a discussion is much more. . . . recitations are quick and fast paced, discussions should not be” (pp. 33, 35).

Hands-on learning was observed among three teachers. Only one teacher included real-life hands-on activities in which she supported presentations, skits, acting, and modelling. However, the other two teachers limited hands-on activities to worksheet questions. Alesandrini and Larson (2002) explain that “a traditional hands-on activity that is teacher guided often results in student products that essentially ‘all look alike.’ In contrast, constructivism posits that learners create knowledge from new information in light of their previous experiences” (p. 119).

Inquiry-based learning was another approach that two teachers referred to in their lesson plans as an instructional strategy. In their lesson plans, they mentioned that inquiry-based learning would be supported by reading and reviewing books (which was not seen implemented in the classroom), as well as reviewing previous information and asking students questions. This showed that teachers had a different understanding than that espoused in the research literature and in the Ontario policy documents of what an inquiry-based approach really involves. The Government of Ontario in its *Capacity Building Series* (2013) identified the characteristics of inquiry-based learning that help students become “thoughtful, motivated, collaborative and innovative learners capable of engaging in their own inquiries and thriving in a world of constant change” (p. 1).

Classroom observations showed that most principles of constructivism were apparent in many teachers’ practices; however, a few principles of constructivism were absent from most teachers’ practices, especially metacognition, apprenticeship, and exploration. Previous studies have also reported that some constructivist characteristics were absent from teachers’ practices such as connecting to previous

knowledge (Gunel, 2008; Lane, 2015), encouraging student control (Savasci & Berlin, 2012), and including exploration activities (Myagmar, 2010). I also was not able to see many examples of principles of knowledge collaboration and problem solving in action. Knowledge collaboration in this study was primarily limited to student-teacher interaction with a little student-student interaction, except in the case of one teacher. Constructivism, as Alesandrini and Larson (2002) discuss, “favors collaborative work groups that actually work together interactively to accomplish shared goals” (p. 118). Problem solving was mainly limited to students completing worksheet questions. In social studies, solving problems is about more than answering questions in worksheets. “Real problem solving and decision making,” explain Weiss, et al. (1980), “takes place when students and teachers try to identify, define, and solve actual personal, local, and social problems” (p. 244). The absence of these principles from the participating teachers’ practices or their ineffective use in the classroom likely stems from two reasons. First, the difficulty in translating constructivist theory into practice. Even though teachers understood student-centered approaches, implementing their constructivist-related beliefs into classroom practice appeared to be challenging. This challenge of implementing beliefs echoed the claims of scholars reviewed in the literature above (Clever & Ballantyne, 2014; Hyslop-Margison & Strobel, 2007; Richardson, 1997). Second, the fact that the teachers did not practice constructivism in the two lessons I observed (two lessons per teacher) does not mean that these constructivist principles were completely absent from their daily praxis. Rather, it may be because these characteristics, according to Richardson (2003), “play out quite differently depending on content domain, age level of the students, students’ experiences as learners prior to coming into the specific classroom, school context, teaching style, and so on” (pp. 1626–1627).

7.4 Beliefs and Practices

Findings from this study revealed that there were consistencies and inconsistencies between teachers' beliefs and practices. For example, in the interview, teachers reported their professed beliefs in using multiple approaches including student-centered, hands-on, group work, problem solving, visual learning, discussion approach, inquiry-based learning, scaffolding, and differentiated instruction. Classroom observation, however, revealed that two teachers were most consistent with their professed and practiced beliefs and two were not. When consistent, teachers practiced approaches that they had discussed in the interview or they practiced approaches that were different from the ones shared in the interview. Teachers were consistent on the following: *hands-on learning, student-centered and visual learning, discussion approach, group work, and problem solving*. I had expected that the experienced teachers would be more consistent than the new teacher due to the years of experience that had shaped and informed their practices. Interestingly, it was found that the teacher who was most consistent in her beliefs (beliefs in action) had the least teaching experience (one to five years), and the teacher who was most inconsistent in her beliefs had the most teaching experience (20 to 25 years). One might speculate that the new teacher was more exposed to constructivist courses in her preparation programs compared to the experienced teacher's professional programs. Also, one might speculate that more experienced teachers were exposed to a variety of approaches to select from or trusted their ability to select what was most appropriate to the lesson and students.

Many similarities were observed between teachers' lesson plans and classroom practices, but there were differences among the four teachers as well. These

differences were particularly focused around four areas: knowledge collaboration, sources, activities, and assessment methods.

It is not uncommon for teachers to modify their instructions during the actual lesson. Eisner (2002) notes that “education is not a field that will yield to simple prescriptions or recipes. Each situation in which educational decisions are made is significantly unique” (p. 125). Every educational setting, Eisner explains, is unique not because of the differences in time and place but also in “goals, methods, people, and context” (p. 125).

Inconsistencies between planned and actual lessons, as were seen more often in more experienced teachers in this study, might be productive. They might also point to a teacher making adjustments to suit a complex situation. Also, inconsistencies in professed, planned, and observed beliefs might simply point to a difference in readiness for an interview or a difference in earlier opportunities to reflect on one’s beliefs. Nonetheless, I also recognize that in interviews meaning is co-constructed between the interviewer and interviewee. Additionally, some practices, such as discussion, which were not mentioned as extensively as they were practiced, perhaps are taken as given and shared in all teaching, so the teachers did not feel the need to write them down in their plans.

7.5 Implications

Teachers in this study shared deep understandings of constructivism. However, their classroom practices sometimes did not reflect these beliefs. According to this research, teachers need to enhance their practices to align more with constructivist-inspired approaches. This conclusion is based on findings of lack of student-student social interaction; limitation of group activities and problem-solving activities to worksheet questions; teacher’s role as lecturer presenting the lesson; as

well as teachers' different interpretation of concepts like discussion, hands-on, and inquiry-based learning. Constructivism values the role of "questioning, disequilibrium, learners paraphrasing each other and discussing ideas in learning communities, the importance of think time and pair talk, and the role of problem-solving and inquiry" (Fosnot, 2005b, p. 279).

A key implication of this study is for pre-service and in-service teachers to take the role of "facilitators, provocateurs, and questioners. They must turn classrooms into workshops and structure discussions around big ideas" (Fosnot, 2005b, p. 288). Another key implication of this study is for teacher education and professional programs to include engaging courses that reflect on teaching constructivist-inspired approaches. Brand and Moore (2011) note that "teachers, like students, learn through meaningful engagement. They need opportunities to confront, connect, and reconcile new knowledge with prior beliefs and experiences. Teachers must be active participants in both goal-setting and the ongoing work of the professional development process" (pp. 907–908).

Another implication of this research is for teacher education to support teachers in translating beliefs and understandings into actual classroom practices. Because teacher educators work closely with teachers and the "expertise of the teacher educating institute enters the schools and teacher educators get acquainted with school reality" (Van Velzen et al., 2009, p. 71), teacher educators are responsible for helping teachers link theories to practice, not only by modelling different teaching practices, which is crucial, but also by encouraging teachers "to practice various teaching styles and learn to reflect on their teaching style" (Tubić & Hamiloğlu, 2009, p. 143).

This research also has implications for school principals in private and public schools. Principals can support teachers in their schools by finding ways to enhance cooperation among teachers; encourage teachers to join programs and conferences that continue conversations on theory and beliefs, as well as how these interact with teaching practices; and provide resources and materials needed, particularly in areas such as social studies where the resources, according to the participants in this study, are limited.

7.6 Recommendations

Several recommendations are suggested for future research. According to the findings of this study—which showed that the new teacher tended to exemplify more constructivist principles whereas fewer examples were observed in experienced teachers’ practices—further research is essential to explore the causes that constrain experienced teachers from professing and being seen to practice more constructivist principles. Furthermore, the findings showed consistencies and inconsistencies between teachers’ professed beliefs (which were shared in the interview and in the lesson plan) and beliefs in action (observed classroom practices). However, the new teacher showed remarkable consistency across beliefs and teaching practices compared to the experienced teachers who lacked consistency in four key areas: knowledge collaboration, sources, activities, and assessment methods. Further research is needed to investigate the conditions that foster consistency across beliefs and teaching practices. A recommendation for future study is to explore in more depth the demographic features including opportunities for PD in a school system. In addition, this study found that all participants reported a lack of resources and materials in social studies. Future research could examine the reasons behind such limitations.

The following topics need further research in a study with

1. a greater proportion of teachers who teach in ways that are inspired by constructivism and related theories of learning,
2. a focus on the relation between teachers' understanding of teaching and learning theories and years of teaching as well as years since taking courses in education,
3. a focus on the relation between understanding of constructivism and the role of gender,
4. ways to support teachers with teacher learning resources and resources they use in their teaching in ways that align with productive theories of learning,
5. research on resources and materials for teaching social studies in lower grades,
6. greater focus on aspects of constructivist-inspired approaches that were absent for all teachers in this study, and
7. interview, planning, and observation findings on other subjects.

7.7 Limitations of the Study

This study had the following limitations:

1. This study only focused on one elementary school. The school was based on religious, doctrinal, or philosophical paradigms, given that most private schools are, and so the results would not be representative of other schools.
2. Data collection was carried out over three weeks closer to the end of the school year. The findings might have been different if the period was longer or the study was carried out earlier in the school year.
3. This study was limited to four practicing teachers, and due to this small number of participants the findings cannot be generalized. Merriam (1988)

notes, however, that generalization “is not a goal of qualitative research” (p. 47).

4. It was not possible to include the teachers in all research stages, including the planning and analysis stages, due to teachers’ limited time as this study was carried out close to the end of the academic year.
5. This study shed light on private school teacher knowledge, understanding, and beliefs. It might not shed light on knowledge, understanding, and beliefs of teachers in public school boards and on private schools of different sizes and of a different nature than the private school studied.

7.8 Summary

It is crucial that teachers understand the theories on learning, teaching, and other aspects of their work as their understanding and beliefs strongly influence their practices, which, in turn, affect the quality of student learning. This qualitative project aimed to examine four teachers’ understanding and practice of constructivism in their classrooms in a private school in Ontario. Case studies were used in this project, and data were gathered through interviews, observations, and teachers’ planner books. Data showed that teachers understood constructivism as one of many approaches that they adopted. Teachers had either a preference or selection of other approaches. Teachers’ understanding, planning, and enactment of constructivism, and their consistency among these three aspects, did not depend on years of experience, advanced degree in education, or teacher collaboration. Teachers practiced many approaches, but only two teachers practiced constructivism and the other two practiced many characteristics of constructivism. Findings also showed that teachers tended to use teacher-centered approaches and operate with a different interpretation of many approaches related to constructivism such as discussion, hands-on, and

inquiry-based learning. Consistencies and inconsistencies were also found between teachers' professed beliefs and practices.

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Appendix A: Interview Questions

Script to be shared with the participants

1. How many years have you been teaching? What grades, ages, subjects?
2. Share with me how you go about planning for your instruction, say a lesson or a unit.
3. Tell me about curriculum guides and frameworks, textbook series, and other resources you commonly use.
4. Tell me about your favourite teaching strategies and teaching resources.
5. How do you feel about lessons in which you engage your students in activity, social interactions with each other, using materials, in- or outside-the-class projects?
6. What assessment methods do you commonly use? Give examples.
7. What are your views on learning? Give examples.
8. How do you handle students' mistakes?
9. Tell me about the support (or lack of support) you enjoy from your school set-up, your administrator, your teaching colleagues, students' parents, and your Board of Education or broader community.
10. In what ways have you changed as a teacher over the years?

Script for the researcher

1. How many years have you been teaching? What grades, ages, subjects?
2. Share with me how you go about planning for your instruction, say a lesson or a unit.
3. Tell me about curriculum guides and frameworks, textbook series, and other resources you commonly use. Probe if needed: How do you feel about them?
4. Tell me about your favourite teaching strategies and teaching resources.
Prompt if needed: Give me an example. How about your classroom arrangement and classroom management strategies?
5. How do you feel about lessons in which you engage your students in activity, social interactions with each other, using materials, in- or outside-the-class projects?
6. What assessment methods do you commonly use? Give examples.
Prompt if needed: How do you feel about your teaching practices today? Are you able to teach the way you want to? Tell me about a time when you felt good about your teaching practices. Tell me about a time when the way you taught did not match your beliefs about how you should teach.
7. What are your views on learning? Give examples.
Prompt if needed: How do you believe children learn? How do you motivate children to learn? In your view, what is your role as a teacher? What is the student's role in the classroom? How about that of parents? Have you changed your beliefs about how children learn since you began teaching? How has your philosophy evolved? If it has, what motivated you to change? How has this change in beliefs affected your teaching practices? (Prompt: influences—professors, something in childhood, something in teaching experiences, teaching colleagues, graduate studies, readings)

8. How do you handle students' mistakes? Prompt if needed: Give me an example. What are your views about students making mistakes?
9. Tell me about the support (or lack of support) you enjoy from your school set-up, your administrator, your teaching colleagues, students' parents, and your Board of Education or broader community.

Prompt if needed: Has your particular school influenced your implementation of your beliefs? If so, how? Tell me about your administrator's influence; the influence of your teaching colleagues; the influence of your students' parents; the influence of your Board of Education or community.

What has supported you, if anything, in your attempts to teach, based upon these beliefs? Give specific examples. (Prompts: colleagues, conferences or other professional development opportunities, readings and research, email, children's responses, parents' responses, administrators).

What, if any, difficulties have you encountered in implementing the practices that you believe help your students learn? Give specific examples. (Prompts: colleagues, administrators, parents, children's responses, theory)

10. In what ways have you changed as a teacher over the years?

Prompt if needed: Are there times when you experience tension between what you believe about teaching and learning and your teaching practices? Tell me about a time that you felt this tension. Further probe, if applicable: If you feel you haven't resolved these tensions, how do you cope? Give me examples.

Prompt if needed: How would you describe yourself in terms of theoretical orientation? How committed are you to this theory? How do you feel about implementing this theory in your classroom? Give examples.

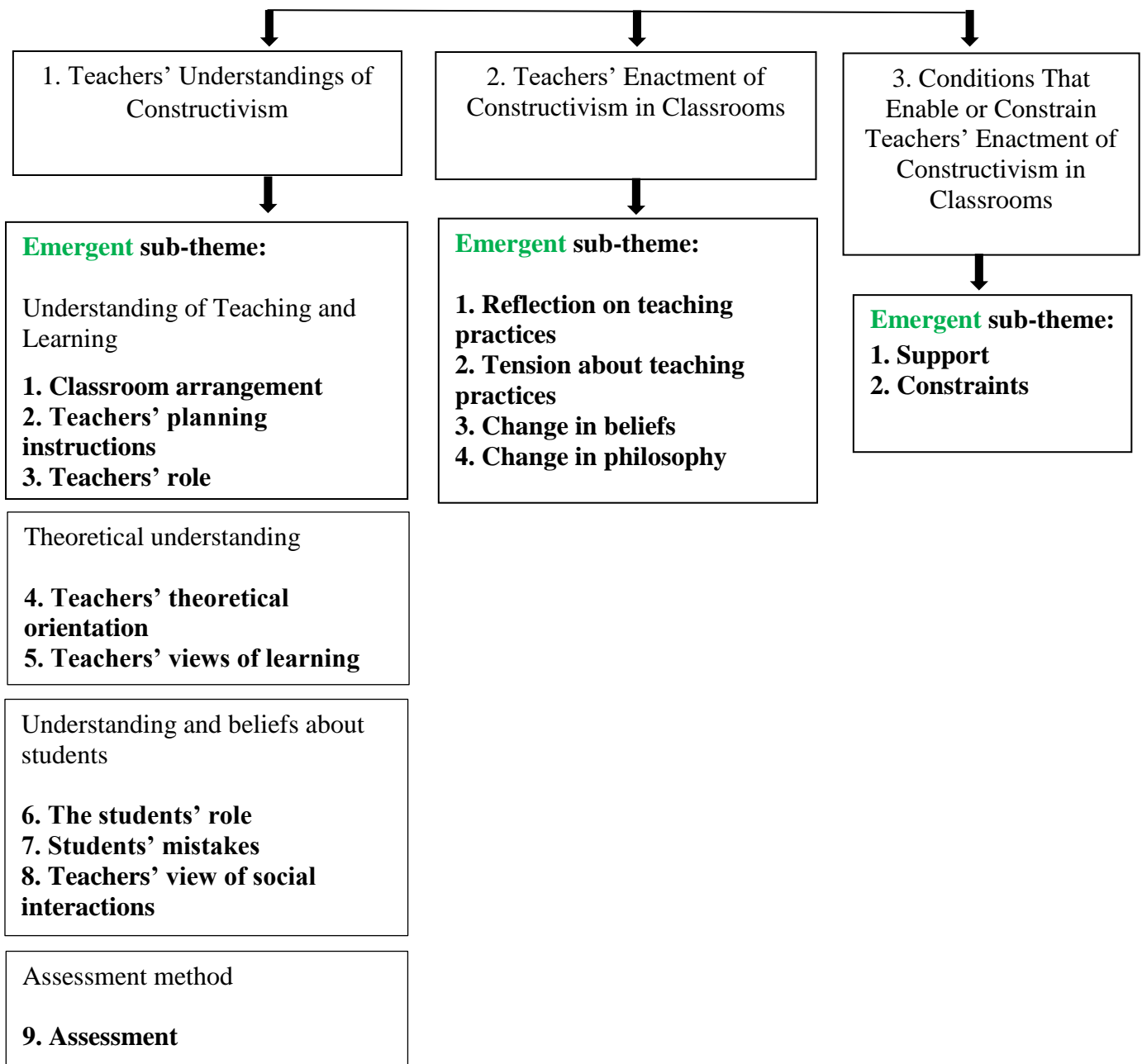
Appendix B: Observation Template

Characteristic	Supported	Not Supported	Not Observed
Knowledge construction (through activity and interactions)			
Knowledge collaboration (through interacting and social learning)			
Previous knowledge (building on previous experiences)			
Learner control			
Student-directed goals (also, student-centered)			
Metacognition (evidence of students being asked to reflect on thinking and learning processes)			
Multiple representations (also, multiple modality, multimedia)			
Primary and secondary sources (e.g., nature, books, experts, videos, or pictures)			
Consideration of errors (as opportunities to learn)			
Alternative viewpoints (multiple perspectives and diversity)			
Authentic activities (use of real-life or familiar contexts)			
Problem solving (also tasks, projects, situations)			
Apprenticeship learning (also, inquiry, simulations, or acting out)			
Exploration (through experiments, research, simulation, or modelling)			
Conceptual interrelatedness (e.g., making connections to other concepts, topics, or subjects)			
Scaffolding (support structures such as hints, summaries)			
Authentic assessment (e.g., variety in assessment for/of/as learning)			
Teachers as coaches (or guide, facilitator, orchestrator)			
Other relevant observations and questions to be asked after the informal follow-up interview:			

Adopted from Murphy (1997) with some modifications.

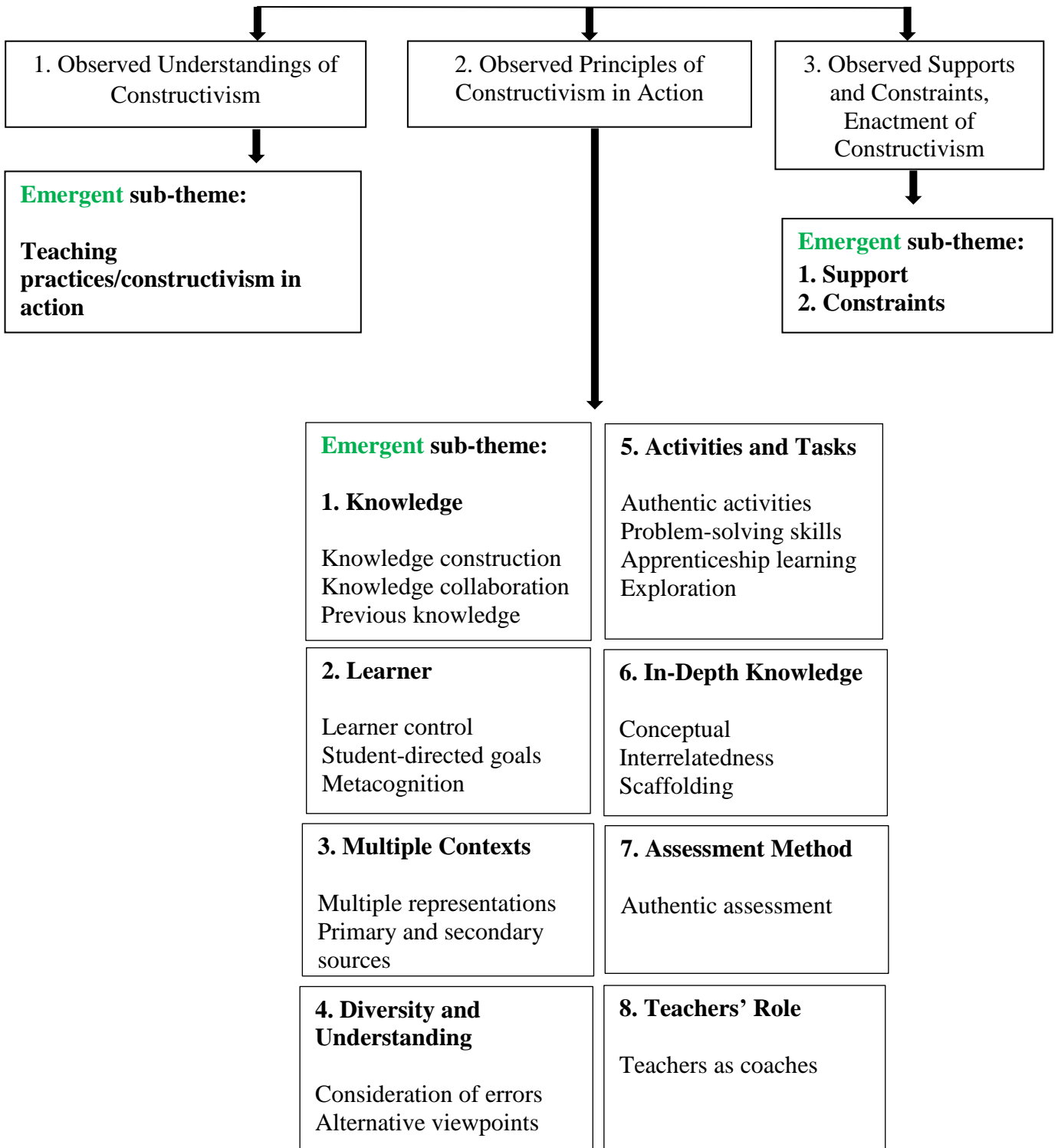
Appendix C: Pre-Existing Themes and Emergent Sub-Themes (Interview)

Three Pre-Existing Themes (Interview)



**Appendix D: Pre-Existing Themes and Emergent Sub-Themes
(Observation)**

Three Pre-Existing Themes (Observation)



Appendix E: Letter of Information and Consent Form



Project Title: Ontario teachers' understanding and implementations of reform instruction: A case study of constructivism

Principal Investigator: Professor Immaculate Kizito Namukasa, Faculty of Education, University of Western Ontario

Letter of Information

Invitation to Participate

You are being invited to participate in this research study on teachers' classroom practices, specifically the ways in which teachers' classroom practices interact with views about theories of learning such as constructivism.

Purpose of the Letter

The purpose of this letter is to provide you with information required for you to make an informed decision regarding participation in this research.

Purpose of the Study

This study is an attempt to gain new insight into the ways in which teachers' classroom practices and views about theories of learning such as constructivism interact. In the past few decades, numerous theories have been explored in curriculum documents, publications, and in research to explain how children learn and the varied ways of teaching children. These theories are currently influencing teaching and continue to be influenced by teaching in classroom.

Inclusion Criteria

1–6 teachers who teach social studies are eligible to participate in this study.

Study Length

It is expected that you will be in the study for a one-month period. There will be four study visits by the researcher during your participation in this study: three visits to your classroom that would take three classroom periods, and one visit for an interview that would take up to one hour.

Study Procedures

If you agree to participate, you will be asked to take part in a one-hour interview in any location based on your preference and availability. You have the right to skip or refuse to answer any questions. Your interview will help us to gain insight about teaching and learning theories that interact with classroom practices. Additionally, the study involves two periods of observations of your classroom. The student researcher observation would be that of a detached observer who does not collaborate with the teacher in the teaching and does not participate with the learners; instead the student researcher will be taking field notes.

Classroom observation will allow us to observe the ways in which teaching and learning theories interact with teaching in action. Follow-up questions might be posed after the classroom observations. These follow-up questions should be an informal interview that will not last more than 30 minutes. The interviews and the classroom observations will be audio-recorded. Audio recording is mandatory for all participants in this research. The student researcher will not use video recording. You will be given an opportunity to review the transcript from your interview and will be able to delete, modify, or elaborate on any of your responses, if you so choose. This may require an additional one hour of your time at a place and time of your convenience. A final component of the study will be to photocopy your lesson or unit

materials for the observed lessons to help us understand the ways in which teaching and learning theories interact with teaching as planned.

Possible Risks and Harms

There are no known or anticipated risks or discomforts associated with participating in this study.

Possible Benefits

You may not directly benefit from participating in this study, but information gathered from this study may provide benefits to the pre-service and in-service teachers education and development programs where theories of learning and teaching are explored with teachers.

Compensation

You will not be compensated for your participation in this study. A token thank-you gift of \$25 will be given to you as an appreciation of your contribution to the study.

Voluntary Participation

Your participation in this study is voluntary. You may decide not to participate in this study. Even if you consent to participate, you have the right to not answer any questions, to refuse the researcher from observing parts of selected lessons, or to withdraw from the study at any time. To withdraw from the study please inform any member of the research team. If you choose not to participate or to leave the study at any time it will have no effect on your employment status.

Confidentiality

The information collected will be used for research purposes only. The data will be kept confidential and accessible only to the investigators of this study. The data would be shared among the researcher, student researcher, and support staff

on password-protected drives. The data will be stored in a secure place until five years after the thesis is submitted after which it will be destroyed by shredding the documents and permanently deleting the electronic files. Results of this study may be published in an academic journal and as a conference paper and may include quotations from your interview, but your rights and confidentiality are protected.

Neither your name nor the school's name will be revealed; instead, pseudonyms will be used. No description of your identity will be disclosed. All information collected during this study will be kept confidential and will not be shared with anyone outside the study unless required by law. Note that Representatives of the University of Western Ontario Non-Medical Research Ethics Board may require access to the study-related records to monitor the conduct of the research. If you choose to withdraw from this study, your data will be removed and destroyed from our database.

Contact for Further Information

Thank you very much for your consideration. If you have any questions about this research, or any comments to make now or at a later date, or if you would like a copy of the published results of this study, please contact Dr. Immaculate Kizito Namukasa at [REDACTED] or [REDACTED] or Nehal Aldamigh at [REDACTED] or [REDACTED]

If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Human Research Ethics [REDACTED]
[REDACTED], email: [REDACTED]

This letter is yours to keep for future reference.

Consent Form

Please complete and return this form to your school office

**** Before returning this form: place this form in the provided envelope and seal the envelope.**

Project Title: Ontario teachers' understanding and implementations of reform instruction: A case study of constructivism

Principal Investigator: Dr. Immaculate Kizito Namukasa

I have read the Letter of Information, have had the nature of the study explained to me and I agree to participate. All questions have been answered to my satisfaction.

I agree to be audio-recorded in this research

YES NO

I consent to the use of unidentified quotes obtained during the study in the dissemination of this research

YES NO

I consent to the use of unidentified photocopies of my lesson and unit plan materials obtained during the study in the dissemination of this research

YES NO

Name of Participant (please print) _____ Signature: _____

Date: _____

Person Obtaining Informed Consent (please print):

Signature: _____ Date: _____

Appendix F: Ethics Approval



Western
Research

Western University Non-Medical Research Ethics Board NMREB Delegated Initial Approval Notice

Principal Investigator: Dr. Immaculate Namukasa
Department & Institution: Education\Faculty of Education,Western University

NMREB File Number: 109065
Study Title: Ontario teachers' understanding and implementation of reform instruction: A case study of constructivism

NMREB Initial Approval Date: April 12, 2017
NMREB Expiry Date: April 12, 2018

Documents Approved and/or Received for Information:

Document Name	Comments	Version Date
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Instruments	Interview Questions. Received March 6, 2017.	
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Western University Protocol		2017/04/03
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Recruitment Items		2017/04/03

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the above named study, as of the NMREB Initial Approval Date noted above.

NMREB approval for this study remains valid until the NMREB Expiry Date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario.

Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB.

The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

Ethics Officer: [Redacted] Chair or delegated board member

EO: Erika [Redacted]

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London, Ontario [Redacted]

Appendix G: Gabriella's Data Set

5.5 Ms. Gabriella

As shown in Table 2 in Chapter 4, Gabriella is an experienced teacher who has 15 to 20 years of teaching experience. As a homeroom teacher, Gabriella has taught senior kindergarten, Grades 1, 2, 4, and 6. She has taught different subjects like math, science, English, social studies, art, and physical education. Gabriella was enrolled in a Master's degree in Education at the time of data collection for this study.

5.5.1 Gabriella's Interview

When I interviewed Gabriella, she was teaching a lower elementary grade as a homeroom teacher (teaching all subjects except French). The interview took place in a classroom following students' dismissal.

5.5.1.1 Theme 1 Teachers' Understandings of Constructivism

In this subsection, I share Gabriella's beliefs, understandings, and perceptions of constructivism that, from her responses to the interview questions, appeared to inform her practices.

Sub-Theme 1a) Gabriella's Understandings of Teaching and Learning

Gabriella's understandings of classroom arrangement: cares about routines and students' positive experiences. Gabriella shared that she reinforces routines and expectations over the year and fosters positive experiences for students in the class. She elaborated on the importance of routines for engaged and happy students in the following quote.

I think if the students are aware, or know your expectation of them, they will live up to it. If they are aware from the beginning of the year, like the first week or so, maybe more than a week, especially the lower grades, you keep on drilling what *our system* is going to be throughout the whole year . . . the main goal is *to be happy* in the class . . . and we cannot reach that happiness and that satisfaction or that learning experience if we don't work as a team, as one group.

Gabriella did not speak about how she arranges the classroom.

Gabriella's understandings of planning instructions: revisited curriculum expectations and outcomes and used a hook. Gabriella shared two strategies that she uses when planning her instructions: referring to the curriculum expectations and outcomes, and ensuring she designs an attractive and engaging introduction to her lessons. She reported that

usually, I start by looking at the *expectations*. What is expected? What's the *outcome* that I want to reach from that lesson or that unit? And then I go backwards. I see the outcome, I want my kids to know this certain concept, and then I go back to plan how I can reach that point.

Gabriella noted that she focuses on the introduction of her lessons in order to grab students' attention with a "*hook*," "something that will make them think," which serves to "make students interested in actually learning the unit." Gabriella mentioned that an engaging introduction makes the lesson "go smoother" with the students "more interested in knowing what you're going to say."

Gabriella's way of revisiting curriculum expectations when planning instructions is similar to Samantha's. Gabriella's use of a hook in the beginning of the

lesson is similar to Courtney who also added other methods in planning instructions such as using teacher resources, the textbook, the internet, and consulting colleagues.

Gabriella's understandings of a teacher's role: as a parental role. The teacher's role, in Gabriella's opinion, is a parental role. She elaborates that the teacher's role

[is] not one, it's many. I think it's a *motherly role*, it's how much [the students] should feel safe, how much they should love, or feel loved, and how much they should learn – all together in one package. So, I don't think anyone can give it except a mom and a teacher.

Gabriella added that

when I first started, my kids were young. But as they grew up and I saw them in all stages of life, I know how to deal with different ages. I know how they feel, what struggles they face, what it means to them.

Gabriella's view of the teacher's role as a parental role is different from the roles shared by Samantha, who views the role of the teacher as a supporter, and different from Courtney, who views the role of the teacher as a guide, director, facilitator, and learner.

In terms of classroom arrangement, Gabriella shared that she cares about routines and students' positive experiences. Gabriella mentioned that she revisits curriculum expectations and outcomes when planning instructions, prefers to use an engaging introduction to her lessons, and believes that the teacher's role is a parental role.

Sub-Theme 1b) Gabriella's Theoretical Understanding

Gabriella's theoretical orientation: inquiry-based and hands-on learning.

Gabriella reported that her theoretical orientation is a combination of inquiry-based and hands-on learning approaches. Gabriella explained in detail how she implements these into her classroom, mentioning using hands-on for math and social studies subjects, in particular. She had this to say about her theoretical orientation:

It is a mixture of all of them. You cannot focus on one and leave the other.

Like, *inquiry-based* is essential in everything we do every single day. This is how we start our lesson, actually. Because to test their prior knowledge, you need to start with questions and to get feedback from them. So, inquiry-based is one thing that has to be in all lessons, I believe, 100%. *Hands-on* is also an essential thing, especially in social studies . . . like countries and continents . . . we always use the globe and we search. . . . It makes a big difference . . . when they see it on the globe and they see it on the map.

I asked Gabriella how committed she was to this theoretical understanding of teaching and she replied, "*It depends on the lesson*. . . . Of course, hands-on has to be in every single activity, especially *if the activity* . . . can be hands-on. Certain things you might not be able to." She further explained that to plan a lesson she works backwards from the goal, outcome, or the expectation that she needs to reach, and then thinks of activities or strategies that help her reach that point. Gabriella noted that "*I never stick to one way*."

Unlike Samantha, who identified group work as her favourite strategy, Gabriella, like Courtney, emphasized various ways. All three teachers mentioned hands-on learning. Gabriella additionally mentioned inquiry-based learning. Samantha and Courtney additionally mentioned child/student-centered learning and briefly mentioned visual learning. Samantha additionally mentioned group work and problem solving.

Gabriella's views of learning: learning never stops, students learn in many ways. Gabriella shared her view of learning as a lifelong process, that essentially "learning *never stops*." She clarified that "the more you read, the more you ask, the more you meet people, the more you read books, the more you are aware of how little you know, and how much more you need to learn." Gabriella discussed that children learn in many ways, by "the scientific way, or the research way of learning; they will tell you that they learn by *touching, they can learn by hearing, or by viewing*." But of all these ways of learning, Gabriella shared that she mostly believes that children learn by loving: "They should *love* the teacher. They should *love* the subject. And they should feel that they are benefiting from this learning." Gabriella highlighted that sometimes children learn by expected routines and structures in class, noting "in my class they always *start with a certain thing in the morning* they know." Gabriella added that "I don't believe that learning can happen on your own individually. As *you're helping others*, you are learning too. You are actually shaping your personality." She concluded that she tries to focus on "learning in different ways" to help her students become better learners and better people.

Gabriella's views of learning are similar to Courtney's and Samantha's. All three teachers shared that children learn in different ways. Gabriella uniquely shared the view of learning "by loving." Gabriella's view of learning by "*helping others*" is similar to Courtney's view of learning "from their *friends*" and appears similar to Samantha's view of learning by "answer[ing] worksheet questions in group work."

Gabriella shared that she adopts inquiry-based and hands-on learning, believing that students learn in many ways. She shared that students learn primarily by loving and "they should love the teacher. They should love the subject."

Sub-Theme 1c) Gabriella's Understanding and Beliefs About Students

Gabriella's beliefs about students' roles: to work hard and be aware of their classmates. There are two roles for students from Gabriella's perspective: to put lots of effort into their own work and be well aware of their classmates. She said, "The role of the student is to *work hard*, but *not to focus on themselves only*." Gabriella highlighted, "I think students should focus on is to *put themselves in the shoes of other students*."

Gabriella's view of the students' role ("to *work hard* but *not to focus on themselves only*") is different from Samantha's view of students broadly as "learners" and Courtney's more specific view of students as "[*picking*] what he likes to do, what he likes to learn" and "*build[ing on it]*."

Students' mistakes are normal. In terms of students making mistakes, Gabriella expressed that "*it's normal* to make mistakes. It's not a big thing for me." She explained that students' errors are opportunities to learn, "I'll remember this next time. I won't do it again." When students make mistakes, Gabriella said "it's because of other skills that they didn't master, like being accurate or reading the instructions. . . . It's not because they don't understand. It's because of the skills they didn't build yet." I asked Gabriella how she handles students' mistakes, and she replied that she always corrects academic mistakes, but "if it happens more than once, I think one-on-one conferences are a must." If four or five students end up making the same mistake, "then it's not one-on-one anymore; then it's a class discussion."

Like Samantha and Courtney, Gabriella viewed mistakes as a normal part of the learning process. Unlike Samantha and Courtney, Gabriella did not speak of mistakes that are not okay (the purposeful ones or rushing through). Instead, Gabriella shared more about how she follows up on repeated and group mistakes.

Social interaction: through group work, peer, or group assessment.

Gabriella discussed two ways she uses social interaction in her classroom: through group activities and assessment. She explained that she engages students in group work to do activities such as recording something in *an experiment* or making a *poster* in social studies. Gabriella also mentioned that she divides students into groups to *assess each other's work*. Her classroom activities constitute “continuous assessment . . . through group work.”

Gabriella's view of social interaction through activities is akin to Samantha's and Courtney's views. Gabriella added peer and group assessment as other ways of fostering students' social interaction.

To sum up, Gabriella shared her understanding that the students' role is to work hard and help each other. She expressed that genuine mistakes are fine and how she uses “one-on-one conferences” and “class discussion” to handle students' mistakes. Gabriella noted that she provides opportunities for social interaction through group work in activities such as experiments or peer group assessment.

Sub-Theme 1d) Assessment

Assessment method: quizzes, tests, questions, group work, and assessment at the end of the lesson. Gabriella discussed several assessment strategies that she commonly uses, such as quizzes, tests, questions, and group work. Gabriella reported that she loves quizzes, considering them “one of the main things” used by teachers, and she implements weekly quizzes on Wednesdays for different subjects she teaches. She explained that “every Wednesday they have a *quiz*, but it's a different quiz. So, they have a math quiz on this Wednesday. Then they have a science quiz next week. And then they have social studies the week after.” Gabriella also explained the importance of quizzes for assessment.

The key is to ask them after a month and they have to *still remember it*. And I don't think that as teachers we actually succeed in teaching except if we *test ourselves and our kids* if after a month, they still remember it. So this is my strategy, this is my belief.

However, Gabriella has changed her approach to quizzes lately when teaching lower grades, pointing out that she uses quizzes “to give me feedback on how I need to improve my teaching and they need to improve their learning” and tries to “make [students] view a quiz as a tool for them to improve.”

In addition to the weekly quizzes, Gabriella gives unit tests, particularly for social studies and science classes. “I don't believe in *unit tests* except in social studies and science,” she explained, “because you're focusing on a certain topic.” Besides the quizzes and unit tests, Gabriella also reported using other assessment methods as part of the “continuous assessment which you are doing in the class *through questions, through group work, through assessment at the end of the lesson.*”

Gabriella shared several methods of assessment such as tests, questions, group work, and assessment at the end of the lesson with a preference for quizzes, noting that she uses quizzes “to give me feedback on how I need to improve my teaching.”

Gabriella's theoretical understanding of assessment was similar to Samantha's. They both mentioned assessment through tests and group work. Weekly quizzes on Wednesdays, unit tests, assessment at the end of the lesson or through questions were unique to Gabriella, whereas projects and games were unique to Samantha. Courtney did not identify her assessment in the interview or the lesson plan.

To summarize, Gabriella's way of allowing her students to "search" and her view of learning as a continuous process ("the more you read, the more you ask, the more you meet people, the more you read books") reflected her theoretical orientation toward inquiry-based learning. Gabriella's use of materials such as the *globe* and *map*, and her view of learning by "*touching, they can learn by hearing, or by viewing*" supported her belief in hands-on learning. Gabriella's expectation of students to "work as a team," her view of students' learning by "*helping others*," her understanding of students' social interaction through group work and group assessment all seemed to align with her belief that the role of the students is to "*put themselves in the shoes of other students*." It may also indicate that Gabriella has a tendency toward group work learning.

5.5.1.2 Theme 2 Teachers' Enactment of Constructivism in Classrooms

In the section below, I introduce how Gabriella enacted constructivism in her classroom. This includes Gabriella's reflection on her teaching practice, tension about teaching practices, change in beliefs, and change in philosophy.

Sub-Theme 2a) Reflection on Teaching Practices

Satisfied when students are interested in the lesson, learn from it, and remember it, but unsatisfied when students are not interested. Gabriella mentioned that she would feel good about her teaching practices when students seem engaged in the lesson, noting that

this feedback I get from the kids, from my students, if I feel that they *love the lesson*, if I feel that they *enjoyed it* and they actually *learned from it*, and that when I asked them the next day they *will remember what I said*, then I feel I achieved my goal.

Gabriella revealed that she would feel frustrated when her students are not interested in the lesson.

If I ask them if they *want to finish the lesson*, it was *too boring for them*, and they can't wait for the next lesson to begin, then definitely I failed to reach them. And of course they won't remember anything the next day, because their goal was to finish the lesson, not to learn from it.

Similar to Courtney, Gabriella mentioned that she feels good about her teaching practices when students seem engaged in the lesson. Related to Gabriella's mention of the role of the teacher and her views on learning that students "should feel loved," "*love the teacher*," "*love the subject*," Gabriella's self-assessment on her teaching depends on whether the students "*love the lesson*." This view on student's attitude toward a lesson is different from Courtney's and Samantha's who spoke about "*light goes on that student's face*," and "*improvement in their marks and their social skills*," respectively.

Sub-Theme 2b) Tension About Teaching Practices

No tension about teaching practices. Gabriella expressed that she has not felt tension between her teaching and learning beliefs and teaching practices. She commented, "*I never had a tension that I never dealt with . . . If I don't believe in it, I won't practice it. The bottom line.*"

Gabriella's lack of tension is different from Samantha, who expressed feeling tension around lacking materials or giving students tests, and from Courtney, who expressed feeling tension when teaching in an old style, when students are not taking their learning seriously, or when she is not practicing child/student-centered.

Sub-Theme 2c) Change in Beliefs

By including more hands-on learning. Gabriella told me that she has changed her beliefs about how children learn. She explained that since she started teaching years ago, “you can say that I was more [pause] less hands-on. Now . . . I try to *elaborate on hands-on lessons*.” Gabriella added,

I still believe in routine. I still believe in paper and pencil work. I use the team board, the smart board [interactive board], but I believe in paper and pencil. I do believe in it 100%, and I don’t think anyone *would convince me otherwise*, because it is a *different way of learning*.

Gabriella, Samantha, and Courtney all changed their beliefs to embrace more contemporary approaches: Gabriella changed from “*less hands-on*” to “*elaborate on hands-on lessons*”; Samantha shifted her role from lecturer to supporter; and Courtney went from teacher-centered to student-centered. Despite using the smart board, Gabriella’s belief in “routine” and “paper and pencil work” differed from Samantha and Courtney, whose beliefs changed from “being an *authoritative* figure in the class” to “becom[ing] more of a *support* for the students” (Samantha), and from “*teacher-centered*” to “*child-centered*” (Courtney).

Sub-Theme 2d) Change in Philosophy

Became less sensitive, tries to use more technology, fun activities, and discussion. Gabriella explained that her teaching philosophy changed in the way that she became less sensitive than she used to be. She explained, “now I’m *less sensitive* this way . . . I don’t want to say I don’t care what parents think or what students believe, but it has less impact on me.”

Gabriella continued, “I’m with *technology* more than before, of course. I’m with more *activities*, with more *fun*. It’s more *discussion* in the class.” Gabriella compared past and present approaches, noting that years ago when she first started teaching

it was very systematic . . . everyone knows their role. Students know that they are there to learn. Teachers know they are there *to give the lesson*. . . . It’s different now. It’s more social. I feel that it’s more about the *students’ feeling* and *social abilities*, and then the education part comes.

Gabriella’s shift to being “*less sensitive*” to the opinions of students and parents appeared to contrast with Samantha’s relating her role to a supporter who assesses students’ learning. Both Gabriella’s and Samantha’s changes are due to years of experience, but Courtney’s changes are due to her post-graduate education.

In summary, Gabriella’s usage of the “*team board*,” her change to include more discussion in her lessons, and her focus on students’ social skills all appeared to support her value of students’ social interaction through group work. Gabriella’s use of technology seemed to reflect her theoretical inclination toward inquiry-based learning.

5.5.1.3 Theme 3 Conditions That Enable or Constrain Teachers’ Enactment of Constructivism in Classrooms

The following section outlines some examples reported by Gabriella in the interview of conditions that either support or constrain her enactment of constructivism in the classroom.

Sub-Theme 3a) Supports

From the school principal, colleagues, and students. Gabriella noted that she receives support from her principal, colleagues, and students. Gabriella explained that the principal is always in agreement with her teaching practices, highlighting that “the *administration never approached me about changing how I’m doing things.*” Gabriella also said that if she wants to participate in a professional program or suggests professional development opportunities, she is confident that “*the administration . . . will definitely send me.*”

Gabriella added that one of her colleagues is supportive too, and together they co-plan lesson activities for different subjects. Gabriella elaborated on this collaboration with colleagues.

I’m working as a team with my other *Grade [x] teacher*. So, as I said, we’re dividing the work among us. So if we have an experiment, let’s say, or an activity we’re planning for . . . I will prepare for an activity for both classes. She will prepare for an activity for both classes.

Gabriella shared that she receives additional support from her students and benefits from “this kind of *communication with the students*” by becoming a better teacher and better understanding her students.

Gabriella, Samantha, and Courtney spoke of support from the school principal and from colleagues. Gabriella elaborated on the team planning with a colleague whereas Samantha elaborated on consulting with a teacher who had taught the students in a previous year. Gabriella, unlike Courtney and Samantha, did not speak of parental support but spoke of support from students through their communication and feedback.

Sub-Theme 3b) Constraints

In resources and students’ behaviour. In the interview, Gabriella described that she faces constraints such as lack of resources, students’ behaviour, and parents. Gabriella explained that the textbook series and curriculum guide that she commonly uses in her classroom are Nelson’s book series (for example, Nelson Literacy and Nelson Math). Gabriella revealed that she does not believe these types of resources have enough variety for a teacher who has been teaching for as long as she has, and students need different activities like worksheets and interesting exercises. Gabriella further clarified the challenge of securing variety in educational resources.

To challenge your kids, you need to bring different things. So they need to get used to reading different instructions, or reaching their goal by understanding it *in a different way*. So, it is a challenging thing for a teacher, I believe, to find *the extra resources*, because we’re always looking for extra resources.

When Gabriella was asked about resources that she uses in social studies, she expressed that she lacks resources, noting that they have a textbook for math and English but none for social studies. Without a textbook, she said “it’s *even more work* of finding these resources.”

Another difficulty that Gabriella mentioned was students’ behaviour. She illustrated that there are “few kids that will not feel that happy or relaxed when they are doing activities because they are very *systematic*. But most of the kids, in general, they love activities.” Gabriella revealed that the challenge for the teacher is to manage these activities to make them run smoothly. She explained how group dynamics affect learning.

We have *bossy kids*. You have the leaders and you have the followers in every context of life; you always have these kinds of personalities. And the problem

is you don't want the leaders to always lead, and you don't want the followers to always follow. This is not what learning is all about.

Gabriella stated that she needs to teach her students to vary their roles, "teach[ing] the followers to be leaders" and making "[the leaders] feel that they can follow." She explained that encouraging them to take on different roles is challenging at their age and she needs to keep reminding them.

Gabriella's challenge of limited resources and the limitation of existing resources is common with Samantha. She did not, nonetheless, speak about limitations specific to their school such as material and space limitations for social studies as did Samantha and Courtney. Among challenges to do with students she spoke about group dynamics, which is a different challenge than Courtney's of students who pose behavioural problems and those who have learning difficulties. Gabriella, akin to Samantha but unlike Courtney, did not mention parents as a challenge.

In summary, Gabriella shared her understanding of teaching and learning, how she arranges her classroom and plans her instruction, as well as her understanding of the teachers' role. She also discussed her theoretical orientation and views of learning and elaborated on her beliefs on students' role, mistakes, social interaction, and methods of assessment. Gabriella reflected upon her teaching practices, tension about teaching, and change in beliefs and philosophy. Lastly, Gabriella talked about the supportive and challenging conditions that enable or constrain her enactment of constructivism in the classroom.

5.5.2 Gabriella's Lesson Plan

Gabriella shared with me her two lesson plans of the lessons I observed. In her lesson plans, Gabriella planned for diversity of learning as the main objective and learner outcome. She also planned for general and specific outcomes, prerequisite knowledge, skills, and strategies. Gabriella identified "knowledge of the neighbourhood, school, and so on" as prerequisite knowledge. As evinced by her lesson plan, Gabriella designed general and specific outcomes that supported higher-order thinking such as demonstration, description, identifying similarities and differences between communities, as well as students' use of maps and the globe. Gabriella identified a hook for her lessons based on questions related to the previous lessons and to the current lesson. She organized learning activities that were based on reviewing previous lessons, reading, questions from the teacher, displaying pictures, reviewing books read in previous lessons, explaining, and activity sheets. Gabriella identified inquiry-based learning as the instructional strategy used in her lessons as planned, and included multiple resources such as a map of Canada, worksheet, igloo sample, and videos. Gabriella identified two assessment methods: observing students "for their ability to work effectively in a group" and assessing students by asking questions as they work. The lesson plan appeared to reflect *student-centered* as evinced in including diversity, main objectives, and learner outcome including those that supported higher-order thinking as well as students' prior knowledge; *visual learning* as evinced in displaying pictures and videos; *hands-on* as evinced in using maps, globes, and an igloo model; *inquiry-based* as evinced in reading and reviewing books; *discussion approach* as evinced by teacher's questions; and *group work* as evinced in group assessment. The lesson plan appeared to also reflect teacher-centered as the word "explaining" appeared several times.

5.5.3 Gabriella's Classroom Observation

Gabriella had 13 students in her classroom. It had a smart board, three white boards, two computers, and a mini library in the corner. The classroom tables were organized in tidy rows of twos and the students' desks were facing the white boards. The teachers' desk was at the back side of the classroom in the right corner, and behind her desk there was a storage unit for students' textbooks for each subject. The walls had posters of different subjects like math, science, English, social studies, and a poster outlining a morning routine. I observed both of Gabriella's lessons at the third learning block, and the observations were one week apart.

Including posters on the classroom wall about morning routine reflected Gabriella's way of reinforcing rules in her classroom by "drilling what *our system* is going to be throughout the whole year."

5.5.3.1 Theme 1 Observed Understandings of Constructivism

The following section reports the classroom observations of how Gabriella enacted her beliefs, understandings, and perceptions of constructivism. I paid attention to Gabriella's actions, interactions, activities, and resources that she included in her lessons.

Sub-Theme 1a) Teaching Practices/Constructivism in Action

I examined Gabriella's practices in the classroom to identify what approaches she commonly adopts. Note that this theme and the following theme (observed principles of constructivism in action) indicated on the checklist are not mutually exclusive.

Adopted visual learning, hands-on learning, discussion approach, and teacher-centered learning. Gabriella's theoretical tendency appeared to reflect visual learning, hands-on learning, discussion approach, and teacher-centered learning. Here, I provide brief examples of Gabriella's classroom practices that will be discussed in detail in the following section.

In the two lessons observed, Gabriella's lessons included visuals such as *videos*, *pictures*, and *a map* of life in the Arctic, which showed that Gabriella applied visual learning. Gabriella also included activities that asked students to *cut and paste* the type of food and *place* it in the correct supper-time meal category, and *draw* an igloo and a modern house. Gabriella brought an *igloo model*. This may indicate that Gabriella incorporates hands-on learning in her lessons.

Gabriella asked questions and encouraged students to *participate*, and students *raised* their hands and *shared* their answers. Gabriella *listened* and *let the students share* their knowledge and experiences with the class. These observations indicated to me that Gabriella supports discussion approach.

Further, Gabriella *stood in front* of the students for much of the classroom time and *presented* the lesson, and students were only allowed to *talk with permission* from the teacher. These observations may indicate that Gabriella practiced *teacher-centered* learning.

It appeared to me that Gabriella's enactment of hands-on learning and discussion approach reflected her theoretical inclination toward these approaches shared in the interview. In the interview, Gabriella reported that she practices inquiry-based learning daily. In addition, her lesson plans indicated that inquiry-based learning would be used as an instructional strategy, but this was not seen in action. Upon closer review, Gabriella's lesson plans mentioned that inquiry-based learning would be supported by "review[ing] information from previous lessons" or by

discussing and asking students about some concepts like “shelters” (which will be elaborated on in the sub-theme on knowledge construction). These inconsistencies among the beliefs she shared in the interview, the notes she indicated in her lesson plan, and the classroom observations might indicate that Gabriella has a different understanding of what inquiry-based learning involves. Yet, I observed Gabriella employ a method that she did not talk about in the interview, visual learning, in which she used pictures, videos, and a map.

5.5.3.2 Theme 2 Observed Principles of Constructivism in Action

This section is organized by the nine broader principles of constructivism indicated in the checklist (Appendix B).

Sub-Theme 2a) Knowledge

Knowledge construction: built on students’ existing knowledge. In Gabriella’s classroom, the lessons in general and the activities in particular provided opportunities for students to construct new knowledge by *building on their existing knowledge of food and houses that they already know and are familiar with to a new knowledge of the food and houses of Arctic communities.*

Knowledge collaboration: discussion between the teacher and the students. Gabriella created opportunities for student discussion throughout the lesson. She tended to *ask* students questions related to the previous or current lesson. Students *asked the teacher any questions or shared comments, and the teacher listened to their questions and answered them.* Using sticks with the students’ names on them, at times Gabriella would randomly select a student to respond to a question she *asked.*

Gabriella’s classroom discussions came in the form of *questions and answers between the teacher and the students.* I noticed that students were working individually during the activities. For example, they were working on their worksheets on their own, although they were allowed to chat with each other while working on the worksheets. During the two lessons, I was only able to observe classroom discussion between Gabriella and the students; group work or group assessment, as Gabriella mentioned in the interview, were not seen during the classroom observations.

Previous knowledge: reviewed previous lessons, included students’ previous knowledge. In the beginning of the first lesson, Gabriella reviewed previous lessons that related to what the students were about to learn. For instance, in the lesson about the “food in the Arctic,” she started first by *asking questions about Canada’s provinces, territories, and surrounding oceans.* In the second lesson, Gabriella began by asking students questions related to the new lesson. For instance, she asked, “*What do we need to survive?*” and “*Why do we need a shelter?*” Some questions were already asked in previous lessons, for example, “*What type of shelters that the [sic] Inuit used?*” and “*What is the difference between igloo, teepee, and long house?*”

Students’ previous knowledge or experiences were integrated during the classes I observed. For example, when Gabriella was describing a picture of harpoons (without saying the term “harpoons”), she paused to *see if anyone knew the term;* a student *raised* his hand and *shared* what the word meant and how harpoons are used. Also, a student *shared* his knowledge about the origin of the word “igloo,” which he learned about when he had visited a museum. Additionally, when a video showed the joy of the Inuit during the cherry season in the Arctic, a student *shared* his joy when he went to a farm and picked strawberries.

I noticed that when students shared their previous experiences and knowledge, Gabriella would only respond with an affirming word, such as “yes,” and continue the lesson.

Sub-Theme 2b) Learner

Learner control and student-directed goals: students asked questions, were able to move around the class. Students in Gabriella’s class raised their hands to ask questions, make a comment, or share a prior experience. They *raised their hands to participate and commented* on the topic or on the video. They *asked* the teacher when they needed further explanation or clarification and sometimes they *asked* questions that went beyond facts and knowledge to critical-thinking questions. For example, a student *asked* why the igloo was built only in a circle shape and not different shapes. Further, students *shared* their previous experiences that were related to the topic of the lesson, as mentioned above. Students in Gabriella’s class were *free to move around* the classroom to grab a pencil, drink water, or get tissue paper. During the lessons observed, I did not observe Gabriella talk about the learning goals with the students.

Metacognition: the teacher asked students questions, students reflected on their thinking. I did not observe metacognitive learning in Gabriella’s class. However, I observed that Gabriella asked students to reflect on their own thinking during the lesson. For instance, she *asked*, “Why do you think Inuit in the past had no fruits, vegetables, or bread?” “Could they grow fruits and vegetables in the Arctic?” or “Why do you think we need shelter?” Students *raised* their hands to answer or if they had a question or a comment. The teacher *answered* most questions and made a majority of comments.

Sub-Theme 2c) Multiple Contexts

Multiple representations and primary and secondary sources: used several ways to represent a concept. Gabriella used many ways to represent the lesson’s concept, such as maps, pictures, textbooks, videos, and a sample model. In the first lesson, Gabriella used a *map* to represent the location of Canada. She also used *pictures* of animals like bears and fish and had students read from their *textbooks* about the type of food that was eaten in the Arctic in the past. In the second lesson observed, Gabriella showed two *videos* about houses of the Inuit and brought a 3D *sample* of an igloo (made from clay) for the students to see. She also used the *textbook* to read about the houses of the Inuit. In both lessons, Gabriella handed out *worksheets* for the students which included questions about the lesson.

It was mentioned in both lesson plans that globes and maps would be used to “locate countries as part of a comparative study,” but this was not seen in action (except the map used in the first lesson).

Sub-Theme 2d) Diversity and Understanding

Consideration of errors: accepted students’ mistakes. If a student did not answer correctly, Gabriella would sometimes say back, “is it?” and sometimes she *accepted the students’ answers as an alternative*. For instance, she asked students what the Inuit used to make needles, and when a student replied “bones” she replied, “the bones, right? Or they could even [use] the [animal] antlers.”

She was observed a couple of times correcting a student immediately while he was reading out loud from the textbook.

Alternative viewpoints: students were introduced to alternative perspectives. In Gabriella’s lessons, students were introduced to multiple perspectives on how other people live. In the first lesson observed, students *learned about Arctic food* like polar bear, caribou, walrus, and seals. They also learned about how the Inuit *used the skin of these animals* to make clothing and bedding, and how they *used their antler bones and sinew* to make needles and thread. In the second lesson observed, students *learned about the popular type of house used in the Arctic* in the winter, the igloo. These lessons exposed students to alternative perspectives on how other people live, in which diversity of food, clothing, and housing were recognized. This lesson appeared to have given students an opportunity to compare and contrast the kind of food and houses used in the Arctic to their own.

Sub-Theme 2e) Activities and Tasks

Authentic activities: activities related to students’ lives. In both lessons observed, Gabriella used activities relevant to students’ lives. In the lesson on food in the Arctic, she used a worksheet where students were asked to *plan two supper-time meals* for the Inuit, one from the past and one from the present. On a separate sheet, there were pictures of different types of food, and students were asked to *cut and paste the type of food* in the correct supper-time meal category, either past or present. In the second lesson observed, Gabriella asked the students to divide a white paper into two parts: On the first part, they had to *draw an igloo*, and on the second part they had to *draw a modern house* used by Inuit nowadays. Both activities related to students’ lives because the activities included familiar settings like food and houses.

Discussions between the teacher and the students and *reading* from the textbook were seen in the lessons observed. Gabriella’s strategy of including several activities reflected her belief that learning happens in many ways, including reading (“the more you read, the more you ask”).

As a part of the learning activities, Gabriella mentioned in her second lesson plan that she would “review books read in previous lessons that show families long ago live in igloos,” but this was not seen in action during the classroom observation.

Problem solving: students selected, evaluated, and imagined. I observed Gabriella practice problem solving in the context of questions in the worksheets. The activities appeared to support students’ critical thinking like selection, evaluation, and creativity. In the first activity, students were asked to *select* and *evaluate* what type of Arctic food fits better under either the past or the present supper-time meal categories. In the second activity, students had to *draw* an igloo and a modern house. This activity seemed to help the students use their creativity and imagination.

Sub-Theme 2f) In-Depth Knowledge

Conceptual interrelatedness: connected concepts to social studies, connecting math to social studies. I noticed Gabriella on many occasions attempt to link different concepts to social studies. For instance, she *related a concept in social studies, the shape of an igloo, to a shape in mathematics, a catenary (a U-shaped curve)*. Moreover, after watching a video about building igloos, which described that right-handed people would build the igloo clockwise compared to left-handed people who would build it counter-clockwise, Gabriella *related this to students who were left-handed in the classroom*.

Scaffolding: provided visuals, samples, gave time, hints, instructions, and moved around. Gabriella’s support was observed during the lesson as a way to scaffold students’ learning. For example, she used visuals in her lessons such as

videos and pictures. Gabriella brought a sample of an igloo for the students to observe while they were working on the activity of drawing an igloo. Gabriella provided time for students to respond to her questions and encouraged students to give their peers a chance to respond. For example, she would say “Guys! You are not giving her a chance” or “let him explain himself.” Additionally, she would *move around* during activities, checking on students’ work and providing *hints and instructions* to students as well as encouraging them while they worked. Gabriella encouraged students when they answered questions correctly or when they worked on the worksheet by saying “good” “perfect,” or “excellent.” At one point, she had to *repeat* a part of the video several times when the students could not understand the concepts of “convection, conduction, and radiation.”

Sub-Theme 2g) Assessment Method

Authentic assessment: questions throughout the lesson. I noticed that Gabriella assessed her students *through constant questions* in the beginning, middle, and end of each lesson. She was also observed asking students questions during the activity time.

This observed action on teaching and assessment was in line with the belief Gabriella professed in her interview of using other assessment methods as part of the “continuous assessment which you are doing in the class *through questions . . . through assessment at the end of the lesson.*” Assessment methods referred to in the interview such as tests, quizzes, and peer or group work were not seen in the lessons observed. Assessment through observing students “for their ability to work effectively in a group,” as mentioned in the first lesson plan, was not seen in action. I observed Gabriella using sticks (with the students’ names on them) to respond to her questions. Gabriella did not talk about this method during the interview and she did not mention this in both lesson plans.

Sub-Theme 2h) The Teacher’s Role

Teachers as coaches: Gabriella as a guide and a lecturer. In the observation, I noticed two roles that Gabriella adopted: a guide and a lecturer. Gabriella was observed *encouraging students to participate* in the lesson by *asking* them questions throughout the class time and *allowing them to share* their previous experiences. Gabriella was seen *helping students to construct new knowledge by building on their current understanding.* Moreover, she *moved around* the classroom during the activities and provided students with *hints and instructions.* Gabriella brought some 3D shapes as samples and showed videos to help students make sense of the topic. Her support was seen when she encouraged students by providing affirmations such as “good,” “perfect,” or “excellent.” This was evident in that Gabriella gave students *autonomy* to move around the classroom if they needed, for instance, to sharpen their pencils. She *included activities that are relevant to the students’ lives* and supported students’ creativity and imagination. Gabriella also *used more than one source* and different ways of representing the concepts being taught.

Gabriella was observed *presenting the lesson* by standing in front of the students for much of the classroom time; thus *social interaction was mainly observed between the teacher and the students.* Students were observed *working individually* on the worksheet. At one point Gabriella rewarded a student who found the answer in the textbook and asked, “How do you think the supplies or food can be delivered to [the Inuit]?” I saw (but Gabriella likely did not) the student look at the textbook and

answer, “shipped or flown,” and Gabriella said, “Good seeing! We just read it and [the student’s name] went back to the passage.”

Gabriella adopted the role of a guide and a lecturer. She had not explicitly shared these two roles when she spoke about the role of the teacher as making the students “feel loved.”

In summary, I noticed differences between Gabriella’s observed principles and her lesson plan. Like Courtney, the differences appeared in the knowledge collaboration, sources, activities, and assessment methods used in the lessons. Group work as shared in the interview or group assessment as mentioned in the lesson plan were not seen during the classroom observation. In the second lesson plan, it was mentioned that books would be used to “show families long ago live in igloos,” but this was not seen during the classroom observation. Further, using globes and maps as mentioned in both lesson plans was not seen in action except in the use of a map in the first lesson. Group assessment as mentioned in Gabriella’s first lesson plan was not noticed during the classroom observation. Gabriella was observed using the sticks practice to select students to answer questions, but this method was not mentioned in the lesson plan.

5.5.3.3 Theme 3 Observed Supports and Constraints, Enactment of Constructivism

The following section describes the supports and constraints that I observed during the classroom observation of Gabriella’s lessons.

Support: from colleagues. The support from colleagues was evident during classroom observations. The *lesson plan and worksheets that Gabriella used for the lessons observed were provided by another lower grade elementary teacher.* I was not able to see supports from the principal and students during the lessons observed, as Gabriella had described in the interview.

Constraints. I did not notice any constraints during Gabriella’s lessons observed. Constraints such as students’ behaviour, as Gabriella explained in the interview, were not noticed during classroom observation.

To sum up, Gabriella’s classroom observation revealed that she practiced several approaches. Gabriella included videos, pictures, and a map in her lessons, which supported visual learning. The type of activities Gabriella used that asked students to draw an igloo (based on a clay model) and a modern house and to cut, paste, and place the Inuit food in the correct supper-time meal category (past or present) may indicate that Gabriella supports hands-on learning in her lessons. The fact that Gabriella encouraged students to participate, share their answers, and listen to the students may reflect Gabriella’s tendency toward a discussion approach. Moreover, that Gabriella was observed standing in front of the students and presenting the lesson for a large portion of the time may indicate that Gabriella supports teacher-centered learning.

5.5.4 Summary

Gabriella expressed that she likes to implement routines in her classroom and cares about students’ positive experiences and happiness. She revisited curriculum expectations and outcomes and introduced lessons with a hook to engage her students. She used inquiry-based and hands-on learning in her classroom, which was consistent with her beliefs that learning is a never-ending process and that children can learn in many ways. Gabriella explained that she supports students’ social interaction by including group work or assessment. Gabriella expressed that the teachers’ role is a

parental role and the students' role is to work hard and help their classmates. Making mistakes is fine and she reported handling mistakes by either meeting with students individually or having a class discussion as needed. She also discussed many methods for assessment.

Gabriella mentioned that she feels good when students are interested in the lesson but is unsatisfied when they are not. Gabriella revealed that throughout her career, she has not felt tension about teaching practices, although she noted that she has changed her beliefs to embrace more hands-on learning in her instruction and has become less sensitive to learners' and parents' opinions than she used to be. She also has tried to incorporate more technology and include more fun activities and opportunities for discussion.

In terms of support, Gabriella shared that she receives support from the school principal, colleagues, and students, but she encounters some constraints in terms of resources and students' behaviour. Observed supports and constraints that affect the teachers' enactment of constructivism showed that Gabriella received support from her colleagues. Difficulty with students' behaviour, as reported by Gabriella in the interview, was not noticed during class observations.

From the two lesson plans I analyzed, Gabriella's observed beliefs in action showed that she adopted student-centered, visual learning, hands-on, discussion approach, inquiry-based, group work, and teacher-centered in her classroom. It was evident that Gabriella planned for diversity and included main objectives and learner outcomes, including those that supported higher-order thinking; the resources she applied were maps, globes, videos, and props (i.e., an igloo); her learning activities were focused on reading and reviewing books and questioning; her assessment methods were identified through peer, group work, and questioning. The lesson plan also reflected aspects of a teacher-centered approach as the word "explaining" appeared a few times in reference to the teacher's actions.

Gabriella's classroom of 17 was arranged in rows of twos and had posters on different subjects like math, science, English, social studies, and a poster outlining a morning routine. Gabriella's observed beliefs revealed that she embraces visual learning, hands-on learning, discussion approach, and teacher-centered learning. Gabriella's observed principles showed that she gives attention to knowledge construction and previous knowledge, using multiple ways and resources to represent the concept. She supported knowledge collaboration by initiating classroom discussion, asking students questions, and encouraging them to participate in classroom discussion and ask questions. Gabriella supported students' metacognition by asking them relevant questions and giving them time to reflect on their own thinking. In Gabriella's class, students were introduced to alternative perspectives and the activities provided were on concepts familiar to the students. These activities helped students to solve problems by using their critical-thinking skills of selecting, evaluating, and imagining as well as constructing knowledge. She tended to connect different concepts to social studies. Moreover, Gabriella scaffolded student learning by providing visuals, samples, giving time, hints, instructions, and moving around. Her assessment method was asking questions throughout the lesson, and her role appeared to be as both a guide and a lecturer.

Differences between professed beliefs shared in the interview and classroom practices were identified in Gabriella's classroom. The differences appeared in terms of professed beliefs as Gabriella practiced certain different approaches than the approaches she had shared in the interview. Differences also appeared in knowledge collaboration and role of the teacher. Gabriella's interview and lesson plan revealed

that she might have a different understanding of inquiry-based learning because she indicated in the interview and the lesson plan that inquiry-based learning would be supported by asking students questions “to test their previous knowledge.” The lesson mentioned that inquiry-based learning would be used to “review information from previous lessons” and by asking students questions. I also recognized revisions between the lesson plan and teaching practices in terms of resources, activities, and assessment methods used in the instruction.

It should be noted that during classroom observations, social interaction was only seen between the teacher and the students, with little social interaction occurring among students themselves. During the observation, I did not get a chance to observe Gabriella sharing the lesson goals with the students. In addition, some components were not present during classroom observation such as exploration and apprenticeship learning.

Appendix H: Emma's Data Set

5.6 Ms. Emma

As shown in Table 2 in Chapter 4, Emma is an experienced teacher who has 20 to 25 years of teaching experience. As a homeroom teacher, Emma has taught different subjects to Grades 1, 2, 3, 4, and high school. She has a Master's degree in Education. Emma mentioned that she reads a lot and receives regular publications that help her stay up to date with the most recent trends in education.

5.6.1 Emma's Interview

When I interviewed Emma, she was teaching a lower elementary grade as a homeroom teacher (teaching all subjects except French). The interview took place in a classroom following students' dismissal.

5.6.1.1 Theme 1 Teachers' Understandings of Constructivism

In this subsection, I share Emma's beliefs, understandings, and perceptions of constructivism that, from her responses to the interview questions, appeared to inform her practices.

Sub-Theme 1a) Emma's Understandings of Teaching and Learning

Emma's understandings of classroom arrangement: has rules. Emma explained that having certain rules and consistent routines is important for classroom management. Emma said, "You need really to stick to the *rules* and be consistent; don't make the kids confused. . . . Everyday it's the same schedule. So they have a routine." Emma shared a similar strategy as Gabriella about having rules in the classroom. Emma did not speak about how she arranges the classroom.

Emma's understandings of planning instructions: based on the teacher's objectives. Emma stated that she usually goes about planning her instruction by knowing what the objectives are and designing her lessons based on them. Emma said, "You have to know what you want for your lesson, what's your objective. So it depends on your objective." Emma spoke about planning lessons for social studies in particular, explaining that "in social studies, you need a social aspect of it; you don't focus a lot on details as much as the social aspect of the curriculum. So when you're planning, you plan more activities, hands-on activities, more worksheets." For Emma, planning for social studies is different than planning for math or science or any other subject because it is "something the kids have to relate to . . . because it's their life, it's their connection to it."

Different from Samantha and Gabriella who revisit curriculum objectives, and unlike Courtney who uses teacher resources, the textbook, the internet, a hook, and consults colleagues when planning instructions, Emma plans her instructions according to her lesson objectives.

Emma's understandings of a teacher's role: as a teacher, a facilitator, and a parental role. The role of the teacher, in Emma's view, is to be a teacher and a facilitator. She expressed that "the role of the teacher first, she's a *teacher* of course. She teaches them, but she teaches them the principles and then she lets them explore by themselves and she *facilitates* it. You know, she goes around." Emma also mentioned that she has built a good relationship with her students; three of them now call her "*mommy*."

Emma's view of the role of the teacher as a facilitator is similar to Courtney's and akin to Samantha's view of the teacher as a supporter. Emma's opinion of the

teacher's role as a parental role was the same as Gabriella. Courtney added the roles of director, guide, a learner.

In terms of classroom arrangement, Emma shared that she cares about classroom rules and routines. Emma mentioned she plans for her instructions by knowing her objectives and planning her lessons according to these objectives. Emma expressed that the teacher's role is a facilitator and a parent.

Sub-Theme 1b) Emma's Theoretical Understanding

Emma's theoretical orientation: student-centered, hands-on learning, scaffolding, differentiated instruction, and Piaget theory. In the interview, Emma noted that she practices different instructions in the classroom: student-centered, hands-on learning, differentiated instruction, scaffolding, and Piaget theory. She discussed her belief that learning should be student-centered instead of teacher-centered, noting that her classroom "most of the time it's *student-centered* learning more than teacher-centered learning." She explained her approach:

I will give them the instructions and just give them the essential knowledge and they have to go and use their own critical thinking to find out the rest of their lessons, and then we wrap up by assessing their knowledge and just emphasizing the important things in their lesson.

She further explained that a student-centered approach is when a teacher "entice[s] [the students] to think, for critical thinking . . . make them all the time use their brain and think, and give them the power." Learning, for Emma, "it's not passive. It's more active learning and positive learning."

Emma also mentioned that the learning centres in her classroom are another aspect of her student-centered approach, where students get involved in activities and learning materials. For example, the social studies centre includes monopoly, word search, puzzles from the map of Canada and Ontario, the names of Canadian cities and provinces, and stories and readings about Canada.

Emma also discussed her approach to hands-on learning. She noted that learning could be "through *hands-on* experience that will stay in your memory more than with the lecture way." She provided an example from a social studies lesson when students learned about houses used by aboriginal people. Emma explained that the lesson involved examples and presentations about the different types of houses aboriginal people used, such as the igloo, the long house, and the teepee. "So it's more life experience and more hands-on experience and related to their lives as Canadians. . . .When it's hands-on experience with things, it's much better for kids to learn and to memorize things."

Emma identified some approaches that she uses in her classroom: "I work [with several theories such as] *scaffolding, differentiating instructions . . . Piaget theory.*" She discussed her approach to scaffolding and differentiating instruction.

I have two or three or four A+ students that I partner [with students in lower levels]. Why? Because I want them . . . they are at different levels. It's scaffolding. I try to give them a little bit higher and more challenging things to do. . . . So you need really to differentiate your instruction.

Emma pointed out that her approach of employing different theories in her classroom works very well, noting that "it's excellent. I'm doing a very good – my kids are doing a very good job." I asked Emma how committed she is to these theories and she replied,

I love to follow theory. It doesn't mean that it's going to be exactly to the letter, but theories will open opportunities for you to think deeper, to think

wider. So I believe in theories. I read a lot. I have lots of publications that I receive all the time, regularly. So theory is good, but the thing is, for me personally sometimes I don't follow it to the letter.

Emma added that "all of [the theories] are good, but all of them are real and true at the same time. . . . You could implement all those theories at different times, different situations, with different kids. You cannot just stick to one theory." She concluded that "unfortunately, some people they follow the theory blindly" instead of implementing it in a way that is suitable for the situation and context.

All four teachers mentioned hands-on learning. Emma, similar to Samantha and Courtney, professed that they adopt child/student-centered learning. Emma additionally mentioned scaffolding, differentiated instruction, and Piaget theory whereas Samantha additionally mentioned group work and problem solving, and Gabriella additionally mentioned inquiry-based learning. Emma did not mention visual learning whereas Samantha and Courtney briefly did.

Emma's views of learning: learning never stops, learning can occur in many ways. Emma explained that learning is an ongoing activity that can occur in many ways. Emma referred to learning as a "*process*." Emma also shared that learning can happen in "*many forms and many shapes*." Emma explained, "You could learn through books and lessons, but you could learn through life experience more even than what you learn in books and lessons. And you could learn through hands-on experience." Additionally, Emma discussed that students learn by "exposure." She gave an example that if students are learning about Canada, the teacher could provide toys like puzzles or monopoly, including a map of Canada so students "start getting a sense because they've got now, they live the experience." Similar to Gabriella, Emma highlighted that when children teach each other, they also learn at the same time.

Emma's belief of learning as a "*process*" is similar to Gabriella's belief that learning "*never stops*." Emma shared the same belief as Samantha, Courtney, and Gabriella who all believe that learning can occur in many ways.

Emma shared that she embraces student-centered, hands-on learning, scaffolding, differentiated instruction, and Piaget theory, believing that learning never stops and that learning can occur in many ways including through "toys."

Sub-Theme 1c) Emma's Understanding and Beliefs About Students

Emma's beliefs about students' roles: as participants. Emma related that the students' role is as participants: "They participate in learning . . . they will be really taking good part in learning and teaching themselves, by themselves or teaching each other. They are more *participant[s]* than passively receiving the information."

Emma's view of students as "participant[s]" in the learning process who teach each other reflected her belief in student-centered learning. Her view is similar to Gabriella's view of the students' role (to "*work hard, but not to focus on themselves only*") but different from Samantha's (that students are "learners") and Courtney's (that students' role is "*to pick what he likes to do, what he likes to learn*" and "*build on it*").

Students' mistakes are normal. Emma expressed that she sees mistakes as "a *normal thing*" because "*they are just opportunity to learn*." Emma indicated that "we learn from our mistakes. They are not a mistake if we learn from them." Emma shared that she always tells her students to see mistakes as normal. When I asked Emma how she handles students' mistakes, she responded, "I like to go over their mistakes with them, either individually or as a class."

Emma's view of mistakes is similar to the other three teachers: Samantha mentioned "*it's fine. We all make mistakes,*" Courtney said "*so mistakes, that's fine,*" and Gabriella shared that "*it's normal to make mistakes.*" Emma also shares the same belief as Courtney and Gabriella who believe that mistakes are opportunities to learn. Unlike Samantha and Courtney but similar to Gabriella, Emma did not speak of mistakes that are not okay (e.g., the purposeful ones). Instead, Emma shared more about how she follows up on going over students' mistakes.

Social interaction: through activities, partner work, and group work.

Emma provided opportunities for social interaction between students by including activities, partner work, or group work in her lessons. Emma explained that social interaction in her classroom mostly comes in the form of "*activities*" or as "*group work*" or as two students together as *partners*." Emma provided examples of partner work and group activities that she regularly incorporates into her lessons, sometimes to check each other's work. Emma elaborated that

as partners, they just teach each other. And the other one is learning, but the other one also is getting the information from his friend, and I think it's more effective. The kids, when they teach each other, it's really very effective for them.

Emma noted that she includes open-book activities as group activities in her class where "they take the workbook and they open it and they start answering the worksheet. So it's like a group work and then we take it together as a class at the end." Emma also mentioned that she even allows her students to work as teams in organizing the classroom library.

We just organized our library. So we brought everything, and the kids divided it, sorted it on levels, and we got the sticks. . . . And they put the sticks on each level, and now they know, when they go they know which books they want to go to read. It's their library; it's their own work.

Similar to Samantha, Courtney, and Gabriella, Emma provided activities as an opportunity for social interaction and she also emphasized partner work.

To sum up, Emma views students as participants and mistakes as normal and fine. Social interaction among students was a big part of Emma's instructions. Her belief that students teaching each other is effective corresponds to her understanding of the students' role as participants in teaching instructions.

Sub-Theme 1d) Assessment

Assessment method: tests, quizzes, interaction assessment, worksheets, peer assessment, or by sticks; assessment occurs before and after the lesson.

Emma noted several strategies for assessment she employs, such as tests, quizzes, interaction work, worksheets, peer assessment, or by sticks. Emma pointed out that she mainly uses "*tests and quizzes,*" which is "the regular kind of assessment. And we do *interaction work* in the classroom. Like even if it's any *worksheet*, we will assess them." Emma noted that she gives quizzes mainly to help students learn "because the idea of the test is not to give marks; the idea is for them to learn and really learn the things very well to be able to memorize for next year." This type of peer assessment as *partner work* allows students to review the work again as they "put their cute check mark to check each other's work."

Emma also mentioned that she uses sticks as another form of assessment. Instead of raising their hands to ask questions, "we have the *stick* there that has their names. Everyone has their names. So they don't raise their hand. So I have to pick the stick, and that's giving me a good assessment."

Emma noted that she assesses her students' learning before and after the lesson. She explained that "we do assessment *before we start the lesson* to find out what their level is, and then we could plan our lessons accordingly. And then *after finishing the lesson*" to learn if they need to go back and review a particular point.

Like Samantha and Gabriella, Emma shared many methods for assessment such as tests, quizzes, interaction work, worksheets, peer assessment, or by sticks. Emma's belief in giving tests and quizzes is akin to Samantha who uses tests in the workbook. Emma's belief in giving tests and quizzes as well as assessment at the end of the lesson is similar to Gabriella who considers quizzes as "one of the main things" and uses "*assessment at the end of the lesson.*" Gabriella additionally mentioned assessment through questions and group work whereas Emma additionally mentioned interaction work, worksheets, peer assessment, sticks, and assessment before the lesson. Emma's assessment methods are different from Samantha who uses games, group work, and projects.

To summarize, Emma's beliefs surrounding planning hands-on activities, her use of rotation centres, her view of learning "through hands-on experience" and through toys and maps, as well as her way of including activities to provide opportunities for students' social interaction all appeared to reflect Emma's belief in hands-on learning. Emma's belief of planning "something the kids have to relate to . . . because it's their life, it's their connection to it," her view of the teacher's role as a facilitator, and her view of students' roles as participants all corresponded to her belief in student-centered learning. Emma's understanding of the teachers' role as a facilitator, her belief in giving her students "the power," and her support of their critical thinking appeared to align with her tendency toward student-centered teaching.

5.6.1.2 Theme 2 Teachers' Enactment of Constructivism in Classrooms

In the section below, I introduce how Emma enacted constructivism in her classroom. This includes Emma's reflection on her teaching practices, tension about teaching practices, change in beliefs, and change in philosophy.

Sub-Theme 2a) Reflection on Teaching Practices

Satisfied when students are interested in the lesson, unsatisfied when she teaches academic topics. Emma told me that she feels good about her teaching when her students enjoy the lesson and find it interesting. She said, "I like it so much when I teach them something and they *love it*, and you say they start *commenting* on things they found in their lives." She expressed that she feels unsatisfied with her teaching practices when she has to teach academic topics to the students. Emma illustrated why she feels this way:

Some of the things we're teaching them, I find it's too much for Grade [x]. In my belief, Grade [x] is still too young to learn that much of *academic subject*. They learn too much, especially in our school. We give them a lot of academic, and that will take away from their fun time from their childhood, you know? Sometimes I teach them because we have to teach them. . . . I tried sometimes not to enforce it for them.

Thus, for Emma academic instruction needs to be balanced with fun time for lower-level students. Emma shared that she feels good about her teaching practices when she teaches the students "something and they love it." This is similar to Courtney's feeling when "*light goes on that student's face*," and Gabriella when she feels "that they *love the lesson*," but different from Samantha who feels good about her teaching

practices when she sees “*improvement in their marks and their social skills.*” Emma’s feeling of dissatisfaction when she has to teach “that much of *academic subject*” is different from Gabriella who feels unsatisfied when her students seem uninterested in the lesson.

Sub-Theme 2b) Tension About Teaching Practices

When teaching in public schools previously. Emma expressed that she used to feel tension between her beliefs and practices when she was teaching in public schools. Emma said, “In *public school*, no. It’s very hard. So you need to just put your belief and what you believe in and do what the curriculum asks you to do and what the school wants you to teach.” She referred to subjects like social studies and science and gave examples of topics about religious myth in social studies to illustrate the point.

When you teach Roman and Greek mythology and those histories, you have to teach it in a way that it’s not wrong. You cannot, in public school to say . . . the mistakes in it, or what is against your belief; you have to teach it the way it’s there. The Egyptians and the pharaoh and all those things.

Different from Gabriella who has never felt tension between her beliefs and teaching practices, Emma, Samantha, and Courtney all expressed that they felt tension between their beliefs and teaching practices, but the source of tension was different. For Emma, it stemmed from teaching in public schools; for Samantha, it was lacking materials or when giving students tests; and for Courtney, it was when teaching in an old style, when students were not taking their learning seriously, or when she is not practicing a child/student-centered approach.

Sub-Theme 2c) Change in Beliefs

Did not change beliefs but improved strategies. I asked Emma if she has changed her beliefs since she began teaching. She replied that she had “*not changed the belief*, because this is my way of thinking actually before even I became a teacher.” However, Emma explained that she has improved her teaching strategies.

It doesn’t matter how long you’ve been teaching, you still need to *improve*. You still need to find new ways. You still need to change a few things . . . through the years. I change the strategies.

Emma compared her teaching strategy at the beginning of her career to her current practices, noting that “now we have more emphasis on hands-on, experience on, and activities, children centres. A long time ago, the teacher will teach and the kids will listen. Now it’s totally different.” Therefore, Emma primarily improved her teaching practices over the years but not her core beliefs surrounding teaching.

Unlike Samantha, who changed her beliefs from the role of a lecturer to a supporter, or Courtney, who changed her belief from a teacher-centered to child/student-centered approach, or Gabriella, who changed her beliefs to include more hands-on learning, Emma expressed that she did not change her beliefs but improved her teaching strategies/practices.

Sub-Theme 2d) Change in Philosophy

Became more experienced and can understand students more; a teacher has a message to pass. Emma explained that her philosophy “evolved from *the years of teaching and believing that a teacher has a message.*” Emma reflected that accumulating years of teaching experience allowed her to become more experienced in a way that allows her to understand her students’ needs. She explained, “You have

more experience to accommodate your kids' needs . . . you can really know what your kids need, you can assess them by just looking at their paper, you know what their difficulties are." Her philosophy of teaching, that teachers have "a message" to deliver, grew out of her realization that her job has a purpose: "It's just you feel how important your job is, and how effective the teacher is in the life of the kids."

Emma's change toward understanding her "kids' needs" is similar to Samantha's increased empathy ("*put myself in their shoes*") but differs from Courtney's shift in philosophy to involve her students more in teaching, and from Gabriella, who became less sensitive and incorporated more technology, fun activities, and discussion into her lessons.

In summary, Emma's consideration of students enjoying the lesson, her strategy to use rotation centres, as well as her understanding of students' needs appeared to reflect her tendency toward student-centered learning. Emma's change to include hands-on activities aligned with her theoretical inclination toward hands-on learning.

5.6.1.3 Theme 3 Conditions That Enable or Constrain Teachers' Enactment of Constructivism in Classrooms

The following section outlines some examples reported by Emma in the interview of conditions that either support or constrain her enactment of constructivism in the classroom.

Sub-Theme 3a) Supports

From the school principal and colleagues. Emma noted that she receives support from the school principal, and colleagues. Emma explained that the school principal would support her even with students' assessment. Emma gave an example of a student with learning difficulties and how when he started to be able to read short sentences she "took him to *the principal* and . . . let the principal hear him and encourage him." Further, Emma reported that she proposed to the principal an idea of having fun activities for the students in the school during June. Emma said, "So *I told the principal and he was so supportive.*" Emma indicated that her colleagues were willing to help and volunteer in the activities. Emma said, "Everyone is supporting me. All the *teachers* are coming to me and willing to [participate]." Emma explained that she would also give her colleagues a hand when they needed assistance. For instance, Emma described how she covered for a teacher because they were so busy. Emma described her school environment as "like a family" and that it is "really very important to feel that."

Just like Courtney who described her school environment as "having a kind of a family," Emma, too, described her school environment as "like a family." Similar to Samantha, Courtney, and Gabriella, Emma mentioned the support from the principal and colleagues. Gabriella mentioned support from "*communication with the students*" whereas Samantha and Courtney mentioned support from students' parents.

Sub-Theme 3b) Constraints

In resources, students' learning difficulties, time, class size, and limitation in the school. Emma reported several limitations that she usually encounters, for example, limited textbooks, students with learning difficulties, class time and size, and limitation in the school in general. Emma articulated that she lacks textbooks for social studies, "*we don't have a certain book*" and so she gathered from different books and made her own "booklet" for her students.

Emma shared some challenges that she faces daily regarding learning difficulties with some of her students, such as some students who will only write three or four sentences due to their “*learning difficulties*.” Emma revealed that the school does not provide specialists or assistants to help these students, and there is no “special place where the kids go and someone will help them. So, they rely on you, and you have other kids, so you can’t really give him all the time. So that’s a problem.” Moreover, Emma does not really have any difficulties with students’ parents; however, she noted that “parents have too many things and they get lazy, but you have to push them all the time.”

In addition, Emma spoke about how she used to struggle with resistance from students when she would partner lower-achieving students with higher-achieving students, explaining that “at the beginning they didn’t like to be a partner with some other kids.”

Emma also mentioned that classroom time, size, and other limitations in the school such as not having a garden hinder her from practicing certain activities in her classroom. Emma said this is “because we emphasize lots of academic subjects. We don’t have *time* for centres, and in Grade [x] I think they will benefit a lot from centres, from activity more than just worksheets and teaching.” Emma added that her “classroom is *small*,” which is another limitation, this limits her ability to do lots of activities. She also mentioned the lack of opportunity at the school of building “a *garden* outside,” and planting seeds and watching them grow, which the teachers had considered as an interesting learning activity.

Emma’s challenge on limited resources is common with Samantha and Gabriella. Emma’s challenge on students’ learning difficulties and space are similar to Courtney. Both Emma and Samantha mentioned limitation in the school outdoor space, for Emma, the need for “a *garden* outside” and for Samantha, the need for “*picnic benches*.” Emma added limitation in time whereas Samantha added limitation in the content and materials. Courtney and Gabriella additionally mentioned students’ behaviour. Courtney added other limitations of money, low-performing students and difficulties with parents.

In summary, Emma shared her understanding of teaching and learning, how she arranges her classroom and plans her instruction, as well as her understanding of the teacher’s role. She also discussed her theoretical orientation and views of learning. Emma also elaborated on her beliefs on students’ role, mistakes, social interaction, and methods of assessment. Emma reflected upon her teaching practices, tension about teaching, and change in beliefs and philosophy. Lastly, Emma talked about the supportive and challenging conditions that enable or constrain her enactment of constructivism in the classroom.

5.6.2 Emma’s Lesson Plan

Emma provided me with her lesson plans for the two lessons I observed. Because Emma and Gabriella shared the same lesson plan for social studies, there were similarities between the structure of their lesson plans. Emma planned for diversity as the main objective and learner outcome. She also planned for general and specific outcomes, prerequisite knowledge, skills, and strategies. Emma identified “knowledge of the neighbourhood, Canadian culture, school, and so on” as prerequisite knowledge. Emma planned for general and specific outcomes and added higher-order thinking such as demonstration, description, identifying similarities and differences between communities, as well as students’ use of the maps and globes. Emma identified a hook for her lessons based on questions related to previous lessons

and to the current lesson. Emma organized learning activities that were based on reviewing previous lessons, questions from the teacher, explaining, showing a video, discussion, reading, and activity sheets.

Emma identified inquiry-based learning as the instructional approach for the lesson and included different resources such as pictures and books about the Arctic tundra. The lesson plan appeared to reflect student-centered learning as evinced in planning for diversity, students' prior knowledge, and supporting higher-order thinking; visual learning as evinced in displaying pictures and videos; hands-on learning as evinced in using maps and globes; inquiry-based learning as evinced in reading and reviewing books; discussion approach as evinced in teacher's questions; and group work as evinced in group assessment. The lesson plan might also reflect teacher-centered learning as the word "explaining" appeared several times.

5.6.3 Emma's Classroom Observation

Emma had 14 students in her classroom. The classroom had a smart board, two white boards, two computers, and a mini library in the corner. The students' desks were arranged in a U-shape. The teacher's desk was positioned at the right side of the classroom next to the smart board. Beside the teacher's desk, there was a storage unit for students' textbooks for each subject. There were posters on the walls of different subjects like math, science, English, and social studies. The classroom had learning centres that contained all the materials and activities belonging to a specific subject, for example, a math centre, social studies centre, art centre, and computer centre. I observed the first lesson in Emma's class at the third learning block, and the second lesson at the second learning block a few weeks after the first observation.

Including rotation centres in the classroom seemed consistent with Emma's professed belief in student-centered and hands-on learning when she indicated that "they will benefit a lot from centres, from activity more than just worksheets."

5.6.3.1 Theme 1 Observed Understandings of Constructivism

The following section reports the classroom observations of how Emma enacted her beliefs, understandings, and perceptions of constructivism. I paid attention to Emma's actions, interactions, activities, and resources that she included in her lessons.

Sub-Theme 1a) Teaching Practices/Constructivism in Action

I examined Emma's practices in the classroom to identify what approaches she commonly adopts. Note that this theme and the following theme (observed principles of constructivism in action) are not mutually exclusive.

Adopted visual learning, hands-on learning, discussion approach, and teacher-centered learning. During the lesson observations, Emma's theoretical practices seemed to favour visual learning, hands-on learning, discussion approach, and teacher-centered learning. Here, I provide brief examples of Emma's classroom practices, which will be discussed in detail in the following section.

In her lessons, Emma appeared to embrace visual learning by providing *pictures* and showing three *videos* about Inuit clothing, food, housing, and transportation. Emma also brought some samples of Inuit houses like the *igloo* and *teepee* for students to see and touch. The type of activities Emma included required students to *draw and write a short story* as well as *colour, cut, and paste* different pieces of clothing and "*dress up*" an Inuit kid model made of paper. This may show that Emma practices hands-on learning.

Additionally, Emma practiced classroom discussions between her and the students. She *asked* students questions in a whole group setting related to the lessons and students *answered* these questions. Emma allowed them to *share* their previous knowledge related to the lesson.

Emma led her classroom by *spending time presenting and explaining the new lesson*. Emma *was not observed walking around* to check on students' work. This might be an indication that Emma's teaching practices were more inclined toward *teacher-centered learning*.

It appeared to me that Emma's enactment of hands-on learning reflected her theoretical inclination toward this approach shared in the interview. I was not able to observe approaches such as student-centered, scaffolding, differentiated instruction, and Piaget theory that Emma mentioned in the interview. I nonetheless observed two methods that Emma had not spoken about during the interview: visual learning that appeared in using pictures and videos, and discussion approach that appeared in students asking questions and sharing their answers and their previous knowledge. Emma's lesson plans indicated that inquiry-based learning would be used as an instructional approach. However, I was not able to see this in action. The lesson plans stated that inquiry-based learning would be supported by "review[ing] what students have learned about the Arctic" or by asking students about certain concepts like clothing worn by the Inuit. These elements suggest that Emma has a different understanding of inquiry-based learning.

5.6.3.2 Theme 2 Observed Principles of Constructivism in Action

This section is organized by the nine broader principles of constructivism indicated in the checklist (see Appendix B).

Sub-Theme 2a) Knowledge

Knowledge construction: built on students' existing knowledge. The lessons in general, and the two activities—on Inuit clothing and Arctic food—that Emma included, allowed the students to *build on their understanding of the context that they are familiar with (clothes, food, home, and transportation) to include the new knowledge of Inuit culture (their clothes, food, home, and transportation)*.

Knowledge collaboration: discussion between the teacher and the students. Emma practiced classroom discussion with the students. She *asked* questions regarding the previous lessons or the current lesson and students *raised their hands* to answer.

Emma's classroom discussions came in the form of *questions and answers between the teacher and the students*. Even though students were working independently, they were allowed to chat with each other during the activities. In the interview, Emma shared that she supports "*group work* or as two students together as *partners*," but I did not have a chance to see social interaction between the students.

Previous knowledge: reviewed previous topics, students shared previous knowledge. Emma began her lessons by asking students questions related to *previous lessons*. If students did not remember previous lessons, Emma encouraged them to visit the social studies centre in the classroom. For instance, in the Inuit and Arctic clothing lessons, she asked about provinces and territories in Canada. Emma let the students *share their previous knowledge*; for instance, one student said, "Did you know the bigger the igloo will be, the cooler it will be, [and] the smaller the igloo will be, the warmer it will be?" Another student shared with the class her way of remembering the Nunavut territory—by using the phrase "none of it."

Sub-Theme 2b) Learner

Learner control and student-directed goals: students asked questions. In Emma's class, students were able to ask questions, make comments, and share opinions or previous knowledge. Students *asked* the teacher when they needed further explanation. For instance, during a video about Inuit houses, a student asked how the snow remains stable for a long time. They also *asked* critical questions; for example, a student asked, "How come the video does not look old?" even though it showed the life of the Inuit in the past. Another student *asked* if the Inuit have schools. As described above, students in Emma's class were also able to share their previous knowledge.

Emma's way of enabling her students to ask, comment, and share opinions reflected her belief of "giv[ing] them the power." During my observation of Emma's class, however, I did not observe Emma sharing the learning goals with students.

Metacognition: the teacher asked students questions, students reflected on their thinking. I did not observe metacognitive learning in Emma's class, but I observed behaviours that are closely related to metacognitive learning. For example, Emma asked students critical questions like, "Why do you think the teepee, the tent, will be warm enough for the Inuit to stay? . . . Why do you think they need a small hole [as a door] for the igloo? . . . Why do you think they use rifles?"

Students raised their hands if they had a question or a comment. For instance, after watching a video about Arctic clothing, one student asked, "How much animals do [the Inuit] kill in a year?" Emma responded to and answered students' questions.

Emma was observed several times asking questions and answering them at the same time. For example, when she asked what the Inuit used for their hunt, she instantly answered "the skin of the animal they hunt." I also noticed a couple of times that Emma would explain and justify her answer. For example, a student asked if the Inuit used dogs' skin, and Emma replied "no, the dogs are very valuable; it is like their transportation, they help them to pull the sled." Another example was when she was describing and giving reasons for the type of clothing used in the Arctic, saying, "You see that? That long thing, it is traditional, but actually it makes the wind not come inside their clothes when it is windy and keeps them warm."

Sub-Theme 2c) Multiple Contexts

Multiple representations and primary and secondary sources: used more than one way to represent a concept. Emma, in her lessons, tended to represent concepts in more than one way; she used videos, samples, and drawing pictures. In the lesson about the Inuit, Emma included multiple representations by showing two *videos* and brought two 3D *samples of a teepee and an igloo*. In the second lesson, on Arctic clothing, she displayed a *video* and used *pictures* to show clothing worn in the Arctic. In both lessons, Emma handed out *worksheets* for the students that included questions about the lesson.

I noticed that while the videos were playing, Emma would lecture and explain features shown in the videos, for instance, how the Inuit hunt bears and sell their fur and what they gain in return.

The lesson plan of the first lesson mentioned that "pictures of Arctic tundra, books about tundra, and chart paper" would be used as resources, but this was not seen in action during the classroom observation. I nonetheless observed that Emma brought samples of a teepee and an igloo, which was not mentioned in the lesson plan. The lesson plan of the second lesson mentioned that an "information sheet" would be used as an additional resource, and this was not seen during the classroom

observation. Emma showed a video in the second lesson, which was also not mentioned in the lesson plan. The lesson plans of the first and second lessons both mentioned that maps and the globe would be used to “locate countries as part of a comparative study,” but this was not seen in action in both lessons.

Sub-Theme 2d) Diversity and Understanding

Consideration of errors: supported students when they answer correctly and gave ample wait time for students to respond. Emma supported students when they did a good job. For example, when they used clear handwriting or when they wrote a good introduction for their stories, she *encouraged them by saying* “very good,” “nice,” or “I like that.” If Emma asked a student a question and the student did not answer, she *let the student take his or her time* to answer.

There were a few moments when Emma expressed with a facial expression, a verbal expression, or a written comment that she was upset by a students’ handwriting, laughing without reason, inappropriate behaviour, or moving furniture in a way that was not needed. For example, a student came up with his planner to show her his work and she spoke to the student in a tone and with words that appeared to express her frustration at his handwriting, and then she put a sad face next to the writing and wrote a comment to express her disappointment with the quality of the writing.

Alternative viewpoints: students were introduced to alternative perspectives. In Emma’s lessons, *students were introduced to multiple perspectives on how other people live, namely the Inuit*. They learned about *different types of houses* like igloos and teepees, *clothing* like sealskin and parkas, *use of seal oil* for heating and lighting, and the way Inuit *travel* using a “dog team.” Emma discussed with her students the *currency* they regularly use to buy or sell items, whereas in the past she explained that the Inuit used to receive goods when they sold their products. Students were exposed to the life of the Inuit people, which is different from their own. The two lessons might have given students an opportunity to compare the Inuit’s houses and clothing and the way they used to travel and buy goods of their own. During the video about Inuit hunting, a student commented that she “did not want to see how animals get hunted.” Emma did not comment on this student’s observation.

Sub-Theme 2e) Activities and Tasks

Authentic activities: activities related to students’ lives. In both lessons observed, Emma used activities that were relevant to students’ lives. In the first lesson, Emma provided activities in which students had to *draw their lives accompanied by a short story* describing how their clothes, food, and home would be if they were members of an Inuit community. In the second lesson, on Arctic clothing, students were *asked to dress up a kid living in the Arctic*. Students had to colour, cut, and paste these different pieces of clothing and dress up the Inuit kid. Similar to Gabriella’s activities, Emma’s activities related to students’ lives by including concepts and settings that students were familiar with like clothes, food, home, and transportation. Discussion between the teacher and the students was noticed in both lessons observed.

Emma’s way of including many activities reflected her beliefs of learning in many ways (“*many forms and many shapes*”). Emma’s use of worksheets that related to students’ lives reflected her view about planning instructions shared in the interview (“something the kids have to relate to . . . because it’s their life, it’s their connection to it,” “you plan more activities, hands-on activities, more worksheets,”

and “related to their lives as Canadians”). During the classroom observation, I noticed that while students were working on the worksheet for the lesson, Emma motivated students a couple of times, for instance, by saying they could be dismissed early if they completed their worksheet early.

As a part of the learning activities for the second lesson plan, the lesson plan mentioned that teacher would “read information sheet ‘Arctic Clothing in the Past’ to the students,” but this was not seen in action.

Problem solving: students imagine, simulate, and use their creativity. I observed that Emma practiced problem solving, but it was limited to worksheet questions. It appeared that the first activity, where Emma provided worksheets, helped the students to *imagine* and *simulate* their lives as if they were a member of an Inuit community. It also gave them an opportunity to compare their lives to the lives of the Inuit. The second activity allowed students to use their *imagination* and *creativity* as well as logical thinking by deciding which piece of clothing fits better.

Sub-Theme 2f) In-Depth Knowledge

Conceptual interrelatedness: related topics to students’ lives. Emma tried to connect social studies lessons to students’ lives. For example, when they were watching the videos about hunting and fishing, she *reminded them to thank their parents and appreciate the food they have at home* as they did not have to take the trouble to hunt or fish for it. Another example was when she *connected the type of snow clothing (jackets, pants, and shoes) worn in the Arctic with the type of winter clothing that students use nowadays*.

Scaffolding: provided visuals, used summaries, hints, brought samples, and gave instructions. Emma tried to scaffold students’ learning using several strategies. Emma used *visuals* such as pictures, videos, and maps. Emma *summarized* the main points of the lessons and wrote them on the white board so students would be able to use these points in their activities. Sometimes Emma gave students *hints* for the answers, like when she gave them the first letter of the word. Additionally, Emma *brought samples* of an igloo and teepee for students to see and showed videos for students to watch. Even though Emma was not observed moving around the classroom, she provided students with *instructions* during the activity time. She also encouraged students when they worked on the activities by saying “very good,” “nice,” or “I like that.”

Sub-Theme g) Assessment Method

Authentic assessment: questions throughout the lesson. Emma was observed assessing her students by *asking questions* regarding the previous lessons or the current lesson. Emma posed questions, she sometimes picked a stick to call on a student, or students raised their hands to answer. Students sometimes would take time to remember and recall information. Emma encouraged them to visit the social studies centre at the corner of the classroom.

Emma’s use of sticks for assessment seemed consistent with her assessment methods shared in the interview: “I have to pick the stick, and that’s giving me a good assessment.” However, this method was not mentioned in the lesson plan. Emma’s lesson plans indicated that the assessment methods would be through observing students “for their ability to work effectively in a group,” and through assessing them “as they work by asking questions,” but I did not get a chance to see these methods during the observation. Assessment methods that Emma had shared in the interview

such as using tests, quizzes, and peer assessment were not noticed in the two classroom observations.

Sub-Theme 2h) The Teacher's Role

Teachers as coaches: Emma as a guide, a lecturer, and a parental role. In the observation, I noticed three roles that Emma adopted: a guide, a lecturer, and a parental role. Emma tried to engage students in the lesson by *asking* them questions throughout the class time and allowing them to *share* their answers. Emma also attempted to *build on students' prior experiences*. She gave students some *hints and summaries*, and brought some *3D samples* to help students understand the concept. Moreover, she included *visuals* such as videos and pictures in her lessons. Emma gave students *autonomy* to ask questions or share their existing knowledge. She also *provided activities that related to students' lives* and supported their critical thinking and imaginations. Emma used more than one source and different ways to represent the concept.

Emma was observed leading her classroom by spending some time *presenting and explaining the new lesson*. *Social interaction was only observed between the teacher and students*. Students were observed working *individually* on the worksheet. Emma yelled at the students on some occasions. I also noticed that a couple of students called Emma “mom” and Emma would respond to them. I also heard Emma say “son” and “sweet heart” a few times, which was consistent with her belief of the teacher's parental role.

The role of the teacher as a facilitator that Emma described in the interview (“*facilitates* it. You know, she goes around”) was not seen in action in the classroom; Emma was not observed moving around the classroom during the activities.

In summary, I noticed differences between Emma's observed principles and her lesson plans. Similar to Courtney and Gabriella, the differences in Emma's lesson plans appeared in knowledge collaboration, sources, activities, and assessment methods. Working as groups or peers, as shared by Emma in the interview, was not seen in action during the classroom observation. The lesson plans mentioned that “pictures of Arctic tundra, books about tundra, and chart paper,” “information sheet,” and maps and the globe would be used; however, these elements were not seen in action during the classroom observation. Yet, I observed Emma use samples of a teepee and an igloo and show a video (in the second lesson). These resources were not mentioned in the lesson plan. As a part of learning activities, the lesson plan mentioned that reading about “Arctic Clothing in the Past” would be included as a learning activity, but this was not seen in action. Assessment through group work and questions while students' work were also not observed in the classroom practices. Assessment using randomly selected sticks, as Emma discussed in the interview, was seen in action in the classroom but was not mentioned in the lesson plan.

5.6.3.3 Theme 3 Observed Supports and Constraints, Enactment of Constructivism

The following section describes the supports and constraints that I observed during the classroom observation of Emma's lessons.

Supports: from colleagues. Support from colleagues was seen during the lessons observed. For instance, Emma used the igloo and teepee made by lower elementary students, and their *teacher provided Emma with these samples* to use in her classroom.

Constraints: students with learning difficulties. I noticed that Emma spent time with a few *students with learning difficulties*, checking their planners and correcting them while the rest of the students were working on the activity.

The support from colleagues evident in Emma's class aligned with her comments about colleague support in the interview. I did not have a chance to observe support from the school principal as Emma had mentioned in the interview. The constraint of students with learning difficulties was seen in Emma's classroom and corresponded with her comments on dealing with the challenge of students with "*learning difficulties*." Limitations in resources, time, class size, and limitation in the school as Emma had described in the interview were not seen to pose challenges during the classroom observation.

To sum up, Emma's classroom observation showed that Emma practiced several teaching approaches. Emma provided pictures and videos in her lessons, which indicated her inclination toward visual learning. Her support of hands-on learning may be seen through her use of 3D samples and her use of activities that asked students to draw and write a short story and colour, cut, and paste different pieces of clothing. Emma practiced discussion approach by asking students questions and allowing them to share their prior knowledge. And Emma's decision to present the lesson by standing in front of the students and not moving around might indicate a predisposition toward teacher-centered learning.

5.6.4 Summary

Emma expressed that she is interested in having rules in her class and planning her instruction according to the curriculum objectives. Emma practiced more than one approach at the same time and shared many methods for assessment. Learning, from Emma's perspective, never stops and can occur in many ways. Emma reported that social interaction in her classroom occurs mainly through activities, partner work, and assessment. She expressed her belief that the students' role is to be a participant and the teacher's role is a combination of being a teacher, facilitator, and taking on a parental role. Emma noted that students' mistakes are opportunities to learn.

Emma expressed that she feels satisfied when students are interested in the lesson and unsatisfied when she teaches overly academic topics to students in this grade. Emma explained that she used to feel tension when she taught in public schools, particularly in teaching social studies and science. Emma said that she has not changed her beliefs since she began teaching but has improved her teaching strategies over her many years of teaching. She has become more experienced and can better understand her students, and over time she has come to realize that a teacher has a message to pass to students. Emma shared that she gets support from the school principal, colleagues, and parents, but also encounters limitations in her school. The observed supports were from colleagues, and the observed constraint during the lesson was from students with learning difficulties. Other limitations Emma described in the interview such as resources, time, class size, and limitation in the school were not seen during the two classroom observations.

Observed beliefs of constructivism showed that Emma's instructional approach has some similarities to Gabriella's. Emma used visual learning, hands-on learning, discussion approach, and teacher-centered learning.

From the two lesson plans I analyzed, Emma's observed beliefs in action showed that she adopted student-centered, inquiry-based, discussion approach, visual learning, hands-on, group work, and teacher-centered learning. It was evident that Emma planned for diversity and included main objectives and learner outcomes,

including those that supported higher-order thinking. Her resources were maps, globes, pictures and videos; her learning activities were focused on reading and reviewing books and questioning; and her assessment methods were group work and questioning. The lesson plans also reflected teacher-centered as the word “explaining” appeared a few times.

Emma’s classroom of 13 students had posters on different subjects like math, science, English, and social studies. Emma’s observed principles showed that she is interested in reviewing previous topics and letting students share their previous knowledge. Knowledge collaboration was seen in Emma’s class in her discussions with the students, where she allowed them to ask questions and share comments, and she offered encouragement and support when they answered the questions correctly. It appeared that Emma supported students’ metacognition by asking them critical questions and having them reflect on their thinking. Emma was big on using multiple representations and resources to present the topic, and she introduced students to alternative perspectives. The lessons in general and the activities in particular helped students to build on their existing knowledge, providing relevant content that supported students’ imagination, simulation, and creativity. Emma supported students’ conceptual interrelatedness by relating topics to students’ lives. She was seen scaffolding students’ learning by providing visuals, using summaries, providing hints, bringing samples, and giving instructions. She assessed students by asking questions throughout the lesson. The roles Emma adopted were as a guide, a lecturer, and a parent.

Differences between professed beliefs shared in the interview and classroom practices were identified in Emma’s classroom. The differences appeared in professed beliefs as Emma practiced different approaches than the ones she shared in the interview. Differences also appeared in knowledge collaboration and role of the teacher. Similar to Gabriella, Emma’s lesson plan showed that she has a different understanding of inquiry-based learning. Differences between Emma’s espoused beliefs in the interview and her teaching practices were also apparent in terms of her role as lecturer. Moreover, revisions between the lesson plan and teaching practices were seen with regards to the resources, activities, and assessment methods used in the instruction.

It should be highlighted that I was not able to see social interaction between the students or students taking part in the lesson instruction during the lessons observed. In addition, there were some components that I did not have a chance to see such as exploration and apprenticeship learning.

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