Give Yourself a Chance:
A Teacher's Quest to Nurture Confident and Productive Students in Essentials Mathematics

by

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ABSTRACT

This work is a self-study examining my positioning as a Grade 10 Essentials math teacher during one school semester. Using a framework that draws on Bandura's (1995) notion of self-efficacy, Dweck's (2000) ideas of growth mindset, and Costa and Kallick's (2008) and Cuoco, Goldenberg, and Mark's (1996) work on habits of mind and mathematical habits of mind, I sought to position myself and my teaching in a way that would increase my students' sense of confidence and capability in mathematics. I used narrative inquiry (Clandinin and Connelly, 2000) and autobiographical narrative (Bullough & Pinnegar, 2001) as interpretive frames to re-tell the story of the semester. What I came to understand is that I need to operate with a positioning that is dynamic, open-minded, and rooted in the notions of care (Noddings, 2013) and expectation if I hope to nurture students who are not only confident and capable, but who also accept the key role they must play in growing as effective and responsible learners. Despite being rooted in a particular time and place, and with particular students, this story seeks to acknowledge the realities teachers face in an honest and hopeful manner.

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CHAPTER ONE

"I am not a math person." Most of us have heard this phrase articulated at least a time or two in various social situations. Similarly, as teachers we have all heard parents excuse their children's poor grades because they themselves were "never good at math". Additionally, I have lost count of the number of times that someone has responded in shock and awe upon learning that I teach high school math. It is clear that "no other school subject pushes emotional buttons the way math does" (Willis, 2010) and unfortunately the idea of hating math or not being good at math has become socially acceptable. The notion that one is either someone who can do mathematics or someone who cannot creates a challenging landscape for the mathematics teacher to navigate. Given this social context and my desire to nurture my students' development as confident and productive learners of mathematics, I set out to inquire into the teaching and learning that occurred in my own classroom and tell a story about the journey that emerged.

The Context of the Inquiry

I teach at a Grade 7-12 school. For three academic school years, I taught Grade 7 mathematics and science. In the fall of 2015, I began a new journey teaching Grades 9-12 mathematics. My course load included teaching mathematics across all streams, Essentials, Applied, and Pre-calculus; as well as Grade 9 Math and Grade 12 Advanced Calculus. Upon beginning the school year in the fall of 2015 I had some pre-conceptions about teaching each of these courses, as they represent each of the various branches of math offered in Manitoba high schools; while some of these held true, some did not.

The course which quickly surprised me the most was Grade 10 Essentials Mathematics. Going into the fall semester of the 2015-1016 school year I was excited about teaching this course because its curriculum offers a wide range of topics, including geometry, algebra,

measurement, and financial mathematics (Manitoba Education, 2014) with many applications to real life. I envisioned myself incorporating many projects and hands-on activities; opportunities where my students would be engaged in connecting curricular content to the real-world. I knew that many of the students in the class were likely to be ones who struggled with math. After all, the Essentials stream is intended for students who do not plan to pursue post-secondary studies that involve mathematics (Manitoba Education, 2014) and in my experience frequently come out of Grade 9 math with lower than average marks. I figured these would be students who would need extra help and guidance along the way. Given my experience teaching struggling students, I felt prepared to support them. In reality I ended up with a group of students quite different than what I had anticipated. While I had a small group of students who were motivated and open to learning, I had a large number of students who were disengaged from learning. For some this looked like coming to class but being off task and rowdy for the duration, and for a small group this looked like simply staying home. I felt frustrated because I felt as though these students were not giving themselves a chance to learn. They seemed to have decided that learning, and specifically math, was not for them. I often felt that my efforts to support their learning were being wasted because they were disconnected from the process and were choosing instead to disguise their lack of understanding, lack of interest, and lack of confidence in their own abilities with disruptive and disengaged behaviours.

In the winter semester, I was going to be teaching the same course to a new group of students. As the new semester approached, I reflected deeply on what I could do differently to make the semester more successful. What could I change in my teaching? Could I structure the course differently? Could I make the course more individualized to meet individual student's needs? Ultimately, I wondered what I could do to make the experience better for everyone

involved. In this study, I seek to share my journey on this quest to nurture my students' development as willing and confident students of mathematics.

My Teaching Philosophy

An important detail to acknowledge in describing the context of this study is my own philosophical beliefs as a teacher. These beliefs represent the core values which underpin the decisions I make as a teacher and therefore have a significant influence on the learning environment. For me, there are two fundamental beliefs which guide my practice. The first is a focus on journey; I believe that learning should be focused on growth. It is about exploring and navigating the landscape in a manner that makes day-to-day experiences meaningful for my students. Secondly, I believe that the key to building a productive classroom is care. Caring for my students is an essential component in building an environment where students can feel comfortable to learn and grow in the process of exploring new ideas and making mistakes along the way.

Journey

According to Fox (1983) teaching can be seen in comparison to four theories – transferring, shaping, travelling, and growing. He notes that while transferring and shaping theories tend to be more "simple", or traditional, views on teaching – ones where the teacher possesses knowledge which is then passed on to students – travelling and growing theories are more developed theories – ones where the teacher is no longer completely in control, "the student is viewed as a contributing partner in his own learning" (p. 156). This is how I view teaching and learning. For me teaching is about leading, guiding, helping and showing (what Fox considers a part of a travelling theory), as well as cultivating, encouraging, nurturing, and

fostering (part of a growing theory). To me the processes of both teaching and learning are journeys. It is about starting at some point and ending at another.

From a travelling perspective, the content represents the landscape to be explored. The teacher in this analogy is the local guide; one who has previously traversed the landscape and can offer advice on how best to navigate it. The students in this instance are a group of diverse explorers;

> …Some are fit and healthy, others may be weaker but with plenty of persistence; some are far-sighted, others so short-sighted that they can only see a yard or two ahead. Some are over-dependent on the guide and have to be encouraged to go out on their own; others are more adventurous, even foolhardy, and rush straight off into boggy ground where they sink up to their knees and get stuck. Some have been so attracted to the area that they intend to take up permanent residence. Others are there because, although their destination is elsewhere, there are vantage points here from which they can get essential sightings into other areas. For all these, education is a journey. But it is a journey of exploration, not a direct trip from A to B. (p. 157)

From a growing perspective, the journey is about what is happening to the student. The material in this case is out there, and "is only significant in terms of what it does for the personal growth of the student" (p. 158). I believe that education is a combination of these two theories. It is my job as a teacher to help the students explore the content in a manner that allows it to be a vehicle for developing skills that are important for a productive and fulfilling life.

Care

Noddings (2013) states that all human beings want “to care and to be cared for” (p. 7). She references Milton Mayeroff and explains that "to care for another person, in the most significant sense, is to help him grow and actualize himself" (p. 9). This is what I hope to nurture in all my students. By caring for students we hope to create a relationship that enables those students to continual developing into ethical human beings.

For Noddings (2013) caring is about receiving the other into oneself. Caring is a way of being which allows one to feel with the other. She describes the seeing and feeling as being on loan to the care-giver allowing him or her to truly feel and see what the other is experiencing. Noddings (2013) offers an example of a math teacher trying to understand what a struggling student may be experiencing;

> Suppose, for example, that I am a teacher who loves mathematics. I encounter a student who is doing poorly, and I decide to have a talk with him. He tells me that he hates mathematics. Aha, I think. Here is the problem. I must help this poor boy to love mathematics, and then he will do better at it. What am I doing when I proceed in this way? I am not trying to grasp the reality of the other as a possibility for myself. I have not even asked: How would it feel to hate mathematics? Instead, I project my own reality onto my student and say, ‘You will be just fine if only you learn to love mathematics’…Bringing him to "love mathematics" is seen as a noble aim... It is a possibility that may not be actualized. What matters to me, if I care, is that he find for some reason, acceptable in his inner self, for learning the mathematics required of him or that he reject it boldly and honestly. How would it feel to hate mathematics? What reasons could I find for learning it? When I think this way, I refuse to cast about

> for rewards that might pull him along. He must find his rewards. I do not begin with dazzling performances designed to intrigue him or to change his attitude. I begin, as nearly as I can, with the view from his eyes: Mathematics is bleak, jumbled, scary, boring, boring, boring. . . . What in the world could induce me to engage in it? From that point on, we struggle together with it. (p. 15-16)

From this perspective I believe that a caring relationship is embodied when a teacher is able to truly see and feel from a student's perspective. I must not only be attentive to what my students are saying and doing, but must also seek to look deeper into what they may be feeling. I agree fully with Noddings (2013) when she argues that a child who feels cared for and feels love and trust for the one caring about them will more frequently engage in tasks thus leading to higher levels of motivation and achievement.

Developing this kind of care, specifically in the mathematics classroom, may require a shift in students' thinking about the nature of mathematics. For example, for Lampert (1990) it is essential that teachers help students see that doing mathematics is not just about following the rules laid out by the teacher, that knowing mathematics means more than simply remembering and applying a rule, and that mathematical truth is not only determined when the teacher approves a correct answer. Students need to see that they are at the center of their own mathematics learning. It is not about what I, the teacher, knows or tells them, it is about a journey towards new understandings that is guided by their own exploration. If students feel safe and respected they may be more willing proceed in their learning journey in a meaningful manner while understanding that the teacher will be there to support them (Gresalfi & Cobb, 2006).

In a productive learning environment, students must understand that mistakes are an essential piece of the mathematics puzzle. Creating a classroom where students feel cared for and respected can make them feel safe enough to "express their ideas, to justify the reasonableness of those ideas, and to revise their thinking in light of mistakes" (Gresalfi & Cobb, 2006, p. 53). Willis (2010) recommends that teachers model the process of learning from mistakes. By helping students understand the value that can come from making mistakes, students can discover the power of perseverance and strive to challenge themselves. In his study on mathematical errors, Borasi (1994) proposed that mistakes can provide the stimulus and means to develop mathematical inquiries. He describes errors as "springboards for inquiry". By having students engage in activities that required them to explore and reflect upon their mistakes, they were able to experience constructive doubt, engage in challenging problem solving, experience the need for justification in mathematics, experience innovation and ownership in their learning, recognize the more humanistic aspects of mathematics, and develop effective means for communication mathematically. In his concluding remarks, he notes that by thinking about and reflecting upon their mistakes, students became "more active and in control of their mathematical experience" (p. 188). This is a process that I feel is essential to nurture in the classroom.

For Allen (2009) one of the most important factors in nurturing a friendly classroom is the notion of community. Through her study, she determined that many students "attributed boredom to having to work alone, which made them feel isolated, resulted in increased levels of anxiety, and made the work feel more difficult" (p. 4). The students she interviewed noted that friendly classrooms were ones where students talk and collaborate, math was interesting yet challenging, and the teacher was empathetic and supportive. By allowing students opportunities to collaborate they are able to help each other, share effort and knowledge, and get more

enjoyment out of learning. Gordon-Calvert (2001) further elaborates stating that focusing on community shifts the authority from the teacher and allows students to see mathematics as "a human endeavour with truths founded and socially negotiated" (p. 17). She notes that our experiences do not occur in isolation; they are instead inherently influenced by our interactions, our conversations, and our environment. She specifies that "a person's activities are never wholly their own – they are filled with echoes of the actions and utterances of other" (p. 55). In order for this kind of interaction and collaboration to occur she notes that students must be willing to take risks, trust each other, and to listen. It is this kind of classroom that I seek to nurture for my students.

The Research Goal

Given this context and my teaching philosophy, I chose to focus my efforts on raising my students' sense of confidence and capability in mathematics. I chose to use the concepts of self-efficacy, mindset, and habits of mind to frame my goals for the semester. Bandura's (1995) notion of self-efficacy reflects one's own beliefs about their ability to deal with some phenomena. He believes that a person's beliefs about their capability impact their thoughts, motivations, and actions. Given my context, I wanted my students to believe that they were capable of interacting with mathematics and to give themselves a chance to have success. I also chose to focus my instructional practice on students' development of certain mindsets. I chose to focus on developing what Dweck (2000) refers to as a growth mindset. I wanted students to understand that they are capable of learning and growing, rather than believing that they have some fixed amount of intelligence. I also chose Costa and Kallick's (2008) and Cuoco, Goldenberg, and Mark's (1996) work on habits of mind and mathematical habits of mind, respectively, as a basis for my instructional planning. I intended to use mathematics as the

vehicle for developing dispositions such as perseverance, problem solving, communication, creativity, questioning, and flexible thinking. I believed that these habits of mind would serve my students well both within and beyond the classroom walls, in addition to the mathematical content itself. Throughout this study I used these three frameworks as guides to monitor how my own actions and position were influencing my students' development.

Where this study differs from many other studies of student growth is my choice to position the inquiry to examine myself as a teacher. For me, this refocusing was essential as I sought to determine how my actions, beliefs, and reflections impact my students and their journey in Grade 10 Essentials mathematics. By conducting this self-study, I therefore sought to answer the question; **how can I reposition myself as a teacher of Grade 10 Essentials mathematics to nurture my students' willingness to give themselves a chance as learners of mathematics?**

In this chapter, I have outlined the goals for this inquiry, as well as the details of the context in which it is situated. Chapter two provides the theoretical foundation for the concepts of self-efficacy, mindset, and habits of mind and begins to articulate why and how each is important in the mathematics classroom. Chapter three outlines the methodology I planned to use to structure this study. It includes the theoretical underpinnings of self-study, narrative inquiry, and autobiographical narrative, as well as describes the specific ways in which I planned to use each to guide this study. Chapter four chronologically outlines the story of the semester and details my day-to-day thoughts as both a teacher and a researcher. In Chapter five I share the stories of five of my students and examine how their journeys progressed alongside my own as the semester unfolded. Chapter six then re-examines the story of the semester using the tools of self-study, narrative inquiry, and autobiographical narrative. It addressed my initial research

question by using narrative fragments from my journey to address my positioning as a teacher. Finally, Chapter seven explains how I have moved forward with the findings from this study with the goal of continuing to improve my practice.

CHAPTER TWO

I believe the notions of self-efficacy, growth mindset, and habits of mind are all important ideas when it comes to thinking about students' math learning. In my view, all three of these theories redirect the focus from mathematical content to the outlook students bring to and take from the mathematics learning environment. While each offers a unique perspective on the kinds of thinking that are most important, they all point to the importance of developing students' willingness to believe that they are capable of learning and engaging with mathematics in a meaningful way. In this chapter, I will begin by examining the meaning and importance of Bandura's notion of self-efficacy and its implications for students' motivation and engagement. I will then explore what it means to create a classroom culture centered on the goal of developing students' growth mindsets. Finally, I will explore dispositions that prove to be important in nurturing well rounded learners. I will begin by looking at Costa and Kallick's ideas about habits of mind, and end with Cuoco, Goldenberg, & Mark's more specific mathematical habits of mind.

Self-Efficacy

Social cognitive theory offers the view that human functioning springs from the interactions among personal factors, behaviours, and environmental conditions (Urdan & Pajares, 2006). Self-efficacy represents one facet of social cognitive theory and refers to the beliefs a person has in their own ability to organize and execute a plan of action that will allow them to deal with potential situations. A person's "efficacy beliefs influence how they may think, feel, motivate themselves, and act" (Bandura, 1995, p. 2). As Bandura explains, a person's

motivations, emotional state, and actions are generally based more heavily on their perceptions of each of these than on the objective reality. High levels of self-efficacy allow a person to persevere when faced with obstacles, hardships, and injustices.

Traditionally, the role of the education system was to train students and provide them with domain specific knowledge so that they could leave school and enter the workforce they were trained for (Bandura, 1995). In today's society it is more important for students to leave school with the tools necessary to tackle complex occupational and societal demands; "education has now become vital for an engaged and productive life" (p. 17). If schooling is to be considered good it will serve to develop students who have the tools necessary to embark on a life long journey of learning. As Bandura explains, these students will be able to leave school with the "the intellectual tools, efficacy beliefs, and intrinsic interests to educate themselves throughout their lifetime…either for their own sake or to better their lives" (p. 17).

When exploring links between self-efficacy and academic life, it is important to note that students' beliefs in the ability to master academic tasks can have an impact on their aspirations, level of interest in school, accomplishments, and how well they prepare themselves for the future (Bandura, 1995). Students with high levels of self-efficacy will participate more readily, work harder, and persist longer, therefore leading to more successful school experiences (Zimmerman, 1995). The most important distinction to be made is that it is the students' beliefs about their own skills and abilities that have a significant influence on their successes in school, perhaps more so than the actual skills and abilities themselves. For example, specifically in the mathematics classroom, "a high sense of self efficacy may serve students well when solving math problems, not because it causes them to be better problem solvers, but because it engenders greater interest in and attention to working the problems, increased effort and perseverance in the face of

adversity" (Pajares & Kranzler, 1995, p. 427). It is a student's efficacy beliefs that allow them to manage the knowledge and skills they possess and use them effectively in the dynamic situations that may present themselves throughout their educational journey (Zimmerman, 1995).

Sources of Self-Efficacy

Beliefs regarding ones self-efficacy can come from various sources. In his work Bandura (1995) indicates four primary influences on a person's self-efficacy: mastery experiences, vicarious experiences, social persuasions, and physiological reactions.

Mastery experiences. The most effective way a person can develop a strong sense of self-efficacy is through what Bandura (1995) calls mastery experiences. Simply put, these are experiences in which a person attains some level of success; "successes build a robust belief in one's personal efficacy…failures undermine it" (p. 3). It is important to note that these successes need not be easily attained. As Bandura explains, difficulties and setbacks serve to teach people about the sustained effort that is sometimes required when facing various challenges. For example, in the mathematics classroom once students have completed an academic task, they will interpret and evaluate their results. Based on this evaluation students determine a judgement of their competence and may alter their pre-existing belief about their competence (Usher & Pajares, 2009). These experiences can have lasting effects on one's self-efficacy, as they can involve acquiring the cognitive, behavioural, and self-regulatory tools for developing and executing action plans to deal with future circumstances (Bandura, 1995).

Vicarious experiences. Social models serve as examples of what may be possible. Seeing someone similar to oneself succeed can serve to raise what a person believes to be possible (Bandura, 1995). By observing someone else succeed a person is more likely to believe that they too can achieve success. "Through their behavior and expressed ways of thinking,

competent models transmit knowledge and teach observers effective skills and strategies for managing environmental demands" (Bandura, 1995, p. 4). Similarity to oneself is key in measuring the degree to which a social model will influence a person's efficacy beliefs. Given this need for similarity it is understandable why students in a classroom can be greatly influenced by their peers. Watching a classmate succeed at a task may convince a student that they too can achieve (Usher & Pajares, 2009). In many academic endeavours there are no absolute measures of proficiency, therefore these comparison judgements are vital in developing students' self-efficacy beliefs.

Social Persuasion. Social persuasions that people receive from others can serve as a source of efficacy beliefs. People who are verbally persuaded that they are capable of tackling a given challenge are more likely to "mobilize greater effort and sustain it" (Bandura, 1995, p. 4). These third party persuaders need to do more than simply convey positive appraisals. They also need to structure situations which will allow the other to succeed and avoid placing them in situations for which they are unprepared (Bandura, 1995). These motivators also encourage evaluating success based on self-improvement rather than simply triumphs over others. In a school setting students may receive supportive messages from the teacher, their peers, and their parents. These messages can serve to boost a student's confidence when they are accompanied by conditions and instruction that bring about success (Usher & Pajares, 2009). Unfortunately, just as social persuasions can shape a student's self-efficacy, they can also very easily serve to undermine it. For example, these effects can also be negative if the encouragement given (e.g., "You can do it!") does not match the subsequent performance (Urdan & Pajares, 2006).

Physiological Reactions. A person's physiological and emotional state also plays a role when judging their own capabilities. Generally, people interpret stress and tension as signs that

they may be vulnerable to poor performance (Bandura, 1995). A person's mood also has an impact on their self-efficacy beliefs; "a positive mood enhances perceived self-efficacy; despondent mood diminishes it" (Bandura, 1995, p. 4). Again it is the person's perception of these emotional and physical factors that plays the most important role, not the actual intensity of them. These physiological reactions are quite common in a school setting. For example, "students who experience a feeling of dread when going to a particular class each day likely interpret their apprehension as evidence of lack of skill in that area" (Usher & Pajares, 2009, p. 90). Conversely, when students feel fewer negative emotional symptoms they are more likely to feel a higher level of self-efficacy (Urdan & Pajares, 2006). It is important that teachers play a role in increasing students' physical and emotional well-being by reducing negative emotional states. This will likely lead to students feeling self- efficacious.

Information gained through mastery experiences, vicarious experiences, social persuasions, or affectively is not inherently instructive (Bandura, 1995). The information is first "selected, weighted, and integrated" (p. 5) and is shaped by personal, social, and situational factors before influencing a person's self-efficacy judgements.

Regulating Human Functioning

Beliefs about self-efficacy regulate a person's functioning through cognitive, motivational, affective, and selection processes (Bandura, 1995). These processes "usually operate in concert, rather than in isolation" (p. 5).

Cognitive processes. Most human behaviours are regulated and organized by thought. For example, a person's personal goal setting will depend on self-efficacy. The higher the person's self-efficacy the more likely they are to set goals for themselves and commit to achieving them (Bandura, 1995). Efficacy beliefs also shape the types of complex, ambiguous,

and uncertain life scenarios a person anticipates and plans for. “In learning predictive and regulative rules people must draw on their knowledge to construct options, to weigh and integrate predictive factors, to test and revise their judgments against the immediate and distal results of their actions, and to remember which factors they have tested and how well they have worked” (Bandura, 1995, p. 6). Ultimately people with strong self-efficacy beliefs are more likely to set goals and face challenges with more success.

Motivational processes. Most people motivate themselves and plan their actions through forethought; they think about what they can do, think about likely outcomes of possible actions, set goals for themselves, and manage resources and the level of effort needed to succeed (Bandura, 1995). People with high levels of motivation seek self-satisfaction by fulfilling goals and will strengthen their efforts if they feel their performance is substandard (Bandura, 1995). Ultimately, this stronger sense of capability leads to greater effort and resilience which in turn contributes to further accomplishment.

Affective processes. Self-efficacy beliefs also determine the amount of stress or depression a person feels during difficult times. People who are highly self-efficacious are more likely to believe they can manage and control any potential difficulties they may encounter thus lessening the chance that they will become overwhelmed when encountering these difficult situations (Bandura, 1995). As a Chinese proverb states; "You cannot prevent the birds of worry and care from flying over your head. But you can stop them from building a nest in your hair” (in Bandura, 1995, p. 9). In sum, self-efficacy beliefs are highly related to coping behaviours, thus regulating stress and anxiety levels.

Selection processes. Beliefs about one’s self-efficacy shape the choices a person makes and the courses they follow. According to Bandura (1995), “people avoid activities and

environments they believe exceed their coping capabilities. But they readily undertake challenging activities and select environments they judge themselves capable of managing" (p. 10). People with low levels of self-efficacy are therefore more likely to avoid difficult tasks, whereas people with higher levels of self-efficacy are more likely to select them. Based on these choices, people will nurture certain competencies, interests and social networks which in turn determine their path in life (Bandura, 1995).

Ultimately, self-efficacy is an essential component of a person's make-up. It determines the cognitive processes they access, the motivation they will have, their affective domain, and the paths they choose in life. As Bandura (1995) summarizes;

> …the successful, the venturesome, the sociable, the non-anxious, the non-depressed, the social reformers, and the innovators take an optimistic view of their personal capabilities to exercise influence over events that affect their lives. If not unrealistically exaggerated, such personal beliefs foster positive well-being and human accomplishments. (p. 13)

These are the types of qualities I believe teachers should aim to nurture in all students.

Mindset

Fixed vs. Malleable Intelligence

In her work on self-theories, Dweck (2000) presents two broad categories for how individuals perceive their own intelligence: fixed intelligence and malleable intelligence (or growth mindset). For someone with a fixed intelligence mindset, intellect is a fixed trait that is within us; a person is born with a certain amount of it and it cannot be changed. To the contrary for a person with a growth mindset, intellect is something that can be "cultivated through

learning" (p. 3); effort and guidance can help to develop one's intelligence. Dweck explains that a person's mindset has significant effects on their effort, confidence, and self-esteem.

Effort. For students with a fixed mindset, the need to put in effort means that you are not good at something, whereas for students with a growth mindset, effort "allows you to fully use your ability and realize your potential" (p. 40). Unfortunately, students with a fixed mindset may never come to value effort or the results that it can produce. These students would rather seek out tasks where they can coast along without having to challenge themselves. Conversely, students with a growth mindset continually push themselves because they realize that effort is directly related to learning. They enjoy exerting the effort required to tackle a challenging task.

Confidence. It is commonly believed that having confidence in one's ability is key to finding success. However research has shown that "what appears to be more important…is not so much the confidence you bring to a situation, as the ability to maintain a confident and non-defensive stance in the face of obstacles" (p. 51). Students with a fixed mindset tend to have more difficulty with the kind of persistence required to face challenges. When students encounter failure their mindset is a great predictor of how they will respond. Students who have a fixed mindset despite having high confidence will tend to flounder, while students who have a growth mindset but have low confidence are more likely to develop the tenacity required to deal with the failure and move forward from it.

Self-Esteem. Similar to intelligence, self-esteem is something that can be fostered in students but is not an entity to be given to them. Students can be encouraged to experience themselves in positive ways and use their resources well "to master challenges, to learn, to help others" (p. 128). Dweck (2000) encourages teachers to foster students who are prepared to face challenges, work hard, stretch their abilities, and use their skills to help build their self-esteem.

She comments that this will produce students who will be able to contribute meaningfully to society. Self-esteem "is not something we give to people by telling them about their high intelligence. It is something we equip them to get for themselves – by teaching them to value learning over the appearance of smartness, to relish challenge and effort, and to use errors as routes to mastery" (p. 4).

Students' mindsets can also determine the types of goals they set for themselves. For example, students with a fixed mindset tend to reach for achievement goals. They want to do well on tasks primarily so that they appear smart and avoid looking dumb. On the other hand, students' with growth mindset are more likely to set learning goals for themselves. They are less likely to be concerned about how smart they appear, and more likely to have "a desire to learn new skills, master new tasks, or understand new things" (Dweck, 2000, p. 15).

Establishing a Growth Mindset Classroom

Boaler (2016) builds on Dweck's ideas related to growth mindset. She recommends some key tools that teachers can use to help students develop a growth mindset in the math classroom. Her first suggestion is the establishment of classroom norms. Students need to come to understand what the teacher expects of them and need to see that the teacher's actions reflect the norms that have been laid out. Boaler (2016) suggests encouraging the following list of positive norms:

- Everyone can learn math to the highest levels
- Mistakes are valuable
- Questions are really important
- Math is about creativity and making sense
- Math is about connections and communicating

- Depth is much more important than speed
- Math class is about learning, not performing (p. 172-173)

Boaler (2016) offers a number of recommendations for encouraging these norms in the classroom.

Praise. The ways teachers praise students can also have an important role in shaping students' mindsets. In a growth mindset oriented classroom, teachers should not focus on praising students for being "smart", instead teachers should use phrases that point to the value of the work or effort that students put into accomplishing a task. It can also be valuable to use the word "yet" quite frequently. Students who are struggling need to be encouraged that while they may not have mastered a skill yet, they are still capable of learning.

Teach math as an open, growth, and learning subject. Mathematical tasks should offer students the chance to "explore, create, and grow" (Boaler, 2016, p. 180). Closed questions encourage students to seek the one right answer, whereas open questions allow students to explore ideas, make connections, and value learning. These tasks should be "low floor and high ceiling", allowing all students to access them at the most basic level while challenging students to push beyond them for deeper learning.

Encourage students to be mathematicians. Teachers should encourage their students to see math as creative and beautiful. Students should have opportunities to conjecture and prove or disprove mathematical ideas.

Teach mathematics as a subject of patterns and connections. Unfortunately many students do not readily see the many patterns that are a part of the field of mathematics, especially when methods are taught through algorithms. Students should be given opportunities to seek patterns and see how various dimensions of mathematics are related to one another. This

pattern seeking ability can be encouraged by having students determine multiple representations for a single concept or having them connect one concept to another.

Teach creative and visual mathematics. Students should be encouraged to represent a mathematical problem in a meaningful way. When students are asked to think visually about mathematics it allows "access to understanding and to the use of different brain pathways" (Boaler, 2016, p. 185). Thinking in this way will help students become effective problem solvers as it allows them the opportunity to use multiple representations to tackle a problem.

Encourage intuition and freedom of thought. Asking students to think about what may work to solve a problem before teaching them a set method can help build their ability to trust their intuition. Allowing students to think freely helps them "not only develop a new perspective on mathematics, themselves, and the world but also an intellectual freedom that transforms their relationship with learning" (Boaler, 2016, p. 189).

Both Boaler and Dweck emphasize the importance of nurturing students who believe in the journey of learning. Students who see themselves as capable of learning mathematics are more likely to approach challenges with the persistence required to tackle them. These students are less likely to be motivated by looking smart, and more likely to be motivated to develop as learners.

Habits of Mind

Much current research emphasizes the importance of students developing certain dispositions in mathematics rather than focusing on the acquisition of specific mathematical content knowledge and skills (Gresalfi, 2009). Gresalfi and Cobb (2006) define a disposition as a way of being "that involves ideas about, perspectives on, and engagement with the information that can be seen both in moments of interaction and in more enduring patterns over time" (p.

329). Dispositions involve behaviours toward the world which are the underlying mechanisms that produce specific events or practices, not the events or practices themselves (Thomas & Brown, 2007). These dispositions "capture not only what one knows but how he or she knows it; and not only the skills one has acquired, but how those skills are leveraged" (Gresalfi, 2009, p. 329). These dispositions redirect the focus from training students to be mathematicians, and instead help them learn to adopt mathematical thinking as a way to solve problems (Cuoco, Goldenberg, & Mark, 1996).

Costa and Kallick's Habits of Mind

Similar to the notion of disposition, Costa and Kallick (2008) define habits of mind as mental habits that are needed in order for people to lead productive and fulfilling lives. These habits of mind are the more general skills that support the development of students who are prepared to deal with the dynamic obstacles they may face in life. Similar to Dweck's notion of growth mindset, Costa and Kallick's (2008) habits of mind build on the idea that "ability is a continuously expandable repertoire of skills" (p. 7). The authors build on several notions about intelligence in establishing what they believe to be the sixteen most important habits of mind. They argue that our vision of intelligence needs to change from an aptitude-centered outlook, to an outlook that values the truly dynamic nature of intelligence. First, they reference Guilford and Hoeptner's view that 'what kind' of intelligence a person has is more important than 'how much' they have. They also reference Gardener's theory of multiple intelligences by conveying the value in the dynamic ways people can have of knowing, learning, and expressing knowledge. They reference Sternberg's notions of analytic, creative, and practical intelligence; Perkins' neural, experiential, and reflective intelligence; Goleman's emotional and social intelligence; and Cole's moral intelligence as important influences on their beliefs about essential habits of mind.

They also acknowledge persistence and communication as vital pieces of the puzzle when amassing a collection of important human dispositions.

A habit of mind is made up of many composite skills, attitudes, cues, past experiences, and tendencies and is made up of six dimensions: value, inclination, sensitivity, capability, commitment, and policy (Costa & Kallick, 2008). In essence, a person who has established particular habits of mind will choose to employ certain behaviour patterns over other less productive ones, will feel a tendency to employ certain patterns of behaviour, will perceive opportunities for and appropriateness of certain behavioural patterns, will possess the skills and capacities needed to employ certain behaviours, will strive to reflect and improve upon their performance, and will make it policy to promote and incorporate certain patterns of behaviour into actions, decisions, and resolutions for situations they may encounter.

Given these influences and dimensions, Costa (2008) describes sixteen habits of mind that are essential in the development of students who will be able to proceed in leading productive and fulfilling lives.

Persisting. People who persist do not give up until a task is completed. They are able to analyze a situation, develop a set of possible strategies for dealing with it, and employ those strategies until a resolution is reached. These people are comfortable with ambiguous situations because they are able to sustain a problem solving process that can help them cope with the situation. Students who lack persistence frequently give up easily, or resort to statements like; “I can’t do this!” or “It’s too hard!” They may rush to get things over with because they may lack a full repertoire of strategies for dealing with a problem.

Managing impulsivity. “Effective problem solvers are deliberate: they think before they act” (Costa, 2008, p. 19). These people have a plan of action and a destination in mind before

they act. They are reflective and consider the consequences of their actions before proceeding. Students who lack the ability to manage impulsivity often shout answers without thinking them through or start working without truly understanding what they are doing.

Listening with understanding and empathy. Good listeners are able to listen to and consider diverse perspectives, empathize with others, and detect indicators of other's emotions. They are capable of paraphrasing another person's ideas, and even though they may not agree with them, can consider them as a possibility. It is important for students to develop deep listening skills as we want them to be able to learn from one another. Students need to learn to monitor their own thoughts while listening to another person share theirs.

Thinking flexibly. The ability to change one's mind upon the receipt of new information or ideas is key in approaching problems creatively. These kinds of thinkers can examine problems from different perspectives, and can tolerate confusion and ambiguity. Students who cannot think flexibly often have a hard time dealing with alternate solutions. They simply perceive situations as "My way or the highway!" (Costa, 2008, p. 23).

Thinking about thinking. The ability to be aware of and understand one's own actions and the effects of those actions is key in developing courses of action to deal with life circumstances. It is about being conscious of ourselves and reflective on our own thinking. For students this means being able to answer prompts such as; "How did you solve that problem?" or "Explain your thinking."

Striving for accuracy. Effective people strive to achieve the highest standards possible. They take pride in their work and check over what they have done. Students who lack this focus on accuracy frequently turn in sloppy or incomplete work. They are frequently more interested in "expedience rather than excellence" (Costa, 2008, p. 26).

Questioning and posing problems. When developing as problem solvers it is essential that people are able to ask questions about alternative points of view, ask questions that assist in making connections, ask hypothetical questions, and question discrepancies. It is important for students to understand the many functions that questions can serve and that they learn to ask questions that can maximize results.

Applying past knowledge to new situations. Learning from experience is a key skill in life. It is important that people are reflective and think "This reminds me of…" or "This is like the time when I…" (Costa, 2008, p. 28). Often students have difficulty making connections to prior learning. They frequently view learning situations as encapsulated with no connection to things they may have experienced before.

Thinking and communicating with clarity and precision. The ability to support statements with explanations, comparisons, quantification, and evidence is key in expressing one's thoughts and ideas. Expressing thoughts and ideas demonstrates clarity and precision in a person's thinking. For students this kind of communication can demonstrate thorough thinking and deliberation in problem solving processes.

Gathering data through all senses. Intelligent people gather information from multiple sensory pathways. This allows one to develop a more complete picture of phenomena. The brain is then able to make further connections and relate bits of data for cross-reference. Students should be encouraged to explore data using all their senses.

Creating, imagining, innovating. Creative people seek to come up with solutions by looking at many possibilities. They "take risks and frequently push the boundaries of their perceived limits" (Costa, 2008, p. 31). They are open to criticism and see it as an opportunity to improve. It is important that students understand that they are capable of being creative.

Responding with wonderment and awe. Feeling excited about solving problems and enjoying the process of coming up with creative solutions is important in maintaining motivation. It is important that students develop a sense of curiosity about the world around them, we want them to ask questions, and feel enthusiastic about learning.

Taking responsible risks. Risk takers "accept confusion [and] uncertainty…and they learn to view setbacks as interesting, challenging, and growth producing. However [they] do not behave impulsively" (Costa, 2008, p. 33). Students who are able to calculate risks and proceed while thinking in new ways are more likely to find success in a world full of uncertainty.

Finding humour. Laughing has physiological and psychological benefits. It produces endorphins, enhances creativity, and stimulates higher-level thinking. It is important that students learn to use humour in a positive way so that they can "distinguish between those situations of human frailty and fallibility that require compassion and those that truly are funny" (Costa, 2008, p. 36).

Thinking interdependently. Effective people are those who understand the value of group thinking. It is essential to understand how much more can be accomplished through the thoughts and ideas of a group in comparison to a lone individual. Sometimes students prefer to work alone, they do not value the importance of social skills. It is important that they learn how to contribute to and learn from others through meaningful interactions.

Remaining open to continuous learning. The world is ever-changing. It is impossible to predict what will come in the future, therefore it is imperative that people be open to continually growing and developing as human beings. Often students think that they simply need to learn some set of facts or master a certain skill to be successful. It is important though that they instead come to terms with the notion that learning never ends. Ultimately we want students to attain

what Costa (2008) describes as the crowning glory of all learning: "to know – and to admit – that we don't know and to not be afraid to find out" (p. 38).

Costa and Kallick (2008) see the development of habits of mind as a necessary piece of the puzzle if students are to also develop an understanding of content, thinking skills, and the ability to tackle cognitive tasks. They acknowledge that these habits of mind take time to develop and are not necessarily simple to nurture, but are worthwhile in the end.

Cuoco, Goldenberg, & Mark's Mathematical Habits of Mind

Similar to Costa and Kallick, Goldenberg (1996) defines habits of mind as ways of thinking that become so natural that "they become mental habits – not only can one draw upon them easily, one is likely to do so" (p. 14). Where Goldenberg (1996) elaborates is on his emphasis on habits of mind specifically in the mathematics classroom. He views mathematics courses as less about facts and more about how mathematicians find the facts. Goldenberg adds that by focusing on particular habits of mind that are essential in good mathematics and also good in thinking more broadly, one may teach a mathematics course that prepares students for advanced mathematical study…while also serving the needs of students who may not yet have developed special interest or strength in the subject, and even serving those who never do so" (p. 20).

Goldenberg (1996) specifies the following mathematical ways of thinking; inclination to visualize, interpreting diagrams, inclination to describe (formally and informally), inclination to translate between visually and verbally presented information, inclination to tinker, inclination to look for invariants, inclination to mix experiment with deduction, inclination to build systematic explanations and proof for observed invariants, inclination to construct and reason about algorithms, and inclination to reason to continuity. Goldenberg explains that while each of these

inclinations are important they cannot be fostered without also dealing with mathematical facts, and without taking the time to understand the students and their context. He describes a good mathematics course as one where these various elements are interwoven.

Further to this work Cuoco, Goldenberg, and Mark (1996), emphasize the importance of a math program that allows students to create, invent, conjecture, and experiment. They stress the value in students seeing the journey that leads to mathematical results that are polished and presented. Cuoco, Goldenberg, and Mark (1996) believe that "when students are asked to describe mathematics they should say something like "It's about ways for solving problems" instead of "It's about triangles" or "solving equations" or "doing percent." (p. 378). They believe that by designing math courses around the development of general habits of mind this goal can be realized.

In their work Cuoco, Goldenberg, and Mark (1996) describe habits of mind that are applicable to many domains beyond just mathematics. They state that these habits of mind are ones that teachers should strive to nurture in their students.

Students should be pattern sniffers. According to the authors students should seek delight in finding hidden patterns. They should be on the lookout for regularity both in mathematics and in their daily life.

Students should be experimenters. When presented with a problem, students should immediately want to start playing with it and experimenting with different strategies. They should also realize the limitations of experimental results and understand how to proceed with some skepticism.

Students should be describers. Students should understand mathematical language and the intersection between ordinary language and symbols. They should be able to describe the

steps in a process, invent notation that can help them describe new phenomena, convince their classmates of results, and develop a way of communicating their thoughts in writing.

Students should be tinkerers. Students should "develop the habit of taking apart ideas and putting them back together" (p. 379).

Students should be inventors. By experimenting and playing with existing ideas students should begin to develop new ideas or methods, either for utility or just for fun. Students should also begin to look for instances where mathematicians may have invented something new, by looking for similarities between different theories.

Students should be visualizers. Students should practice visualizing both things that are inherently visual as well as constructing visual pictures of phenomena they may not encounter visually at first. The authors explain that students should learn to visualize data, relationships, processes, change, and calculations.

Students should be conjecturers. Conjectures are central to doing mathematics. Students should learn to make data-driven conjectures as well as conjectures developing from experiments and previous experiences.

Students should be guessers. Students should learn the value of guessing and checking as a strategy. Guessing often provides a starting point, and checking can allow students to discover new insights, strategies and approaches.

Cuoco, Goldenberg, and Mark (1996) believe that students need to be prepared to use, understand, control, modify and make decisions about many phenomena that do not yet exist. By nurturing these habits of mind they believe that students will be empowered to "bring power and important perspective" (p. 401) to domains both in- and outside of mathematics.

This chapter has presented theories related to self-efficacy, mindsets, and habits of mind. In the above sections I have described each as an entity on its own, but I actually see these theories as interwoven and interdependent. For me, each of these theories points to the importance of the bigger picture; the world beyond the classroom. These theories are about developing students who are confident, persistent, and prepared to face the challenges they may encounter in life. From this perspective, I see my math class as a place where students can use the context of mathematics as a vehicle for developing these much broader and more widely applicable skills. In the next chapter, I draw links between these theories and their role in my study. I will describe the methodology that I planned to use to frame the study, as well as the pedagogical tools that I hoped would enable me to dig deeper into my students' development as willing math learners.

CHAPTER THREE

In this chapter, I will describe the methodology I planned to use for my study. I will begin by offering an account of the bigger picture by briefly describing my rationale for choosing to conduct a self-study using narrative inquiry and autobiographical narrative. I will then focus on each of these methodologies and describe their theoretical frameworks. I will conclude the chapter by describing the pedagogical and methodological tools I planned to use in the study.

My research question focuses on how I could transform my teaching practice to better suit the learning needs of my Grade 10 Essentials students, I therefore chose to conduct a self-study. Self-study provided the tools for me to examine my own practice with the intention of making improvements. It allowed to me to engage in thinking about any dissonance that may have existed between what I thought I was doing and the reality of my actions as a teacher. I had

also planned to use self-study as a framework for engaging in productive conversations with a critical friend who could offer an alternative perspective on my teaching. My decision to conduct a self-study was rooted in my commitment to my own development as a teacher.

Narrative inquiry provided me with an avenue to tell this story in a manner that could reach other teachers. By engaging in the writing of a narrative I hoped to be able to share the journey of both myself and my students as we moved through this semester together. Narrative inquiry enabled me to share the lived experiences that shaped the journey while recognizing the continuity and contextually embedded nature of these experiences. By then reflecting upon this narrative and focusing my attention on myself as a teacher, I was able to truly engage in a study of myself.

In order to narrow this study to an examination of my own learning as a teacher, I used autobiographical narrative. In borrowing from the traditions of narrative inquiry, autobiographical narrative allowed me to focus my attention on my own transformation and growth as a person and a teacher who cares about my students and their development as confident, persistent, and engaged learners. In seeking to understand my students and their experiences, I needed to understand my own role and how it has been shaped by my experiences, my history, my beliefs, and my identity. Autobiographical narrative provided me with the tools to do this. Through the examination of key moments and reflection upon my own thoughts and feelings throughout the journey, I was be able to engage in the process of authentically telling my own story; a story that sought to reflect my own sincere commitment to self-transformation that would hopefully ring true for other teachers.

Self-Study

Self-study allows teachers to "inquire thoughtfully and deliberately into their teaching practice and the assumptions embedded in that practice" (Samaras & Freese, 2006). It allows teachers to better understand themselves, their teaching, and their students. It also allows teachers to ask their own questions given their particular context and develop practical knowledge that can lead to personal and professional improvements. Samara and Freese (2006) explain that self-study is influenced primarily by three educational research paradigms; teacher inquiry, reflective practice, and action research. Self-study is comprised of four particular characteristics; it is situated, it is a process, it is knowledge, and it is multiple. In this sense a self-study is driven from a teachers' questions and context, allows teachers to change their philosophy as the process unfolds, produces knowledge that educates future decisions, and encompasses different theories, different methods, and different purposes (Samaras & Freese, 2006). Because of its rich context "self-study has implications for how knowledge is defined, who defines it, where it is to be generated" (p. 111) and is therefore "key to building teacher efficacy" (p. 3).

Self-study can lead to valuable learning for all involved in the process. For example, Samaras (2002) draws some important links between self-study and Vygotsky's principles of cognitive development. First, self-study allows learning to acknowledge social and cultural influences by situating study in the context where phenomena occur. It allows teachers to "hold a mirror before their biases and think about how those biases impact what and how they teach" (p. 42). Secondly, learning occurs most effectively through situated and joint activity. As Samaras (2002) emphasizes "theory, no matter how inspiring, has no soul unless the researcher is immersed in the culture and context of doing or practicing it" (p. 61). Third, cognition is socially

mediated. Knowledge building is most effective when constructed in a social context with others through effective collaboration. Finally, learning leads development. Knowledge gained through self-study can lead to rich developments and changes in the ways we approach education, this development can lead to many positive changes for both teachers and students.

Loughran and Northfield (2005) identify that one key consideration to make when engaging in self-study is the recognition of any discord between beliefs and practice. Only when one can recognize this dissonance, can action be taken to match philosophy with reality. Whitehead (2000) calls this dissonance a living contradiction. Whitehead suggests that teachers must therefore develop living educational theories which recognize the impact of past practices, and move forward with the "intention to create something better in the future which the individual commit[s] to working towards" (p. 97).

While self-study tends to be centered on the researcher it is essential that others become involved in the process to offer alternative perspectives (Loughran & Northfield, 2005). Because the researcher is also heavily involved in the processes they are studying it is essential to have others serve to check data and interpretations. Hamilton and Pinnegar (2005) summarize the multi-layered nature of self-study when they describe it as;

> "…is the study of one's self, one's actions, one's ideas, as well as the not self. It is autobiographical, historical, cultural, and political and it draws on one's life, but it is more than that. Self-study also involves a thoughtful look at texts read, experiences had, people known, and ideas considered. These are investigated for their connections with and relationships to practice as a teacher educator." (p. 264)

Ultimately, they note that all students are deserving of teachers who engage in conscientious and purposeful examination of their practice and how they may seek to improve it, self-study offers one avenue for developing this improvement.

Narrative Inquiry

Narrative inquiry provides an effective vehicle through which a teacher can tell the story of their own self-study. Narrative research is a micro-analytic approach which offers practical and specific insights into individuals' stories (Creswell, 2012). Clandinin and Connelly (2000) offer an ample overview of how narrative inquiry can be used in educational research. For the authors "life…is filled with narrative fragments, enacted in storied moments of time and space, and reflected upon and understood in terms of narrative unities and discontinuities" (p. 17). These fragments are worthy of being studied and appreciated given how they tend to reflect the past and influence the future.

Similar to self-study methodology, narrative inquiry recognizes that "people, at any point in time, are in a process of personal change" (p. 30) and note the importance of narrating the person in terms of process. They center the research interest on experience and seek to author a life story based on growth and transformation.

Narrative inquiry is inspired by Dewey's notion of experience. Dewey (1938) points to experience as critical for its impact on future experiences. As Dewey states, "each experience enacted and undergone modifies the one who acts and undergoes…the modification affects…the quality of subsequent experiences" (p. 35). He notes that all experiences are social, and therefore cannot be fully understood without reference to their context. Using Dewey's framework of experiences based on situation, continuity, and interaction, Clandinin and Connelly (2000) construct what they call a "three-dimensional inquiry space with temporality along one

dimension, the personal and social along a second dimension, and place along a third" (p. 50). They use the terms personal and social to represent the notion of interaction; past, present, and future to represent the notion of continuity; and place to represent the notion of situation.

For Clandinin and Connelly (2000) "narrative inquiry is stories lived and told" (p. 20). In respecting the aspects of the three-dimensional inquiry space it is "important to consider the characters who were living the stories, the characters who were telling the stories, the times at which the stories were lived, the places in which the stories were lived and told, and so on." (p. 25). The authors note that often time's teachers believe that they have developed a complete picture of the landscape in which they are situated. Frequently, there are numerous taken-for-granted moments that are missed. Narrative inquiry is about paying attention to those moments and situating them within a context and a longer historical narrative.

It is important that the teacher/researcher remember that their lives do not begin the day they arrive in class, nor do they end when they leave. Narrative inquiry is about respecting the evolution and continuity of experience and life. Unlike other methodologies, narrative inquiry may not have a clear beginning and end. It is about a journey and the stories that are constructed along the way. Therefore, "when researchers enter the field, they experience shifts and changes, constantly negotiating, constantly re-evaluating, and maintaining flexibility and openness to an ever-changing landscape" (p. 71).

Field texts are important in narrative research as they "help to fill in the richness, nuance, and complexity of the landscape" (p. 83) more clearly than memory alone. Clandinin and Connelly (2000) note that these field texts are always interpretive, created by an individual at some specific time and need to be interpreted while respecting the context from which they came. One primary challenge of composing field notes is balancing the need to retell a story

while at the same time capturing an image of "our inner experiences, feelings, doubts, uncertainties, reactions" (p. 86). The authors offer an example of how dual field notes can be useful in capturing both the outward and the inward by capturing an event alongside the researcher's reflection on it. It is also important to recognize that field texts can tell us a lot about what is not said and not noticed. This fact must be considered when it comes time to analyze field texts.

In the end, narrative inquiry allows us to imagine new possibilities through the re-telling and re-living of our stories.

Autobiographical Narrative

The development of autobiographical narrative has stemmed from the recognition that self-study is an important element in the self-realization of individuals (Bullough & Pinnegar, 2001). Autobiographical narrative allows us to tell our own stories. It consists of "a narrator, in the here and now, [who] takes upon himself or herself the task of describing the progress of a protagonist in the there and then, one who happens to share his name" (Bruner, 2001, p. 27). In order to bring this protagonist from there and then to the here and now the narrator needs a story of growth and transformation. Autobiography should focus on a person's desires and beliefs, and how those intentions led to certain types of activity. This autobiographical narrative should not only serve to present a sequence of events over time, but must also have a "why tell function…something that endows it with exceptionality" (p. 29).

In order to ensure that both the researcher and the reader can learn from the story being told, it must be a story worth telling. Bullough and Pinnegar (2001) refer to C. Wright Mills in an attempt to point to the importance of the filtering of public policy through the realm of personal experience.

> Know that many personal troubles cannot be solved merely as troubles, but must be understood in terms of public issues and in terms of the problems of history-making. Know that the human meaning of public issues must be revealed by relating them to personal troubles and to the problems of the individual life. Know that the problems of social science, when adequately formulated, must include both troubles and issues, both biography and history, and the range of their intricate relations. (as cited in Bullough & Pinnegar, 2001, p. 14)

In an attempt to explore issues that are important in the teaching profession, Mills is underscoring the importance of recognizing the interconnectedness of the individual, immediate setting, and the larger context of any issue being studied. Mills is also alluding to the necessity of looking to the past, the present, and the future as a means of understanding a given situation. From this perspective it is impossible to come up with a solution to a problem without first recognizing and acknowledging the many factors that are at play in the situation.

In their work, Bullough and Pinnegar (2001) outline fourteen guidelines for conducting autobiographical forms of self-study research effectively.

Guideline 1: Autobiographical self-studies should ring true and enable connection. The key when conducting an autobiographical narrative is that is allows the reader to make connections to themselves and their practice. The narrative should serve to shed light on problems that a reader may also be encountering and promote some inspiration for dealing with it.

Guideline 2: Self-studies should promote insight and interpretation. According to Bullough and Pinnegar (2001), self-study should be centered on “nodal moments”; moments

which are central to the learning journey for both the teacher and the students. It is the connections among these moments and their connections to the larger context which make the research experience meaningful for both the researcher and the reader. Through the researcher's presentation and interpretation of these moments, the narrative should allow the reader to "see self and other more fully" (p. 16).

Guideline 3: Autobiographical self-study research must engage history forthrightly and the author must take an honest stand. A self-study should be interesting to read, and must present history in a truthful light. The author must be able to honestly represent themselves and their journey. Without honesty the narrative becomes a falsification of reality and loses its potential to connect to the experiences of the reader.

Guideline 4: Biographical and autobiographical self-studies in teacher education are about the problems and issues that make someone an educator. Becoming an effective teacher is a complex process; one that is best understood through making connections with others along a similar learning journey. An autobiographical narrative should allow others to see their own journey in the journey of the researcher and serve to help them navigate the obstacles through reading about another educator's experiences.

Guideline 5: Authentic voice is a necessary but not sufficient condition for the scholarly standing of a biographical self-study. There is a fine line between an autobiographical narrative that is of value for the purpose of personal development as a teacher, and an autobiographical narrative that is worthy of being shared.

Guideline 6: The autobiographical self-study researcher has an ineluctable obligation to seek to improve the learning situation not only for the self but for the other. The reader must be able to connect and care about the journey being shared in the narrative.

When reading an autobiographical narrative readers should "expect to find evidence of honestly engaging issues we recognize as central to teaching and teacher education" (p. 17), without this engagement the narrative loses its value as a tool to support the learning of others.

Guideline 7: Powerful autobiographical self-studies portray character development and include dramatic action: something genuine is at stake in the story. An autobiographical narrative should be reflective of the dynamic nature of the journey of teaching. The reader should be able to engage with the writing not only because of the events it describes, but also for the emotional impact of these events. The key is that the reader should be able first and foremost to be able to learn something from the story being presented.

Guideline 8: Quality autobiographical self-studies attend carefully to persons in context or setting. Without the acknowledgement of where the stories being shared are situated, a narrative can lose its ability to provoke readers to make connections between the author's experiences and their own. Without context the stories lose the richness of their meaning.

Guideline 9: Quality autobiographical self-studies offer fresh perspectives on established truths. An autobiography "must be censored with a purpose that is not self-serving" (p. 18). Stories told from the perspective of what Bullough and Pinnegar call a "romantic hero", one who is presented as superior to others because of their ability to conquer problems, lack in the value they bring to the reader. In narrating a story that is meaningful yet familiar it is instead necessary to offer a fresh perspective; "stories of learning to teach, representing different but similar scenes, situations, themes, and points of view, become fresh when told through new eyes…we still recognize the story, but we engage it differently" (Bullough & Pinnegar, 2001, p. 19).

Guideline 10: Self-studies that rely on correspondence should provide the reader with an inside look at participants' thinking and feeling. In order to produce meaningful narrative the reader needs to feel as though they are able to access the author's inner thoughts and feelings. Problems can arise when "readers sense the functioning of impression management, self-censorship in the hope of portraying the romantic hero, perhaps, and sometimes posturing driven not by friendship but by anticipation of an unknown and perhaps unfriendly critic" (Bullough & Pinnegar, 2001, p. 19). It is critical that when authoring an autobiographical narrative the researcher is conscious of this potential for misrepresenting their journey.

Guideline 11: To be scholarship, edited conversation or correspondence must not only have coherence and structure, but that coherence and structure should provide argumentation and convincing evidence. An autobiographical narrative should offer a compelling presentation how teachers struggle with ideas and practices as they seek to improve their practice (Pinnegar & Bollugh, 2001).

Guideline 12: Self-studies that rely on correspondence bring with them the necessity to select, frame, arrange, and footnote the correspondence in ways that demonstrate wholeness. What is contained within the presented data is what shapes the final product of the research that has been conducted. It is important to recognize how this product has been shaped by the author as they navigated decisions regarding what is included and what is not.

Guideline 13: Interpretations made of self-study data should not only reveal but also interrogate the relationships, contradictions, and limits of the views presented. The narrative should seek to engage the reader in better understanding what it means to be a teacher. Readers should be enabled to glean important understandings from the work that are based on data that has been appropriately presented while understanding the context in which the research was

situated. The data that is presented should serve to embody the larger themes of the study in a deep and meaningful manner.

Guideline 14: Effective correspondence self-studies contain complication or tension. There is no need for a study to present a perfect picture; in fact it is the hurdles and challenges that have occurred which make a narrative worth reading. As Pinnegar and Bollugh (2001) point out, "when something of genuine importance is at issue, it is likely there is intellectual sustenance to be had. The converse is also probably true" (p. 20).

In following these guidelines a researcher is able to author a story of growth and transformation that is not only important to themselves but also to others as they proceed along a similar journey.

Integrating Methodologies

In examining these three methodologies, I perceived self-study as the overarching methodology which would guide my study, with narrative inquiry and more specifically autobiographical narrative, as the interpretive frames I would use to tell the story of my journey. In honouring each of these methodologies, and in keeping with guidelines provided by Bullough and Pinnegar, I sought to tell a story which was specifically situated in the context of my classroom, in my school, in my neighbourhood, and with my students and myself. I also sought to acknowledge the impact this context and these characters had in shaping the story which I would tell. I aimed to focus this story on the small, sometimes taken-for-granted, moments that happened over the course of the semester and dig deeper into the thoughts and emotions which accompanied them for both myself and my students. I also recognized the connections and influence of the past, the present, and the future on the journey as it unfolded. By honouring how the present had been shaped by the past, and how the past and present would shape the future, I

hoped I would be able tell a story about learning and growth that was rooted in an honest investigation of my practice and my understanding of myself as a teacher of Grade 10 Essentials mathematics.

Tools to be used

Data for this study was collected over the course of the second semester. I intended to have two intensive data gathering points during the fifth week of classes (March 7-11) and another during the twelfth week of classes (May 2-6). I chose these dates based on our school calendar. I wanted the first period to occur before spring break and the second to occur after, while avoiding the beginning of the course and the hectic weeks that tend to come later on in May and June. I also chose full school weeks that would have a limited number of interruptions (in-services, school events, etc.). In reality, I did not end up segmenting particular intensive data gathering periods. Instead, I collected data on a more continuous basis. This fluidity in structure enabled me to acknowledge the more natural progression of the semester and the needs of both my students and myself that emerged as it progressed. By allowing data collection to flow more naturally I was able to tell a more continuous story.

My plan was to use particular pedagogical tools throughout the semester, namely reflective journal writing and interactive writing. I planned to use these tools as a means of reflecting upon my own teaching as well as my students' learning and guiding my instructional decisions accordingly. I would then reflect upon my use of these tools and the products of these tools as primary sources of data once the semester was complete. I also planned to work with a critical friend throughout this journey to provide me with feedback both throughout the semester and in my data analysis phase. In the following section I will describe each of these tools, their

theoretical background and how I intended to use each of them. (See Appendix A for a summary of how, when, and why I planned to use each tool.)

Pedagogical Tool: Reflective Journal Writing

Reflective thought has long been valued in teaching as a means for reflecting upon one's actions and using thoughts to proceed in a meaningful manner. As Dewey (1909) explains, reflective thinking is the "conscious inquiry into the nature, conditions, and bearings" of a belief (p. 5). He specifies that all reflective thinking involves; "a state of perplexity, hesitation, doubt" (p. 9). Dewey uses the metaphor of a man navigating an unknown place. This traveller has no map to fall back upon, and therefore must either proceed hoping that he will have luck in finding the correct path or must instead search for evidence that he is on the right path. He may "climb a tree; he may go first in this direction, then in that, looking, in either case for signs, clues, indications" (p. 10-11). In this instance the man's reflection is aimed at discovering facts that will guide him. Similarly when a teacher finds themselves at a point of dilemma they must "metaphorically climb a tree…to find some standpoint from which we may survey additional facts and [get] a more commanding view of the situation" (p. 11).

Loughran (1996) studied the development of student-teachers as reflective practitioners using Dewey's work as a guide for his study. He summarizes Dewey's three attitudes that allow a person to effectively reflect as open-mindedness, whole-heartedness, and responsibility. He underlines the importance of a practitioner being open to new ideas, being engaged and enthused about learning, and understanding the consequences of his/her own actions. Through his study, Loughran noted that these three elements did seem to be essential indicators of student-teachers preparedness to engage in meaningful reflection. Loughran (1996) also uses Dewey's five phases of reflection as a guiding structure in his study. These five phases include; suggestions,

problems, hypothesis, reasoning, and testing. Suggestions refer to the specific ideas one has when confronting a challenging situation. Conversely, recognizing problems requires taking a step back and examining the bigger picture. It is an important perspective to have so that decisions can be made more fully. Hypothesis formulation and reasoning occur when considerations are made for what could be done to resolve a situation and are then tested against previous experiences and knowledge. Finally these ideas are tested to see if they will in fact be useful in solving the problem. Through his study, Loughran notes that these phases were not observed as mutually exclusive and did not always occur sequentially in his students' reflections, but they seemed to be essential in moving forward in a given situation. He found that as the student-teachers developed their skills in reflection the lines between and among the phases became more blurred.

Taggart and Wilson (2005) offer many suggestions on methods for prompting teacher reflection, including observational learning, reflective journaling, narrative reflection, mental models, and action research. However, the authors believe that any of these methods must give consideration to three modes of reflective thinking; technical, contextual, and dialectical. At the most basic level technical reflection refers to reflection on how to get through a given lesson or class. It is about making short term instructional or managerial decisions in order to meet some behaviour or content skill. At the next level, reflection begins to consider contextual factors. For example, a teacher may reflect upon the beliefs that they bring to their classroom and how those beliefs impact their teaching or their students. At the third level, dialectical, "practitioners contemplate ethical and political concerns relative to instructional planning and implementation" (p. 4-5). At this level teachers become concerned with worth of knowledge and social consequences and how these factors may impact their choices. Taggart and Wilson (2005)

outline that journal writing can allow teachers opportunities to; analyze and reason through a dilemma, enhance development and reflection, promote growth in critical analysis, promote awareness of links between theory and practice, build understanding by writing about what is learned, and link understanding to practice.

Throughout the semester I planned to complete weekly reflective journals. This journal would serve as an ongoing reflection of myself as a teacher and the happenings in my classroom. My journal entries would focus specifically on students' development of self-efficacy, growth mindset, and mathematical habits of mind. They would also serve to reflect my more personal thoughts and feelings as my teaching progresses. As Dewey (1909) suggests, I planned to use journaling as a way of climbing a tree to gain a different perspective; moving away from the in-the-moment perspective to more of a looking-in perspective. Throughout the journaling process I foresaw addressing technical, contextual, and dialectical issues ranging from day-to-day concerns to the broader big-picture of teaching Essentials 10. By formally stepping back from my daily work and taking the time to meaningfully reflect I hoped to be able to delve more deeply into where we (both myself and my students) were in our learning journeys. I also hoped that journaling would allow me to refocus and redirect the next steps as the semester progressed.

Similarly, during each of the two intensive data gathering periods I planned to journal daily. I planned to use these two sets of weeklong journal entries to depict a sequential flow of data that would provide more daily details than the weekly journal entries I wrote throughout the semester.

I also planned to complete three more focused journal entries at different points throughout the study. I planned to write the first entry before the course began; detailing my thoughts about the upcoming semester. In this entry I wanted to reflect upon my feelings as the

semester approached and what I was anticipating in the upcoming semester. This is what Loughran (1996) refers to as an anticipatory reflection. It would allow me to consider the situation to come and "the nuances associated with the complexity of teaching" (p. 108).

I planned to write the second more focused entry after I completed my first week of class activities. Every year I ask students to complete an All About Me activity. It serves as an introductory activity specifically centered on getting to understand students' thoughts and feelings about math. I ask them to respond to questions and prompts such as: "What topic do you like most/least in math class?" and "I learn math best when ____." This semester I planned to reframe the All About Me activity to be more reflective of the notions of self-efficacy, growth mindset, and mathematical habits of mind. For example, I planned to add questions that asked students to express their beliefs about their ability to learn. Once my students completed the All About Me activity I planned to reflect upon their responses. I wanted to use my reflection to deeply consider their responses and begin to formulate ideas on how their needs could direct my teaching.

At the end of the semester I planned to have my students complete a version of the initial All About Me activity and complete a third more focused journal entry reflecting on their responses. In this reflection I wanted to examine my students' growth over the course of the semester. I hoped that I would be able to reflect upon the changes I had seen in comparing their initial responses with their year-end responses. These reflections align with Loughran's notion of retrospective reflection. This kind of reflection moves beyond simply thinking about whether a lesson or class, or in my case a semester, was good or bad, and instead moves to a point of reflecting more deeply on the experience. Retrospective reflections "encompass learning from the experience regardless of the perceived success of the episode" (p. 111). For example, instead

of thinking, “Did that semester go well or poorly?” a teacher can ask themselves, “Why was that semester good or bad?” I hoped that taking the time to reflect in retrospect would allow me to appreciate the successes and challenges that the semester had offered and allow me to take the knowledge I’d gained throughout the semester to move forward in my future teaching.

Pedagogical Tool: Interactive Writing

Throughout the semester I also planned to use what Mason and McFeetors (2002) call interactive writing. In this process, the teacher provides a prompt for students to respond to, the teacher then reads what each student has written and writes a reply. Students can be asked to write specifically about a mathematical topic, to reflect upon themselves as a math learner, or to elaborate on their thinking processes. I intended to use this tool weekly as a way of building my students’ skills in communication, specifically related to mathematics and their learning. At the same time, I hoped the weekly interactive writing process would prepare students for reflecting more specifically on their feelings related to ideas such as growth mindset, self-efficacy, and mathematical habits of mind during the two more intensive data gathering periods. Because many of my students had likely never experienced interactive writing prior to being in my class, I planned to work with them during the first few experiences and guide them through the process. I intended to use exemplars to demonstrate high quality writing as well as provide lots of feedback on their growth as mathematical writers.

I planned to use this interactive writing not only as a tool to guide my next steps as a teacher throughout the semester, but also as a tool to build relationships with my students. When taking part in an interactive writing students may write for many reasons; they may write to respond, to report, to reflect, or to relate to another. According to Mason and McFeetors (2002) the interactive nature of this kind of writing morphs the process of writing from a task that is to

be completed into an interaction with the teacher therefore making it more meaningful. In large classes it is sometimes difficult to connect with each student meaningfully every day. I planned to use interactive writing as one more contact point where I would be able to engage in a small discourse with each student.

When writing prompts for interactive writing Mason and McFeetors (2002) stress the importance of using questions that do not simply have one right answer, as well as creating prompts which allow all students access to responding. According to the authors, students have a more difficult time responding to prompts which ask them to reflect upon their thinking or beliefs, and instead have an easier time responding to prompts which ask them about their actions. Over time, as students develop practice at interactive writing, the prompts can require more complex thought and reflection.

When responding to students it is important that the teacher "offers meaningful replies, rather than general platitudes" (p. 534). It is also important that students understand that the teacher is responding with their first thoughts upon reading the students' writing. The response need not be perfected, but it should offer a model for students to see how to write with a purpose. "When students' perceive the teacher as an authentic and interested audience, what they write is more likely to be worth reading" (Mason & McFeetors, 2002, p. 536). I was interested to see how the interactive writing process would evolve over the course of the semester. I hoped by the end of the course to be able to find significant themes and observe growth in both my students' writing, and my responses to it.

From Pedagogical Tools to Methodological Tools

I planned to use my reflective journal entries and my responses in the interactive writing process as artifacts for the purposes of this study. I also planned to seek permission to use my

students' responses through the interactive writing process during the two intensive data gathering periods as artifacts. Upon completion of the semester I planned to code and analyze these artifacts to find common themes. Coding is a process for making sense of data by dividing text into coded segments, looking for overlap in the codes, and finally collapsing the codes into broad themes (Creswell, 2012). I intended to center my analysis on what Bullough and Pinnegar (2001) refer to as "nodal moments". These moments were those that represented the key points throughout my journey and allowed for patterns of experience to be noted. The key throughout the analysis would be to look for elements in the data that were particularly relevant in seeking to answer my research question. I envisioned weaving together a story of my journey throughout the semester that would address the research question while seeking to tell a story that could be of significance for others. As Clandinin and Connelly (2000) explain, "we need to make sure that when we say 'I', we know that 'I'" is connecting with 'they'" (p. 122-123). These stories lived and told become "stories to live by" (p. 29).

Critical Friend

Throughout the research process I also planned to work with what Costa and Kallick (1993) describe as a critical friend. In their work they describe a critical friend as a;

> "…trusted person who asks provocative questions, provides data to be examined through another lens, and offers critique of a person's work as a friend. A critical friend takes the time to fully understand the context of the work presented and the outcomes that the person or group is working toward. The friend is an advocate for the success of the work." (p. 50)

They elaborate that a critical friend is similar to the process of an ophthalmologist flipping different lenses and asking a person which is better or worse. They stress that if a person never

tries a new lens, they may limit their vision. Costa and Kallick (1993) specify that a critical friendship much be built on trust. When choosing a critical friend, they explain that it is important to choose someone who will understand that nature of the relationship and the importance of listening well and taking the time to authentically process what it is they are being presented with. Ultimately a critical friend should "be an advocate for the success of the work" (p. 50).

Similar to the process described in Costa and Kallick's (1993) work I planned to invite a critical friend to be a part of this study. I had two possible people in mind to fill this role, both were teachers as well as Master's students. I hoped they would be able to provide me with insight based on our shared experiences as well as their understanding of me as a person and a teacher. I envisioned meeting and discussing the purpose of the study early on. I also wanted to invite this critical friend to visit my classroom on two occasions, ideally during my two intensive data gathering periods although I had flexibility given the challenges I knew I would face in accommodating busy schedules. During these classroom visits I intended to ask my critical friend to specifically take note of my actions as a teacher and the interactions that were taking place in my classroom. I would also ask this critical friend to read any journal entries that I had written around the time of their classroom visit. As an outsider to the situation, I anticipated that they would be able to provide me with feedback that was significant to the research purpose, as well as provide me with insight from an alternative perspective. I would ask this critical friend to raise questions and critique what they had witnessed and what I had written in hopes of expanding my views of what is taking place in my classroom and my analysis of it. I also wanted to ask this critical friend to get involved in the analysis process by reading my reflections on the

artifacts I collected throughout the semester. Again, I hoped this would serve to open my eyes to an alternative perspective and consider other possibilities for my analysis of themes.

The Reality of Data Collection

It is important to note that despite my intentions not all of these tools were used in the final analysis of the data. The previous sections represent the planning and thinking I did prior to beginning the semester. While I had clear goals in mind for the semester, with only one semester of experience teaching Essentials math, I did not anticipate the territory I was entering. It was therefore necessary for me to consider which devices were most helpful in making sense of my lived experiences as the journey unfolded. Despite not consciously using each and every tool throughout the semester and analysis, I have chosen for them to remain present in this chapter as they reflect my positioning in the learning journey prior to embarking on the semester.

Given the unpredictable nature of any school or classroom, I recognized ahead of time the need to be flexible in adapting the research plan to fit with the needs of my students and my teaching practice. Not surprisingly, I realized early on the need to adapt some of my original plans. Some of these changes included a change in the timing of my journaling, an abandoning of the use of interactive writing, and a change in structure to how I worked with my critical friend.

First, my journaling became less formal in structure and in timing than I had initially planned. Instead of journaling weekly throughout the semester and daily throughout the intensive data gathering periods, my journal became more of a living document that I would add to multiple times a week throughout the semester. It was used to document my emotions, the day-to-day happenings in my classroom, and ideas I had for moving forward. Throughout the semester my manner of writing fluctuated between brief, point form notes to more extensive written pieces. In revisiting my journal throughout the data analysis process I was able to situate

key moments and ongoing dilemmas that served to guide my responses to my initial research question.

Second, after attempting to use interactive writing on two occasions, I ended up abandoning it as a central element for data collection during my proposed intensive data collection periods. As I will detail in Chapter 4, the challenges I faced throughout the semester waivered from those I had initially anticipated. Given the circumstances that I faced each day it was necessary for me to pivot my pedagogical decisions accordingly.

Finally, I also modified the working relationship I had with a critical friend in two primary ways. First, during the semester, instead of inviting a critical friend into my classroom, I chose to use my colleagues as sources for feedback on my teaching and my responses to the challenges I encountered along the way. Second, I decided to invite a critical friend (someone who did not work at my school) to read the story of the semester (as I composed Chapter 4) and provide feedback to me as an outsider looking in. These changes in structure were necessary because of the challenges I encountered throughout the semester, to be described in later chapters, and enabled me to think with people who understood the context in which I was teaching throughout the semester, while also gaining an outside perspective once the semester was complete.

In this chapter I have outlined the structure of data collection I planned for in this study, as well as the methodology which supported it. While my anticipation of possible changes proved to be true and changes were made accordingly my goal remained the same; to tell a story of growth as I sought to determine how I could reposition myself as a teacher of Essentials math to best support my students development as confident and productive learners.

CHAPTER FOUR

In this chapter I will outline how the semester unfolded, including the day-to-day happenings in my classroom and my deeper wonderings about how to make my teaching better. I will explore the successes of the semester, as well as the frustrations I encountered along the way. I will attempt to paint a picture of what the semester looked like and share the story of myself and my students as we went on this journey together.

Because I engaged in this research as a self-study, I have decided to re-tell the story of the semester through two lenses. The first is my lens as Ms. McLarty, a teacher, and the second as Michelle McLarty, a researcher. Each of these lenses was important to this project as I continually needed to balance the needs of both of my roles throughout the semester. Despite the distinctiveness of each lens, one dealing primarily with the professional responsibilities I have as an educator and one rooted in the research and preparation I had done for this project, I have chosen to write the story of my two selves as one which is intertwined. The two lenses, while distinct, intersect in too many ways to be able to tell my 'teacher story' as separate from my 'researcher story'. In the following summary I have chosen to distinguish the two stories with the use of italics; the italicized font indicating elements more specific to my journey as researcher and the non-italicized font indicating elements more specific to my teaching journey.

I began the semester with a lot of hope and many plans. I began with a picture in my mind of what the semester would look like. Since it was only my second time teaching the course, and still my first year teaching at the high school level, this picture was largely based on the experiences I had had with my students during the months prior. In the first semester, I had a very large group of 38 students who were in general quite high energy. The class was usually loud and busy. I would categorize my first semester students into three primary groups. First, I

had a large group of students, primarily boys, who spent their time throwing things around the room or stealing each other's binders and supplies, rather than engaging in learning. They drove me crazy and frustrated me because I had positive relationships with most of them individually, but when gathered as a group they were immature and silly. I had just moved up to teaching high school after teaching Grade 7 for a number of years and thought I would be done with this kind of behaviour in class. I quickly began referring to this group as my "crazy boys" when discussing the challenges they were giving me. Second, I had a small group of students who were quite successful in the course and who were committed to earning their credit. They came to class each day demonstrating a desire to be successful. They were attentive, receptive to support, and always on task. These students were the ones who got me through the tough days dealing with my "crazy boys". Finally, there were also a handful of students who simply did not attend; these were students who I saw a total of 10-15 times throughout the entire semester. These students were plagued by issues both in and out of school that inhibited them from attending any of their classes regularly.

By the end of the first semester, while some just scraped by, most of my students earned their credit for the course. I was exhausted from having to deal with silly behaviours and a lot of off-task time with the group, but in general I ended the semester feeling like I knew what I needed to do differently for the upcoming semester. Whereas I had structured the previous semester in a fairly traditional manner, most classes beginning with a lesson at the board followed by students having time to work through practice questions, I hoped to include group work and collaboration more frequently, while also planning more engaging hands-on experiences. Given these experiences I set out with an idea in mind of what I hoped this class could look like in the second semester. While I did not plan lesson by lesson how I would attain

this ideal, I did have a picture in mind of a classroom where students were working together, engaged in real-life phenomena, and developing significant confidence and enjoyment for mathematics.

Because I was feeling confident, as a teacher, that this semester would be much better than the first, I also felt confident as a researcher that by the end of the semester I would have a meaningful story to share. I looked forward to actively reflecting upon my teaching. I thought it would lead to helpful insights about my teaching world and allow me to reflect deeply on what I was doing in my classroom from day to day. I had spent so much time thinking about and planning for my research, I was anxious and excited to begin the journey and purposefully connect my researcher-self to my teacher-self.

February

From day one of the second semester, I knew I was dealing with entirely different classroom dynamics than the first semester. My new group of 28 students was quiet, much less social, and seemed to lack confidence. They would come in to my classroom and generally keep to themselves. Some had a few friends in the class, but it was a significantly different atmosphere than in the first semester. I noted in my journal that it was "an interesting mix of students" (February 11, 2016). I knew that I would need to ease into things in hopes of helping my students' build a bit of confidence.

I was quickly reminded of how important it would be for me to build a safe and caring classroom. In my research planning, these were the kinds of students I had imagined. Students who were reserved; students who seemed to need someone to help them build their confidence.

I began my semester as I usually do by outlining the expectations I had for my students (these are the same expectations I share with each of my classes). For me, as outlined in Chapter

2, I base my classroom expectations largely on the notions of care and trust. I try to put myself in the students' position; if I were coming into class on my first day with a new teacher what would make me feel comfortable? How would I want this teacher to treat me? I consider the learning environment productive when students are willing to proceed in their learning as a journey while knowing that I am there to support them along the way. In my classroom, this translates to most of the power being shifted away from myself and instead to my students. This is reflected in the three guidelines I share with my students each semester;

1. My rules are simple; respect yourself, respect each other, and respect our classroom.
2. I understand that each of you is in the course for different reasons and has come from different experiences. It does not matter to me if you have taken the course before or not, it does not matter to me if you love math or if you hate it, all that matters to me is that you come in with an open mind and a willingness to put in an effort.
3. We operate on a two-way street. I am here to support you in any way you need, but you need to reciprocate that effort. I cannot want you to succeed, more than you want it for yourself.

I feel that by laying out more open guidelines, rather than strict "no cellphones, no hats, always write in pencil" type of rules, students must take more ownership for their learning. I like to introduce my classroom as a welcoming place that operates on mutual respect and responsibility, rather than top-down authority. My goal is that my students take on the responsibility for their own success, with my support along the way. Thinking about what it means to authentically enact these guidelines in my classroom became significantly important to my research journey. I will explore this notion further in Chapter 6.

During the first two days of classes I had my students complete an All About Me activity (see Appendix B). I have used a similar tool during each semester of my teaching as I find it helpful as a starting point for connecting with my students. On the front of the page I asked students more general information about themselves; things like hobbies, favourite foods, their family, and their future goals. On the back of the sheet, I asked for more information about my students' attitudes towards math. First, I asked them if they agreed, disagreed, or were undecided on a number of statements related to math and their math learning. Then, at the bottom of the page, I asked them to describe a time when they felt successful as a math learner and asked them what I could do as their teacher to support them throughout the semester.

I was surprised when reflecting on students' answers. In the math related portion of the activity I expected more students to say they did not like mathematics or did not feel they were good at it. To my surprise only three students stated that they had never liked mathematics, and only one student said that math made them feel uneasy or confused. I was also surprised that most students agreed with the statement "I am willing to give math a shot, even if I find it hard" (Journal, February 9, 2016).

I wondered what this meant in terms of my students' mindsets. While I had begun the semester believing that students who take Essentials Math would not like math and would not be eager to learn, perhaps this was not the case. I wondered if I would be able to build on their willingness to give math a chance, and use it as motivation to encourage the development of their confidence in math. I was happy they were saying they were open to trying math, even if it may be difficult. I hoped I could maintain this mindset as we moved forward and they encountered potential challenges along the way.

When asked about how I could support them this semester, many students wrote nothing, a few wrote notes to the effect of "teach well", and a few said things like "help me when I need help". I felt many responses were quite limited to such an open ended question. It made me wonder, "Do students know what they need from me in order to be supported?" (Journal, February 9, 2016). If students themselves don't know what they need, how could I as a teacher dig deeper to find out? What could I do to help them see that I was willing to support them? Given the general unspecific nature of their responses I knew I would play a key role in determining how to best support each student as we moved forward.

In terms of curricular content, I chose to begin with a review of fractions, decimals, and percentages. I generally like to ease into things by reviewing something that should be familiar to students. Throughout the first few days I talked to students about various manners for representing fractional parts. They also had time to work on their own and in small groups to practice navigating between different representations for part-whole thinking. It was my hope that this would lead to them having opportunities for success from the start and allow them to build confidence at the start of the course.

On the third day of classes the students completed an assignment on these topics and I was "feeling like we were off to a good start" (Journal, February 10, 2016). The students did particularly well. Many expressed excitement that they actually understood what we were working on. Despite this successful start, by the fourth day of classes I was feeling stuck. While the students who had been in the course since the first day were ready to move on, I was continually having new students register in the class. I was stuck because I felt like the students who were in the class were getting bored, but I was hesitant to move on because I didn't want students who were still doing timetable revisions to come into the class feeling like they had

missed a big chunk of our first unit. This was the first time in my journal that I commented on the "ongoing challenge of not wanting to leave students behind, but wanting to provide rich content to the other students" (Journal, February 11, 2016). I felt that this struggle was also related to the fact that I was still only in my second semester of teaching at the high school level. I did not have much experience to lean on when it came to making decisions like this and I also did not have a lot of resources readily available to fall back on.

As a researcher I began to question my hesitance to have students work at different paces. Why would I choose to not take an opportunity to provide enrichment for students who were ready to move on? (Journal, February 11, 2016). At this point in my research, I was beginning to become aware of the decisions I was making. By journaling, I felt I needed to justify why I chose to prioritize certain things over others. In this instance, I thought that my decision-making was largely based on my need to accommodate an incredibly busy time of year. It was the beginning of a new semester and I was teaching two other courses I had never taught before. My time and energy seemed to be exhausted in preparing for those courses, leaving me to feel out of ideas for how to add to my Grade 10 course. Reflecting on these influences on my decisions caused me to think about the gap that seemed to exist between research and practice. I felt that it was the day-to-day realities of teaching, and all the other duties that came with it, that made implementing change a real challenge.

By the end of the first week I had already had some students "who had missed 3 or 4 classes" (Journal February 12, 2016). On the sixth day of classes I had 8 students present at the beginning of the class, 13 students showed up late. I began to wonder about the timing of my lessons. "Part of me worries about starting my lesson right at 9:00 am because I don't want most students to miss it, but I also want them to feel a sense of urgency to get here by 9:00 am. Maybe

they don't feel motivated to get here even if they know the lesson will be starting" (Journal, February 12, 2016). Feeling stuck between these conflicting ideas made me feel frustrated. In my heart I wanted to wait until students arrived so they would not miss the lesson and fall behind, but in my head I felt that by accommodating their late arrivals I was welcoming the behaviour. I began to wonder how much the students actually worried about this; did it actually matter to them if they missed the lesson?

This was the first significant instance where I felt I was facing a dilemma. My teaching philosophy had always been centered on care and support for my students. This instance was the first time in the course that I felt pulled in different directions. I began to wonder about how I could best show my students care. Was it more supportive to be understanding of why they may have been late and be accommodating or was it more supportive to put the onus on them to get to class on time and have to deal with the consequences if they were late? As a teacher I had to do what made sense from day-to-day, but as a researcher I began to think about how the decisions I was making were shaping the foundations of my classroom environment and my role as a teacher. This dilemma of care evolved as a significant theme throughout the semester. My positioning in dealing with it using my theoretical lens will be developed further in Chapter 6.

Despite these challenges, I was feeling as though I had made solid connections with students who were present each day. The learning environment was much more productive than it had been in the previous semester. Students who were in attendance seemed to be doing a lot of learning and while some "were still hesitant to ask for help, [they] were receptive when I would offer to help" (Journal, February 12, 2016). I was spending much less time on classroom management which allowed me to get a good grasp on my students' academic needs, what we needed to review, and what they had already mastered. I was hopeful that their "productivity

would make a big difference in what I was able to do with them" (Journal, February 12, 2016) compared to the first semester. While I had begun the semester using module booklets, with fill in the blanks notes and examples as well as practice questions, I was feeling like I would be able to incorporate many more projects and activities because I did not need to worry about constantly managing behaviour.

Unfortunately, my optimism began to wane during the following week when large numbers of lates and absences quickly became routine (see Appendix D for attendance data). On February 18 I noted in my journal, "its 8:55 [5 minutes before the bell] and I have 3 students out of 31". I began to regularly have less than 10 students in attendance at the start of class, 5-10 students coming in late, and 10 or more students absent each day. I felt as though all I was doing in class was catching students up. Students would come in and be in such different places that I would have to figure out where they were, re-teach them any lessons they had missed, get them any work they did not have, explain upcoming deadlines, and so on. I also began to have a handful of students who requested to work elsewhere (our academic support classroom, the newcomers' room, the library, etc.) It felt impossible to lead a full class activity when my classroom seemed to have a revolving door of arrivals and departures. In my journal I noted that it was "hard to think about doing anything different or fun when my students are not here" (Journal, February 18, 2016). I also began to feel torn about which students received my attention. On one hand the students who were in class regularly deserved my attention and extra help, but the students who were not there regularly needed me to work with them one-on-one. It was strenuous trying to make sure I reached every student each day.

As a researcher I began to think about why my students were coming in late so frequently. I thought a lot about how our school's system for dealing with lates and absences, or

lack thereof, was failing our kids. Students did not face any consequences for being late. My door was open for them whenever they arrived. I felt stuck because I did not want to lock the door and not allow students to enter if they were late as I worried that it would create an unwelcoming environment, but I also did not like that my students' coming and going was causing disruption in what was happening in the room. I figured it was more beneficial to allow students to come in late because at least they could do a bit of learning, rather than locking them out and having them wander the hallways.

By the end of the second week of the semester, I began to seriously consider the idea of implementing an independent study model for the course. I was struggling to keep up with whole class lessons. Usually I only had a handful of students present for the lessons anyway, and those students were generally motivated and typically worked ahead in their booklets regardless. I worried though about trigonometry. While I felt that most of the students could work through the other units independently with my support as needed, I worried that for trigonometry they would struggle (Journal, February 18, 2016). I felt that it was the one unit that really needed to be taught in a more traditional manner, I felt teaching it one-on-one would be too demanding on my time as each student would likely need a lot of instruction. I considered moving to small group instruction but still felt that students were in such different places that even that would be difficult. I decided to keep moving forward using the module booklets I had used the previous semester and deciding how to approach topics as we got to them on a case-by-case basis. As a teacher I felt this was my best available option, as it allowed me to rely on resources I already had so that I could use my energy in helping resolve the many other issues I was encountering daily. The idea of moving away from a module based approach, to a project based or hands on approach, seemed to be increasingly unrealistic as each day passed and each challenge evolved.

This dilemma about my instructional methods was one that I have felt before at many points in my career, so far. It was where I felt there was the most significant gap between my researcher self and my teacher self. While in theory I had a picture in my mind about what an ideal classroom would look like, one where students were engaged and involved in developing authentic connections to the math they were learning, as a teacher I had to give consideration of the day-to-day realities in my classroom. I felt a significant difference in what I wanted to do and what I felt I could do. My researcher-self felt frustrated by the limitations that I was feeling in my classroom; I had made plans to incorporate more engaging activities, but I did not feel I had the environment to be able to make my visions come to life.

During the third week of classes I entered students' marks into my online gradebook. Most students had either a "mark of 90% or higher, or less than 50%" (Journal, February 19, 2016). While I was not surprised, I was feeling particularly frustrated. What could I do to close the gap between these two groups of learners?

By the end of February, I felt bored with the day-to-day monotony that had established itself in class. The classroom was quiet and I did not feel that the students were engaging with material in a meaningful manner nor engaging with one and other. It was not the kind of classroom that I wanted to have, nor was it the kind of environment that I had with my other classes.

As a researcher, I was beginning to feel like many of my research goals had taken a back seat to the needs of my teacher-self. I felt I had established a classroom based on the notions of care. I had developed many good relationships with the students who attended class regularly. I also felt happy that I had seen signs of growth-based mindsets in a number of my students. For example, I noticed one of my students, Jillian, beginning to believe she was capable of engaging

with the math she was learning. She was showing evidence that she believed she was capable of growing as a learner. I felt much less resistance to learning than in the first semester. For almost all of the students who came to class regularly they had made progress in their learning. They were getting more comfortable with moving themselves forward with support from me. Conversely, I knew I still had a long way to go in developing my students' mathematical habits of mind. My primary concern as the month came to a close was that I would not be able to reach my research goals. I felt frustrated because I felt like I did not have a chance to let a lot of my students develop a sense of possibility because they were simply not there. I wished that I could replicate the successes I had seen in my small group of regular attenders with more of my students.

March

At the beginning of March, I began thinking about incorporating a project for the personal finance unit. Again, the attendance issues my students were having quickly surfaced. I wondered how I could do a project that would be engaging, yet still be able to accommodate the revolving door of students (Journal, March 2, 2016). I worried the kind of project that would accommodate sporadic attendance would be no more meaningful than the booklets I was already using, and ultimately decided against using my energy to come up with something new. The guilt then set in. Why was I compromising on engaging the few students who were in class, for the sake of the students who were choosing not to come to class regularly? At the time I decided it was important to just keep "teaching the students who show up, helping the students who ask, and going out of my way for the students who seemed interested in succeeding" (Journal, March 4, 2016). As a teacher I felt this was how I could best utilize my energy. I had to focus on the students who were ready to learn.

At this point, as a researcher I was feeling the strain of keeping up with the desires of my two selves. I felt it difficult to balance the needs of day-to-day of teaching, with the bigger picture of bringing my teacher world and my researcher world together. I felt I needed to make choices about what should take precedence. Would I continue with methods and ideas that did not seem to be working because I had planned for them in my research? Or did my teacher-self get to take over and decide what was best in the moment? How could I balance the needs of both worlds? I also wondered why was I feeling like there was such a dissonance between the two worlds. Was Michelle McLarty the researcher really that different than Ms. McLarty the teacher?

Throughout the month we continued with the personal finance unit, learning about wages, overtime, and deductions. I used the module booklets as a basis for my lessons but allowed a significant amount of time for whole group discussion, questions, and made an effort to continually link ideas to things that my students were familiar with. In general the students enjoyed this unit. They seemed to enjoy learning about money and would ask me lots of questions about jobs and income. These questions led to many quality conversations rooted in real world contexts. Throughout, the unit though I began to notice how reliant my students were on procedure and formulas. Most students were not able to look at a problem and come up with the steps that may need to try. Instead, I noticed "most students flipping back and following my exact steps for solving a problem" (Journal, March 2, 2016). For example, students were not truly understanding why we multiply by 1.5 when calculating time-and-a-half and were simply going through the motions as they were presented in their booklets. There was very little conceptual understanding going on, procedure was winning out. I wondered how I could change this. In my journal I noted how much difficulty I was having "getting into their heads" and

figuring out how to teach them differently so that they would understand the math on a deeper level (Journal, March 2, 2016); how could I help them understand the meaning behind the procedures they were using?

My students' reliance on procedure and focus on learning the exact steps needed to solve specific types of problems caused my researcher-self to wonder about the idea of mathematical habits of mind. I wanted to develop my students abilities to problem solve and reason mathematically. I thought a lot about the kinds of math experiences my students were used to. In elementary and junior high, how much chance had they been given to play with math? Had they had an opportunity to develop a deeper understanding of what numbers meant or what operations meant? I thought about how tough it is to develop those skills at this point in a student's educational life. How could I move them beyond procedure and get them thinking about numbers, while at the same time teaching the outcomes that I was supposed to teach?

On March 4, I tried interactive writing for the first time. I asked my students to write about something they had found useful in the class so far. I noted feeling curious and "anxious to read students responses" (Journal, March 4, 2016). Despite this I didn't get through their responses for nearly a week. Many of them answered quite briefly with comments about "how useful it was to learn about wages and salaries", my "style of explaining things" or "how easy the class was" (Journal, March 11). I was hopeful that "as we did this more often they would feel more comfortable answering questions with more extended thoughts" (Journal, March 11, 2016).

While I felt hopeful about using interactive writing in the future, I did not actually revisit it for over a month. My choice to forgo using it again right away was related to how much I felt I had yet to accomplish. Because I only had a small number of students attending each day I felt that I was able to connect with them on a one-on-one basis daily. I felt that these interactions

were more authentic and informative than the interactions I had experienced through interactive writing. In talking to my students face-to-face I not only felt I could get a better sense of their emotions, but also that I could more easily have conversations with them in the moment that could address their concerns more immediately. I also worried that the permanency of the written word may feel more daunting than more casual conversations and that my students would hesitate to commit to sharing authentically in writing. If I had more students attending class and subsequently had less time to check in with each of them on a daily basis, I may have been more eager to try interactive writing again.

At the beginning of the semester students who came late for class seemed to take some accountability for coming in and figuring out what they were supposed to do. I keep a weekly agenda on the board so they would look at it, see what the plan for the day was, and find what they needed. Unfortunately, as the semester progressed I found students taking less and less initiative. By mid-March I found a number of students continually coming in with nothing; no pencil, no notebooks, none of their work. While my heart urged me to approach these students and try to help them, my head, and ultimately my frustration, led me to decide not to rush over to rescue them. I felt they needed to "step up and take responsibility for themselves" (Journal, March 10, 2016). I couldn't do things for them. If they wanted to be successful I felt it was up to them to take the first step by coming to class prepared or at least take initiative once they got there to figure out what they needed to do.

This dilemma was similar to the one I had experienced in February. How could I show my students care and support? In thinking about this dilemma, I wondered if it was a matter of balancing care with expectation. Was it a matter of having expectations but being kind in my approach? Was it a matter of trying to figure out what kind of support each student needed on an

individual basis and acting accordingly? I had spent a lot of time researching the notions of care and community but, practically, what did it look like to show care in a way that encouraged responsibility?

When report cards were sent home at the end of March one third of the class had failing grades. I felt so disappointed in myself and the progress of the semester. What had I been missing? Why weren't my students having more success?

As a researcher I worried that my project was slowly beginning to lose traction. I felt discouraged that I was not making a difference and that by the end of the year I would not have a story worth telling. Despite this, I had to make a decision to push forward. I decided that I had to prioritize my role as a teacher and do what was best for my students. While my research was still important there were certain priorities that needed to shift. I knew I would continue journaling throughout the project, but I had come to a realization that inviting a critical friend into my classroom just once or twice would likely not be beneficial. It would be difficult for them to understand exactly what I was dealing with in just a few short visits. I also decided that I would try interactive writing again, but was not as hopeful about the benefits I had initially thought it would have.

After report cards went home, I received a phone call from the mother of a student who, despite the numerous phone calls I had made and emails I had sent, had not attended a single class throughout the semester so far. She was requesting that her daughter have a chance to make up what she had missed, which was everything we had done so far in the course. This call left me feeling conflicted. One on hand, I felt frustrated that nothing had been done on the student's part to try to rectify the situation sooner. The student "had not taken any responsibility for the situation or made any attempts in the first weeks of the course" (Journal, March 23, 2016) to

communicate concerns with me. Of course, the other part of me wanted to support the student and be understanding of the fact that there was probably some outside issue that had been stopping her from getting to school for her classes. As a teacher, I always want to help and support my students, but at the same time, like I tell them on the first days of class, they have to put in some effort as well. I ended the conversation with the mother by agreeing to work with her daughter and help her get caught up. Unfortunately, the student did not seek my assistance, missed the remainder of the semester and did not receive her credit.

In my journal I expressed my confliction about the larger picture of the situation as well; on one hand I thought that it was the learning that was most important – regardless of when it was done – subsequently I wanted to give my students chances to make things up or hand things in late. On the other hand, I worried about what I was teaching them by allowing this. How would that prepare them for real life? I thought a lot about what my goals were for my students; was it more important for students to learn the content of the Grade 10 Essentials course or was it more important for them to learn the life skills that came with being a responsible student?

As spring break approached the number of students coming to class dwindled (Journal, March 23, 2016). The week before the break I had more than half the class absent each day. I felt bad starting a new unit with so many students missing but felt it was necessary as we were already behind with what we had covered in the semester so far. I decided to go ahead and start on trigonometry. I left for spring break feeling defeated with how the semester had progressed. I felt like I was failing to resolve so many of the issues that I was facing each day. I knew I needed to make a change but felt frustrated by the options that seemed available to me. I was discouraged that my frustration was not being echoed by the students. While it was difficult for

me to let the blame rest on my students, I had to continue to remind myself, "I cannot want this more than they do".

April

I returned from spring break feeling like I had a bit of "a fresh start" (Journal, April 4, 2016). I saw many students who I had not seen for a quite a while prior to the break and felt as though they must have felt the same way. I began the week with a lesson on the cosine ratio. I showed students what it was and how it connected to what we had started before spring break. I went through a few examples and then let the students try some on their own. Many students seemed to catch on somewhat quickly. In the previous semester, I had felt like my students' behaviour overtook whatever I was trying to do with them in class, and I was not able to tell what they understood and what they didn't. This semester I was able to take much more time with topics. I put a focus on providing my students with oral feedback and encouragement on what they were doing. For example, I spent a great deal of time circulating and checking students' work as they went. For some students it was a matter of checking a question once they were done, while for others I provided them with encouragement or support throughout each step of the question. I hoped that continued feedback and opportunities for success would allow them to feel confident about trigonometry, and therefore encourage them to come to class so they could have more of these positive experiences. I noticed my students responding positively to these opportunities for success. I noted in my journal how "proud [my students] were because they already knew how to use [formula triangles]" (Journal, April 4, 2016). It was these small moments that made me feel like I was making connections with students and allowing them to feel more confident as math learners.

As a researcher I felt validated in seeing how my students reacted to opportunities for success. I had hope that by nurturing an environment where they felt successful I could encourage them to attend more regularly. Building students' confidence was one of my primary research goals therefore I was happy to be able to cultivate an experience that allowed them to feel good about themselves.

Unfortunately, it did not take long for me to feel like I was playing catch up again. Within a few days, attendance had gone back to how it had been prior to the break. On April 5, I noted in my journal that "I had a handful of students show up who I hadn't seen in varying amounts of time. Some hadn't even started on our current unit." I felt frustrated and felt like I was not providing rich enough content to those students who were present and motivated because of my need to constantly be catching other students up. I felt like I was trying to provide students with the tools to be successful and while some were taking advantage and doing incredibly well, others simply did not want to accept them.

From a research standpoint, it was issues like these that I felt were inhibiting my progress. While I had thought that I could nurture all of my students' confidence and engagement in class with large scale changes in my instructional decisions, I was coming to realize that making these changes was really difficult. The realities of the day-to-day situation in my classroom left me feeling drained. Dealing with the high number of absences, the inconsistency in the group that was present each day, and the lack of care that many of my students seemed to have about their own success was emotionally challenging. The research goals that I had laid out and hoped to reach only felt attainable for a small number of students. For the majority of the class the goal felt as though it had shifted. It no longer felt like it was

about developing their mindsets, it felt like it was about getting them into the school and into the classroom. If they were not there, none of my goals and plans felt like they mattered.

On April 8, I did another interactive writing activity. This time I asked my students to write about how they dealt with concepts they found difficult. I only had nine students complete the activity. I noted how it was difficult to "get students to write more than one sentence" (Journal, April 8, 2016). I found that what I was reading about in the students' responses were things that I had already heard expressed by them in my one-on-one time circulating around the classroom. The nine students who responded represented students that did attend class somewhat consistently, and therefore I had conversations with them regularly about their learning. It seemed redundant to have them re-express their thoughts again in writing.

As a researcher I felt it was important to try interactive writing again. It had been a key piece in my planning and therefore I felt I needed to try to commit myself to the process again. In my heart I wanted the outcome to be successful, I wanted more of my students to be able to express themselves and have a safe place to communicate with me. Unfortunately, this did not seem to be happening. The other challenges I was facing with the group seemed more worthy of my time. While I felt I was letting my researcher-self down, I knew that ultimately this was the best choice for me as a teacher. I needed to focus my energy in other directions.

What I began to notice in the next few weeks was how a particular group of students would influence the classroom environment. I noted in my journal that when these few students were asking for help and working with each other, other students would do the same (Journal, April 15, 2016). I tried to capitalize on this by circulating and checking in with these more eager students in hopes that their willingness to discuss what they were struggling with would help others feel comfortable to do the same.

As we approached the end of the trigonometry unit I began reflecting on the large number of assignments I had given. I had always believed that trigonometry was a unit where you need a lot of practice to begin to see the patterns that arise when working with the various trigonometric ratios, therefore I thought that giving more assignments and practice questions was necessary. What I noticed was that the majority of students were either "getting almost perfect scores on every assignment or were not handing them in at all" (Journal, April 15, 2016). There were not many between those two extremes. Clearly a small number of students were completing all their work and understanding the topic from early on, while others were doing nothing and weren't gaining anything from having multiple assignments to practice. What was the point in having so many assignments?

As a researcher, I began to become increasingly aware of the influence my past experiences as a student had on my teaching. When I was in school I remember feeling so much gratification in watching a teacher go through a lesson, then completing worksheets on my own. I can remember vividly a worksheet I did on fractions when I was in elementary school. I remember feeling so much satisfaction in completing the same types of questions over and over again and mastering procedure. I began to wonder how my preferences were influencing my practice and hence the kinds of students who were having success in my class. Were these students motivated in the same ways I had been motivated in school? How could I broaden my approach to be more inclusive of different kinds of students without losing students who liked the structure of the more traditional approach I had been using?

When test day came for the trigonometry unit I had only a few students show up. We then got interrupted for bus ridership so those few students did not have a chance to finish. The next day I was away from school so I left the tests with the substitute teacher and gave the students

more time to complete them. I came back the next day to find only 8 out of 33 tests on my desk. Only three of those who actually completed the tests had passed. I was at a loss for what to do. Part of me wanted to go back and re-teach the unit. Clearly students had not learned it. But another part of me just wanted to move on, there was no point in "kicking them while they were down" (Journal, April 22, 2016).

At this point I felt as though I was going in circles. I did not know what I should do next. In speaking to my colleagues they understood my frustration. They have all encountered the same challenges in teaching this course. What quickly became apparent to me was that the difficulties I was facing regarding attendance were not at all uncommon for our Grade 10 Essential's classes. In fact, unknowingly to me, it had been rare to have so few attendance concerns as I did in the first semester.

It was at this point in the semester that I accepted that my research had taken a significant pivot. My priorities going into the semester had been based on the challenges I had faced in the one prior, but I was now encountering much different challenges. It was evident that my goals also needed to shift. I felt that my goals and priorities related to self-efficacy, habits of mind, and growth mindset were still in fact relevant for those students who attended my class each day, but for the larger majority of students I had to become more concerned about simply getting them to walk through the door of my classroom. I could not do much to help them if they were not actually in the room.

By mid-April attendance in class had dwindled. I was averaging 20 students absent each day (Journal, April 15, 2016). It became impossible to teach the class as a full group. I decided to transition the course into an independent study model. The theoretical underpinnings of my struggle in deciding to implement this model will be discussed more extensively in Chapter 6. I

decided to enter all the work that was to be completed by the end of the course into my online gradebook and provide students with a list. This list would show them what they had completed and what they still needed to do before the end of the course. I edited my student booklets to include examples that were completed (prior to this the examples were what we did as a group). Students would each progress at their own pace. When they finished certain lessons they would do assignments, and when the unit was done they would write their test. I worried about my ability to provide adequate instruction to 33 students on an individual basis, but I figured I had been doing a lot of that so far throughout the semester anyway so I would be able to manage. I thought that maybe if students knew they wouldn't be coming into a class where they were weeks behind on what I was teaching, and instead could work at their own pace, they might feel less intimidated and more willing to come.

On April 26, I had a conversation with my class about the change in structure for the class. I explained to them my frustration with keeping everyone moving along at the same pace (I noted in my journal the irony of having this conversation with the students who were present, obviously these were not the ones who had caused the need for a change). I explained that I would be laying out weekly goals for them on our agenda board so that they could have an idea of where they should be if they wanted to pace themselves throughout the remainder of the course. I asked them for any work they had completed but hadn't handed in. This allowed me to update my online gradebook completely and print them each an accurate report of where they were at. I decided to do this each day. Even if a student had not finished something, I would "collect whatever they had done for that day and mark it" (Journal, April 26, 2016). I would then give it back the next day so they could correct it or finish it. This allowed them to get feedback sooner, and allowed me to see which students were understanding the material and which

students needed more support. For me, it was "about learning not instant mastery" (Journal, April 26), therefore allowing them to go back and work through errors or incomplete work was important to me. I also made a point of talking to some of my non-attenders if I saw them in the hallway. Some seemed relieved at the change of pace. I had high hopes this change would make them feel more comfortable coming to class and not feeling completely lost with where we were at.

On the first day of trying this structure I felt it was successful. "All my students were working on all different missing assignments. I found that by circulating and helping them along many of them were able to actually complete work" (Journal, April 26, 2016). I felt hopeful that maybe this was going to work. Perhaps this was the change that was needed. Unfortunately by the end of the week, attendance hit an all-time low. I had between "20 and 23 students away each day" (Journal, April 29). At this point I felt frustrated. Part of me wanted to let the students be in total control of their own success, and not chase them to get things done. But another part of me felt like it was up to me to make sure they did not fail my course.

In working through this new structure from day-to-day I began to feel as though I was giving up on what I as a researcher knew to be best practice for teaching, and found myself simply going through the motions to survive the day-to-day challenges I was facing as a teacher. My new approach relied heavily on booklets and the traditional approach of instruction followed by practice, though I took steps to ensure that feedback was provided in a timely manner. These methods do not match with the kind of methods I had hoped to use throughout the semester, but they were the methods that allowed me to have the energy to cope with the bigger picture challenges I was facing, primarily attendance. I felt frustrated and embarrassed that these were the teaching methods I was relying on. As a teacher I feel the pressure to be innovative in my

teaching is never-ending, when I added the knowledge that I would eventually be sharing my story with others this pressure to present the story of trying something creative and new began to feel even more intense. I felt I was letting myself and my research down by relying on booklet work.

May

By the beginning of May I was feeling a mixed bag of emotions. I found that many students were "moving slowly through the lessons" and were distracted by their phones and their friends. I did find that the new structure was allowing me more "time to connect with students on an individual basis" (Journal, May 4, 2016). I had more time to walk around, work with students, answer their questions, and also connect with them on a personal level. I was spending less time catching students up on what they may have missed because they could just pick up where they had left off in their workbooks. Despite this, my energy towards the course was low. I was not feeling motivated because I could not seem to make the change I wanted to make.

My journaling took a hiatus through the first couple weeks of May. I was struggling with the situation at hand. I felt frustrated. I was worried about what my research story would end up being. I wondered about the value of the story that I would have to tell at the end of the semester. I had hoped for one of change and possibility, but I felt that I had not been able to successfully achieve my goals with many of my students. This feeling caused me to distance myself from the project. I needed a break.

On May 20, I ran into two of my non-attenders in the hallway. One of them told me that he had "been attending our Off Campus program and therefore shouldn't have been registered in the class at all" and the other told me that she was "re-doing all her courses next semester" but hadn't been withdrawn from the course (Journal, May 20, 2016). I noted in my journal how it

bothered me that our school systems were not on top of things like this. Why had no one informed me of these things? I also wondered why the one student was "always hanging around the school if she was not in any courses?" (Journal, May 20, 2016). I worried about the standards we were setting for our students by allowing them to be at school but not attend their classes.

Near the end of May, I ended up getting sick and was away from work for 2 days. When I returned to work "my students had not made any progress" (Journal, May 27, 2016). I decided I needed to have a talk with them and stress the fact that there were only a few weeks left in the school year until their exam and that they needed to be on top of their progress.

June

At the beginning of June I found out I would not be teaching Essentials again the following school year, because I would be getting an extra section for another course. While I wanted to be excited that I would no longer have to teach my most difficult class, I couldn't help but feel somewhat disappointed. I felt "I had not mastered teaching Grade 10 Essentials, or even come close to getting better at teaching it" and I wanted another try (Journal, June 2, 2016). I felt like I had so much to learn about teaching the course and would not have the chance to figure things out.

Throughout the month of June, I found that many of my students began opening up to me about the obstacles that got in the way of their education. Many students told me that if they missed math regularly they had also been missing all of their other courses regularly. One student who had missed many classes told me she doesn't miss school because she doesn't like it, but instead because there were "other things going on, like family issues, which kept her home" (Journal, June 2). I began to think about specific students who had been successful throughout the semester. "What had made them able to find success?" (Journal, June 2, 2016).

Why were they able to overcome obstacles in their way, while other students could not? I found myself feeling overwhelmed by the enormity of the issues at hand. How was it possible for me to support my students through all of the diverse obstacles that were standing in their way? What role did the student need to play in this situation? How could I encourage my students to overcome difficulties and see possibilities that they may not have known existed?

As the end of the semester approached I noticed that I had more students in class regularly. On June 3 I noted, "I had the biggest class I've had in a long time – 18 students!" (Journal). It was as if reality had set in and for some students panic mode had set in. I noted in my journal that same day that the classroom had a bit of a buzz. Students seemed to be eager to get caught up on their work. At this point I told students to pick a unit they were interested in. Some had gotten stuck with certain topics and had become frustrated. I told them to try something new. I hoped if they could work on any unit it would allow them to make some progress. I also encouraged students to work together. "Three of the boys in the class really took advantage of that" (Journal, June 3, 2016). One of them expressed to me that his motivation to get things done had dwindled as the end of the year approached. I told him to use his friends in the class as resources. The three of them worked well together to support one and other and were engaged in valuable learning together.

These were the kinds of experiences I had hoped would happen throughout the semester. Students supporting each other and collaborating to figure out a new concept, even just for a short time, proved to be a valuable learning experience. They were having conversations about math, debating with one and other, and gaining understanding of the concepts they were working with. I wished that these boys had attended regularly throughout the semester. If they could have

had experiences like these throughout the whole semester I believed they could have made significant progress and developed strong conceptual understanding of the ideas we covered.

Initially I had planned to give my students an All About Me activity similar to the one they had done at the beginning of the year, but as the end of semester approached I decided to add a few more elements to the activity and create a year-end portfolio assignment (see Appendix C). I created it in an attempt to have students reflect upon and consolidate their learning from throughout the semester. The assignment was broken into three components; the first task was to create a cheat sheet for the exam, the second was to complete a survey that was similar to the one they had done at the beginning of the year, and the third part asked them to select two pieces of work from through the semester and reflect on them.

At first I worried about adding more to my students' workload with this assignment, but I found it was necessary for them to think about the progress they had made throughout the semester and consolidate their learning in a final piece of work. I received four year end reflection projects that were fully completed, and of course they were from the students who had great success in the course. In their reflections, these students demonstrated pride in their accomplishments. They made comments related to having success because they had studied and asked for help. They also demonstrated good summaries of the topics we had covered in their cheat sheets.

I also received five assignments that were partially complete. Most of these students only completed the year end survey. Their responses were a bit more varied as they represented a more diverse selection of students from the class. One of them was a student who missed much of the course, but had a great understanding of the topics. Even though she missed most instruction and class time she breezed through the materials. She commented on taking time to

catch up on work she had missed as something that helped her be successful. She also noted that being allowed to work at her own pace was helpful. Another one of these students commented that in the future he should actually do his work in order to have success. In his responses he demonstrated an understanding of the role his decisions and motivation had played in him not completing the course. Another student acknowledged feeling discouraged by the course. He expressed a frustration in not understanding the topics like he did when he was in Grade 9. He was a student who had sporadic attendance in class and unfortunately got very far behind (Journal, June 24, 2016).

In terms of my research the goal of this assignment was to gather more information from students. There were many students whose voices I wanted to hear. I considered this a last effort to try to get at the things that made being a student challenging for them. I still had hope that somehow moving forward I would be able to figure out how to make Essentials math a class that students could find engaging. A class where they could feel successful.

I ran into one of my students in the hallway about a week and a half before the exam. She had been a student who started the semester off quite strong. She had been really proud of herself for staying ahead in the course and was having more success than she was used to having in math class. Unfortunately part way through the semester she stopped attending class. When I spoke to her in the hallway she told me that she "knew she would not get her credit so she had just stopped coming to class" (Journal, June 10, 2016). She had been having issues at home that caused her to miss a few weeks of school and she felt she had fallen too far behind to be able to catch up. I told her to come see me when she had time and I could get her the things that she needed. She had done well enough at the beginning of the course that she could in fact still earn her credit; she would just have some work to do in order to catch up on the newest topics. At the

end of the day she sent one of her friends to come get her work. When I asked him where my student was he told that, “She was too lazy to walk up the stairs” to my classroom. I felt so disappointed. I was trying my hardest to help her and get her caught up, but she was “too lazy” to walk up the stairs (Journal, June 10, 2016). I again reminded myself – “I cannot want it more than they do”. I found it difficult to understand why she would not take advantage of a chance to make up the things she had missed, especially when we had just had a positive conversation about her being able to finish up her coursework in time.

During the last week of classes, “panic mode” really set in for the kids (Journal, June 15, 2016). I found myself feeling guilty. Had the change in structure been a disservice to the students? “What is the problem with this course? Is it too much content? Is it the structure of the course? What needs to change so that students can be successful?” (Journal, June 10, 2016). I tried to do some mini lessons on certain topics that students seemed to be struggling with. Some listened and got some work done accordingly, some did not. I did my best given the situation to prepare my students for their exam. We discussed what would be covered, I provided them with summaries of each unit, and worked through a review with them.

What was interesting to me as I reflected on this year-end panic was that clearly some of my non-attenders were concerned about getting their credit, but had lacked the skills throughout the semester to persevere and understand that it would require effort to get through the course. Was it that my students had felt that Essentials math was “easy” and did not require effort but at some point realized it would actually require some work? Did they not realize how far behind they had actually gotten in the course? I also wondered how their attitudes toward the course would have been different had they not been allowed to stay in the course once they had reached a certain number of absences. If a student had over 30 or 40 absences in the class it seemed

unreasonable for them to think they could make up that time within the last few weeks of class. Was the lack of an attendance policy causing them to think they could squeeze in such a significant amount of learning into such a short period of time? Could a stricter attendance policy put more value on the time required to complete a course?

When exam day came it was clear that some students simply did not study. I was not sure if they felt that they had to be there regardless of how prepared they were, or if they thought they could challenge the exam and get lucky enough to pass it despite not knowing much of the content. It was interesting to watch the students tackle the exam; a handful of them moved through it quite confidently, while others just sat and shook their heads as they tried to understand the questions. At that point I was at a loss. For many of them I had put in significant effort to support their learning, but they had not reciprocated. I could not sit with them at this point and try to push them through the exam, they had to demonstrate their knowledge. For me, it was a long afternoon that caused all of my "mixed emotions from throughout the semester to come flooding to the forefront of my mind" (Journal, June 20, 2016).

Once exams were completed and I had marked them, the turmoil of making decisions about students began. I had many students who had failed the course and I had to decide whether those students would simply repeat the course, should be given the opportunity at credit recovery or should be granted their credit. "I hate making these decisions as sometimes a student's success cannot be captured in a single mark" (Journal, June 24, 2016). In the end I had 11 students pass, six students enrol into credit recovery for the fall (with marks between 40-50%, students are granted an opportunity to simply finish up course work they did not complete), and 15 students who did not earn their credit. The number of students who scored less than 15% in the course was upsetting, but not surprising. These students had missed almost every class throughout the

semester. Despite phone calls, outreach, and support offered these students were not able engage with the course. While I felt as though I had done everything in my power to get them to class and support their learning, I had not been successful. I ended the semester feeling happy for the 11 students who had been successful, hopeful for the six who would go through credit recovery in the fall, but guilty about the large number who had failed the course.

From a research perspective, I began to think about the bigger picture. I thought about where these students would end up next year; would this pattern continue? I also thought a lot about the larger systemic issues that seemed to be plaguing my students. Was the school system adequately meeting their needs? How had the system caused them to get to Grade 10 without having the skills (academically and otherwise) to attend school and commit themselves to their own success? I felt the enormity of the issues at hand as I began to think about how I would retell the story of my students and myself as we had moved throughout this semester. How was I going to be able to share this story, while maintaining a sense of possibility and hope moving forward? How would this story, which at the moment felt incredibly painful and unsuccessful, become a story worth sharing?

In this chapter I have outlined a chronological tale of the semester. In using my journal, I have shared day-to-day anecdotes as well as the beginnings of themes that emerged as the semester progressed. This chapter represents the bigger picture of how the semester unfolded. In the following chapter I will be looking more specifically at five of my students. I will seek to share their stories as they moved through the semester and what it looked like for me to take the journey through Grade 10 Essentials Mathematics with them.

CHAPTER FIVE

In this chapter I will share the stories of five of my students from the semester. Three of them represent stories which I consider to be success stories; stories that enabled me to see how I was able to support my students learning and move them forward as confident learners. The other two stories are not necessarily about students finding success, but are important as they have caused me to think deeply about the obstacles that can stand in my students' way and what I could have done differently to help them overcome these obstacles. Later in the chapter I will examine how aspects of my teaching philosophy helped some of these students, but not others, as well as discuss my successes and disappointments in effectively positioning myself to nurture my students' confidence and productivity as math learners.

My Students' Stories

In the following section I will share the stories of Jillian, Joshua, Ethan, Brittany, and Macey. Each of their stories represent different journeys that occurred over the span of our five months together. It is important to note that while I included these students in many of my journal entries, I did not have a plan to examine any of them specifically in my final analysis. I have therefore chosen these five students to write about as they are ones who I believe represent a diverse cross-section of my class. Because I did not collect data about each of them specifically, I have used the anecdotes recorded in my journal, supplemented with my own recollections, to re-tell their stories.

Jillian's Story

I have known Jillian since she was in Grade 7. Since then she has sort of floated through school. She has never been the strongest student, but has also never been the weakest. She is the kind of student who flies under the radar academically. Socially though, she tends to get herself

involved in a lot of drama. Jillian has been in many fights and has also dealt a lot with the guidance department. When she began in my class I was excited to teach her again, however I could not have predicted the progress she would make as the semester unfolded.

Throughout the semester, Jillian had nearly perfect attendance. She missed two days of classes due to volunteer commitments at a nearby elementary school, other than that she was present and on time (usually early) each day. Despite her consistent attendance, Jillian struggled with math. She needed a lot of support and at first was shy about asking for help. She would allow me to help her, but I would have to initiate the support (Journal, February 23, 2016). As the semester progressed, she became more comfortable asking for help, and sharing her struggles with me so I could support her. The math never came easily to her, she had to work through many questions and examples to build her understanding, but she was willing to put in the work necessary (Journal, April 15, 2016).

By the end of the first half of the semester Jillian had earned a spot on the honour roll. She had never been on the honour roll before. Jillian actually came to my classroom immediately when she found out and politely interrupted one of my other classes because she could not wait to tell me. I took this as a sign of the relationship we had built. It made me so proud. Not only had she achieved a goal she did not think was possible but she was excited to share it with me (Journal, May 10). It was at this moment that I saw her confidence take a turn. Jillian was feeling sure of herself, and began taking more risks in the classroom. She still asked questions if she was unsure of things, but I found she was more willing to make attempts on her own before relying on me.

As the semester went on and we moved into the independent learning structure, Jillian began to inch ahead of many of the other students. She was one student who used the

independent model to accelerate her learning. She took full advantage of being able to work at her own pace. She was able to direct herself based on the goals I laid out for the class, and was motivated to stay on track with the course content. She was excited about getting through the rest of the course material that she would often come to my room on her spares and spend extra time working through lessons and assignments.

Jillian's motivation to get herself prepared and be ahead of her classmates resulted in her finishing the course content before all of her classmates, approximately two weeks before the exam. In the end Jillian completed the course with a mark of 98%. She was incredibly proud of herself as she had never achieved such high marks before. I was proud of her not for the mark she had achieved, but for the difference I saw in her attitude towards math. She was open to learning, and open to being supported when she needed support. This shift in attitude was encouraging for me to see. In her year-end reflection, Jillian selected two pieces of work that she was most proud of. She reflected upon how she felt proud of herself for doing well and not second-guessing herself on a consumer decisions assignment. On her second piece of work, she talked about how proud she was to discover that I had made an error in correcting one of her answers which lead to her earning a mark of 100% (Journal, June 24, 2016).

Overall, I feel that Jillian's experience in my class was extremely positive for both her as a student, and me as her teacher. Jillian developed confidence in her abilities as a math student and flourished in her learning. As her teacher it was incredible to see her growth throughout the semester. It made me hopeful for other students moving forward. When I think about my own positioning in relation to Jillian's growth over the semester I see myself as walking by her side. For Jillian it was largely about knowing that I was there if she needed me. At the beginning of

the semester she relied on me more often, but as she progressed I was able to take a few steps back and allow her to move forward with less and less guidance.

In thinking about Jillian's story I also think to the importance of our prior relationship from Grade 7. Being able to start the semester in a position where I already knew her gave me a head start on determining how to support her. The position I held as Jillian's teacher was one I was comfortable in from the beginning of the course. I understood early on what she may need from me and was able to build on that foundation, instead of starting from nothing.

Joshua's Story

Of all the stories to share Joshua's is the toughest for me. Joshua is another student who I taught in Grade 7. Joshua is one of the quietest students I have ever taught. In all the years I have known him I have never been able to get more than a few sentences out of him. In junior high, Joshua was a student who easily went undetected in a class full of students. He was never one to be getting into trouble or causing any problems in class. He would come to school, do his work, and go home. Joshua's family dynamic caused him to miss some school here and there, and he frequently come in to class late. While his attendance issues were not severe, they were enough to disrupt his learning. He got through Grade 7 math, but I never felt as though he was able to meet his full potential.

When the semester began I saw that Joshua hadn't changed all that much. He was still incredibly quiet and would not say more than a few words at a time. What I noticed right away was that Joshua still seemed motivated to come to class, get his work done, and move on. He did not seem eager to engage in learning any more than he had to. He wanted to do only what was necessary. Knowing what I knew of Joshua, I knew it would be difficult for me to change this. I didn't believe he would become the kid who would raise his hand in class and be eager to

participate, and I was okay with that. I purely wanted Joshua to feel comfortable and safe being himself in my classroom. Similar to when he was in Grade 7, Joshua flew under the radar. I would make a point of trying to talk with him every day but he was never eager to have a conversation. He would come in, usually borrow a pencil from me, and then get to work. His attendance was mediocre, he was frequently late, but when he was present he used his class time effectively (Journal, March 23, 2016).

By the end of term one, Joshua was doing well. He had a mark in the mid-60s and had kept up with class material. As term two started and I began to shift into a more independent model, I noticed that Joshua began to miss more and more classes and quickly fell behind. Joshua had always preferred to work on his own so I could never have guessed that this change in classroom setup would have had an impact on him. As soon as I noticed the struggles Joshua was having, I narrowed in on supporting him daily. I would "sit with him and go through examples of the topics he was working on" (Journal, May 4, 2016). I would also try to engage in conversation with him about the topics, but he was so quiet that he would not generally reciprocate in conversation. I didn't know how else to support him so I simply continued to help him academically, as well as try to have conversations with him to connect on a more personal level. I also made a point of providing him with as much positive feedback as I could. Despite all of this I simply couldn't crack his tough exterior shell.

In Joshua's year-end portfolio he wrote about not feeling confident in math anymore. When I read his feedback my heart broke. I never want to cause any student to feel poorly about their abilities. After reading what he wrote I pulled him aside to talk to him. "I reminded him that he is capable and that he just needed to continue plugging through his work" (Journal, June 15, 2016). Unfortunately I feel like my efforts were too late. The whole scenario made me feel sad

and helpless. How had I let one of my students feel so poorly about their math abilities? At the end of the semester Joshua ended up with a mark in the 40s. In our school, a mark between 40-50% can allow a student to enroll in a credit recovery program. This arrangement allows students more time to finish work that is incomplete. I felt Joshua was a perfect fit for credit recovery. He had done his work well, he simply hadn't finished everything yet. I called and spoke with his parents about this option and they seemed supportive, but when I approached Joshua about it he had decided he wanted to re-take the course completely. I wondered what had caused him to make that decision. Was it a frustration with the course and the content? Was he frustrated with himself for not achieving what he was capable with? Unfortunately Joshua was not open to talking much about it, again he just wanted to do his work and move on.

I do not feel as though I was able to find an effective positioning as Joshua's teacher. Despite my efforts to support him and show him I cared, I was unsuccessful at encouraging him to feel safe in taking risks and trust that I was there to support him along the way. Unlike with Jillian, my prior relationship with Joshua in Grade 7 did not seem to matter when it came to being able to connect with him. Reflecting back I do not know what I could have done differently for Joshua. I have wondered if it was a case of Joshua not trusting a system that has frustrated him in the past, or perhaps it was a case of him not being ready to accept care. These are only conjectures on my part, but I believe they are important as they are reflective of the very nature of teaching. It is important that I acknowledge that my positioning may not always need to be the same with each student and that for some students I may not always be able to find a positioning that is effective in supporting them.

Ethan's Story

Despite being only 16 years old, Ethan has faced a lot in his life, including a battle with addiction. I taught him when he was in Grade 7 and he continually challenged me. Ethan was constantly disruptive, always goofing around, and loved getting himself kicked out of class. Despite this, I had maintained a positive relationship with him in the years following Grade 7. When I saw that he was in my Essentials class I was excited to teach him again.

Ethan began the semester with decent attendance, unfortunately as the semester progressed he would go through times where he would miss multiple days at a time. Eventually Ethan fell behind with his work. Luckily, when he did come to class he would use his time effectively and always ask for help when he needed it. The relationship I had built with him over the years helped him trust me and feel comfortable enough to be honest with me. Ethan and I frequently had honest conversations about why he was missing class and what he needed to do to get through the course (Journal, April 15, 2016). He knew that I would not give up on him, and would give him the flexibility that he needed. I knew his personal life was tough, and I did not want that to impede his success. The common understanding we shared about this helped him gain confidence and know that I was going to support his learning. In Ethan's year-end reflection he noted that it was important for him to keep on trying and put his mind to it in order to be successful.

Ethan ended the term with 53% in the course, but because of family circumstances missed his final exam, leaving him with a mark of 40%. I tried to have him come in during exam week to complete the exam, unfortunately it was not possible for him to do so. I decided to enroll Ethan in credit recovery for the fall. Despite a slow start to get going in credit recovery, Ethan eventually got his motivation to get his work done. He worked during his spares with our math

support teacher to complete the exam review. He was so proud to accomplish this work. He would come visit me to show me what he had done and ask me to look over it. Once he finished the review he began on his exam. Again, he would come show me his exam and how proud he was that he was able to accomplish it. I allowed him an informal format for completing the exam, allowing him to work on it bit by bit rather than in one sitting. For him, he needed time. He needed to be able to put in an hour of work then take a break and come back to his work the next day. This was fine with me as I was more concerned about his learning and knowledge. I didn't care if he could spit out all the answers within an hour or two, it was about getting him thinking and demonstrating what he could do without a time limit.

For Ethan, the journey was about slow and steady progress. One semester ended up not being enough time for him to complete the course, but he was determined to complete the necessary work and earn his credit. From my conversations with Ethan, I feel as though his experience going through the course built his confidence and proved his need for a support system to help him through. Early on it became evident that he was willing to put in the effort, I just needed to be understanding that sometimes his home life would get in the way. The most important factor in Ethan's success was the "two-way-street" he and I operated on. He knew that I was positioned to support him whenever he needed, but he knew that he had to hold up his end of the deal by coming to class, staying in communication with me, and continuing to put in effort. This back and forth, in my opinion, was the key to his success.

When I reflect on Ethan's growth over the course of the semester I feel proud. In some ways I feel like I was a cheerleader for Ethan; he was ready to take on the course but needed someone there to encourage him on along the way. Ethan's honesty about when he needed help or when he needed more time, allowed me to understand what my role needed to be. From earlier

on it became evident that he needed someone to believe in him and based on the relationship we had established prior to the course it was not difficult for me to be that person from early on.

Brittany's Story

Brittany's story is one that is particularly interesting to me. Her story is one that puzzles me, yet makes me strive to dig deeper to understand her as not only a student but as a person. In junior high, Brittany was part of a group of students that was fairly social. It was a group of about 6 girls, all of whom were decent students, somewhat involved in school activities, and usually engaged in classroom happenings. Over the years though these girls have drifted into different directions. A few remain good friends but the dynamics of the group changed quite a bit. Brittany and one other girl from the group, unfortunately, have become somewhat isolated from this original group and have struggled to find their way both personally and academically. When I found out that I would be teaching Brittany, I was motivated. So many teachers had tried to reach her, yet she was not connecting. She had been unsuccessful in Grade 9 math, had not passed Grade 9 repeater math, and had been placed in Grade 10 Essentials in hopes that it would move her forward. I had hoped that the connection I'd had with her in Grade 7 would help me understand and support her so that she could be successful in the course.

It became apparent early on that Brittany was a significantly different student than the girl I had known in Grade 7. She began the semester with decent attendance, she would frequently be late but for the most part she would come to class by about 9:15. Regardless of her attendance what I found the most puzzling with Brittany was her complete lack of engagement in the class. She would come in and sit by herself, open her binder to her math work, but then plug in her headphones and "completely disengage" (Journal, February 18, 2016). I tried each class to make a point of connecting with her. I would check in with her and ask her how she was doing, if

she understood whatever we had gone over that day, and if she needed help in any way. Most days I would not get much response from her; when I would ask her anything she would "just shrug her shoulders" (Journal, February 18, 2016). She certainly did not ask for help if she did not understand something. At times I would just go ahead and do an example with her even if she would not admit to not understanding something. Regardless of my efforts, Brittany did not hand in a single piece of work to me within the first month of classes.

By the end of the first few weeks, Brittany's attendance dropped off completely. In March and April I only saw her a handful of times, and in May she only attended 4 classes (Journal, June 15, 2016). I became frustrated because I wanted so badly to connect with her and support her through the course, unfortunately she was not there so my hands felt tied. Unfortunately, Brittany was not attending school so I could not even connect with her in the hallways to make arrangements for moving her learning forward. I made multiple calls home to her Dad but he expressed similar frustration with not being able to connect with his daughter. He expressed to me that he was unsure of how to support her. He had tried many things but nothing seemed to be helping.

In June, after another phone call home to her Dad, Brittany began attending classes. In fact in the 3 weeks of classes in June, she only missed one day (Journal, June 24, 2016). At this point Brittany had not yet handed in any work for the course. I knew she would not be earning her credit for the course but I tried to take advantage of the time I had with her to try and get her prepared for re-taking the course. I decided to try a bit of a new approach. Instead of having her work through the booklets, I decided to use one single sheet/assignment at a time. Each day I would sit with her for a few minutes and go through one or two examples with her. I would then guide her through one or two on her own. I would then walk away and let her keep working. I

would check in throughout the class to see how she was doing and help her with anything I may have noticed she was stumped by (as she was still incredibly reluctant to admit to me when she didn't understand). At the end of class I would then take her assignment (complete or not) and mark it as it was. I would then return it to her the next day and the cycle would begin again (Journal, June 10, 2016). I found that using this method was more successful for her. She was able to work at small chunks of work without feeling overwhelmed and was able to get feedback from me much sooner as I would return her assignments the next day. Throughout the three weeks in June, Brittany handed in a total of 3 completed assignments (Journal, June 24, 2016). This was more work than she had handed in for any course since Grade 9. While this was not nearly enough to prepare her for her exam or cover even one unit of the course I felt the process was successful for her. I saw a slight increase in her confidence, while she still had a long way to go I thought it was a decent start.

Despite these small successes, Brittany remains a bit of a puzzle. I still haven't quite figured out what interests her, what motivates her, and what has caused her to shut down so much since junior high. Similar to my experience with Joshua, I do not feel that I was able to find an effective positioning as Brittany's teacher. Her exterior shell was incredibly difficult to crack. Despite how frustrated I felt by her at times, Brittany is actually the type of student that pushes me to continue working to break down the walls that so many students have. My desire to understand my students is of particular significance when I think about what it means to be an effective teacher. It will be discussed further in Chapter 6.

Macey's Story

While I have presented four stories about students who I have known since they were in Grade 7, I feel it is also important to share the story of a student who I have not known for as

long. I first met Macey when she enrolled in my first semester Grade 10 Essentials class. She was a quiet student who did not seem to be well connected to any of the others in the class. She also seemed overwhelmed by the size of the class. She would often get to class late and not feel comfortable entering a room filled with over 30 other students. She frequently asked if she could work in our academic support classroom. I allowed her to as I knew she had a bit of a connection with the teacher there. Unfortunately throughout the first semester her attendance dropped completely off. She rarely attended school and fell far behind. Ultimately, she was not successful in earning her credit.

Macey enrolled to take the course again with me during the second semester. Right from the beginning I noticed a change in her willingness to come to class. The class was much smaller and much quieter. At the start of the semester, despite frequently being late, she did attend class regularly and would work in the classroom. She was a student who struggled academically but I was happy to see that she was in class and putting in an effort (Journal, February 18, 2016). She was hesitant to ask for help when she needed it, but she worked well independently with frequent check-ins with me. Macey worked her way through the first half of the course and ended the first term with a passing grade.

As the second term started I began to see her attendance dropping off. I was concerned because she had made such great progress in the first term. I decided to call her father to discuss things with him (Journal, April 19, 2016). He was supportive and shared with me how motivated Macey was to earn her credit. After only one conversation with him, Macey began attending regularly again. She reconnected with our academic support classroom to get the academic help she needed and would check in with me daily to keep up on what work she needed to get done. Macey was still a quiet student, but I saw her come out of her shell little by little.

Macey wrote her final exam in June and though she still struggled with the content it covered she knew enough and was confident enough in herself to get the grade she needed to pass the course. I was very proud of Macey for getting through the semester and having such success. In her year-end portfolio she talked about needing the time to get through assignments without being rushed (Journal, June 24, 2016). Allowing her to take the necessary time to work through the course topics was important for her. She also demonstrated great pride in her year-end reflections, by talking a lot about how proud she was that she was able to do assignments on her own. She recognized the need to get help when needed, but ultimately the importance of being able to demonstrate her skills on her own.

With Macey I needed to take on a supportive position from a distance. From my perspective, she needed space and time to be willing to let me in. During the first semester I do not feel that Macey was ready to accept my care and support, with time though she was more open to seeing me as someone who was there to help her. In contrast to Ethan and Jillian's needs, Macey needed to develop her own confidence by knowing that I trusted her to work independently. She did not need me to be by her side at each moment cheering her on. Macey served as an important reminder to me of the diverse approaches my students may need me to take.

Each of these students offered me a unique perspective on how I could re-position myself as a teacher to best support them. While some of our experiences together are reflective of areas of my teaching where I feel confident and capable, some have lead me to think deeply about how I could position myself differently to support students who are less open and ready to take on new learning.

Connections to Teaching Philosophy

Each of the above students went on a journey with me throughout our semester together. Each of them became part of a story that was inherently influenced by my teaching philosophy and the decisions I made as their teacher. For some of them my teaching philosophy seemed to complement their philosophy as a learner, for others my beliefs and position as a supporter did not seem to be enough.

Journey

In chapter two, I outlined my teaching philosophy as one based on Fox's (1983) metaphors of travel and growth. From this perspective teaching and learning can be viewed as a journey where the teacher is not in complete control, and where the student plays a key role in their own development as a learner. The content of my course was the land to be explored and I sought to act as a guide for my students to navigate it. I hoped that my students would end the course having grown in a meaningful way that would serve them beyond the four walls of my classroom.

For Jillian, I was able to reach this goal. She was on board for me to guide her through the topics in the Grade 10 Essentials course, but was also responsive to the need for her to play a key role in her own journey. Through the relationship that I built with her, Jillian was able to grow as a more confident mathematics learner and became more and more productive in her willingness to take chances as the semester went on.

Ethan and Macey embarked on similar journeys. They both understood themselves as learners and while they each had lapses in motivation at times, they were ultimately committed to getting through the journey. They also both knew that I was there to support them when they needed me and openly accepted my support when I offered it. Through my willingness to

understand that Macey and Ethan needed to proceed through the course at their own pace and my willingness to allow them the flexibility to do so, I feel as though I gained their trust. They trusted that I was at their side if they needed me, but also knew that I also trusted them to navigate the terrain at their own pace.

Joshua was a traveler who was less willing to go out on his own. When the learning model shifted to independent study, he became lost and eventually got stuck. He was quick to get discouraged when he felt he was losing his way and was not always open to guidance and support. Despite my efforts to encourage him and show him the way Joshua struggled to move forward. Joshua seemed to desire what Fox (1983) calls a transferring or shaping model. One where I would simply pass on the knowledge that was to be learned so that he could try to absorb it.

At the beginning of the semester Brittany did not seem open to any kind of learning journey. She was disengaged, uninterested, and in my opinion, struggling academically to a point where she could not perceive a possibility of moving herself forward. Near the end of the semester I began to take more of a transferring approach with her as I tried to pass on small pieces of information at a time. While this approach is not one that I find ideal, it was an attempt to connect with her in some way that could possibly be helpful for her moving forward.

Care

Care and compassion are also central elements in my classroom. As outlined in chapter two, I feel these elements are essential if I hope to connect with students and to allow them to understand and reach their potential. There are a few key elements to creating a caring classroom. First, in order to truly care one must be able to put themselves in another's position and be able to feel what that person is experiencing (Noddings, 2013). Second, it is about

fostering an environment where students understand that they are central to their own learning (Lampert, 1990). Students must feel safe to proceed in their own learning journey while feeling supported by their teacher. Third, it is essential that students understand that mistakes are an acceptable, and necessary, piece in any learning journey (Gresalfi & Cobb, 2006). They must know that mistakes can be great starting points for deeper thinking and exploration (Borasi, 1994). Finally, a key component to any caring classroom is the notion of community. Allowing students to work together and learn from one another is key in shifting the power away from the teacher and towards themselves (Gordon-Calvert, 2001). Throughout the semester I tried to focus on making these elements central to the fostering of a classroom where my students felt safe to take risks, make mistakes, and felt they were supported in doing so.

For Ethan, care and community were central to his learning journey. Throughout the semester, and after it during credit recovery, Ethan would frequently check in with me. It was as though he needed to maintain a connection with me and needed reassurance that I was still there to support him. He also seemed to feed off of my praise for his hard work. He thrived within the small community of boys that he was friends with in the class. He enjoyed working with them, and would frequently be motivated by any work or progress they were making. Ethan was also very responsive when he made mistakes. If I gave him feedback about something that he had done incorrectly, he would pay close attention to what I explained and then work hard to learn from the error he had made. In his year-end reflection he actually commented on how he had not understood something the first time, but then eventually got it. He was not ashamed of mistakes he had made early on, but instead was proud to be able to learn from them. Ethan's need for care on a personal level was essential to his learning journey. He thrived on personal connections.

From the first day of classes, Jillian was also quite responsive to the support I could offer her. She was open to getting help but not always eager to ask for it. As the semester progressed, I saw her develop more and more confidence to ask questions, take risks, and make mistakes. Similar to Ethan, she also responded and thrived on sharing her successes with me. She wanted me to acknowledge her hard work and let her know how well she was doing. As the semester progressed I began to see her praising herself and feeling pride in her own progress. This shift from external motivators to internal motivators is what I believe will keep Jillian moving forward in her future learning endeavours.

Macey was a more independent in her learning journey, and reliant on care in a different way than Ethan and Jillian. For Macey, I was able to show care by allowing her the flexibility to complete the course work at her own pace, as well as the independence to frequently work on her own. She was not as connected to the classroom community because she didn't know anyone in the class, but she did establish good connections with the academic support center which helped her feel supported. Macey was a quieter student and didn't express herself as openly as Ethan and Jillian, but there were little things that signalled to me that she was feeling cared for and safe in my classroom. During the first semester, for example, she would hardly step foot into the room and would barely speak a few words to anyone, but by the end of second semester she was comfortable coming into my classroom and touching base with me. I saw that as a significant success for her.

Unfortunately, my care for Brittany and Joshua did not seem to be as readily accepted. Neither of them were as open to being supported or asking for support when they needed it. I believe the biggest obstacle that interfered with their progress was a fear of making mistakes. For Joshua the semester started out better as he felt more confident about the topics we were learning

but as the learning became more independent he began to shut down. He was not willing to attempt things he did not fully understand. For Brittany, on the other hand, this unwillingness to try started from the first day of classes and lasted until the end of the semester. It was only when I showed her small steps and procedures that she was willing to make slight efforts to move forward with her learning. For both Joshua and Brittany, I feel their lack of response to my care stems from years of experience of feeling left behind in math. Both of these students have immense academic gaps. They struggled with many foundational skills in math. I feel they both need much more than a few semesters of care and healing to move beyond the damage that has been done by a system that has pushed them along without ensuring they have the essentials skills they need to be successful.

Connections to Goals

In chapter two I outlined the primary goals I had for my students; first, I wanted to nurture my students' sense of self-efficacy; second, I wanted to encourage them to operate with a growth mindset; and finally I wanted to develop their mathematical habits of mind. For some of my students I feel I was successful in achieving these goals. However, for others I believe there is still much progress to be made.

Self-Efficacy

The notion of self-efficacy refers to the perceptions a person has in regards to their motivations, emotional state, and actions (Bandura, 1995). Frequently, it is a person's perceptions of their own abilities that have more influence than their abilities themselves. As explained in chapter two, students with higher levels of self-efficacy are more ready to participate, work hard, and persist, than those with lower levels of self-efficacy. Bandura (1995)

outlines four primary influences on a person's self-efficacy; mastery experiences, vicarious experiences, social persuasions, and physiological reactions.

I believe, that each of the five students I have written about had different experiences in nurturing their own self-efficacy throughout the semester. For example, Jillian and Macey were highly influenced by mastery experiences. I saw each of them develop more and more confidence after each success they experienced. Both Jillian and Macey were able to use their experiences to develop and execute plans to deal with each new challenge they were faced with. Throughout the semester I believe that both Jillian and Macey's growth were highly influenced with the opportunities they had to do well and feel successful in math.

From my perspective Ethan was also influenced by mastery experiences, but I feel that he was more reliant on social persuasions. He was reliant on outside motivation to feel confident enough to tackle difficult tasks and relied heavily on feedback from others to make him feel proud of what he had accomplished. In my opinion, Ethan still has room to develop his sense of self-efficacy in math. If he continues to work hard and have success with math, I feel that his own pride in his work will lead him to feel more confident, rather than needing to rely on outside sources for encouragement.

For both Brittany and Joshua, I tried to use social persuasion to encourage them to be more confident in themselves. The result was slightly different for each of them. For Brittany, I believe, the tremendous gaps she had in her math learning lead to a mismatch between what I was encouraging her to do and what she was actually able to do. As Urdan and Pajares (2006) warn this mismatch can be highly detrimental to a student moving forward. If I encouraged her to do a certain task but she in fact could not complete it at that time, then my encouragement could not be perceived as valid and therefore would lose its effect. From my perspective, Joshua

was unable to overcome negative physiological reactions throughout the semester. Although he had some successful experiences, they were not enough for him to overcome his extremely low confidence and the feelings that accompanied it. Unfortunately his lack of confidence made it hard for him to face the difficulty he encountered in completing tasks. I feel that Joshua needs much more exposure to positive affirmations and even more opportunities to feel success in order to build his feelings of positive self-efficacy.

Mindset

In chapter two, I explored Dweck's (2000) work on fixed and malleable intelligence and it was my goal to encourage my students to develop a malleable intelligence mindset; in other words I wanted them to know that they were capable of growing and developing their intelligence. Students who believe that their intelligence is malleable are more likely to put in more effort, feel more confident, and feel higher levels of self-esteem (Dueck, 2000). Their mindset can also determine the types of goals they set for themselves and their desire to learn and grow as students. In my classroom, I aim to develop an environment based on the notions of growth mindset. I try to praise my students regularly, teach in a way that encourages students to see connections, and reinforce to students that there are many ways to get to the same solution to a problem.

What must be acknowledged is the difficulty in measuring mindset. It is difficult as an outsider to get inside the mind of another to determine their thought processes. However, over the course of the semester I attempted to understand my students' mindsets by examining their willingness to take risks, their ability to deal with challenges they encountered, and their eagerness to learn new things.

I would argue that for Macey growth mindset was a key in her success this semester. Of all of my students I saw the most change in her mindset. In the first semester when she took the class with me she was unwilling to try many tasks. She seemed set in a mindset that she was not able to do math, and was therefore unwilling to give it a chance. In the second semester I worried about how she would go about overcoming the struggles she had faced in the first semester. While the progress was slow, she did eventually begin to see that she was capable of growing and learning. She began demonstrating a willingness to try things and take risks. I saw changes in her that pointed to a shift in her mindset. Obviously this growth mindset was echoed in the development of her confidence and feelings of self-efficacy. Her transition from a student who would not come into the class during the first semester, to a student who attended regularly and consistently put in an effort to learn was a great transformation to be a part of.

Jillian and Ethan also demonstrated shifts in their mindsets, but I did not feel that theirs were quite as central to their growth over the semester. For example, from my perspective I felt that Jillian began the semester with some feelings of being capable of growth and learning. The possibilities of changing and growing as a learner seemed real to her, she simply needed to have positive experiences to reinforce those feelings. Ethan also began to develop a growth oriented mindset, but as I have mentioned his was more influenced by the encouragement of others. In my opinion Ethan requires more successful experiences to be able to internalize the feelings that he is capable of growth and learning on his own, instead of relying on outside sources to tell him that he is capable.

At the beginning of the semester I would have argued that Joshua did in fact show early signs of feeling as though he was a learner who was capable of growth. Unfortunately his mindset seemed to change as the semester progressed. I would argue that the biggest obstacle

Joshua faced was a lack of self-confidence. I attempted to boost his self-confidence by praising his efforts and celebrating his successes. Unfortunately, he did not seem to be able to internalize those feelings. I feel that he was not able to see the value in learning, use his errors as learning opportunities, or enjoy challenges and the effort they required because he felt overwhelmed by the tasks at hand. He seemed to understand what was required of him to earn his credit in the course and was not willing to accept any adaptations to these requirements as I tried to support him. His unwillingness to participate in credit recovery was clear evidence of this. He felt he needed to redo the course, a decision that I supported.

Brittany seemed to have a fixed mindset from the beginning of the semester. From my perspective, her mindset was what stopped her from being willing to try things out. She refused to engage in learning and I feel it was because she did not think she was capable. Instead of seeing mistakes as opportunities for learning, I feel that Brittany saw them as failures. By the end of the semester, when she would complete small tasks, it was evident that she only felt comfortable doing questions that were the same as questions I had modeled for her. Of all of the five students, Brittany had the lowest levels of confidence and self-efficacy and I believe that can largely be attributed to her fixed mindset. I hope for Brittany that she can overcome this mindset, begin to see that she is a capable learner, and learn to accept the supports that are around her.

Habits of Mind

I chose to examine two theories related to habits of mind in chapter two. The first was Costa and Kallick's (2008) habits of mind which focuses on mental habits that are needed for people to lead productive and fulfilling lives. They acknowledge the dynamic nature of intelligence, noting that it is composed of many composite skills, aptitudes, cues, past experiences, and tendencies. Cuoco, Goldenberg, and Mark (1996) take these ideas of habits of

mind and apply them more directly to mathematical thinking. They outline particular inclinations that can lead to students finding success in mathematics. In their work the authors stress the importance of students having chances to create, invent, conjecture, and experiment.

Throughout the semester I attempted to encourage my students to develop these habits of mind. Despite this, I feel this area was the one where I made the least amount of progress. While Jillian, Ethan, and Macey made progress in areas related to persistence, accuracy, and remaining open to continuous learning, some of Costa and Kallick's (2008) key habits of mind, I struggled to get them to think creatively and question the things they were doing. Unfortunately, like most of my students, the three of them relied heavily on process and procedure when approaching mathematics. I would argue that some of this stemmed from gaps in their understanding of basic math concepts as well as inexperience working with math on a conceptual level. It seemed evident to me that they saw math as facts and steps to be memorized. It seemed as though their lack of seeing the bigger picture involved in working with math, as well as their lack of opportunity to work with math in a larger context, caused them to work on the procedural level.

Throughout the semester I also attempted to encourage students to look for patterns, describe their thinking, visualize concepts we were working with, and conjecture about solutions through experimentation. One unit that I feel many students had success in this regard was our measurement unit. I can remember Jillian and Ethan specifically digging into the notions of powers of ten when converting metric measurements. They both enjoyed working with the patterns of ten that emerge when you go from one unit to another. They began to notice the patterns of how to move decimals over to the left or to the right and how many spots you would move the decimal depending on what unit you were converting to and from. Brittany also had some success with looking at patterns when she was working with trigonometry near the end of

the semester. She began to notice the pattern of how to use opposite operations to isolate a variable.

As a teacher, I am continually working on improving my students' abilities to communicate about the mathematics they are learning. It is so easy for students to develop the idea that math is something that is simply written in numbers and symbols. It is a challenge for me as a teacher to get them out of this mindset and show them that there is more to math than just the symbols and numbers we write on paper. Another area that I am continuing to develop with students in their willingness to try new things. Many of my students this semester, and in fact in most classes that I have taught, want to be shown a procedure that they can duplicate. They hesitate to try their own methods and come up with an alternate solution to a problem. I feel that no matter how much I encourage them to come up with their own methods, they struggle to accept the challenge.

Overall, I feel that the five students I have described in this chapter have served as good representatives of the diverse group of students that made up my Essentials class this semester. Each of them had a different journey over the course of the five months in the course with me. In many ways they represent the lessons I learned over the course of the semester. Each of them has served to remind me of the priorities I have for my students and my classroom. They allow me to reflect fondly on the successes we had over the semester, as well as the places where I can still seek to make improvements to my practice.

CHAPTER SIX

The goal of this chapter is to re-examine the story of the semester using the tools of self-study, narrative inquiry, and autobiographical narrative.

I have chosen to outline this chapter based narrative fragments (Clandinin & Connelly, 2000). These fragments have served to help me as a researcher to imagine possibilities through the re-telling and re-living of my story, and to acknowledge the influence of the temporality of the story and the context in which it was lived.

In using Bullough and Pinnegar's (2001) guidelines for autobiographical narrative, I have chosen fragments that I feel are most meaningful to myself as the narrator of this story, and those that will hopefully ring true for the readers of this work. The narratives I have chosen to focus my attention on are those related to my transition to an independent learning model, my struggle with demonstrating authentic and effective care, and my attempts to determine my students' needs. These narratives represent the elements that I believe make my story a story worth telling. They also center themselves on nodal moments from throughout the semester. In the sections below I will describe each narrative, outline the related narrative fragments and nodal moments that are significant to it, and then attempt to connect these narratives and moments in a manner that allows me to respond to my initial research question and think about my positioning as a teacher of Essentials math.

In acknowledging the key elements of self-study (Samaras, 2002; Samaras & Freese, 2006), I have taken an honest stance in exploring how my assumptions and biases, as well as the social and cultural context which surround me have impacted the story I lived.

Transitioning to an Independent Learning Model

In Chapter 4, I expressed on numerous occasions my hesitation to move to an independent model of learning with my students. I was teaching using a traditional approach where my students had unit booklets. At the beginning of class, I would work through a lesson with my students explaining concepts, showing them examples, and having conversations about

the topics we were learning. They would copy down the notes and examples into their booklets. They would then work through the practice questions in their booklet while I circulated to help as needed. In the independent model, I provided students with booklets that had explanations and examples filled in, they would read them, and then work through the practice questions in their booklets while I circulated to help. All students would work at their own pace as they navigated the topics to be covered.

In Chapter 5, I spoke about how this transition to an independent model impacted my students. While for students like Jillian the change had a positive impact, for some, like Joshua, the transition was not as easy. Upon changing my teaching approach I saw a decrease in Joshua's attendance which I attributed, at least in part, to the change in class structure.

Narrative Fragments: Independent Learning

"Teaching and learning are journeys." As I spoke about in Chapter 2, I believe it is appropriate to think of teaching and learning as analogous to travelling and growth. It is about the teacher leading, guiding, encouraging, and nurturing students. I believe that the content is the landscape to be explored and while the teacher is the one who can serve as a tour guide, the students should be at the center of their own exploration. Along this journey, I believe that students grow and mature, as influenced by the experiences they have. They develop knowledge and skills that contribute to their growth as people.

In thinking about what it would mean to transition to an independent model, I feared that my less formal role as guide would cause my students to wander off and get lost. I assumed that without me leading them each day they could not make a productive trip. I knew that some of my students would be okay because they had the skills necessary to deal with the challenges they

would encounter along their journey, but I worried about those who I did not feel were equipped to go out on their own.

"Good teaching requires collaborative models." Just as Costa (2008) expresses the importance of being able to think interdependently, I believe that allowing students opportunities to discuss topics, debate ideas and work together is central to quality teaching. In my opinion, these opportunities allow curricular content to come to life. I do not believe that a classroom should be a place where students come to sit on their own and work in isolation from others. I assumed that by implementing an independent model I would have to sacrifice, what I believed to be, high-quality teaching practices.

"Independent learning models do not allow collaboration." When I thought about what an independent model would look like in my classroom I pictured my students sitting on their own, working through booklets, and having little interaction with each other. I worried it would isolate students and eliminate the possibilities for us to have rich, meaningful conversations as a whole group. In earlier units when learning about earning income, students had engaged in great classroom conversations about different types of wages, overtime pay, and deductions. I assumed that the opportunities for these kinds of conversations would diminish, or perhaps even disappear, given that students would be working on their own and likely be on different units at different times. These assumptions halted my willingness to move forward with the new structure early on.

"Independent learning models leave students feeling abandoned." In considering the implementation of an independent model, I worried that my students would feel abandoned. I believe these concerns stemmed from feelings I had when I was a student. I can remember a particular math teacher I had in high school who would often times hand out assignments

without doing any formal teaching. He would sometimes leave notes on the board or include some examples on the page for us to look at, but ultimately he spent little time teaching the class as a whole. His pedagogical decisions often left me feeling that he did not care about my learning. Often times I felt that I was on my own to try to figure out the topics. Given what I believed to be true about him based on his teaching methods, I did not find it easy to approach him to ask for help.

As a teacher, I never want to cause my students to feel this way. By not being at the front of the room and directly involved in their learning, for at least a part of the class, I assumed my students would feel like I was disengaged from teaching them. The traditional teaching model is what most of them likely experienced in previous school years and I believed that the adjustment to an independent model would cause them to feel abandoned. I was concerned that they may misinterpret my lack of "in the front of the room" instruction as a lack of caring about their learning. I worried that even if I expressed a willingness to support them when they needed help they would feel there was a discrepancy between my pedagogical decisions and their expectations of me as their teacher.

"Linear sequences of lessons lead to more opportunities for success." I believe my students need opportunities to gain confidence through incremental, linear processes. Especially for topics like trigonometry, I feel that students learn best when they can learn in chunks. For example, I believe it is best practice to teach students about trigonometric ratios by first teaching them how to solve for a missing side and then once they have gained experience and confidence, move on to teaching them how to solve for a missing side.

I believe my bias for teaching and learning in this way stems from how I felt most comfortable learning math when I was a student. In school I enjoyed learning rules and then

applying them over and over again. I preferred to learn the rules first and then fill in my conceptual understanding later. For example, I was much more comfortable tackling an open ended problem once I had learned a strategy or rule that could help me in solving it. In my teaching, I assumed that many of my students would feel the same way as I did as a student.

By teaching in a traditional manner I felt that I had control over when and how I exposed my students to various chunks of the course material. I hoped that by leading them through each topic as I felt they were ready to move forward I was setting them up to have more opportunities for success.

Re-Positioning

Despite my worries and concerns, I decided part way through the semester to move to an independent structure. While I was nervous about the transition, I decided it was necessary for a number of reasons. First, because of the attendance concerns I had throughout the semester, I had previously spent a great deal of time trying to figure out what lessons students had missed and get them any work they had not done yet. Now, because the booklets were set up in a linear manner with all resources and work included, I had more time to work with students one-on-one and in small groups.

The transition to an independent structure also allowed for more opportunities for my students to have mastery experiences, one of Bandura's (1995) sources of self-efficacy. What I came to notice was that by allowing students to work at their own pace, they were able to work in individualized small well-defined steps, that allowed them to move linearly through material, and offered me more opportunities to give them feedback. Students would work through each lesson and hand-in any work they did at the end of class. I would then provide them with feedback, either written, verbal or both, the next day and then they would continue working from

where they had left off. These opportunities to feel successful were important in helping my students' sense of self-efficacy grow.

What I also discovered was that collaboration and group thinking were not impossible to accomplish within the model. In Chapter 4, I spoke about an instance where some of my students began working together and having good conversations around the math they were working on. While these occasions for conversation happened less frequently on a whole group level than at the beginning of the year, this instance gave me hope that perhaps within an independent model I could still encourage group collaboration and meaningful discussions.

Finally, I noticed the use of an independent structure was not as inconsistent with the idea of a travelling and growth metaphor as I had once believed (Fox, 1983). While some students did in fact metaphorically wander off and get lost, these students had also been lost when I was using a traditional approach with the class. It was not my pedagogical decisions that had caused them to wander, in fact what seemed to matter more was their own readiness to go on the journey.

What mattered in terms of my positioning as a teacher was a willingness to acknowledge that new pedagogical ideas could serve to accomplish the goals that I had. While I felt hesitant early on to make different pedagogical decisions than I was used to, I came to realize that the ideas I had in my head for helping my students grow and develop as learners could be accomplished via different means than I had initially thought.

Demonstrating Care

Throughout Chapter 4, I wrote about the dilemmas I faced with regards to how to best care for my students. For example, was I caring more about my students by allowing them to arrive late for class without feeling like I was going to lock them out, or was I demonstrating more care by closing the door and setting an expectation for them to be on time. Further, was I

showing care by offering help to the student who had missed the entire first half of the semester by trying to be understanding of the circumstances that may have caused her absences, or was it more caring to again set an expectation that once a certain amount of class time has been missed the credit is irrecoverable. I also thought a lot about how each of my students seemed to have different needs. The ways in which I demonstrated care for some, were not effective for others. These dilemmas of care occurred frequently throughout the semester and caused me to feel a great deal of tension in hoping I was making the right decisions.

Narratives Fragments: Care

"I'm not being a good teacher if I give up on my students." As a teacher I have always put my students at the forefront of my practice. I believe it is my role to nurture their growth and support their development as both math learners and as young people. I have always acknowledged the importance student-teacher relationships have in developing meaningful interactions within the classroom and greater school community. Throughout the semester, I saw the positive impact that having an ongoing relationship with students could have on their success. For Jillian and Ethan, for example, I would argue that the relationship I had previously built with them starting when they were in Grade 7 was instrumental in the success they had in Grade 10.

When I think about the teachers who have inspired me to become a teacher myself, the key characteristic I think of is their dedication to their students. Despite the challenges of dealing with students who can be difficult or unmotivated, they do not give up on wanting to help them grow and learn. This is the kind of teacher I have always strived to be because I believe it is the kind of teacher that my students need. They need someone who is there for them to support them through the challenges that often come with learning, growing, and developing into young adults.

My belief in the importance of not giving up on my students also rests on my assumption that all students want a teacher who they can count on for support. It also rests on the assumption that my students are willing and ready to learn and grow.

"I must acknowledge my students socio-economic, social-emotional, and academic needs." While I have always been guided by the notion that being a good teacher means caring about my students, it has become even more important given the context that I teach in. I teach in a school that is located in a neighbourhood where most families have a low socio-economic status and we have many at-risk students. A lot of our students have lived through many hardships related to family circumstances, struggles with drugs and alcohol and/or their effects, and poverty.

As a teacher in this school I acknowledge the importance of being someone my students can count on. For many of these students, their school and the people in it play an integral role in providing routine, structure, and consistency. At the same time, I also realize that for many of my students school may not be at the top of their priority list. As Noddings (2013) notes, it is imperative in my job that I empathize with my students and truly try to develop a sense of what they may be feeling. I must try to understand the obstacles that may be in their way, and ultimately help them overcome these obstacles.

Getting to know my students and gaining an understanding of their lives and the potential obstacles in their way is a priority in my teaching. I try to be the kind of teacher who my students know they can count on. My door, both literally and figuratively, is always open for them. Given the effort I put forth in trying to understand my students' needs, I feel frustration if I am unable to do so. There often seem to be students who I simply cannot reach, these are the ones who

motivate me the most to figure out what tools I may need to use in order to be able to support them.

The importance I placed on developing a caring classroom also stems from what I knew about where my Grade 10 Essentials students had come from academically. In my experience students who end up in Essentials Math are generally students who have not had a lot of success in their past math classes. They have ended up in a position where as soon as they can choose which math class to take, they choose Essentials, the class that many of them call the "easier" one.

Many of my students were victims of a system that left them confused about what it meant to work with numbers and to have the tenacity to work out problems. In my experience working in my school division I have seen how teachers have been continually pulled in many directions, asked to follow various directives, and try many different programs when it comes to how the math curriculum is taught. Unfortunately it seems that each year there is something new that teachers are expected to try. The tension between the idea of teaching math as rote practice and memorization versus teaching with a focus on conceptual understanding and problem solving has been significant. Unfortunately, I think that this shifting of the pendulum has left many teachers and subsequently their students feeling overwhelmed, confused, and anxious about math. Furthermore, I think that many of my students were pushed through from grade to grade without ensuring that they had core mathematical competencies. **"I don't want to make my students feel poorly about themselves."** Because of the issues outlined above, a large number of my students arrive in Grade 10 with math and school related struggles. They have not necessarily had positive experiences in the past and therefore face struggles academically, socially, and emotionally. Despite this, I never want my students to feel poorly about themselves

as students or as people. As Bandura (1995) explains it is these feelings about oneself that can have negative effects on their sense possibility, their motivations, and their willingness to be persistent in the face of obstacles. Furthermore, I strive to nurture my students' sense of hope and possibility regarding their own potential and help them to develop a mindset that is growth based (Dweck, 2000).

Re-Positioning

I have always been a teacher who emphasizes the notions of care and compassion in my classroom (Noddings, 2013). What I came to realize this semester is that care and compassion can look different in different instances. It became evident to me that sometimes I can demonstrate care, for example, by setting higher expectations for my students.

Prior to this journey I had an idea in my mind of two kinds of classrooms; one where the teacher was strict, inflexible, and set high standards for their students and another where the teacher was caring, compassionate, and showed empathy for the obstacles that students may face. I thought of these as two distinct environments. What became evident upon thinking about my journey with my students is that there is a great deal of middle ground between these two extremes. It is, for example, possible to create a classroom environment where I have rules and expectations, while at the same time working to nurture students' development through an ethic of care. At the beginning of the semester, I laid out classroom guidelines with my class. These guidelines focused on creating a classroom where there was mutual respect between my students and myself. I outlined my expectations under the premise of a two-way street, letting students know that I could support them but that they played a key role in their own success as well. What I have learned is that I need to continue to work on setting, maintaining, and enforcing these expectations of students. For example, if I want to encourage students to have respect for

themselves then I should be setting a standard that they arrive on time and prepared. If I do not, I am not teaching them to value their own potential.

It has become evident to me that I need to position myself as the leader of a learning environment where students are held responsible for their own success while knowing that I am there to support them along the way. I must be a leader in my own classroom and help my students understand that they need to be accountable for themselves. I must make it evident to my students that there are certain rights that they have as learners, but that there are also responsibilities that come with participating in effective learning experiences. Mutual respect and understanding need to be at the center of the classroom environment.

In the narrative fragment above, I expressed my desire to never make my students feel poorly about themselves, and I maintain this stance. What I have come to realize is that there can be value in students feeling poorly about the decisions they may make. If I hope to help them flourish then it is imperative that I allow them grow and realize the opportunities for learning that surround them while recognizing that there can be both positive and negative consequences for their decisions.

I have also come to realize that not all students are in a position to accept my care. I have come to understand that while I can offer support and guidance, there comes a point where the student must be ready and willing to accept it. If they are not in that place, then I must acknowledge that my care may not make a difference. As Noddings (2013) describes this does not "signify negligence on my part. There are limits in caring…there may be no way for my caring to reach him" (p. 68). For Noddings this signifies that the caring relationship is only partially actualized. For example, when I think of my students who had poor attendance throughout the semester, I realize that for many of them learning and developing as a math

student was not a priority. They were not in a position to accept what was being offered to them. This realization does not mean that I will give up on a student if they are not accepting my support, it just means that I have to understand that I can only do so much.

Determining Students' Needs

Throughout the semester, I continually wondered what my students needed from me pedagogically, as well as emotionally. I encountered ongoing frustration with the significant number of lates and absences I had in class each day. I felt particularly discouraged by students who were absent regularly as I did not even have a chance to get to know what they needed from me as I would hardly ever see them. I was more easily able to determine the needs of students like Jillian, Ethan, and Macey and was therefore able to make more significant progress. But for some, like Joshua and Brittany, determining these needs was much more difficult. As much as I attempted to reach them and support them, I feel I was unsuccessful at helping them grow.

Narrative Fragments: Students' Needs

"My students are puzzles. As I find more pieces, I can better support them." I envision each of my students as puzzles, each of them being comprised of many different pieces all combining to create their totality. These pieces represent all facets of their social-emotional needs, their academic needs, and the many other elements that come together to form whom they are in the here and now. As the semester progresses, not only do I gather more pieces of each of their puzzles but I also frequently develop new outlooks on how the pieces come together to form what I know about each student. I believe that as time goes on not only does my picture of each of them become more complete, but I also hope that the pieces of their puzzle evolve as they do.

Upon the start of a new semester, it is always exciting for me to find out that I will be teaching students for a second time as I feel I am getting a head start on putting their puzzles together. During this semester my history with some students, like Jillian and Ethan, seemed to be highly beneficial, allowing me to pick up where I had left off when I taught them in Grade 7. However for some of my students, like Joshua and Brittany, our history did not seem to be much help. Furthermore, for some students, like Macey, I was able to gather and put together the pieces more quickly, so much so that my lack of knowing them in the past did not seem to interfere with the progress they were able to make while in my class.

"With the right tools, I can help my students grow." At the outset of this journey, I chose to focus my attention on developing my students' self-efficacy, growth mindset, and habits of mind, as I believed these were the areas where they would need support. I assumed that my students would not feel confident about their math abilities and that they would have fixed mindsets about their potential to learn and grow. I believed that by focusing my attention on developing their habits of mind and using math as the vehicle to do so, I could encourage them to see that their math experiences could be different from what they may have experienced in the past.

Fortunately, for some of my students some of these tools were the right fit. As I speak of in Chapter 5, Jillian, Macey, and Ethan benefitted greatly from my focus on nurturing their self-efficacy and growth mindsets through an ethic of care. Unfortunately, for Brittany and Joshua none of the tools seemed to be the right fit. For both of these students the picture seemed much more complex and I was not able to make as much progress in helping them grow and flourish into confident and productive math learners.

"If my students come to class, I can support them." Throughout the semester the severity of the attendance issues in my class became a significant concern, and despite phone calls and outreach from both myself and many other supports at my school, for some students the issue simply could not be resolved. As shared in Chapter 4, I frequently found myself wishing they "would at least come" so that I could have a chance to help them.

Unfortunately, for Joshua and Brittany my assumption about being able to help them, at least when they were in attendance, was not true. While each of them struggled with maintaining regular attendance throughout the semester, they did attend regularly for different periods of time. During those times, I was not able to reach them and make a significant difference on their outlook towards math and their potential to learn. It did not seem to matter how much I tried to determine and meet their needs, I was not able to help them have significant growth.

Re-Positioning

Prior to the semester and while planning for my research, I believed that my Essentials Math students' needs would be linked to some kind of fear or hate for math specifically. What became evident to me was that while this was true for some of them, many of the problems my students were having related to engagement and motivation were not specifically "math problems". Instead the problems were much broader in context than I had initially assumed. What therefore became evident is that self-efficacy, growth mindset and habits of mind were inadequate as frameworks for me to use in determining how to nurture my students' growth as learners. For some students it seemed that one semester was not long enough to effectively develop their sense of self-efficacy and these mindsets. For others it seemed that there were more substantial obstacles that overshadowed my ability to nurture their confidence and willingness to even come to school. Furthermore, there were significant school-wide contextual issues, for

example a lack of policy and consequence, to support my efforts in developing students who could see themselves as playing a key role in guiding their own educational journey.

One of the biggest faulty assumptions I made leading up to and throughout the semester was that I would be able to reach each and every student in my class. While I think it is common for many teachers to believe they will be able to do this, I have become much more aware of the naivety of this belief. In my case, I found that for some students they were simply not in a position where they were open to growth and learning. For these students simply getting to class and engaging when they were present, was not a feat they were prepared to take on. While I do not believe this is reason to quit trying to offer support, it became evident to me that I could not fault my efforts. I could not feel bad that I was not making an impact on each student. Instead I had to accept that I put in my best effort to help but that at a certain point the student also had a role to play in their own growth.

In initially reading and thinking about Noddings (2013) ideas on care I had targeted my attention on what she said about what it looks like for a teacher to care. Upon thinking about my experiences and revisiting her work it is now more evident to me that Noddings does in fact state that students have a key role to play in the development of a caring relationship. Given this, it is clear that at times there may in fact be no way for my care to reach my students, as they may not be ready to engage in this kind of shared relationship.

When I think about what this means for my positioning as a teacher, I am reminded of the complexity of the task I take on each day in my career. My students' needs are so diverse, intricate, and ever-changing that I must be open to trying to put together many different kinds of puzzles, including ones with missing pieces. I must also acknowledge that it can be difficult to assemble puzzles when the surface I am working on is not supporting my efforts and push for

change so that I may be more successful in my attempts. And finally I must be patient and accept that some puzzles are not yet ready to be assembled.

Being a Teacher-Researcher

At many times throughout the semester I worried about the integrity, purpose, and direction of my research. While I had entered the semester with an idea in mind of the tools and strategies I was going to use with my students, I often found myself needing to decide if I was going to move forward with certain pedagogical decisions, for example interactive writing, because they were a part of my research plan, or if I was going to abandon them because they were not serving the needs of my teaching. At many times, I felt as though my teacher needs were taking precedent over the plans I had made for my research and that the narrative of "teacher first, researcher second" was frequently in play. Given this I was initially going to include this among the series of narratives included in this chapter.

Upon further reflection, I have come to realize that in fact my two selves are not as distinct as I had once imagined and that in truth my researcher-self has played a significant role in my thinking about how this journey has impacted my repositioning as a teacher of Essentials Math, and in fact as a teacher in general.

Without the research process, and subsequently my role as a researcher, I would never have been challenged to use self-study tools to acknowledge and question my assumptions, biases, and decisions. Furthermore, the process of using narrative inquiry and autobiographical narrative to write about narrative fragments and consider how they have caused me to reposition myself as a teacher has caused me to think and reflect at a level beyond what I would normally do before, during and after a semester.

By taking the time to journal throughout the semester, I was able to step away from my practice and think about my experiences and the possibilities ahead. In then re-telling my story first as a chronicle in Chapter 4 and then as a story of individual students in Chapter 5, I was able to think about what it meant for me to move through a semester with my students. In the re-telling of the story in these chapters, I was able to notice connections, nuances, and themes that enabled me to begin addressing my research question. Moving from Chapter 4 and 5 into Chapter 6 allowed me to think critically and deeply about the meaning of the story I had told. It not only caused me to be conscientious and purposeful in examining my own practice (Hamilton & Pinnegar, 2005), but also to think about how I could share a fresh perspective on my journey that would resonate with other educators (Bullough & Pinnegar, 2001).

What I have been reminded of is that I as a teacher always want to position myself as someone who strives to improve in my practice. I want to be a teacher who makes sound pedagogical decisions, demonstrates care and compassion, and who strives to understand and support the needs of my students. My role as a researcher has not only made me acutely aware of these goals, but has also allowed me to think about how my positioning can help me achieve them.

As a researcher I have come to understand the true value that self-study and narrative inquiry can offer. I realize now that the process of re-visiting and re-telling my own story of the semester has allowed me to unveil the multi-layered nature of the experiences I engaged in. Each time I revisit this story I uncover more and more layers that I could continue to delve deeper into. The number of different approaches and outlooks that are still available to be unpacked are endless. If I were to use Bullough and Pinnegar's (2001) guidelines for autobiographical narrative again, I see that there are still many honest, insightful, and new perspectives to offer.

As a researcher, this has resulted in me developing a stance as someone who can continue to use the experiences I lived as launching points for further thinking and learning.

CHAPTER SEVEN

Throughout the semester I went on a journey both as a teacher, and as a researcher. Living between these two worlds was both insightful yet daunting and exciting yet frustrating.

At the beginning of this project I wondered how I could reposition myself to nurture my students' willingness to give themselves a chance. What I discovered was the need to develop my role as the leader of a learning environment where I balance a caring approach with a high level of expectation for my students. I also discovered that at times my positioning needs to be dynamic. First, I need to be open to making different pedagogical decisions than I am used to and secondly, I need to recognize how varied my students' individualized needs are. What I have come to conclude, is that it is this kind of dynamic positioning which will enable me to move forward as a teacher who constantly strives to improve my practice while responding to the needs of my students, the classroom environment and myself.

While I chose to include growth mindset and habits of mind as frameworks in this study, self-efficacy seems to offer a perspective that most readily fits with my efforts to understand my students. It also offers a perspective that seems more dynamic, compared to the more dichotomous sense that growth mindset offers. As well self-efficacy is more appropriate for my students as a first step towards the deeper levels of engagement and thinking nuanced in the ideas of habits of mind.

While I am not currently teaching the Grade 10 Essentials course, my journey is continuing through various avenues. For example, I am using my experiences to better my teaching of my Grade 9 Math class. Also, I have been working with the math team at my school

to create alternative options and better programming ideas for the Essentials math courses. I have also been thinking a lot about what it may look like if I were to teach the Grade 10 Essentials course again.

Grade 9 Mathematics Course

I currently teach a Grade 9 "low enrolment" class. This class is made up of 17 students who are believed to benefit from a smaller group setting because of academic difficulties and personal struggles. Some of them have missed large periods of schooling throughout elementary and junior high school, some of them have dealt with difficult family situations, and some of them are facing challenges related to attention and anxiety. The reality is that most of them will end up taking Grade 10 Essentials mathematics next school year. Because of what I learned in working with students in Essentials, I have made it my goal to ease my students' transition out of Grade 9 and into Grade 10. For my students in particular the transition is frequently difficult. This group of students have, for the most part, been in a class together since Grade 7. They have been part of a small group of students and have always had at least one Educational Assistant in the class with them for support. When these students move into Grade 10 they will join the larger student body and be a part of regular classes. Given this dynamic it is important that I prepare my students in a number of ways for this transition.

Academically, many of my students have large gaps in their math understanding, this is the primary reason that many of them have been placed in the "low enrolment" class. Throughout their Grade 9 year these students are expected to complete regular Grade 9 curriculum. Unfortunately, most of them are not ready for it. Many of my students have moved from one grade to the next without necessarily having mastered the skills they should have. They have also been exposed to many different styles of learning math and seem overwhelmed with

the number of potential strategies to use when adding, subtracting, and multiplying. In fact, many of them have now entered Grade 9 and still count on their fingers to compute basic operations.

Given the academic challenges that my students face, it is not surprising that their confidence is low. I see three trends with the students in my class. I have a large majority who want constant direction. They feel they need someone to sit beside them and walk them through each step of any problem they are trying to solve. These students lack the confidence and willingness to take chance and try things out. They want to know for sure that it is 100% correct before they are willing to write anything down. I have another group of students who simply shut down. They refuse to try anything. They are disruptive and off-task for large amounts of class time. In my opinion, they believe it is easier to be defiant than to admit they do not know what to do. Finally, I have a small number of students who will try to work things out on their own but have weak skills which cause them to make many errors along the way. It is difficult to meet the needs of all of these groups of students.

Given these needs and my experiences throughout this study, I have maintained a focus on providing my students with opportunities to have positive learning experiences. For example, at the beginning of teaching a new concept I have been spending time allowing them to work on related concepts they already know. By then slowly moving them forward toward the Grade 9 concept I can monitor each of their needs and support or scaffold as needed. I have also spent some time exposing them to some of the Grade 10 Essentials math topics. It is my hope that if they can enter Grade 10 having already seen some the topics they will be learning, they will feel more prepared to deal with the transition.

I have also been maintaining an open mind when it comes to trying new pedagogical ideas and have been less resistant to using increasingly independent models. For example, I have

spent a great deal of time working with students one-on-one in developing strategies that make sense to each of them individually. While I still do some whole class teaching, I have significantly reduced the amount of time I spend at the board leading the class as a whole group and have made an effort to encourage my students to engage in conversations with one another instead of relying on me for help. In the next school year I am planning to develop more individualized resources which will allow my students to be increasingly self-directed in moving their learning forward.

In this study, I recognized the ideas of self-efficacy, growth mindset and habits of mind were not adequate on their own as lens to examine and understand my students positioning as learners. Despite this, I do believe they are important perspectives to help my students develop. For example, in the year following this research I used Dweck's (2000) ideas of growth mindset as a vehicle to help my students develop their own sense of possibility as learners. At the beginning of the year we created a bulletin board outlining the difference between growth and fixed mindset. The board had examples of how someone with each mindset could look at certain situations and what they may say; for example "this is too hard" vs "this may take some time and effort". I made a point of referencing these ideas regularly with my students. I believe that this kind of self-talk can greatly contribute to my students' confidence, and therefore allow them to feel that they are capable learners.

I have also been working on determining what it looks like to find balance between caring and expectation. I have been making efforts to put more onus on my students while ensuring they understand that they are supported. Operating my classroom as a learning environment where my students have rights, but also have responsibilities has allowed them to

understand that there are can be both positive and negative consequences for their actions and decisions.

Finally, while just as not all of my Grade 10 students were in a position to accept my care, I have come to accept that not all of my Grade 9 students will be open to my support. For many of my Grade 9 students, the transition to high school is difficult. They are at a point in their lives where they are in the midst of many changes. While I can position myself as a person who is there to support them I have come to understand that sometimes my support may not be enough. While this does not mean that I will give up on a student, it does mean that I must acknowledge the limits of my own abilities and move forward acknowledging that sometimes there is only so much I can do.

Re-Structuring Essentials Mathematics

As a mathematics department at my school we have also been making specific efforts in an attempt to remedy some of the problems that seem to be recurring for our Essentials classes. Our first goal was to reduce class sizes. As made evident in this study, many of the students who take Essentials mathematics tend to struggle in math and face obstacles that keep them out of school. In order to be able to better support them, as well as make them feel more comfortable in class, we recognized a need to reduce the size of the classes. During the time of this study, we were able to do so by putting together a proposal to redirect funds and add another part time math teacher. This allowed us to offer an extra section of Grade 10 Essentials in each semester which reduced the class sizes to between 20-25 students instead of the 30-40 students we had in each section previously.

Further to this we have also been working on a proposal to offer a new section of Essentials that operates on a more individualistic model, similar to the model I implemented

mid-way through the semester of this study. In this section students would work on modules at their own pace with a teacher there to support them. While I struggled with whether or not to implement this kind of model with my students, I have come to understand that it can be beneficial. Our proposal, therefore, is to create a section for students who are capable and needing flexibility in the pacing of the course. It would allow students to take more than one semester to complete the course and would allow them to write their exam at varied times throughout the year. The goal for this course is to offer a more flexible option for students who miss school for reasons outside of their control, as well as for students who struggle with the anxiety of being in a regular class. We will be doing a small trial of this kind of model in the upcoming semester. Given some of the benefits I saw in using this kind of model, we are hopeful it will prove to be successful and allow us to move forward on a larger scale to include Grade 11 Essentials mathematics.

Teaching Grade 10 Essentials Math

In finishing up this project I have also been asked many times about what I would do differently if I were to teach Grade 10 Essentials again. The best response I can offer is that I would need to be responsive to the needs of my students. For example, if I had a class where attendance was not a significant issue, I would want to try to implement more project and group based learning. However, if I had another class like the one in the study, I think I would need to maintain an independent learning model, as I saw the benefits it could have. I believe I could improve by giving students more choice when it comes to how they meet the required outcomes of the course. I believe this would serve the needs of the diverse types of students who may take the class while also building on the possibilities for collaboration among students that I believe is vital to quality learning.

Further, just as I have been doing with my Grade 9 class, I believe it would be important for me to develop my role as the leader of a learning environment where students are held accountable for their own growth as learners. I would want to ensure that my students understood the key role they need to play in their own education.

In a number of instances throughout Chapter 6 and 7, I have argued that my efforts to nurture my students' self-efficacy, growth mindsets, and habits of mind were not enough to help them overcome the larger-scale contextual issues in their way, in moving forward it is imperative that these big picture concerns are addressed. This self-study has enabled me to see that I can, should, and will advocate for these changes with my colleagues, with my school administration, and within my broader professional community. From my perspective, an effective starting point for redirecting responsibility to students would be an attendance policy for the Grade 10 Essentials course, as well as all other courses at the high school level. While it is important that as a school we continue to support at-risk students through teacher outreach, guidance and resource support, or through placement in alternative programming, I believe it is also important to set an expectation for attendance. If supports have been offered but no changes in behaviours are happening, course withdrawal should be considered. Students need to understand that they have a role to play in their education; allowing them to stay in a course after missing large periods of time is not beneficial to them academically, and also devalues the responsibility required to engage in the process of learning and growing. Nurturing an environment where we as educators serve as leaders who care, empathize, and also have high standards for our students is essential if we hope to allow them to grow as learners who are accountable for their own success.

Final Thoughts

Throughout this journey I often thought about what I had hoped this story would be as compared with what it was becoming. At first, the development of the story frustrated me. I felt like I had failed in solving the problems I was hoping to solve and like I was losing grip of a story that would be one worth telling. I felt that each time I sat down to write about my experiences I was re-opening deep wounds. Wounds I had incurred due to guilt and feelings of failure. It was difficult to move forward and think about sharing a story that would be so different from the one I had initially hoped to tell.

However, at a certain point I came to realize that while this story may not be one that answers all the questions I had about what it meant to position myself as an effective teacher of Grade 10 Essentials math, it did in fact have some significant value. That value, I feel, came in its honesty, a central element of autobiographical narrative (Bullough & Pinnegar, 2001). While it is difficult to put aside pride and face the reality that sometimes we as teachers do not know all the answers and that we cannot always help each and every student who comes through our classroom door, it is the reality of the profession we have chosen. Hence, if we hope to move forward with the intention of improving our practice and opening our minds to new possibilities, we must reflect in a manner that is authentic, another of Bullough and Pinnegar's guidelines. It is important that we are able to look in the mirror at our own practice and see what is working and what is not. Sometimes this reflection may cause us to feel emotions we do not want to feel. It may cause us to feel frustrated. It may cause us to feel sad. All of these emotions are real and must be acknowledged. Teaching is not an easy job. There are no simple answers. The complex scenarios teachers must encounter and overcome can be challenging. What is most important is a willingness to be open and honest with ourselves and with others in hopes of moving forward. It

is also essential that we find our own voice in advocating for the structures that will enable us to do so.

Just as we expect our students to learn and grow over their time with us, we too must be ready and willing to learn and grow over our time with them.

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APPENDIX A: Proposed Timeline for Data Collection

Tentative Dates	Action	Purpose
February 1	Anticipatory Journal	▪ Anticipate the upcoming semester
Early February	Meet with Critical Friend	▪ Discuss purpose of the study, formulate a plan for classroom visits
February 8-12	Recruitment (to be organized by a colleague, with consent forms kept confidential)	▪ Seek parental permission to use student responses during intensive data gathering periods as part of final data set
February 8-12	Focused Reflective Journal	▪ Reflect upon student responses on the start of year All about Me activity
February – June	Weekly Reflective Journal Writes	▪ Ongoing reflection of happenings in class, thoughts, feelings, ideas for next steps
February – June	Weekly Interactive Writing	▪ Interact with students, build our skills in interactive writing
March 7-11	Intensive Data Gathering Period #1 ▪ Daily Journal Writing ▪ Focused Interactive Writing ▪ Critical Friend Classroom Visit 1	▪ Gather a sequential flow of data for an entire week ▪ Focus interactive writing to have students reflect upon self-efficacy, growth mindset, and habits of mind
May 2-6	Intensive Data Gathering Period #2 ▪ Daily Journal Writing ▪ Focused Interactive Writing ▪ Critical Friend Classroom Visit 2	▪ Gather a sequential flow of data for an entire week ▪ Focus interactive writing to have students reflect upon self-efficacy, growth mindset, and habits of mind
June (upon course completion)	Retrospective Journal	▪ Reflect upon year end All about Me activity ▪ Reflect upon the year as a whole

APPENDIX B: Start of Year Activity

Name: _____

All About Me

My birthday is…

My favourite thing to do in my spare time is…

My favourite movie is…

My favourite food is…

I live with…

Not many people know that I…

My TAG advisor is…

My favourite school subject is…

In the future I would like to…

I would really like to travel to…

One short term goal I have is to…

Name: _____

	☺	UNDECIDED	☹
Math is enjoyable to me.			
Math is not important in everyday life.			
I enjoy solving problems.			
I have never liked mathematics.			
I believe I can learn and grow as a math learner.			
Math makes me feel uneasy and confused.			
I believe I am good at math.			
I am willing to give math a shot, even if I find it hard.			
I just want to get my credit and get out of here.			
I believe I have the tools to deal with challenges I might face.			

Describe a time when you felt successful as a math learner…

What can I do as your teacher to support you this semester?

APPENDIX C: End of Year Activity

Grade 10 Essentials: Year End Assignment

The purpose of this assignment is to have you reflect on the semester. You will be creating a cheat sheet that is intended to help you review the things we have learned so far. You will also be asked to reflect on your progress as a math learner and set goals for yourself moving forward.

This assignment will count towards your term mark. It includes 3 parts:

1. **Cheat Sheet:** Create a summary page of all the topics we have learned about this semester. Include definitions, examples, diagrams, etc. You will be allowed to use this cheat sheet during your final exam so make it something that YOU find useful for remembering the details in this course.

   Criteria:
   - No more than ***one page (double sided)***
   - Neat and organized
   - Needs to include ***all the units*** we have covered: Personal Finance, Trigonometry, Consumer Decisions, Measurement, Angle Construction, and Geometry

2. **Math & Me:** Each of you responded to this survey at the beginning of the semester. Let's see how much your attitude towards math have changed or stayed the same.

   Criteria:
   - Survey is complete
   - Responses are descriptive and well thought out

3. **Work Samples:** Include 2 pieces of work that you have done this semester. These can be whatever pieces of work you would like; good, bad, or ugly.! For each item complete a learning reflection sheet.

   Criteria:
   - Work samples are attached
   - Reflections are descriptive and well thought out

DUE DATE: **WEDNESDAY JUNE 15**

Math & Me

	AGREE	UNDECIDED	DISAGREE
Math is enjoyable to me.	.		
Math is not important in everyday life.			
I enjoy solving problems.			
I have never liked mathematics.			
I believe I can learn and grow as a math learner.			
Math makes me feel uneasy and confused.			
I believe I am good at math.			
I am willing to give math a shot, even if I find it hard.			
I just want to get my credit and get out of here.			
I believe I have the tools to deal with challenges I might face.			

Describe a time when you felt successful as a math learner…

Describe something that you did to help you be successful this semester...

Describe something that your teacher did to support your learning this semester...

Work Sample #1: Reflection

Why have you chosen to include this piece of work as a sample to include?

Name and describe something that makes you proud of this piece of work.

Name and describe something that you could have improved on in this piece of work..

What skills did you learn/practice by completing this piece of work (either math skills or more general skills)?

Work Sample #2: Reflection

Why have you chosen to include this piece of work as a sample to include?

Name and describe something that makes you proud of this piece of work.

Name and describe something that you could have improved on in this piece of work..

What skills did you learn/practice by completing this piece of work (either math skills or more general skills)?

APPENDIX D: Attendance Data

FEBRUARY	Enrollment	Present	Late	Absent
11	28	12	8	8
12	28	10	7	11
16	28	11	9	8
17	28	16	4	8
18	31	11	11	9
19	31	8	13	11
22	32	8	16	8
23	32	11	6	15
24	33	16	5	12
25	33	10	7	16
26	33	12	7	14
29	33	12	5	16

MARCH	Enrollment	Present	Late	Absent
1	33	11	10	12
2	33	9	10	14
3	33	9	8	16
4	33	8	10	15
7	33	10	4	19
8	33	10	12	11
9	33	12	6	15
10	33	10	10	13
11	33	8	7	18
14	33	8	9	16
15	33	11	9	13
16	33	10	8	15
17	33	10	9	14
21	33	9	8	16
22	33	11	4	18
23	33	8	10	15
24	33	6	8	19

APRIL	Enrollment	Present	Late	Absent
4	33	14	6	13
5	33	11	8	14
6	33	7	14	12
7	33	11	8	14
8	33	11	9	13
11	33	7	11	15
12	33	12	7	14
13	33	16	2	15
14	33	8	6	19
15	33	8	7	18
18	33	11	4	18
19	33	12	6	15
20	33	9	4	20
21	33	8	5	20
25	33	6	4	23
26	33	9	4	20
27	33	5	9	19
28	33	10	1	22
29	33	6	6	21

MAY	Enrollment	Present	Late	Absent
2	33	6	7	20
3	33	7	4	22
4	33	7	8	18
5	33			
6	33	5	7	21
10	33			
11	33	7	7	19
12	33	8	5	20
13	33	7	8	18
16	33	4	9	20
17	33	11	3	19
18	33	8	6	19
19	33	6	8	19
20	33	5	4	24
24	33	8	3	22
25	33	6	5	22
26	33	8	4	21
27	33	2	7	24
30	33	6	7	20
31	33	5	8	20

JUNE	Enrollment	Present	Late	Absent
1	33	3	7	23
2	33	4	4	25
3	33	6	12	15
6	32	9	5	18
7	32	10	5	17
8	32	10	4	18
9	32	7	8	17
10	32	5	4	23
13	32	7	4	21
14	32	12	6	14
15	32	2	10	20
16	32	6	9	17