A NARRATIVE INQUIRY INTO CURRICULUM-MAKING EXPERIENCES WITH
GAMES AND PUZZLES IN A MATHEMATICS CLASS

A Thesis Submitted to the College of

Graduate Studies and Research

In Partial Fulfillment of the Requirements

For the Degree of Masters of Education

In the Department of Curriculum Studies

University of Saskatchewan

Saskatoon

by

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ABSTRACT

This thesis is a narrative inquiry into curriculum-making experiences with games and puzzles in a mathematics class. For sixteen weeks I lived alongside a teacher and children in a fifth-grade class exploring what curriculum unfolds when interactive games and puzzles are introduced into a mathematics class. When it came time to write research texts I expected to write about mathematics curriculum unfolding for children when they interact with games and puzzles as I had read about in my literature review. Instead I inquired into two resonating moments in my inquiry using field texts I wrote of my experiences, transcripts from research conversations with children, literature I read, and my own memory constructions. I came to see the decisions I made in my experiences surrounding these resonating moments had what Coles (1989) refers to as stories to tell about my "stories to live by" (Clandinin et al., 1999). I learned I live stories of labeling children and stories of teachers as those who plan and whose plans are followed and that the games and puzzles interrupted the ways I was living these stories in my inquiry. In coming to understand my stories to live by, I realized the children I teach more easily live and tell their stories to live by. I also gained insight into my teacher stories (Clandinin et al., 2006), helping me better understand my experiences in the fifth-grade classroom and myself as a curriculum maker. To continue to become what Greene (1978) refers to as wide-awake to my stories to live by, I learned I must incorporate new experiential contexts for me into my future classrooms and inquire into places of tension (Clandinin, Murphy, Huber, & Murray Orr, 2009) in any resonating moments. Overall my inquiry led me to learn something about each of Schwab's (1973) commonplaces: teacher, learner, milieu, and subject matter. I came to understand curriculum as more than subject matter, but instead that curriculum involves all of Schwab's commonplaces and the interactions between them. This insight into curriculum helped me think about my future practices as a teacher and a professional developer.

ACKNOWLEDGEMENTS

Jeffrey and Emma, my research participants, for sharing with me their stories and experiences while interacting with the games and puzzles. I was thankful for the opportunity to work with them and get to know them better.

Keith Solomon, English Man, for his patience and commitment to help me, Math Girl, become a better writer. In the writing of this thesis I drew on what I learned from Keith many years ago.

Pat Regal, for the weekday care of my young daughters. It was comforting to know my girls were happy and cared for during the times I could not be with them while writing this thesis. I am also grateful to Pat for her interest in my work and the time she took at the end of each day to talk with me about my progress and offer words of encouragement.

My extended family and friends, for their interest in my work and their support and encouragement.

My daughters, Kacie and Keeley, for their love and patience while I completed my "book without pictures." It was the smile they brought to my face and the warmth they brought to my heart that pulled me through the challenging times and inspired me to finish what I had started before they were born.

Lastly my husband, Keith Fonstad, for his unconditional love, support, and encouragement. It is all the hard work he does that made a graduate program and the culmination of my graduate experiences, this thesis, possible for me. Thank you, Keith, for the opportunity. Love always.

DEDICATION

To Kacie and Keeley,
My two beautiful daughters,
Who were born during this inquiry.
May this work,
Inspire you to dream big,
And be fearless, work hard and persevere,
To achieve what you dream,
As anything is possible.
Love always.

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CHAPTER 1

COMING TO THE RESEARCH

First Thinking More Deeply About the Math Tickle Trunk

I nervously stand outside the second floor classroom with several boxes and plastic containers. I try to distract my churning stomach and chattering teeth by taking in my surroundings. I am amazed by the number of classrooms and hallway entrances I see. I wonder how school life in this large urban high school is different from the small rural kindergarten to Grade 12 school I attended as a student or the small urban kindergarten to Grade 8 school I presently teach at. It is difficult to imagine because today is different. Since this high school is now host to a provincial teachers' convention, the students and staff usually found in the hallways and classrooms have been replaced with science and mathematics teachers from across the province. At this conference I am not only a teacher attendee looking for new ideas about teaching and learning mathematics, but I am also a session presenter. I am waiting outside the classroom where I will soon present a session entitled "Mrs. Dressup and the Math Tickle Trunk."

As teachers from the previous session begin to stream into the hallways, I set my nerves aside and carry the boxes and plastic containers containing the Math Tickle Trunk into the classroom. Just as Mr. Dressup[1] had a Tickle Trunk containing a variety of costumes and props to entertain children, the Math Tickle Trunk contains a variety of items to mathematically entertain children. I begin to unpack the contents of the Math Tickle Trunk to display a variety of books containing mathematics stories, information, puzzles, mysteries, and magic tricks as well as laminated paper copies of problems and puzzles to be completed with

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[1] "*Mr. Dressup* was a Canadian children's television series which was produced by the Canadian Broadcasting Corporation from 1967 to 1996" ("Mr. Dressup", 2010).

erasable markers. I lay out flashcards, cribbage boards, playing cards, and dominoes for practicing basic computation skills and examples of homemade games that I used in class lessons for children to practice math skills and concepts. My exhibit also includes plastic bags containing pattern blocks, linking cubes, and geo boards as well as activity cards that promote using these materials in mathematical ways. Lastly I begin to cover the tables at the front of the classroom with interactive games and puzzles such as Rush Hour®[2] and Rubik's Cube®. I refer to these games and puzzles as interactive because they contain colorful pieces to be organized and manipulated to solve challenges, sometimes in a variety of ways.

Soon my session is underway and I am sharing my experiences with the Math Tickle Trunk. I am still nervous, but also excited to share the Math Tickle Trunk because I found it was a useful resource in my upper elementary and middle years mathematics classrooms. I had initially created the Math Tickle Trunk to help me meet the diverse needs of the children in my mathematics classroom. When stronger students had finished their assignments they were invited to choose an item from the Math Tickle Trunk to work with independently and quietly. With my fast finishing students engaged and challenged, I had extra time to address the needs of students needing extra assistance. However as the items in the Math Tickle Trunk became popular, I noticed students seemed to work harder in class to have extra time to use them. Harder working and more motivated students meant fewer classroom management issues and more time learning mathematics. Besides helping me better meet the needs of my students, I felt the Math Tickle Trunk also became a motivational and classroom management tool.

As my session comes to a close I allow for comments, discussion, and sharing of ideas. One participant asks whether I feel the Math Tickle Trunk could be more than a tool for helping with motivation, classroom management, and meeting the diverse learning needs of children. This teacher wondered if some of

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[2] Appendix A lists all the interactive games and puzzles in the Math Tickle Trunk that were featured in this inquiry.

the items in the Math Tickle Trunk could help children become better problem solvers. At the time I was not sure, but I was intrigued that the Math Tickle Trunk might have more to offer children and teachers. (Memory construction, January 2010)

Thinking About the Math Tickle Trunk in Relation to Curriculum

Wondering what could be learned from the items in a Math Tickle Trunk I first considered the items in relation to curriculum.

Initial Views of Curriculum

When first thinking about curriculum I envisioned binders of Saskatchewan curriculum documents containing pages of outcomes and indicators telling what children are to learn and what they might do or say to show that learning. This view of curriculum is aligned with most dictionary definitions of curriculum. According to Clandinin and Connelly (1988) the word curriculum originates from the Latin word for racecourse, therefore most dictionaries define curriculum as a course of study to be used by teachers. With this definition in mind I saw the items in the Math Tickle Trunk as resources to be used by teachers to address the outcomes and indicators in a mathematics course of study.

Curriculum Making Rather than Curriculum Using

However, Clandinin and Connelly (1988) see curriculum as more than a course of study to be used when they say, "[t]he general idea is that curriculum is experienced in situations" (p. 6). According to Clandinin and Connelly (1988), people are situated in contexts where they interact with other people, things, and processes and what unfolds or emerges from these experiences is curriculum. In other words:

> Teachers and students live out a curriculum; teachers do not transmit, implement, or teach a curriculum and objectives; nor are they and their students carried forward in their work and studies by a curriculum of textbooks and content, instructional methodologies, and intentions. An account of teachers' and students' lives over time is the curriculum, although intentionality, objectives, and curriculum materials do play a part in it. (Clandinin & Connelly, 1992, p. 365).

Since curriculum is made as it is lived, Clandinin and Connelly (1992) described curriculum as "a course of life" (p. 393).

According to Clandinin (2008) when curriculum is viewed as made as it is lived teachers are curriculum makers rather than curriculum users. As a curriculum maker, "the teacher is an integral part of the curriculum constructed and enacted in his/her classroom" (Clandinin, 2008, p. 10) as opposed to a user or implementer of curriculum resources and materials as a means to achieve ends of accomplishing curriculum course objectives (Clandinin & Connelly, 1992). As "an active agent in the ongoing composing of curriculum" (Clandinin, 2008, p. 10), a teacher as curriculum maker provides opportunities for children to interact with other people, things, and processes. Within these spaces, teachers and children "make or co-compose curriculum together" (Clandinin, 2008, p. 11).

Curriculum Using and Curriculum Making in the Past

Clandinin and Connelly's view of curriculum reminded me of my past experiences with a mandated textbook program.

A few years ago my school division adopted a new textbook program in response to the renewed mathematics curriculum documents. Since this new textbook program aligned completely with the renewed curriculum, all other textbook programs and resources were taken from teachers' classrooms and school libraries. It was believed the new textbook program was the only resource needed in mathematics classrooms.

As a mathematics teacher, I struggled with the idea of being mandated to use a single textbook program resource in my classroom. Up to that point I had invested a lot of time and money to attend professional development opportunities to learn more about the teaching and learning of mathematics. My unit plans for my math classes were a product of these experiences. They contained an assortment of ideas, activities, teaching strategies, and assessment techniques from a variety of resources. When told teachers must teach the new textbook program from cover to cover and use the scripted questions and discussions provided in the teacher guide, I immediately felt all my professional development had been a waste. If teaching math meant following the textbook program like a recipe book was there a need for math specialists? Can anyone teach math effectively? At this point in time I was considering enrollment in a graduate program focusing on

mathematics education and I questioned whether furthering my education was of value. However I then considered that perhaps my resistance to the new textbook program was the result of being a change-resistant teacher. Since I certainly did not want to be one of those I prepared to use the textbook program as my sole resource.

My first year abiding by the new textbook program occurred in a seventh-grade mathematics classroom and it was not easy. I found many instances where the textbook assumed students had already attained a mathematical understanding when they actually did not. I found myself secretly teaching my own lessons to supplement these areas that the textbook did not address. Even though there were many times where I enjoyed the activities in the textbook, there were also many times when I felt my past lessons would have accomplished the same goals and been a better fit for my teaching style and the learning style of my students.

Things continued to go downhill in my second year with the textbook program. I was assigned to teach mathematics to a split grade and immediately became concerned with how I would implement two grades of the textbook in one class. In the previous year I could barely implement one! I felt better when only one grade received the textbook and I was allowed to use my resources with the other grade. However, attempting to balance the textbook and my own resources with two grades often led to more use of the latter with both.

By the third year, my dedication to the textbook program completely broke down. I was transferred to a new school where my sixth-grade mathematics students were functioning at a fourth-grade level. I abandoned the sixth-grade textbook program almost entirely and relied heavily upon my own resources, sometimes drawing from the fourth and fifth-grade textbook programs.

Needless to say, after three years trying to use the mandated textbook program I had a very negative view of it and I was not a supporter of continuing to implement it under the imposed stringent guidelines. (Memory construction, January 27, 2010)

At the beginning of my graduate program I reflected on my experiences with the mandated textbook program in a course on curriculum resource implementation. When

McClain, Zhao, Visnovska, and Bowen (2009) suggested mandating curriculum resources "de-professionalizes teachers giving them limited official decision-making capacity in the process of implementing texts" (p. 56), I realized my feelings for not wanting to strictly adhere to the textbook program were not unreasonable. Being strictly mandated to use a textbook program restricted my ability to make professional decisions and seized a part of my professional identity.

Reading the work of Brown (2009), I wished I had been viewed as a designer when it came to using the textbook program. Brown believed teachers should use their pedagogical design capacity, "defined as a teacher's capacity to perceive and mobilize existing resources in order to craft instructional episodes" (p. 29). In other words, teachers should be given the opportunity to design their own use of curriculum resources in ways that are meaningful to them and useful to their classroom situations.

Brown's (2009) idea that teachers be viewed as designers is important because one size does not fit all. Schwab (1983) made this point when he said:

> Teachers practice an art. Moments of choice of what to do, how to do it, with whom and at what pace, arise hundreds of times a school day, and arise differently every day and with every group of students. No command or instruction can be so formulated as to control that kind of artistic judgment and behavior, with its demand for frequent, instant choices of ways to meet an ever-varying situation.
> (p. 245)

The El Barrio-Hunter College PDS Partnership (2009) agreed it is impossible for a single curriculum resource to address all possible classroom situations because "writers can't put in all the details for all the different groups of students" (p. 132). If I had been given the authority to be a designer I wondered if my attitude towards and success with the mandated textbook program would have been different.

Considering my experience in relation to my new view of curriculum I began to see implementing a single mandated textbook program in my classroom put me in the position of a curriculum user. Clandinin and Connelly (1992) suggested teachers are often put in the role of curriculum user with resources:

> Since its introduction into the English language…curriculum has been seen as an
> instrument of school reform and teachers as mediators between the curriculum and

intended outcome. Teachers were generally told what to do and…supervised to

make sure they did it. (p. 367)

Indeed the mandated textbook was a resource I was told to use as a means to achieve

ends of improved student learning of objectives in the mathematics course of study.

When I first reflected on my experiences implementing the mandated textbook

program I realized I wanted to be a designer as suggested by Brown (2009). As a

designer of the use of curriculum resources I wanted to be involved in choosing learning

experiences appropriate for the children in my class, situation, and me. However I still

planned to tell children what they should learn based on predetermined objectives or

goals, which means even though I would be a designer I would still be a curriculum user.

I was not thinking about ways children and myself would "make or co-compose

curriculum together" (Clandinin, 2008, p. 11) outside of the learning experiences I

designed. In other words I did not see myself as a curriculum maker as suggested by

Clandinin (2008).

A New View of the Math Tickle Trunk

Thinking about curriculum in a new way I began to see the role of the Math Tickle

Trunk in relation to curriculum differently. I saw the Math Tickle Trunk not just as a

resource that could help teachers implement curriculum documents; I began to see the

curriculum potential of the Math Tickle Trunk, that is "the idea that curriculum materials

and packages are not embodiments of things for teachers to do but reservoirs of

'potential' from which teachers and students may create a variety of classroom curricula"

(Ben-Peretz, 1975, as cited by Clandinin & Connelly, 1992, p. 376).

Narrowing In On Interactive Games and Puzzles

I was most interested in learning about the curriculum potential of the interactive

games and puzzles in the Math Tickle Trunk. These games and puzzles were the most

popular items in the Math Tickle Trunk with students in the classes I taught.

Literature Involving Similar Games and Puzzles

Based on my past experiences I thought interactive games and puzzles helped

motivate and manage the behavior of the children in my past classrooms. I also felt they

helped me better meet children's needs by mathematically entertaining and challenging

fast finishers, allowing more time for me to spend with children needing extra assistance. Now I wondered about other possible curricula of interactive games and puzzles. I decided to explore what others wrote about when they designed opportunities for children to interact with games and puzzles.

Goldberg (1980) wondered if playing strategy games would improve the problem-solving abilities of seventh-grade students.[3] Over ten weeks Goldberg organized an experimental group of 100 seventh-grade students who played strategy games for 45 minutes per week. At the same time a control group of 100 seventh graders completed activities with hand-held calculators or spent time learning the Chisanbop[4] method of calculation. Upon analyzing the data he had collected, Goldberg indicated a positive transfer from strategies used in playing the games to problem solving.

Reviewing Goldberg's (1980) work, Fluck (1981) wondered if playing and analyzing computational strategy games would not only improve problem solving ability

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[3] According to Krulik and Rudnick (1983), a game is considered a strategy game if it follows the following criteria:
1. The game should be for two or more players.
2. The game must have a set of rules for the players to follow.
3. The rules should establish the goals for the players, and their individual goals should be in conflict.
4. The players should be able to choose their own path or action in an attempt to reach their individual goals.
5. It should be apparent when one of the players has won the game. (p. 27)

Some of the interactive games and puzzles in the Math Tickle Trunk could be considered strategy games according to this definition.

[4] Chisanbop is "an abacus-like finger counting method used to perform basic mathematical operations" ("Chisanbop," 2010).

but also computational skills.[5] Over five weeks Fluck's experimental group of fifth graders played and analyzed ten computational strategy games while a control group continued to partake in their regular scheduled mathematics instruction which "included instruction in and practice of addition, subtraction, multiplication, and division of decimals and fractions…[and] solving word problems related to these topics" (p. 91–92). After analyzing pre- and post-assessment scores Fluck stated: "Since the control group did not show a significant gain in problem solving ability and the experimental group did show a significant gain, it can be concluded that problem solving ability was increased by the use of computational-strategy games" (p. 126). In terms of improved computation, Fluck reported "no difference between the two groups with regard to their computation performance" (p. 127).

Through examination of recorded teacher and student comments Fluck (1981) noted the children seemed to enjoy playing the games and they were more willing to take part in class discussions about game strategy. Since a teacher commented: "As the weeks progressed, the students paid closer attention to the instruction before playing the games" (Fluck, 1981, p. 117), perhaps the children became better at listening and following directions as a result of playing the games. Fluck also noted: "Teachers played the games with the students. The students enjoyed this competition with their teachers" (p. 119). This may indicate the ability of strategy games to better connect and build relationships between teachers and students, therefore improving classroom climate.

In "Strategy Gaming and Problem Solving: An Instructional Pair Whose Time has Come" Krulik and Rudnick (1983) stated: "In view of Goldberg's (1980) and Fluck's (1981) findings, teachers should seriously consider the use of strategy games in their classroom planning in the hopes of introducing their students to problem solving in a most enjoyable way" (p. 26). Besides improved problem solving, Krulik and Rudnick indicated, "the gaming situation offers students an opportunity to win and thus obtain

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[5] According to Fluck (1981), a computational strategy game is "any game that follows the criteria established for a strategy game…necessitates the use of computational skills and includes the elements of chance" (p. 18). Sudoku 5x5[TM] is one interactive game in the Math Tickle trunk that could be played as a computational strategy game.

peer approval" (p. 27). In addition to improving children's social situations, Krulik and Rudnick also believed games may help children become actively involved in their learning. They said: "A game requires the learner to be an active participant in the learning process, moving away from passively listening to the teacher's explanations" (Krulik & Rudnick, 1983, p. 27).

Keller (1990) considered Krulik and Rudnick's (1983) statement about the importance of strategy games for problem solving when he became concerned with his fourth-grade students' problem solving abilities after they performed weaker in problem solving tasks than computational tasks on both the Canadian Tests of Basic Skills (CTBS)[6] and an unidentified criterion referenced curriculum-based test. Based on informal observations of the children in his class, Keller noticed poor attitudes towards problem solving as well as a lack of motivation and perseverance on problem solving tasks. He wondered if improvement in these areas would improve children's knowledge of problem solving.

In response Keller (1990) designed a ten-week practicum for his students. Twice a week the children played commercial strategy games such as Checkers and Mastermind[7] in small groups and discussed strategic thinking. The children also worked on tangrams[8] and deductive reasoning puzzles, and were explicitly taught problem solving strategies.[9] Using data collected from pre- and post- problem solving tests and

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[6] The Canadian Tests of Basic Skills (CTBS) are assessment tools published by Nelson Education that aim to "identify student achievement in major curriculum areas including vocabulary, reading, language, mathematics, and science" (Nelson Education).

[7] "*Checkers* is…played on an eight by eight squared board (with sixty-four total squares) with twelve pieces on each side" ("English draughts," 2010). "*Mastermind*…is a code-breaking [peg] game" ("Mastermind (board game)," 2010). At the time of this research neither of these games were in the Math Tickle Trunk.

[8] "The tangram is a dissection puzzle consisting of seven flat shapes, called *tans*, which are put together to form shapes" ("Tangram", 2010).

[9] Scrambled Egg, Tangram Puzzle, and Chocolate Fix® are games and puzzles in the Math Tickle Trunk that involve tangrams and deductive reasoning.

attitude inventories, Keller reported: "Student attitudes [towards problem solving] improved and perseverance and knowledge of problem solving techniques increased" (p. 1).

More recently, ThinkFun[10] produced a program called Game Club and the benefits of this game program as suggested by ThinkFun are similar to the benefits suggested by Goldberg (1980), Fluck (1981), Krulik and Rudnick (1983), and Keller (1990). ThinkFun's Game Club program contains many interactive games and puzzles found in the Math Tickle Trunk such as Rush Hour®, Sudoku 5x5™, Hoppers® and Square by Square® as well as a teacher guide and posters suggesting ways of using the games and puzzles as teaching tools. According to ThinkFun Inc. (2007) using Game Club allows children to "further extend their problem solving, teamwork, and communication skills" (p. 2). On the Game Club program packaging ThinkFun lists critical reasoning, lateral thinking skills, perseverance, patience, concentration, and self-confidence as other possible educational benefits of using Game Club. Contacting ThinkFun I learned from C. Fixler (personal communication, July 29, 2009) that Game Club itself has not been studied but there is some work related to the different games in the Game Club package. C. Fixler (personal communication, August 3, 2009) sent me an internet link for the work of Mani and Kalletta (n.d.) and an electronic copy of an unpublished article by Mani and Call (n.d.).[11]

Using Game Club games, Mani and Kalletta (n.d.) implemented a six-week pilot called Strategies Lab Intensive (SLI) for eleven classrooms ranging from kindergarten to Grade 5. During SLI the children in participating classrooms played the games and then discussed the strategies they used. At the end of the pilot, teachers whose students played ThinkFun games in SLI informally noted that they felt the program increased student

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[10] "ThinkFun [Inc.], formerly known as Binary Arts, was founded in 1985 by Bill Ritchie and Andrea Barthello" ("ThinkFun," 2010, para. 1). ThinkFun Inc. sells games and puzzles. In this thesis ThinkFun Inc. will be referred to as ThinkFun.

[11] Since the article by Mani and Call (n.d.) was received in an electronic form from C. Fixler as a personal communication on August 3, 2009 it is not publicly available and is therefore not cited in the reference list of this thesis.

perseverance, independence, motivation, generalization of strategic thinking, and verbalization of thinking. Intrigued by these observations Mani and Call repeated the SLI program the following year with four second-grade classrooms. This time data were collected about children's problem solving and perseverance using pre- and post-assessments. At the end of their study, Mani and Call reported increased perseverance and improved performance on problem solving tasks from pre- to post-assessment for those children who participated in the SLI program.

Lach and Sakshaug (2005) also conducted classroom research using ThinkFun's Rush Hour® as well as other interactive commercially produced games from other companies. They "focused on how game playing affected students in the areas of algebraic reasoning, spatial sense, and problem solving" (Lach & Sakshaug, 2005, p. 173). Two thirty-minute mathematics classes were organized per week in Lach's fifth-grade classroom where groups of children rotated through six stations, each containing one or two games. Lach and Sakshaug also organized daily twenty-minute game periods where children could play the game of their choice with children from other groups.

After twelve weeks, Lach and Sakshaug (2005) noted many improvements in Lach's students. After repeating the same problem solving assessment given to the children at the beginning of the study, Lach and Sakshaug found "students…showed a greater ability to solve the multi-step problems [involving algebraic reasoning and spatial sense]…and when students could not complete a problem they were still willing to try some strategies that they thought might work…[as opposed to not attempting the problem as seen on the pre-test]" (p. 174). Besides improved problem solving, strategizing, and perseverance, Lach and Sakshaug also informally noted increased confidence and more positive attitudes and enthusiasm towards mathematics among the children in Lach's class. Improvements in the children's verbalization of thinking were also noted by Lach and Sakshaug when Lach said: "I saw an increase in the numbers and length of discussions [explaining game results and strategies] over the course of the study from beginning to end" (p. 175). Lach and Sakshaug also noted "the class developed a deeper sense of community and [the group] was better able to interact socially with each other" (p. 175).

In "Strategy Games: Treasures from Ancient Times," Gorman (1997) described using ancient and historical mathematical interactive games and puzzles to provide opportunities for children to connect culture and mathematics. With fifth-grade children, Gorman played a two-player game called Kalah.[12] Besides using Kalah to develop children's strategic thinking and ability to analyze situations critically, Gorman invited his students to investigate the history and culture of the game:

> Small groups of students investigated the history and the cultures of the people who also played the game, eagerly working on such diverse class projects as compiling a time line of civilizations where Kalah had been played [sub-Saharan Africa, Syria, Asia, the Philippines, the West Indies, and Surinam in South America], investigating Ramses I and his pyramid [a version of the game board was carved into the stone of the great pyramid of Cheops in Egypt], writing and enacting a play attempting to explain the attraction of the game to nomadic tribes in Africa, and comparing how strategies changed for different versions of the game. (p. 2)

According to Gorman, ancient historical interactive games and puzzles like Kalah can not only teach strategic and critical thinking but can also be used to explore connections between culture and mathematics.

Relationship Between Reported Improvements and Mathematics

Goldberg (1980), Fluck (1981), Krulik and Rudnick (1983), Keller (1990), Mani and Kalletta (n.d.), Mani and Call (n.d.), Lach and Sakshaug (2005), and Gorman (1997) reported improvements in areas such as problem solving, independence, confidence, attitude, motivation, involvement in learning, perseverance, communication skills, social skills, and ability to connect culture and mathematics when children interacted with games and puzzles similar to the interactive games and puzzles in the Math Tickle Trunk. Wondering about a relationship between these improvements and mathematics, I turned

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[12] Kalah, sometimes called Mancala, is "an ancient game of strategy that dates to the Mediterranean civilization of Sumeria" (Gorman, 1997, p. 1). Even though at the time of this research the Math Tickle Trunk did not contain any ancient historical interactive games and puzzles like Kalah, I have been interested in adding them to my collection.

my attention to the National Council of Teachers of Mathematics'[13] (2000) *Principles and standards for school mathematics*.

Many of the studies I noted in my literature review reported improvements in problem solving. The NCTM (2000) says: "In everyday life and in the workplace, being a good problem solver can lead to great advantages" (p. 51). Krulik and Rudnick (1983) agreed: "No topic that is presented to children in school is more essential and more valuable than problem solving" (p. 26). According to the NCTM, problem solving helps children "acquire ways of thinking, habits of persistence and curiosity, and confidence in unfamiliar situations" (p.51). Indeed many of these same skills and habits were also noted by Fluck (1981), Keller (1990), Mani and Kalletta (n.d.), Mani and Call (n.d.), Lach and Sakshaug (2005), and Gorman (1997). Since Mani and Kalletta noted increased independence in their project, perhaps children become more independent as they become more confident problem solvers. According to the NCTM, "a major goal of school mathematics programs is to create autonomous learners" (p. 20).

As children become more independent and confident problem solvers, perhaps they will have improved attitudes and motivation towards learning mathematics. "When students work hard to solve a difficult problem or to understand a complex idea, they experience a very special feeling of accomplishment, which in turn leads to a willingness to continue and extend their engagement with mathematics" (NCTM, 2000, p. 20). Having children "value mathematics and engage actively in learning it" (p. 2) is one of the NCTM's (2000) visions for school mathematics. Fluck (1981), Krulik and Rudnick (1983), Keller (1990), Mani and Kalletta (n.d.), and Lach and Sakshaug (2005) all noted improvements in children's attitudes, motivation, and involvement in their projects.

Improvements in attitude and motivation towards learning mathematics may also lead to increased effort among children. According to Bloom (1976), "attitude helps to determine the extent to which the learner will put forth the necessary effort to learn a specific learning task" (p. 104). In other words, if children's attitudes improve and they

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[13] The National Council of Teachers of Mathematics (NCTM) is "the world's largest organization concerned with mathematics education" ("National Council of Teachers of Mathematics," 2010, para. 1).

are more motivated, they will try harder. Schwartz (2006) stated that success in mathematics "is very much dependent on developing an *attitude*, one that includes perseverance, tenacity, and fearlessness" (p.50). Those who have this attitude or disposition work hard, experiment, take risks, make mistakes, and refuse to give up regardless of the obstacles encountered. According to Lappan (1999), a past NCTM president, "students need dispositions that will enable them to persevere in more challenging problems, to take some responsibility for their own learning, and to develop good work habits in mathematics" (para. 3). Increased perseverance was noted in the work of Keller (1990), Mani and Kalletta (n.d.), Mani and Call (n.d.), and Lach and Sakshaug (2005).

The improvements in children's communication noted by Fluck (1981), Mani and Kalletta (n.d.) and Lach and Sakshaug (2005) would also be considered important by the NCTM. The NCTM (2000) stated: "Communication is an essential part of mathematics and mathematics education...Students who have opportunities, encouragement, and support for speaking… and listening in mathematics classes reap dual benefits: they communicate to learn mathematics, and they learn to communicate mathematically" (p. 59). The NCTM said that in order "to support classroom discourse effectively, teachers must build a community in which students will feel free to express their ideas" (p. 61). This is where the improvements in social skills and sense of classroom community noted in the work of Fluck, Krulik and Rudnick (1983), and Lach and Sakshaug are important.

The ability for ancient and historical games to connect culture to mathematics is also important. The NCTM (2000) stated: "Mathematics is one of the greatest cultural and intellectual achievements of human-kind, and citizens should develop an appreciation and understanding of that achievement, including its aesthetic and even recreational aspects" (p. 4). More importantly playing ancient and historical games can help children learn about and appreciate different cultures. Barta (2001) stated:

> Mathematics is a vital aspect of culture. Mathematical principles may not in and of themselves be "cultural," but as soon as those principles are used by human beings, what is done becomes culturally influenced. Mathematics, therefore, is a reflection of the culture of those using it. We can use this knowledge to better

understand not only the nature of mathematics itself but also ourselves and the

people with whom we share the planet. (p. 305)

According to Barta, learning to respect cultural diversity is of utmost importance given daily reports "of how intolerance and insensitivity have led to damage, destruction, and death" (p. 305). Barta believed: "Our classrooms must become places where children learn to value differences and respect variety…[and] learn that we all count" (p. 305). Perhaps playing and exploring ancient historical mathematical games is one way this can be done.

Coming to a Research Puzzle

Goldberg (1980), Fluck (1981), Krulik and Rudnick (1983), Keller (1990), Mani and Kalletta (n.d.), Mani and Call (n.d.), Lach and Sakshaug (2005), and Gorman (1997) designed opportunities for children to work with interactive games and puzzles and according to the NCTM (2000), the reported improvements are beneficial for success in mathematics. Even though I saw Goldberg, Fluck, Krulik and Rudnick, Keller, Mani and Kalletta, Mani and Call, Lach and Sakshaug, and Gorman as designers creating their own opportunities for children to interact with games and puzzles, I also began to see them as curriculum users. Similar to the way I came to see myself as a curriculum user when thinking about being a designer of a mandated textbook program, they often had predetermined learning outcomes in mind when they designed opportunities for children to interact with the games and puzzles. Before their research began, they usually determined what curriculum of the games and puzzles they planned to study. Perhaps then in their research they only noticed the curriculum they were specifically interested in. I wondered what curriculum they did not notice.

My Research Puzzle

After reading about the experiences of others when they designed opportunities for children to interact with games and puzzles and thinking about my own practice I realized I was interested in better understanding curriculum-making experiences with games and puzzles in a mathematics class.

CHAPTER 2

BECOMING A NARRATIVE INQUIRER

Narrative inquiry was the research methodology I chose to explore my research puzzle. In this chapter I will explain why I chose narrative inquiry and how my narrative inquiry unfolded.

Coming to Narrative Inquiry as a Research Methodology

I chose narrative inquiry because it best fit my research puzzle.

Narrative Inquiry as a Way to Study Experience

According to Clandinin and Connelly (2000), "experience should be studied narratively" (p. 19). We learn about experiences by "living a life story, telling a life story, retelling a life story, and reliving a life story" (Clandinin & Connelly, 1994, p. 418). Crites (1971) also suggested that experience is a story; it is naturally narrative. Since I wanted to better understand curriculum-making experiences with interactive games and puzzles, narrative inquiry was an appropriate research methodology for my work.

Narrative Inquiry Provides Opportunities to See Big

In their studies, Goldberg (1980), Fluck (1981), Krulik and Rudnick (1983), Keller (1990), Mani and Kalletta (n.d.), Mani and Call (n.d.), Lach and Sakshaug (2005), and Gorman (1997) focused mostly on scientific, quantitative approaches to research by relying on numerical data from pre- and post-assessments. Greene (1995) indicated a reliance mostly on quantitative methods means only "seeing small." She said, "Seeing schooling small is preoccupied with test scores, 'time on task,' management procedures, ethnic and racial percentages, and accountability measures, while it screens out the faces and gestures of individuals, of actual living persons" (Greene, 1995, pg. 10). On the other hand, "seeing big" means:

One must see from the point of view of the participant in the midst of what is happening if one is to be privy to the plans people make, the initiatives they take, the uncertainties they face…the vision that sees things big brings us in close contact with details and with particularities that cannot be reduced to statistics or even to the measurable. (Greene, 1995, p. 10)

This is echoed in the words of Coles (1989) who learned more about his patients when he saw big after listening to their stories rather than relying only on traditional "symptoms and the categorization of behavior in terms of syndromes" (as cited in Clandinin & Connelly, 2000, p. 12).

I wondered if Goldberg, Fluck, Krulik and Rudnick, Keller, Mani and Kalletta, Mani and Call, Lach and Sakshaug, and Gorman only saw small when they pre-determined constructs to study and measured them using tests generating numerical data. What curriculum-making experiences did they possibly misinterpret or miss by not seeing in the way Greene described as big? Perhaps they did see big, but only reported on the quantitative data their pre- and post-assessments created and/or the readers of their reports demanded.

What if Goldberg (1980), Fluck (1981), Krulik and Rudnick (1983), Keller (1990), Mani and Kalletta (n.d.), Mani and Call (n.d.), Lach and Sakshaug (2005), and Gorman (1997) had used a narrative inquiry approach to research? What else would they have learned if they had listened to and explored their participants' stories of experience, "living a life story, telling a life story, retelling a life story, and reliving a life story" (Clandinin & Connelly, 1994, p. 418) with the games and puzzles? I wonder what further curriculum they would have reported if they had paid attention to Clandinin and Connelly's (2000) three-dimensional inquiry space "with temporality along one dimension, the personal and social along a second dimension, and place along a third" (p. 50).[14] Thinking about how I would have interpreted Goldberg, Fluck, Krulik and Rudnick, Keller, Mani and Kalletta, Mani and Call, Lach and Sakshaug, and Gorman as

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[14] Clandinin and Connelly (2000) believed all three dimensions in the three-dimensional inquiry space are important in a narrative inquiry.

seeing big if they had used a narrative approach to their research, I turned to narrative inquiry for the possibility of seeing big in my research.

Narrative Inquiry Offers Places to Imagine

According to Clandinin and Connelly (2000), narrative inquirers do not seek to solve a problem or find a theory to explain a situation. They do not believe a single theory can explain a situation or that there is one solution to a problem. Instead they realize "other possibilities, other interpretations, other ways of explaining are possible" (Clandinin & Connelly, 2000, p. 31). Therefore "the contribution of a narrative inquiry is more often intended to be the creation of a new sense of meaning and significance with respect to the research topic" (Clandinin & Connelly, 2000, p. 42). Often narrative inquirers open up spaces for new sense of meaning by creating "texts that, when well done, offer readers a place to imagine their own uses and applications" (Clandinin & Connelly, 2000, p. 42). This allows each reader of a narrative study to find their own theory to explain the situations or solve problems present in their own lives.

Based on my study of McClain, Zhao, Visnovska, and Bowen (2009), Brown (2009), and the El Barrio-Hunter College PDS Partnership (2009), I did not want my research to end with a theory about incorporating interactive games and puzzles into classrooms and a description of what curriculum-making experiences to expect. Similar to what I experienced with implementing a mandated textbook program, teachers may feel a loss of professional identity and negative attitudes towards interactive games and puzzles if they are told how to include them into their classrooms. Teachers may also find including games and puzzles in the same way I did in my inquiry to be unsuccessful for them in their classroom situations. One way of incorporating interactive games and puzzles cannot possibly work for all child, teacher, and classroom situations. I also recognized the curriculum-making experiences that I would write about in my inquiry may not be what others experience in their classrooms. Instead I hoped the stories I would capture of curriculum-making experiences with the interactive games and puzzles would offer my readers a place to imagine their own curriculum-making experiences with interactive games and puzzles.

The Research Site

My inquiry was conducted at Fraser Valley Elementary School[15] in a fifth-grade mathematics classroom with a teacher named Amy. Fraser Valley Elementary School is a kindergarten to Grade 8 English/French immersion school of approximately 500 students located in an affluent neighborhood of a small urban center of approximately 40,000 people.

Negotiating the Research Site

 I met Amy four years prior to conducting my narrative inquiry. Amy was an intern teacher with one of my teacher colleagues at another elementary school in the same urban center as Fraser Valley Elementary School. While Amy was an intern teacher we never had the opportunity to formally teach together. However our shared interest in mathematics education led us to have many conversations in each other's classrooms about teaching and learning mathematics.

When talking with Amy during her internship I remember being awed at how reflective and creative she was as a beginning mathematics teacher. Amy was always reflecting upon her practice and thinking about ways it could be better. I often came away from our verbal exchanges thinking differently or with a new idea I had not thought about before. Amy's insightfulness and creativity may have come from her years of previous experience working in schools as an educational assistant before pursuing her education degree.

It was during one of our talks in Amy's internship when I first shared with Amy my Math Tickle Trunk idea. Remembering how interested in the Math Tickle Trunk she had been, I decided Amy would be a teacher I would approach when negotiating a site for my research. When I contacted Amy she agreed to meet me at a local coffee shop so I could explain to her my research puzzle and my tentative plan for exploring it in my inquiry.

The first portion of our meeting was spent sharing the current happenings in our professional lives. I learned Amy was in her third year of teaching and that this was her first year working at Fraser Valley Elementary School. Prior to taking her position at

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[15] All the names of places and people used in this thesis are pseudonyms.

Fraser Valley Elementary School, Amy had spent her first two years of teaching at a small rural school in the same school division. At Fraser Valley Elementary School Amy was a Grade 8 homeroom teacher. Even though Amy's teaching load included Grade 8 Math, Science, and Computers, she also taught Grade 7 English Language Arts and Grade 5 Mathematics in her eighth grade homeroom classroom while her Grade 8 homeroom students were with another teacher.

When Amy told me about her fifth-grade mathematics class I was immediately very interested in this class as a possible research site for my inquiry. In my ten years of teaching, I mostly worked with children in the fifth and sixth grades. Based on these experiences I thought I would feel the most comfortable working with children in these grade levels in my research, making it easier to connect and build relationships with them. I also liked that Amy taught mathematics to her fifth-grade students. Even though I believed curriculum-making opportunities with interactive games and puzzles could be a part of any subject, I was interested in working in a mathematics class because this was the subject area where I had used interactive games and puzzles in my classrooms.

Turning our conversation to my research, I began by reminding Amy about my Math Tickle Trunk. She immediately remembered it and talked about how she was still interested in creating her own Math Tickle Trunk:

> Amy described how she has been thinking about what her current Grade 8 mathematics students could do in extra time when finished their work. She talked about her feelings about longer assignments being unfair and boring especially [when she felt] students had shown they understood the [mathematics] concepts being studied. Amy talked about creating booklets of interesting [mathematics] problems, puzzles, and activities but found this unsuccessful, as the stronger students and keeners would often take them home for homework and therefore still have nothing to do in class when they were finished their work. Now that she remembered the Math Tickle Trunk she was now thinking about how [it] could be something possibly educational that students could work on in extra time.
> (Memory construction, October 8, 2010)

Listening to Amy talk about her Grade 8 mathematics students reminded me of my own past struggles meeting the needs of the children, especially fast finishers, in the first

mathematics class I taught that was not my Grade 6 homeroom. I shared these experiences with Amy:

This Grade 7 math class consisted of students at a variety of levels. On one hand, I had students who seemed to pick up mathematics concepts easily and therefore finished their work quickly and accurately. On the other hand, I had students who struggled with mathematics and required extra instruction. With this mixture of learning levels, I struggled with how to meet the needs of all my students. I wanted to challenge my stronger students and engage them in mathematics, but at the same time, I needed to be available to tutor and help the weaker students. How could I do both? What were my options? Assigning more questions or extra assignments to my stronger students was not the answer. This seemed like a punishment to the stronger students. [I also wondered if] completing more work actually challeng[ed] them.

I then decided to create booklets of paper and pencil challenges, games, and puzzles related to the topic of study. I purchased a mathematics activity book that consisted of paper and pencil activities designed to challenge students and provide problem and logical thinking opportunities for a variety of math topics. These activities interested some students, but not all. It became a struggle to get the uninterested students to work on these activities, even in small groups.

Finally I just decided to allow the option of free time for students to work on assignments in other subject areas. [However]…these Grade 7 students knew I had no idea what other projects or assignments they had to work on because I only taught them one subject, [mathematics]. They also weren't going to be quick to admit that they had other projects to work on.

There was a better reason not to provide free time. This was my time. This was mathematics class time. There had to be something that I could find that would engage my stronger students mathematically and allow me to be available to my weaker students. (Memory construction, October 25, 2006)

I then told Amy about how I had eventually come across the Rush Hour® game at a teacher's conference and began to think about how it and games like it might help me in

this seventh-grade mathematics class, hence leading me to begin collecting items to make a Math Tickle Trunk.

Once I knew Amy remembered the Math Tickle Trunk, I shared my research wonders and my intention to focus on just the Math Tickle Trunk's interactive games and puzzles. When I showed Amy a copy of Rush Hour® as an example of one of the games and puzzles I was interested in she "was very excited and eager to get my study rolling" (Field note February 14, 2011). She began to talk about ideas for ways in which Rush Hour® could be incorporated into the classroom. "She [even] already had a plan for what we should do next to get approval from the Director of Education in her school division" (Field not February 14, 2011). I remember how much I appreciated "her willingness to be actively involved in the process…like a co-researcher helping to organize the project" (Field note February 14, 2011).

In the end I decided to pursue Amy's fifth-grade mathematics class as the site for my research not only because I felt I would be the most comfortable in a fifth-grade mathematics class and Amy had been interested in my work, but mostly upon the comfortable relationship I felt with Amy at our meeting. According to Clandinin and Connelly (2000), "moving into close relationships with participants is necessary work in narrative inquiry" (p. 82) to avoid some of the feelings they initially experienced at Bay Street School where "the forces of collaboration [were] weak and the arrangements [felt] tenuous…[and] one can feel on the edge almost as an uninvited guest" (p. 72). Since Amy and I were already familiar with each other and shared common interests, experiences, struggles, and desires in relation to my research, we had already begun to develop a connection with each other. Since we both had a personal interest in and ideas for exploring the curriculum-making opportunities of the interactive games and puzzles in the mathematics classroom, I envisioned us becoming collaborative researchers, "meaningfully involved in the same problem" (Clandinin & Connelly, 2000, p. 272), which would likely deepen our relationship further. I also felt Amy's reflective nature and creativity would enrich my research experience, pushing and adding new layers to my thinking.

After Amy accepted my invitation for her fifth-grade mathematics class to be the place in which my inquiry would take place, I gained the necessary informed consent as

required by the University of Saskatchewan Research Ethics Board (REB). Informed consent to conduct my research in Amy's fifth-grade mathematics classroom at Fraser Valley Elementary School was first attained from Amy's employing school division, the principal of Fraser Valley Elementary School, and Amy herself. I then visited Amy's Grade 5 mathematics class to meet her students for the first time. After introducing myself and my research and taking time to play the Rush Hour® games with the children, each child was given parental and child information letters and consent forms to take home and look over and sign with their parents or guardians. Even though all children in Amy's fifth-grade mathematics class were guaranteed opportunities to interact with the games and puzzles in my study, twenty-three of the twenty-nine children submitted signed parental and child consent forms, allowing me to write field texts about their experiences and later on in my inquiry invite two of them to be my research participants.

The Researcher Living on the Landscape

For this narrative inquiry I "liv[ed] on the landscape" (Clandinin & Connelly, 2000). According to Clandinin and Connelly (2000), living on the landscape involves being a consistent part of the research environment. Clandinin and Connelly believed living on the landscape helps researchers "make sense of life as lived" (p. 78). It helps them "grasp the huge number of events and stories, the many twisting and turning narrative threads that pulse through every moment" (Clandinin & Connelly, 2000, p. 77).

Since "narrative inquiry is relational" (Clandinin & Connelly, 2000, p. 81), living on the landscape can also help researchers develop important relationships with potential research participants. Spending significant time with the children in Amy's fifth-grade mathematics class helped me know them better, it helped me decide which children to invite to be my research participants and making them more comfortable sharing their experiences with me once I did so. In terms of my teacher research participant, I felt it was also important to live alongside her and build upon the relationship we already had. Even though I did not intend to explore her experiences I wanted to foster our co-researcher relationship in order to understand the experiences of my child research participants further. Like Lawrence (2008) I felt I "could not understand the children's stories without [the teacher] because she was so much a part of their experience on the classroom landscape" (p. 23).

According to Clandinin and Connelly (2000), if a researcher wants to become part of the research landscape they need "to be there long enough" (p. 77). At the beginning of my inquiry I negotiated spending twelve weeks with Amy and the children in her fifth-grade mathematics class at Fraser Valley Elementary School. In the end I actually spent sixteen weeks. My decision to extend the length of my inquiry was made when province wide teacher sanctions resulted in school cancellations on days I had planned to be at my research site. I had also not anticipated Amy's Grade 5 math students would spend over a week during my inquiry writing a provincial mathematics assessment.

I began living on the landscape by attending all of Amy's fifth-grade mathematics class periods. In a six-day timetable cycle, Amy taught nine 35 to 45 minute Grade 5 mathematics periods. Most days Amy had two scheduled fifth-grade mathematics class periods. Sometimes these double class periods were back-to-back and other times they were split up by other class subjects and/or recess and noon hour breaks.

The Games and Puzzles on the Landscape

Once I had received signed parental and child information letters and consent forms from Amy's fifth-grade class I spent seven weeks teaching the children how to play the interactive games and puzzles. I felt it was important to take time to teach the children how to play the interactive games and puzzles to help avoid what happened in the past where I assumed my past students knew how to play the games and puzzles when they did not.[16]

I first taught the children how to play the seven remaining ThinkFun games and puzzles of which I owned multiple copies.[17] I organized Shape by Shape®, Hoppers®, Chocolate Fix®, Treasure Quest, Sudoku 5x5 ™, River Crossing®, and Pete's Pike each

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[16] In my past classrooms I did not show the children how to play the games and puzzles. Instead I assumed children would figure out how to play them on their own. During conversations with former students, I was surprised to find many of them confessed to not really knowing how to play some of the games and puzzles.

[17] The children in Amy's fifth-grade mathematics class already learned how to play all the versions of Rush Hour® the first day I visited to introduce my study and invite the children to be a part of it.

into one of seven black cloth bags numbered #1 through #7. Each game bag also contained several copies of an instruction sheet with written instructions and diagrams illustrating how the game or puzzle featured in the bag is played.

The children were divided into seven groups and each group was assigned one of the black game bags and asked to figure out how to play the ThinkFun game or puzzle inside. Over approximately seven games and puzzles playing class periods, the game bags were rotated among the seven groups of children so all children were exposed to each of the seven ThinkFun games and puzzles. At the end of this rotation all the ThinkFun games and puzzles the children had been shown were placed in large plastic tubs at the front of Amy's classroom which already held all versions of Rush Hour® from my first visit to Amy's classroom.

In the three weeks that followed, Amy and I negotiated free play games and puzzles playing opportunities for the children to continue practicing how to play the ThinkFun games they had already been introduced to. The children were invited to choose to play any of the games and puzzles in the plastic tubs and they were usually permitted to sit wherever they wanted in the classroom and with whomever they pleased. Amy and I generally negotiated whole class periods for free play. However some free play times took place when the children had extra time after Amy had finished teaching a lesson or when they were finished their assigned work during regular mathematics class.[18]

Once the children were familiar with the ThinkFun games and puzzles already in the plastic tub, I introduced them to the games and puzzles of which I only owned one or two copies. The children were invited to seat themselves in groups of four and each group was given four different games and puzzles and their corresponding instruction sheets. The groups were instructed to figure out how to play each of the games and puzzles and create a commercial to present to the rest of the class where they would briefly tell the other children about each of the games and puzzles and how to play them. The children in each group negotiated amongst themselves how they would learn to play

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[18] When I refer to regular mathematics class I am referring to time in Amy's fifth-grade mathematics class when the children did not play the games and puzzles.

the games and puzzles and present their commercials. At the end of the class period, the games and puzzles featured in the commercials were added to the plastic game tubs.

Once the children were introduced to how to play all of the interactive games and puzzles, all interactions the children had with the interactive games and puzzles involved free play as described earlier. While the children were playing, Amy and I observed and sometimes played along with the children.

Every games and puzzles class period ended with a reflection time once all the games and puzzles were packed up and put away. It was during these times the children were invited to share their experiences interacting with the games and puzzles. As the children were sharing their experiences I encouraged them to explore their experiences using Clandinin and Connelly's (1994) four inquiry directions. Clandinin and Connelly stated:

> To summarize, methods for the study of personal experience are simultaneously focused in four directions: inward and outward, backward and forward. By inward we mean the internal conditions of feelings, hopes, aesthetic reactions, moral dispositions, and so on. By outward we mean existential conditions, that is the environment or what E. M. Bruner (1986) calls reality. By backward and forward we are referring to temporality, past, present, and future. To experience an experience is to experience it simultaneously in these four ways and to ask questions pointing each way. (p. 417)

To focus the children inward I asked the children to talk about how they felt during and after their experience. In focusing the children outward I asked them to consider how aspects of the environment may have affected their experience. Asking the children to consider whether they have experienced similar feelings or situations in the past and how they dealt with these experiences and feelings then was a way I focused them backward. I also tried to focus the children forward by asking them to consider where they may encounter similar feelings or situations in the future and how they might cope with them then.

Negotiating Research Participants

Approximately seven weeks into my inquiry I invited Jeffrey and Emma to be my research participants.[19] Jeffrey and Emma were two of the twenty-three children in Amy's fifth-grade mathematics class who had submitted signed parental and child consent forms. My decision to invite Jeffrey and Emma to be the focus of my study was based partly upon feeling both these children expressed interest in my work and/or me. I arranged to meet with each child individually to tell them more about my study and invite them to be a part of it. Both Jeffrey and Emma agreed to take home and later submitted additional signed parental and child consent forms agreeing to have one-on-one research conversations with me so I could learn more about their experiences interacting with the games and puzzles.

I negotiated one-on-one research conversations with Jeffrey and Emma to take place over the school noon lunch break. Even though Amy had indicated to me that she was willing to allow me to conduct one-on-one research conversations during her fifth-grade mathematics class time, I was pleased that I did not have to make this arrangement. Like Lawrence (2008):

> I did not want the conversation time to put the children in a position of being
> behind in their work or missing something significant. I wanted to make sure that
> spending time in conversation with me was not deemed by the children as
> something negative. (p. 29)

I also felt lunch time research conversations would make Jeffrey and Emma feel more at ease and therefore willing to share their experiences with me. "I like[d] the idea of having lunch together with my…participants. Somehow it seem[ed] like a…comfortable and natural thing to do…visit while eating" (Field note May 4, 2011).

I wanted to negotiate places for my one-on-one research conversations where Jeffrey and Emma would feel comfortable. Just as Lawrence (2008) noticed in her narrative inquiry, I found my teacher participant was "a significant part of this negotiation" (p. 29). Amy knew what areas of the school Jeffrey and Emma would find

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[19] Although Emma was one of my research participants, I did not write about her or use the field texts I wrote from my experiences with her in this thesis.

"comfortable, familiar, quiet, and non-threatening…for our conversations" (Lawrence, 2008, p. 29) as well as when these spaces were available over noon hour. The majority of my one-on-one research conversations took place in Amy's classroom or the Art room with the exception of two one-on-one research conversations with Emma. One of Emma's research conversations took place in the school's Multi-Purpose room and the other took place in an empty classroom that neighbored Amy's eighth grade homeroom.

Originally I anticipated having up to three 30 to 45 minute one-on-one research conversations with each of my child research participants. In the end I had five conversations with Emma and six conversations with Jeffrey. Jeffrey and I met one extra time because our conversations were much shorter than the conversations I had with Emma. Research conversations with Jeffrey only lasted approximately ten to 30 minutes so Jeffrey could go outside and enjoy a portion of the noon recess break. One-on-one research conversations with Emma usually lasted the entire lunch break (approximately 40 minutes) unless Emma was involved in lunchtime extra-curricular activities such as track and field or student leadership council.

All research conversations with Jeffrey and Emma were audio taped. Clandinin and Connelly (2000) indicated the use of a tape recorder not only helps to "capture the interpersonal-exchange dynamics…[but also] frees the researcher to participate in the conversation" (p. 109). Like Lawrence (2008) I found the use of an audio recording device "help[ed] me concentrate on being part of the conversation instead of trying to write down the important things [my participants] had to say" (p. 29).

Field Texts

According to Clandinin and Connelly (2000), field texts are the records "created…by participants and researchers in order to represent aspects of field experience" (p.92). Field texts remind us of what really happened and how we really felt during an experience because they "freeze specific moments in the narrative inquiry" (Clandinin & Connelly, 2000, p. 83). Field notes and research conversation transcripts were two types of field texts I used in my narrative inquiry to document my experiences.

Field Notes

Clandinin and Connelly (2000) describe field notes as "ongoing, daily notes, full of details and moments of our inquiry lives in the field" (p. 104). At first my field notes

involved Amy and many of the fifth-grade children in her fifth-grade class who I had received informed consent, however eventually they focused more so on the experiences of my research participants, Jeffrey and Emma.

The majority of my field notes were in the form of anecdotal records that slid "back and forth between records of the experience under study and records of…[myself] as researcher experiencing the experience" (Clandinin & Connelly, 2000 p. 87). I recorded descriptions of events, situations, and conversations I observed and experienced, but also my own feelings, thoughts, and interpretations of those events, situations, and conversations.

When talking to prospective research participants about how she saw her research unfolding in the classroom, Huber (2008) wrote: "Not observing, sitting off to the side writing notes, field notes written after in-class time" (p. 36). When I interviewed Huber as a part of an assignment for one of my graduate classes she told me that she felt this choice made her research participants more comfortable and less observed. Thinking of Huber I chose to write most of my anecdotes once I had returned home each day from Fraser Valley Elementary School. Like Huber I also wanted to ensure my research participants were comfortable. It was one way I showed them I valued our relationship.

Clandinin and Connelly (2000) say, "A researcher is, even with the best of intentions of getting everything down, unable to do so" (p. 93). Sometimes when I had returned home from Fraser Valley Elementary School to write my anecdotal records, I found it difficult to recall everything I had experienced. To help I sometimes quickly jotted down words and phrases during Amy's fifth-grade mathematics class periods to help remind me of my experiences.

Clandinin and Connelly (2000) encourage narrative inquirers to read the work of other narrative inquirers and "imagine taking [their] field texts and…puzzles and fitting them within the form that the other inquirer has created" (p. 162). Indeed I became interested in Huber's (2008) use of word images as "a way to select and fit together [my field notes of quickly written words and phrases]…into an overall narrative text" (Clandinin & Connelly, 2000, p. 139) once I had returned home from the field. For her doctoral thesis Huber "selected words and phrases [from her field texts] to compose word images" (p. 61). Huber indicated that her use of word images "drew loosely on the ideas

of composing found poetry developed by Richardson (1994) and Butler-Kisber (2002)…[who] 'found participants' words and phrases and pulled them into new interpretive texts they called 'found poetry'" (p. 62). My word images were also created by carefully choosing words and phrases from those I had recorded that I felt were important or best represented my experiences and the experiences of my research participants.

Research Conversation Transcripts

Clandinin and Connelly (2000) said, "Whole tapes can be transcribed; field notes can be made as one listens and re-listens to the tape recordings" (p. 110). I created research conversation transcripts from the audiotaped one-on-one research conversations I had with my research participants, Jeffrey and Emma. Following each research conversation I transcribed the resulting audio recording in its entirety. I then looked through the transcript, highlighting and writing down comments and questions for sections I found interesting and wanted more detail or had further questions about. These sections became the starting point for subsequent research conversations.[20] Referring Jeffrey or Emma to a specific highlighted numbered section in both our transcripts, I would read over the section to them as they followed along in their own copy. I would then ask them if I had captured their thoughts, ideas, and experiences accurately and I provided them an opportunity to suggest changes, deletions, or additions. Our conversations would then continue as I addressed the comments and questions I had recorded for the specific section in my own copy of the transcript, paying attention to Clandinin and Connelly's (1994) four inquiry directions. Like Lawrence (2008) I found the questions I created were "largely constructed from [my research participant's] previous statements" (p. 26). However even though I recorded comments and questions, to discuss for each of my one-on-one research conversations I tried not to be too focused on what I had prepared during the actual one-on-one research conversations. Instead of rigidly following a set of predetermined questions, I wanted my one-on-one research

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[20] As a starting place for my first one-on-one research conversations with Jeffrey and Emma I chose questions from a set of possible research conversation questions I created at the time I wrote my research proposal.

conversations to be "marked by equality among participants and by flexibility to allow participants to establish forms and topics appropriate to the …inquiry" (Clandinin & Connelly, 2000, p. 109).

Negotiating Exit

According to Clandinin and Connelly (2000), "narrative inquiries do end, at least in a formal sense" (p. 74) because at some point narrative inquirers need to begin composing research texts. However since the narrative inquirer is in relationship with his or her participants, they "do not simply walk away when their time has come" (Clandinin & Connelly, 2000, p. 74). Narrative inquirers do not want their participants to think:

> I sure know this: when they're through with their work, they will be out of here
> lightning fast, and that'll be the end of them. They come here, people like that,
> they have their job to do, they do it, that's when they'll sweet-talk you, and when
> they leave, out they go and if you get a 'so long,' your lucky. (Coles, 1997, p. 77)

Instead narrative inquirers must negotiate their exit so research participants know the research relationship is important.

During the last four weeks of my narrative inquiry I gradually spent fewer days attending Amy's Grade 5 mathematics class periods instead of being there every day. During the first two weeks of my exit I only attended Amy's Grade 5 mathematics classes two days each week and in my final two weeks I only attended one day per week.

Even though I was not always present in Amy's fifth-grade mathematics classes, Amy sometimes arranged for the children to continue to play the interactive games and puzzles we had explored in my inquiry. She also sometimes arranged games and puzzles playing opportunities for the children in her Grade 7 and Grade 8 classes. I had left the interactive games and puzzles with Amy for the rest of the school year as a way of thanking her and her students for inviting me to be a part of their classroom and sharing their stories.

Besides seeing Amy and her fifth-grade class in the few mathematics classes I attended at the end of my study, I was sometimes visible to them when I periodically visited Fraser Valley Elementary School to meet with Jeffrey and Emma to finish research conversations, review transcripts, and sign transcript release forms. During these times I would occasionally stop by the Grade 5 homeroom class over lunch break or

join the fifth-grade children outside for recess to visit with them. I wanted Jeffrey and Emma and the other children in Amy's fifth-grade mathematics class to know that I still thought of them and appreciated the time we spent together.

During the final week of the school year Amy and I negotiated exit for the interactive games and puzzles.

> Amy informed me that while I was at the school on Monday that I could arrange to take the game tubs home with me…with end of the year activities and homeroom class periods, Amy would not have the Grade 5 students again this year. I asked Amy if she was sure that I should take the games home and she said that she was. I guess that I asked because even though my study has extended longer than I planned due to teacher sanctions and…[provincial mathematics assessments], it is still hard for me to believe that my time at the school with the Grade 5's, Amy, and the games and puzzles is coming to an end. It is sad. (Field note June 20, 2011)

Indeed "good narrative working relationships carry with them a sad and wistful sense born of the possibility of temporariness" (Clandinin & Connelly, 2000, p. 72).

Even though there were no more fifth-grade mathematics classes to attend and the games and puzzles were no longer at the school, I continued making brief visits to Fraser Valley Elementary School throughout the last week of school. I had asked Jeffrey and Emma to obtain permission from their parents to share their contact information with me so that I could get in touch with them if I needed to clarify information and when I was ready to share some of my writing with them. I visited the school during recess and noon hours to collect these permission forms.

Composing Research Texts

At the time I wrote my research proposal I had learned when children interacted with games and puzzles similar to the interactive games and puzzles in the Math Tickle Trunk, Goldberg (1980), Fluck (1981), Krulik and Rudnick (1983), Keller (1990), Mani and Kalletta (n.d.), Mani and Call (n.d.), Lach and Sakshaug (2005), and Gorman (1997) reported improvements in problem solving, independence, confidence, attitude, motivation, involvement in learning, perseverance, communication skills, social skills, and ability to connect culture and mathematics, all considered beneficial for success in

mathematics according to the NCTM (2000). Thinking about what I had learned from my literature review I expected I would also write research texts about mathematics curriculum that unfolds for children when they interact with games and puzzles in a mathematics class.

However as I read and reread my field texts, including field notes and transcripts, I found myself reflecting on, and returning to, an experience I had the first day I visited Amy's fifth-grade mathematics class to introduce myself and my research and to play the Rush Hour® games. When Clandinin and Connelly (2000) said, "Research texts…grow out of repeated asking of questions concerning meaning and significance" (p. 132), I wondered what could be learned from inquiring deeper into that first experience and why the experience resonated with me throughout the multiple readings of my field texts. To help me better understand my experience and what I might learn from it, I decided to use the field notes I wrote throughout my inquiry about the first time I visited Amy's fifth-grade class to write a single text. Since my experience in Amy's classroom that day included Jeffrey, one of my research participants, I used field notes and research conversation transcripts I wrote about Jeffrey as I lived alongside him in my inquiry to write a single text about him. According to Clandinin and Connelly, the two texts I wrote, one about my experience first visiting Amy's fifth-grade classroom and the other about Jeffrey, are interim texts. Interim texts are "texts situated in the spaces between field texts and final, published research texts" (Clandinin & Connelly, 2000, p. 133). They are created when you take excerpts from field texts and write a document about them.

Reading over the interim texts I wrote my thoughts turned to Coles (1989). While in his residency as a psychiatrist in a hospital ward, Dr. Ludwig, one of his supervisors, told him, "Our questioning…had its own unacknowledged story to tell – about the way we looked at lives, which matters we chose to emphasize, which details we considered important, the imagery we used as we made our interpretations" (Coles, 1989, pp. 18-19). When Coles was told by Dr. Ludwig that the questions psychiatrists ask their patients have their own story to tell, I wondered if the decisions I made the first time I visited Amy's fifth-grade mathematics class had their own story to tell. The writing that resulted from inquiring into my experience visiting Amy's fifth-grade class for the first time

became a research text that is Chapter 3 of this thesis. In Chapter 3 I describe how I came to see the decisions I made the first time I visited Amy's fifth-grade mathematics class had their own story to tell and that those stories to tell were about my "stories to live by" (Clandinin et al., 1999).[21] Better understanding myself, I gained insight into Jeffrey's stories to live by and a curriculum of the games and puzzle for me.

Remembering another moment in my inquiry that had resonated with me when I had been reading and rereading my field texts I wondered what I might learn if I inquired into it. It was an experience I had while I was teaching Amy's fifth-grade class how to play the seven remaining ThinkFun games and puzzles of which I owned multiple copies. To help me better understand this experience and what I might learn from it, I wrote an interim text about it using field notes I had written throughout my inquiry. The writing that resulted from inquiring into this moment became another research text that is Chapter 4 of this thesis. In this chapter I learn the decisions I made in the moments of teaching the ThinkFun games and puzzles had stories to tell and once again those stories to tell were about my stories to live by. Coming to understand more about myself, I gained insight into myself as a curriculum maker and more about a curriculum of the games and puzzles for me.

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[21] Clandinin et al. (1999) developed the phrase "stories to live by" to refer to identity. Stories to live by are shaped by all the stories one lives.

CHAPTER 3

A CURRICULUM OF GAMES AND PUZZLES: SPACES FOR INTERRUPTING STORIES OF LABELLING CHILDREN

First Meeting and Playing Games and Puzzles with the Children

I watch the children in Amy's Grade 5 mathematics class enter Amy's homeroom classroom busily discussing the events of the previous class period. Their boisterous conversations immediately turn to whispering as they wonder who I am and what is inside the yellow Rush Hour® game bags displayed in my two open suitcase-style boxes.

Their wondering is interrupted when Amy begins directing children to sit in specific locations. Amy usually allows her fifth-grade mathematics students to choose which group of four desks in her classroom they would like to sit and whom they would like to sit with given the groups are productive and not disruptive. However Amy had identified to me a few children in her fifth-grade mathematics class who require extra assistance and wanting to ensure we meet the needs of these children when playing the Rush Hour® games we decided before class began that these children should sit together so the teacher aid of one of the children can assist the others. To ensure this seating arrangement Amy assigns each of the Grade 5 children a spot to sit as they enter her classroom.

Once the confusion of having their normal seating routine disrupted subsides and all the children are seated with their attention on Amy, she turns the class over to me. The children listen quietly and attentively as I introduce myself and talk about my research. When I display a picture of the many interactive games and puzzles that will be a part of my inquiry, the calm of the classroom erupts into chatters of excitement. When I ask the children if they would like to play one of the games today, a unanimous roar of, "Yes!" resounds throughout the room.

After I show the children Rush Hour's® game pieces and demonstrate how to play, Amy and I are soon distributing a version of Rush Hour® to each group of students. Earlier we had decided to assign the group of children identified as requiring extra assistance the easiest version of all the Rush Hour® games, Rush Hour® Jr. Above the excited voices of the children, the classroom is instantly filled with the sounds of Rush Hour® game pieces and boards clattering on the children's desks as they eagerly empty their yellow game bags. Soon these clatters are replaced with sounds of clicking and sliding as the children set up their game boards according to their game's challenge cards and begin moving game pieces around to solve the challenges.

There is only enough time in the class period for the children to play the Rush Hour® games for about ten minutes. Early on in this short amount of time, I watch Amy take away the Rush Hour® Jr. game from Jeffrey, one of the children identified as needing extra assistance. As I watch Amy return Jeffrey's Rush Hour® Jr. game to one of the games boxes, I immediately think that Rush Hour® Jr. must have been too difficult for Jeffrey. However, to my surprise, Amy returns to Jeffrey with Railroad Rush Hour®, a much more difficult version of Rush Hour®. Upon receiving Railroad Rush Hour®, Jeffrey immediately empties the contents of the game bag and begins to play without assistance. Later when I asked Amy about her actions, she said she had noticed Jeffrey quickly solving the Rush Hour® Jr. challenges. She said, "It seemed too easy for him." (Excerpt from Interim Text August 1, 2011)

Reading my interim text about my first visit to Amy's fifth-grade mathematics classroom and thinking about the decisions Amy and I made for Jeffrey and the other children in his class identified as requiring extra assistance and what stories these decisions had to tell, my thoughts turned to Clandinin and Connelly (1998) who wrote, "What we have in mind is drawn in our imaginations from our notions of people as narrative beings composed of multiple story lines" (p. 152). Even though I understood Jeffrey to be composed of multiple story lines, two story lines of Jeffrey emerged for me in the above excerpt of my interim text.

The first story line resulted when Amy and I decided to make special arrangements for the children identified as requiring extra assistance the first time Amy's fifth-grade mathematics class played the Rush Hour® games and puzzles. We decided to seat the children together so they would have access to one of the children's teacher aids and assign them the easiest version of the Rush Hour® games, Rush Hour® Jr. Since Jeffrey was seated in the group of children identified as requiring extra assistance, one story line I had of Jeffrey was of a child requiring extra assistance when playing the Rush Hour® games. However since the special arrangements Amy and I made were unnecessary for Jeffrey, another story line I had of Jeffrey was of a child requiring no assistance when playing the Rush Hour® games.

Thinking about the two story lines of Jeffrey that emerged for me when reading my interim text, one as a child requiring extra assistance and another as a child who required no assistance, I remembered two other story lines of Jeffrey also emerged for me from the stories I had of Jeffrey as I lived alongside him in my inquiry. I was reminded of these story lines when I turned to the interim text I wrote about Jeffrey. In this chapter I share and unpack the two story lines I had of Jeffrey as I lived alongside him in my inquiry. I learn that in experiences with games and puzzles in a mathematics class a curriculum unfolds for me. The decisions I made the first time I visited Amy's fifth-grade mathematics class to introduce myself, my research, and the Rush Hour® games had stories to tell about my stories to live by. In coming to know myself better I gained insight into Jeffrey's stories to live by and a curriculum of the games and puzzles for me.

Two Story Lines I Had of Jeffrey

From the stories I had of Jeffrey as I lived alongside him in my inquiry one story line I had of Jeffrey was in regular mathematics class. I had another story line of Jeffrey in mathematics class with games and puzzles.

Jeffrey in Regular Mathematics Class

The story line I had of Jeffrey in regular mathematics class was of a difficult child. One way I came to have this story line of Jeffrey was from stories I had of Jeffrey being often off task in regular mathematics class periods. On numerous occasions during regular mathematics class instruction I saw Jeffrey engaged in behaviors such as "banging markers, stacking markers, twirling markers, stacking three markers end to end,

point[ing] a stack of three markers towards the front of room like a wand, bit[ing] the stack of three markers between teeth, tak[ing] markers apart, attach[ing] one marker to front teeth" (Field note, May 4, 2011) as opposed to facing forward in his desk with his eyes on his mathematics teacher, Amy, and the activities she was leading the class through.

I also observed Jeffrey off task during times in regular mathematics class when he was supposed to be working on his mathematics assignments. Sometimes it appeared to me that Jeffrey quit working on his assignments when he came across a challenging part. On one such occasion Jeffrey's class was divided into two groups, Student A and Student B, and each group was assigned a different mathematical task:

> Amy told all the children who were Student B that their task was a more difficult task than the task given to the children who were Student A. Jeffrey [a Student B] commented to himself, "Why do we get a harder question?" He began scribbling on his desk with his pencil, spinning his pencil, looking down in his lap, and eventually laying his head down on his book. Amy asked Jeffrey how he was doing and if he knew how to solve the question. [Jeffrey] yelled, "No!" Amy didn't say anything else. Jeffrey attempted no questions from that point on. He spun his pencil and eraser and put his head down on his desk. (Field note March 23, 2011)

Based on observations like this I also had a story line of Jeffrey as a difficult child to have in regular mathematics class because I storied Jeffrey as a child who easily gave up in the face of challenging tasks.

When Jeffrey did not finish his assigned mathematics work during regular mathematics class I noticed he would often be assigned his unfinished work for homework. Quite often I observed Jeffrey returning to subsequent regular mathematics class periods with this homework incomplete. My story of Jeffrey as a child who consistently arrived unprepared for class was another reason I had a story line of Jeffrey as a difficult child to have in regular mathematics class.

The stories I came to know of Jeffrey being easily frustrated and often exhibiting angry behavior in regular mathematics class also made me tell a story line of Jeffrey as a difficult child. Early on during my time at Fraser Valley Elementary School, Jeffrey's

mathematics teacher, Amy, had "warned me about [Jeffrey's] anger spurts and that these episodes [were] easily triggered. She talked about him sometimes getting so angry and frustrated that he would throw chairs" (Field note February 28, 2011). In fact this story Amy had of Jeffrey was one of the reasons Amy had placed Jeffrey in the group of children requiring extra assistance the day her fifth-grade mathematics class first played the Rush Hour® games and puzzles. Amy had been "afraid [Jeffrey] would be overwhelmed by one of the more difficult Rush Hour® games and then an angry episode would take place" (Field Note, February 28, 2011).

During our one-on-one research conversations Jeffrey told me himself about being easily frustrated saying, "I have anger issues…I have been to like five anger management camps" (Transcript April 14, 2011). However he also storied himself as no longer the boy who "would spaz out…get mad and …flip desks and stuff" (Transcript April 14, 2011) saying, "Well its been like…two years since I used to be like acting out and stuff" (Transcript April 14, 2011). Regardless of the stories Jeffrey told of himself, I still storied Jeffrey as an easily frustrated child with angry outbursts. I had heard additional stories from Amy about Jeffrey becoming frustrated and acting out angrily and I thought I had observed Jeffrey myself on numerous occasions in regular mathematics class become easily frustrated, leading him to exhibit angry behavior. On one occasion I observed Jeffrey yell at his teacher, swear under his breath, and clench his fists during a mathematics class lesson (Field note March 23, 2011). Thinking an easily frustrated child would be a difficult child to have in mathematics class if he/she began to act out angrily, like Amy, I often chose to "just let Jeffrey be…[to] avoid confrontations" with him (Field note February 28, 2011).

Stories of Jeffrey being weak in mathematics and having dyscalculia[22] also led me to have a story line of Jeffrey as a difficult child to have in regular mathematics class. Jeffrey storied himself as "Okay at math…not some super genius…sometimes…really bad at math" (Transcript May 11, 2011). Jeffrey also said, "I have dyscalculia"

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[22] Dyscalculia is "difficulty in learning or comprehending arithmetic, such as difficulty in understanding numbers, learning how to manipulate numbers, and learning facts in mathematics" ("Dyscalculia," 2015, para. 1).

(Transcript May 4, 2011) but that his dyscalculia only caused him difficulty in mathematics "like every two months or so" (Transcript May 11, 2011). Jeffrey's mother had indicated to me over the telephone that Jeffrey's dyscalculia diagnosis had come from an agency outside of the school. Since "she didn't sound like she really believed [Jeffrey had dyscalculia]" (Field note July 6, 2011), I assumed the staff at Fraser Valley Elementary School were never made aware of Jeffrey's diagnosis when I learned in Jeffrey's school records "there was no mention of dyscalculia…[only] that math was a weak area" (Field note May 13, 2011) for Jeffrey. Hearing stories of Jeffrey as weak in mathematics and having dyscalculia, the extra time and effort I believed I would need to invest in Jeffrey to help him be successful in regular mathematics class led me to have a story line of him as a difficult child.

I also had a story line of Jeffrey as a difficult child to have in regular mathematics class from stories I had of Jeffrey having poor relationships with many of his classmates. I noticed Jeffrey usually sat next to Jordan in mathematics class and he had told me:

> Jordan is also one of my best friends. I have probably spent more time with
> Jordan this year than Ben[23] because Ben always has to go swimming and do stuff.
> The only other option is Jordan. (Transcript May 20, 2011)

When I asked Jeffrey to explain to me why he felt spending time with Jordan was his only other option besides Ben, Jeffrey said:

> I asked Nathan and then…I don't think his dad likes me…and I don't know
> why…And then I don't think anyone else would want to come over to my house
> because I used to be like a bully in Grade 3 and stuff so I think they might be a
> little bit scared being alone with me at my house or something or with just my
> parents there. (Transcript June 9, 2011)

Even though Jeffrey also indicated to me the relationships he had with the other children in his class were continually improving, I did not believe him based on the discussion Amy and I had when Jeffrey and another child in his class agreed to share a copy of the Chocolate Fix® game:

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[23] Earlier Jeffrey had also described Ben as "one of [his] best friends" (Transcript May 4, 2011).

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I told Amy about the [Jeffrey's] group's decision [for Jeffrey and Eli to share a copy of the Chocolate Fix® game] and she was amazed that Jeffrey agreed to share a game and that it went smoothly. From the way Amy talked I got the feeling that Jeffrey does not always get along with his peers…[Later] Amy asked if the students would be playing the games in the same groups for a few classes. I said they would be and she said she was glad because she felt it would be good for Jeffrey. I think she meant that it would be good for Jeffrey to work with the same students for several classes and build some relationships. (Field note March 4, 2011)

I interpreted Amy's comments to mean Jeffrey's relationships with his classmates were still poor. I thought a child with poor relationships would be a difficult child to have work in groups with other children in regular mathematics class.

Jeffrey in Mathematics Class with Games and Puzzles

My story line of Jeffrey in mathematics class with the games and puzzles was much different than the story line I had of Jeffrey in regular mathematics class. Instead of a difficult child, my story line of Jeffrey was of a child who was less challenging to have in class. I had this story line of Jeffrey because I observed during games and puzzles playing class times that he was always on task, working hard to solve the games and puzzles he played, especially the Mini Bedlam Cube. I noticed Jeffrey would "take apart and [attempt to] put the [Mini Bedlam Cube] together several times without [ever] finding a solution" (Field note May 16, 2011).

Even when Jeffrey made little progress towards solving complicated games and puzzles such as the Mini Bedlam Cube, it appeared to me that Jeffrey displayed no physical signs of anger even though he admittedly felt frustrated inside:

In my mind I am like [Jeffrey makes a frustrated face] but in real life I am just like [Jeffrey makes a calm face.] I'm like, "Dang" but in my mind I am like "ERHERG!" I am just all angry. It is funny. (Transcript June 9, 2011)

Instead Jeffrey told me he would continue to play the Mini Bedlam Cube, saying, "I don't like to give up. It is too easy…Have you ever heard the saying that quitters never win and umm…winners will…I don't know the rest of it but…I just don't want to be a

quitter" (Transcript May 4, 2011). Jeffrey also told me he wanted to find a solution to

the Mini Bedlam Cube without unfairly seeking out and using other's solutions:

> Jordan yesterday said, "Hey you should go on YouTube[24] and find out…the
> solution [to the Mini Bedlam Cube]." I'm like, "No way man! I want to finish
> this fair and square!"…I don't know. It feels wrong to cheat on it…because first
> of all…it wouldn't be that fun if you just found out on the Internet. It would be
> like, "Awesome!" and then the next day it would be like "You know it is not as
> awesome as before…as I thought it would be." (Transcript May 4, 2011)

Once he found a solution to the Mini Bedlam Cube Jeffrey described to me the next game

or puzzle he would choose to play would be one that is "Hard, hard, hard" (Field note

June 9, 2011). Jeffrey said, "I like a challenge" (Field note June 9, 2011). Based on

these observations and conversations with Jeffrey I also had a story line of Jeffrey as a

less challenging child to have in mathematics class with the games and puzzles because I

thought he enjoyed and was able to persevere through challenging and potentially

aggravating situations with games and puzzles in an honorable way.

Even though Jeffrey found complicated games and puzzles such as the Mini

Bedlam Cube challenging, overall I storied him as an expert at the games and puzzles.

During one of the first games and puzzles playing class periods Jeffrey "commented that

he just had an eye for games" like Railroad Rush Hour® and later he described many of

the other ThinkFun games and puzzles his class played as "pretty easy" (Transcript April

14, 2011). Indeed I observed that Jeffrey seemed to easily see possible solutions or

strategies for almost all of the ThinkFun games and puzzles as well as for many of the

other brands of games and puzzles. Noticing he excelled while playing many of the

games and puzzles, I asked Jeffrey to learn to play and present a commercial for more

than one game to the class when the children were learning to play the last of the games

and puzzles. My story of Jeffrey as a successful student who I could rely on to take on

extra responsibilities in relation to the games and puzzles in class also made me have a

story line of Jeffrey as a less challenging child to have in class.

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[24] YouTube is a video-sharing website…on which users can upload, share and view

videos" ("YouTube," 2011, para.1).

I also had a story line of Jeffrey as a less challenging child to have in mathematics class with the games and puzzles because I thought he appeared to get along well with his classmates. On numerous occasions I observed Jeffrey helping children sitting in his group who were struggling to solve their games and puzzles:

> Reese was starting to get stuck [while playing Railroad Rush Hour®] when
> Jeffrey who was sitting beside him thought that he saw how to solve it. Jeffrey
> then reached over and moved some of the pieces on Reese's board around.
> Jeffrey's moves seemed to make progress. (Field note March 1, 2011)

Seeing Jeffrey help other children with their games and puzzles eventually prompted me to ask Jeffrey on a few occasions to assist other children with their games and puzzles and he did so without hesitation, often voluntarily. My stories of Jeffrey as a helpful child also led me to have a story line of him as a less challenging child to have in mathematics class with the games and puzzles.

Why Different Story Lines?

Thinking about the two story lines I had of Jeffrey in mathematics class I was struck by how different they were. My story line of Jeffrey in regular mathematics class was of a difficult child. This story line of Jeffrey emerged from stories I had of Jeffrey in my inquiry as a child who was often off task, easy to give up in the face of challenges, unprepared for class, easily frustrated and angry, weak in mathematics, and difficult to assign to work with other children. However in mathematics class with the games and puzzles my story line of Jeffrey was of a less challenging child to have in class. I had this story line from my stories of Jeffrey as a successful child who excelled at solving many of the games and puzzles and was willing to help others needing assistance. Also when playing more challenging games and puzzles I storied Jeffrey to be a child who was on task, hard working, and able to persevere and handle frustrating situations. These stories of Jeffrey also led me to my story line of Jeffrey as a less challenging child to have in mathematics class with the games and puzzles.

Thinking about the two different story lines I had of Jeffrey reminded me of Anne and James in Clandinin et al.'s (2006) *Composing Diverse Identities: Narrative Inquiries into the Interwoven Lives of Children and Teachers*. As a part of her research at Ravine Elementary School Anne met with James, one of four Year 1 and 2 children, on a weekly

basis for book conversations. Over a three month period "the four children and Anne came together over the lunch hour to share favorite books and to talk about them in relation to their lives both in and out of school" (Clandinin et al., 2006, p. 62). Outside the noon hour book conversations, "Anne was aware of the school story created of James, a story with a plotline of not fitting in, of attention deficit, and of learning difficulties" (Clandinin et al., 2006, p. 66). However during book club, Anne noticed James to be living and telling stories of himself as thoughtful, curious, imaginative, humorous, strong, capable, kind, a good reader with an extensive vocabulary, and a student good at mathematics. I wondered why the story lines I had of Jeffrey and the story lines Anne may have had of James outside games and puzzles playing times and book conversation club were different from the story lines we had or may have had of them during games and puzzle playing times and book conversation club. I decided to inquire into what Clandinin, Murphy, Huber, and Murray Orr (2009) would call a place of tension with my different story lines of Jeffrey. I began by taking a closer look at the stories I had of Jeffrey as I lived alongside him in my inquiry.

Revisiting My Stories of Jeffrey

As I thought about the stories I had of Jeffrey as I lived alongside him in my inquiry, it was interesting to me that some of the stories I had of Jeffrey were not stories Jeffrey had of himself. For instance early on in my inquiry Amy had warned me about Jeffrey becoming easily frustrated which then led him to exhibit angry behaviors at school. After hearing this story of Jeffrey from Amy, I thought I had observed several instances outside games and puzzles playing class periods where Jeffrey became frustrated and acted out angrily. My observations coupled with additional stories Amy shared with me about situations outside of games and puzzles playing class periods where she had heard about or witnessed Jeffrey become frustrated and display angry behavior made me story Jeffrey as easily frustrated and angered. This story was one of my stories of Jeffrey that led me to have a story line of Jeffrey during regular mathematics class as a difficult child. However during our one-on-one research conversations Jeffrey told me the stories about him acting out angrily were stories that he used to live; he was now better able to handle frustrating situations and therefore his angry outbursts were a thing of the past.

Another situation where Jeffrey's story of himself was different from the story I had of him as I lived alongside him in my inquiry involved Jeffrey's relationships with his classroom peers. In one of my one-on-one research conversations with Jeffrey, Jeffrey indicated to me that he had few options when deciding what children in his class to spend time with because he used to be a bully to other children at school when he was in Grade 3. Even though Jeffrey indicated to me that he felt his relationships with the children in his class were improving, I still storied Jeffrey as a child who had poor relationships with his classmates based on assumptions I made about Amy's comments to me when Jeffrey and one of his classmates shared a game during a games and puzzles class period. Thinking Jeffrey to have poor peer relationships also led me to have a story line of Jeffrey as a difficult child to have in regular mathematics class.

Still thinking about how my story about Jeffrey and his peer relationships in regular mathematics class was so different from the story Jeffrey told of his relationships, I returned to my field notes of Jeffrey and found that I had written, "From what I have seen so far, it seems [Jeffrey] has good relationships with others. He always has a group to sit with so it appears he has friends in the class" (Field note March 3, 2011). At first I noticed that I had made this comment early on in my inquiry when I was just beginning to get to know Jeffrey and perhaps at the time I had not yet had enough experiences with Jeffrey outside of games and puzzles playing class periods to story him as having poor relationships with his classmates. However when I continued to look through my field notes I found while on noon hour supervision later on in my inquiry I had made the following comment: "I didn't really visit with Jeffrey but I noticed he was eating his canteen lunch very slowly. He was busy visiting with Randy, Jordan, and Craig. He definitely is a social butterfly!" (Field note May 16, 2011). Seeing this comment I was reminded of the times I had gone looking for Jeffrey when he had not arrived right away to meet me for our one-on-one research conversations and how I had found him visiting with his classmates in his homeroom or by his locker in the hallway (Field notes May 11, 2011 and June 9, 2011).

Reading in my field notes about my experiences looking for Jeffrey when he did not arrive for our one-on-one research conversations when I expected him reminded me of when Jeffrey and I had negotiated when our research conversations would take place.

Jeffrey had indicated to me that he could meet over the school lunch break as long as our conversations ended shortly after the mid noon hour bell so he could participate in a portion of the 25 minute noon recess break. Jeffrey indicated he enjoyed recess times and out of all the recess breaks, "noon hour recess [was] the most fun" (Field note April 12, 2011). Thinking about this conversation with Jeffrey it did not make sense to me that Jeffrey would say he enjoyed noon hour recess and would want to end our noon hour one-on-one research conversations early to take part in it if he had poor relationships with other children. Instead I would have thought Jeffrey would have wanted to spend the entire noon hour in one-on-one research conversations with me to avoid not having other children to play or socialize with during the recess portion of the break. Thinking then about the times I accompanied Amy outside for recess supervision I could not remember a time when I observed Jeffrey playing alone; he always seemed to be happily playing with his classmates. I began to think that perhaps Jeffrey's relationships with his peers were not poor at all.

At first I thought I had simply forgotten about the field notes I had just rediscovered about Jeffrey and his peer relationships when I had initially storied Jeffrey as having poor relationships with his classmates, but then I realized I had not. I had known all along that these field notes existed; I had just not interpreted them as stories of Jeffrey as a child with improved, possibly good relationships with other children. When Jeffrey had not arrived immediately for our one-on-one research conversations and I had found him visiting with other children when I had gone looking for him, I only thought about Jeffrey in those moments as a child who was late. Instead of storying Jeffrey as a social boy, I storied him as a child who was irresponsible because he could not be relied on to show up on time. Similarly when Jeffrey did not want our one-on-one research conversations to interfere with recess times, I did not think him to be sociable. Instead I thought of Jeffrey in this moment as a child who lacked commitment to things he signed up to take part in, such as being a research participant in my inquiry. These stories of Jeffrey as irresponsible and uncommitted were some of the stories that led me to have a story line of Jeffrey during regular mathematics class as a difficult child.

I wondered why I had taken stories of Jeffrey as a social boy and turned them into stories of irresponsibility and a lack of commitment. Wondering when and why I had

come to label Jeffrey as irresponsible and uncommitted I decided to examine the special education literature about labeling children.

Labeling Children in Schools

At first I noticed the special education literature I examined supported the practice of labeling children in schools.

Literature Supporting the Practice of Labeling Children in Schools

Elliot, Kratochwill, Littlefield, and Travers (1996) described the process of labeling children in schools as "a remarkable success story for special needs children" (p. 177). According to Elliot et al., "[l]abeling has allowed millions of children access to services that have improved the quality of their lives and the lives of their families" (p. 177). Thomson (2012) listed the many advantages of a system of classification in special education:

> First, a classification system enables *practitioners* to name disabilities, to differentiate them from one another, and to communicate in a meaningful and efficient way about a specific disability. Second, a classification system is essential for *researchers* as well. It would be very difficult to conduct research about physical disabilities, for example, without a system of categorizing the disability and the needs of those who have physical disabilities. Third, the system helps in forming *special interest groups* to lobby for improved services and promote enlightened attitudes. Finally, categories are helpful in developing particular *treatments and therapies*. The established categories make it easier to relate to a certain treatment or diagnosis for each category. (pp. 159-160)

In other words it is believed that exceptional children are being helped when their exceptionality(ies) is/are identified.

Based on these excerpts from Elliot et al. (1996) and Thomson (2012) it is not surprising the practice of labeling exceptional children would be a common practice in schools. Indeed looking back on my experiences with Jeffrey I began to see that as early as the first day I visited Jeffrey's fifth-grade mathematics class to introduce myself, my research and the Rush Hour® games I came to know Jeffrey as a labeled child. The moment Jeffrey was seated in the group of children who would have access to a teacher aid and be assigned the easiest of the Rush Hour® games, I came to know him as a child

labeled as requiring extra assistance. Later I learned Jeffrey had been labeled as having dyscalculia by an agency outside the school and even though school personnel appeared to not know of Jeffrey's dyscalculia label, they had labeled him as weak in mathematics, as indicated by Amy when she inspected his academic records. I also sensed Jeffrey may also have been labeled as having difficulty with anger management. It appeared many of the staff at Fraser Valley Elementary School, including Amy, identified Jeffrey as being easily frustrated and angered. Perhaps it was some sort of official label with regards to his ease to become frustrated and his angry outbursts that resulted in Jeffrey attending the five anger management camps he told me about in one of our one-on-one research conversations.

Thinking about the decisions Amy and I made the day I first visited Amy's fifth-grade mathematics class it appeared Amy and I were aware that it is important to identify children with exceptionalities so they can receive extra supports so they can achieve in school. Amy and I lived what some such as Clandinin et al. (2006) would call this dominant story of school[25] when we decided to make special arrangements for playing the Rush Hour® games for Jeffrey and the children in Amy's class identified as requiring extra assistance. We arranged for them to sit together so they would have access to one of the children's teacher aid and we planned to assign them the easiest version of Rush Hour®. By making these special arrangements we believed we were providing the children identified as requiring assistance with extra supports so they would be successful when playing the Rush Hour® games.

Literature Discrediting the Practice of Labeling Children in Schools

Reading the work of Thomson (2012) I learned there exists special education literature that discredits the practice of labeling children in schools. According to Thomson, "labeling is frequently associated with stigmatizing, isolating, and stereotyping individuals with learning, behavioral, or physical differences" (p. 158). Citing the work of Kuther (1994) Thomson went on to say:

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[25] Clandinin et al. (2006) described stories of school as "the stories composed by others and told to others about what the school is about" (p. 7).

Kuther (1994) observes that the label imposes a negative status on an individual and that labels entail that the identity assigned to a person is in some respect altered to his or her discredit. When an individual is publicly labeled, certain negative qualities are assigned to them; they are actually forced into the deviant role. The labeled individual is treated as if he or she possessed certain characteristics that are stigmatizing. (p. 159)

According to Fairbanks (1992), the negative status imposed by labels becomes more problematic. Once individuals are labeled, it is difficult for them to be seen by others in any other way. Fairbanks described her experiences with Glenn, a learning disabled student she met at the University of Michigan in 1988. Glenn shared with Fairbanks that even though he worked hard enough in his special education classes in high school to take "only mainstream classes by his senior year, he was still considered a learning disabled student" (p. 486). Glenn was not able to shake his learning disabled label. Once labeled as learning disabled, Glenn was not seen in any other way.

Thinking about Kuther's (1994) words about labels imposing a negative status on individuals my thoughts turned to the children labeled as requiring extra assistance in Amy's fifth-grade mathematics class. Even though Amy and I made decisions together about these children I wondered about my part in our decisions. Had I thought children labeled as requiring extra assistance were not capable of succeeding on their own when playing the Rush Hour® games? Was it this negative status I imposed on the children identified as requiring extra assistance that made me agree to seat them together so they would have access to a teacher aid and assign them the easiest version of Rush Hour®? Did I believe the only way the children in Amy's class identified as requiring extra assistance would be successful when playing the Rush Hour® games was if Amy and I lived out a dominant story of school about providing extra supports for these labeled children? Since Jeffrey was seated in the group of children identified as requiring extra assistance, I wondered if it was his label of a child requiring extra assistance that immediately made me impose a negative status on him when I saw Amy take Rush Hour® Jr. away. I assumed Jeffrey was not capable instead of the possibility that Rush Hour® Jr. may have been too easy for him. Perhaps it was also a negative status associated with this label and Jeffrey's other labels that affected the stories I had of

Jeffrey as I lived alongside him in my inquiry and made me have a story line of him as a difficult child to have in regular mathematics class.

Similar to Glenn's experience, once I had a story line of Jeffrey in regular mathematics class as a difficult child I could not see him differently in this context. When first thinking about why the stories Jeffrey had of himself as being better able to handle frustrating situations and as having improved peer relationships were different from the stories I had of him outside games and puzzles playing times, I did not consider the stories Jeffrey may be telling might be part of his actual stories to live by. My stories of Jeffrey as a child with poor social skills and poor behavior fit nicely with my story line of Jeffrey as a difficult child to have in mathematics class. Similarly even though my field notes about my experiences with Jeffrey evidenced Jeffrey as a social boy, I only interpreted them as stories of irresponsibility and lack of commitment, stories that also aligned with my story line of Jeffrey as a difficult child. Conveniently other field notes I had written about the experiences I had where I thought I observed Jeffrey off task, easily giving up, and not returning to mathematics class with complete homework also fit with the story line I had of Jeffrey as a child who would be a difficult to have in regular mathematics class. Regardless of the stories Jeffrey had of himself and my own observations of the stories Jeffrey seemed to live, I could not see him any other way in regular mathematics class once I had a story line of Jeffrey as a difficult child.

My Stories of Labeling Children in Schools

I now see the decisions I made the first time I visited Amy's fifth-grade mathematics class tell stories about the stories of labeling children I live. I impose a negative status on children when I learn of their labels. When I learned there were children in Amy's fifth-grade class labeled as requiring extra assistance, a negative status I associated with the children's labels affected the decisions I made for and about them. I assumed the children identified as requiring extra assistance would not be successful playing the Rush Hour® games unless extra supports were put into place for them. Together Amy and I lived this dominant story of school by deciding to seat the children together to have access to a teacher aid and to assign them the easiest version of Rush Hour®. When Amy took Rush Hour® Jr. away from Jeffrey I immediately decided Rush Hour® Jr. was too difficult for Jeffrey. Living stories of labeling children I did not

entertain the possibility that Rush Hour ® Jr. might have been too easy for Jeffrey. The negative status I associated with Jeffrey's labels also affected my stories of Jeffrey as I lived alongside him in my inquiry, leading me to have a story line of Jeffrey in regular mathematics class as a difficult child. This story line affected the way I interpreted the stories Jeffrey lived and told of himself.

The opportunities Amy's fifth-grade class had to interact with the games and puzzles interrupted the ways I was living stories of labeling children in my inquiry. The stories of labeling children I lived the first day I visited Amy's class were interrupted when Amy replaced Rush Hour® Jr. with a much more difficult Rush Hour® game and he played without assistance. The games and puzzles also interrupted the stories and story lines I composed of Jeffrey in my inquiry while living stories of labeling children. My story line of Jeffrey as a difficult child to have in regular mathematics class was interrupted by my story line of Jeffrey as a less challenging child to have in mathematics class with the games and puzzles.

Revisiting My Experiences with Jeffrey in My Inquiry

Realizing I live stories of labeling children I wondered how I might re-tell the stories I had of Jeffrey in my inquiry that led me to a story line of Jeffrey as a difficult child to have in regular mathematics class. When I revisited my experiences with Jeffrey in my inquiry I began thinking about the times when I thought I saw Jeffrey exhibit frustrated and angry behaviors and how these moments led me to story Jeffrey as child who had difficulty with anger management. In my one-on-one research conversations with Jeffrey I learned Jeffrey storied himself differently. Jeffrey told me the stories about him acting out angrily were stories that he used to live; he was now better able to handle frustrating situations and therefore his angry outbursts were a thing of the past. Wondering how Jeffrey might have felt being storied in a way he did not like and/or felt he was not, I began thinking about my experiences being storied in a way I did not like and felt I was not.

When Amy first introduced me to her colleagues and students at Fraser Valley Elementary School "she would often say that I was a mentor for her when she was [an] interning [teacher]. She talked about how I taught her everything she knows about teaching" (Field note February 11, 2011). When Amy talked about me in this way, I felt

storied as an expert and since taking on the role of Learning Support Teacher (LST) for First Steps in Mathematics[26] in my past school division, I struggled being storied in this way:

> As an LST for my school division…I am considered an expert in mathematics, especially in the First Steps in Mathematics program. I have often struggled with the idea that I am an expert. Over eight years of teaching mathematics, I have been fortunate to meet many dynamic mathematics teachers and attend many interesting and unique mathematics professional development opportunities. However there is still much more to learn. I feel I have only just scraped the surface of what there is to know about the teaching and learning of mathematics. I sometimes wonder whether I know enough to be considered an expert…Shouldn't experts know all there is to know and what to do in any situation within their area of expertise? Am I the right person to be helping other teachers?...Even though I have stepped into the role of an expert, I certainly don't feel like one...I sometimes think that teachers expect school division consultants to know everything...I do not want to be viewed in this way. I certainly do not know everything. (Memory construction, September 21, 2009)

My tensions of being storied as an expert made me begin to feel uneasy when Amy invited me to teach lessons in her fifth-grade mathematics classroom. I said, "I like the idea of team teaching but it also makes me nervous...I know that Amy thinks highly of me and I certainly do not want to disappoint her with a terrible lesson" (Field note February 28, 2011). I did not want to disappoint Amy. I said, "I am afraid that I am not the teacher that she thinks I am" (Field note February 28, 2011).

Thinking about how uncomfortable I felt during my experiences as an LST and in the moments with Amy when I felt I was being storied in a way I did not like and felt I was not, as an expert, I began to think about how Jeffrey would have felt during the times

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[26] First Steps in Mathematics is a professional development program and set of resources I had been trained to facilitate two years prior to accepting my position as LST. "The aim of First Steps in Mathematics is to improve students' learning of mathematics" (Government of Western Australia: Department of Education and Training, 2006, p.1).

he was storied in a way he did not like and/or felt he was not. Thinking about each of the frustrated and angry episodes involving Jeffrey I wrote about in my field notes I realized Jeffrey may have behaved the way he did, not because he was a difficult child, but because he felt he was being storied in a way he did not like and/or felt he was not, as weak in mathematics.

This seemed to be the case when Amy's class was reviewing related multiplication and division facts sentences. Jeffrey refused to work and swore under his breath at Amy after I had questioned his solution and showed him mine, hoping he would add more detail to his already correct answer. I immediately attributed Jeffrey's behavior to stories I had heard of Jeffrey having anger management issues and when Jeffrey refused to complete any more questions, I also storied him as a child who easily gives up in the face of challenging tasks. I now wondered if Jeffrey became upset and refused to do any more work because I was someone who was just getting to know him and I already had the same stories of him as everyone else, stories that his answers, even though correct, were not detailed enough because he did not know mathematics.

In the next angry episode I recorded about Jeffrey I wrote about how Jeffrey crumpled up a test paper and yelled that he hated mathematics after he was taken outside the classroom to finish writing a mathematics test he had missed while on a weeklong vacation with his family. I wondered if Jeffrey felt storied as not good at mathematics when he was taken to write the exam without an opportunity to review and find out what he had missed while he had been away. I wondered if he felt his teacher did not think he was capable of knowing mathematics so giving him time to prepare for the exam would not matter anyway.

Later on in my field notes I wrote the explosive behavior Jeffrey had exhibited when he was asked to write the test he had missed prompted Amy and I to decide that it was important to talk to him about the upcoming provincial mathematics assessment so it would not be a surprise and he would not become upset. A few days before the start of the assessment, Amy took Jeffrey outside her classroom to talk about the upcoming provincial mathematics assessment. She told Jeffrey that she wanted the experience of writing the assessment to be "as painless as possible for him" (Field note May 13, 2011) and asked him if he would be interested in working on it by himself, with me, or with Mr.

Jackson, the special education teacher who supports children. Amy told me that Jeffrey instantly became upset and would not respond to her question. When he came back into the classroom he refused to do his work, yelling at those who offered to help him and scribbling on his notebook.

I wondered if Jeffrey felt storied as not good at mathematics the moment Amy pulled him out of the classroom to talk to him about potential special arrangements when writing his exam. Perhaps he knew of a dominant story of school about special arrangements, especially those that included the special education teacher, that would story him as not capable of completing and doing the exam on his own. I wondered if Amy exacerbated the situation when she told Jeffrey she wanted the assessment to be as painless as possible. Perhaps Jeffrey felt she was insinuating that writing the assessment would involve some degree of pain for him because he was just not smart enough in mathematics.

I wondered how Jeffrey felt being storied as not good or not knowing mathematics? Perhaps Jeffrey did not feel like he was as weak or not smart in mathematics as he was being storied. In either situation it could be expected that anyone would eventually become frustrated or act out angrily if they were repeatedly storied in a way they did not like or if they felt the stories they were trying to live and tell of themselves were not being heard. I wondered if this also explained why Jeffrey became upset during the one-on-one conversation we had where the hamburger I brought him for lunch came equipped with condiments he had not ordered. According to Jeffrey, he had asked the restaurant for his hamburger to be prepared a certain way several times in the past and each time it was not. Perhaps Jeffrey was not so much frustrated with the hamburger he received, but more so with the fact that even fast food restaurants do not listen to him.

Thinking about the stories I had of Jeffrey having poor peer relationships and anger management issues might not be a part of Jeffrey's stories to live by I began wondering about other stories I had of Jeffrey that led me to my story line of Jeffrey as a difficult child to have in regular mathematics class. This story line was also influenced by the stories I had of Jeffrey outside games and puzzles playing times as a child who was off-task and unprepared for class and easily gave up in the face of challenges. If

Jeffrey was not as weak in mathematics as he was storied, perhaps he was bored in mathematics class, explaining his off task behavior. An off task child would likely not work on instructional tasks, regardless of how challenging they were, and would not finish their assigned work during class time, explaining why Jeffrey often had homework. If Jeffrey felt the assigned work was not engaging, it might not come back to school complete if assigned for homework.

Interpreting my experiences with Jeffrey differently I began to see the stories I had of Jeffrey in my inquiry changing, making my story line of Jeffrey in regular mathematics class align more with the story line I had of Jeffrey in mathematics class with the games and puzzles as a less challenging child to have in class. I felt it would be necessary to continue to live alongside Jeffrey on school landscapes to learn more about him.

A Curriculum of the Games and Puzzles

Moving forward I see it is important for me to open up spaces in my future classrooms where stories of labeling children I live can be interrupted. Based on my experiences in Amy's fifth-grade classroom, a curriculum of the games and puzzles is that they open up these spaces for me. Even though I was not aware the games and puzzles were interrupting the ways I was living stories of labeling children in my inquiry, I believe it was the interruptions that kept me reflecting on, returning to, and wondering about my experiences in Amy's class and my stories and story lines of Jeffrey. This led me to eventually inquire into them and come to understand the stories of labeling children I live. Perhaps for Anne (Clandinin et al., 2006) noon hour book conversation clubs are spaces for her that interrupt stories of labeling children.

As the stories of labeling children teachers live are interrupted and they become aware of how they are living these stories in classrooms, perhaps the children they teach will more easily live and tell their stories to live by, changing their experiences in schools. In the case of Jeffrey I can not help imagine how different Jeffrey's school experiences would be if he could more easily live the story of a less challenging child to have in class rather than a difficult child. For Jeffrey I think it would be a game changer.

CHAPTER 4

A CURRICULUM OF GAMES AND PUZZLES: SPACES FOR INTERRUPTING
STORIES OF TEACHERS

Another Resonating Moment

*Amy's twenty-eight fifth-grade mathematics students strain and squirm in
their desks to catch a glimpse of which of the seven black cloth bags numbered #1
through #7 their group will be assigned today. Inside each bag there are several
copies of one of the following ThinkFun games and puzzles: Shape by Shape®,
Hoppers®, Chocolate Fix®, Treasure Quest®, Sudoku 5x5 ™, River Crossing®,
and Pete's Pike. Each bag also includes several copies of an instruction sheet
with written instructions and diagrams illustrating how the game or puzzle
featured in the bag is played.*

*Before Amy and I distribute the game bags I tell the children that unlike
previous class periods they are not required to first carefully read the games and
puzzles instruction sheets before opening up the games and puzzles. Instead I
instruct the children to learn how to play the games and puzzles using whatever
strategies or methods they want. I remind them the sooner they learn how to play
their games or puzzles, the more time they will have to enjoy playing them.*

*When Amy and I distribute the game bags all of the children immediately
unpack the games right away and take apart and inspect all the pieces. I notice at
some point in time many of the children choose to read through their game
instruction sheets either by themselves or with the other members of their group.
Overall I also notice the children are much more successful at learning how to
play the games and puzzles than in previous class periods.* (Interim Text July 24,
2011)

Remembering there was another moment in my inquiry that resonated with me
when I had been reading and rereading my field texts, I wondered what else I might learn

if I inquired into it. To help me better understand this resonating moment, I wrote the above interim text about it using field notes I had written throughout my inquiry. In this chapter I inquire into this second resonating moment and learn more about curriculum that unfolds for me during experiences with games and puzzles in a mathematics class. The decisions I made teaching the seven ThinkFun games and puzzles to the class had stories to tell and once again those stories to tell were about my stories to live by. Coming to know myself better gave me insight into myself as a curriculum maker and led me to understand more about a curriculum of the games and puzzles for me.

Games and Puzzles Class Periods Leading Up to My Resonating Moment

As I read and thought about my interim text I realized my resonating moment was more than just one moment. The experience I wrote about in my interim text was a culminating moment that took place during the fifth class period I spent teaching Amy's fifth-grade class how to play the seven ThinkFun games. Revisiting my field notes about the events of the four previous games and puzzles class periods helped me gain insight into why the moment during the fifth class period resonated with me.

First Class Period

During the first games and puzzles class period I noticed in my field notes that I began the class by explaining to the children my plan for teaching them how to play the ThinkFun games and puzzles in the black bags. The children were seated into seven groups and over seven games and puzzles class periods I planned for the seven game bags to be rotated through each group. Each class period the children would be assigned a new game bag and they would learn how to play the ThinkFun game or puzzle featured inside using the accompanying instruction sheets. By the end of the rotation the children would know how to play all the games and puzzles in the bags.

Before Amy and I distributed each group their first game bag I instructed the children to "read over the instructions with the members of their [group] before taking the game pieces out of the bags and trying the games" (Field note March 4, 2011). When Amy and I distributed the bags, we found my instructions were not followed. Most children opened up their games and puzzles right away to see exactly what was inside. Amy and I frantically darted around the classroom to stop them, reminding them to read the instruction sheets first.

Second Class Period

The second games and puzzles class period unfolded in much the same way as the first class period. Reading my field notes I was reminded that even after I explicitly asked the children to first read their instruction sheets, Amy and I offered constant reminders to follow my directions. Once we finally had all the children looking at the instruction sheets it did not seem long before I noticed the room filling with sounds of games and puzzles pieces clattering on desks as the children opened up the bags. In my field notes I wrote, "I was not sure that many groups actually read the instructions. The games seemed to come out of the bags quite quickly" (Field note March 4, 2011). Thinking it should take longer for the children to read over the instruction sheets, I questioned the children if they had actually finished reading the instruction sheets fully, and they claimed they had.

In my field notes I then described how I noticed one of the first groups of children who had inspected their game pieces was the group who had been assigned the River Crossing® game. I wrote, "There was no way that the instructions were read [by the River Crossing® group]" (Field note, March 4, 2011). Since River Crossing® happens to have the most lengthy and detailed instruction sheet I felt the group with this game should be one of the last groups beginning to play, certainly not one of the first.

Annoyed at the group of children playing the River Crossing® game, I observed them to see how they would learn to play River Crossing® without first reading its instructions. At first, "They had no idea what to do or how to set their game boards up" (Field note March 4, 2011) and unlike the first games and puzzles class period where I assisted groups struggling to learn how to play their games and puzzles, "I didn't tell them [how to play]. I wanted to force them to read the instructions to figure out how to play" (Field note March 4, 2011). I thought if I did not help the River Crossing® group they would come to realize reading the instruction sheets was an important strategy for figuring out how to play the games and puzzles and they should have used this strategy first as I had asked them to. However, by the end of the class period I noticed the children in the River Crossing® group still had not read their game instruction sheets. In my field notes I wrote, "Eventually they figured out how to play but they wasted a lot of time guessing" (Field note March 4, 2011).

Continuing on in my field notes I remembered throughout this same class period I had noticed the groups of children playing Pete's Pike and Hoppers® also had difficulty playing their games and puzzles. These games had also caused problems for the groups of children who played them the first class period. "Pete's Pike…was a game that I found difficult to learn how to play" (Field note March 4, 2011) so I had anticipated the children might also find it difficult. As for Hoppers® the children who experienced difficulty learning how to play claimed they did not realize both green and red frogs are allowed to jump around the game board. Initially I saw where this misunderstanding might come from because only the red frog jumps to solve the challenge in the diagram on the instruction sheet. However, after watching the River Crossing® group, I wondered if the real reason the children had not been immediately successful at learning how to play Pete's Pike and Hoppers® was because they had also not really read their game instruction sheets.

Third Class Period

Moving forward to my field notes about the third games and puzzles class period I recalled what happened when the groups of children were assigned a third new game or puzzle to learn. Before Amy and I distributed the game bags I once again reminded the children to read through the instruction sheets first before opening up their games and puzzles. In my field notes I wrote, "Some students follow[ed] my instructions and others [did] not" (Field note, March 9, 2011). I also described how once again Amy and I struggled to get all the children to read the instruction sheets first and throughout the class period groups of children continued to struggle to learn how to play their games and puzzles.

Reading the field notes I wrote after that third class period I remembered I found myself convinced not reading the game instruction sheets was the reason some of the children in Amy's class had struggled over and over again to learn how to play the games and puzzles. In my field notes, "I wonder[ed] more about why the students would choose not to read the instructions to the games, especially when they have been asked to do so" (Field note March 9, 2011). As I wondered I was reminded of a conversation I had with Amy when we first met to talk about my inquiry:

At the beginning of the school year Amy told the children in her homeroom class that she wanted to have a classroom where the children were seated in groups of their choice. She wanted to encourage the children to talk with each other about the ideas they were learning in class. She also wanted her students to make their own decisions about when to use the bathroom or get a drink instead of always asking her for permission.

Shortly after sharing her classroom vision with the children in her homeroom, Amy became unhappy with what was going on in her classroom. During class time Amy found her students visiting with their friends about topics unrelated to what they were learning. Also students were leaving the class multiple times for drinks and to use the bathroom. Sometimes many students were leaving the classroom at the same time. Amy eventually revoked the freedoms she had given her students. She moved the students' desks out of a group seating arrangement and back into rows and she made rules for the students to follow about bathroom and drink breaks instead of allowing them to make their own decisions.

Disappointed that her homeroom classroom was not as she had initially envisioned it, Amy eventually decided to talk about how she was feeling with her class. She told the students what her initial vision had been for their classroom…She [then] asked her students to share their vision and to her surprise she found their vision was the same as hers. Agreeing they wanted the same things, Amy and the children immediately resumed the classroom procedures and expectations Amy had originally began with at the beginning of the school year but this time with fewer problems. (Field note February 14, 2011)

I was reminded of this conversation with Amy because I thought there were similarities between Amy's experience negotiating classroom procedures and expectations with her homeroom students and my experiences teaching the children in my inquiry how to play the ThinkFun games and puzzles. I realized both Amy and I had had strong ideas of how things should unfold in the classrooms where we worked. Amy wanted certain procedures and expectations to be adopted in her classroom and I wanted the games and puzzles featured in my inquiry to be learned a particular way, by first

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reading their instruction sheets. Both of us told the children we were working with what we wanted and in both situations the children did not adopt our ideas the way we had envisioned and we became frustrated.

However, I had noted that Amy was able to eventually attain what she wanted with the children in her classroom. When she shared with her students the kind of classroom she envisioned and asked them to tell her about the kind of classroom they would like, both Amy and her students found they wanted the same things. The initial ideas Amy had about her classroom procedures and expectations were then put into action with little difficulty.

Thinking the key to Amy's success was that she eventually involved her students in creating classroom procedures and expectations together with her I returned to thinking about my experiences teaching the ThinkFun games and puzzles. In my field notes I wrote, "Telling the students to read the instructions might have been the problem" (Field note March 9, 2011). I wondered if, like Amy, I needed to involve the children in my inquiry in deciding how to learn to play the seven ThinkFun games and puzzles:

> I should have given the student groups their game bags, with the instructions included, and let them negotiate themselves how they would learn how to play the games. Then if we discussed strategies that students found were working in their groups, perhaps the students would have discovered that reading the instructions first is a good strategy…[and] more students would have done it. (Field note March 9, 2011).

During the reflection time in the next class period I planned to ask the children to share their experiences with successful strategies for learning to play the games and puzzles. I hoped they would mention reading the instruction sheets and then the class would adopt this strategy when learning how to play the rest of the ThinkFun games and puzzles.

Fourth Class Period

Continuing on in my field notes I read about what happened in the fourth class period when Amy turned the last fifteen minutes of her mathematics class period over to me for games and puzzles time.

> I asked the children to share strategies that have worked for them and their groups
> to learn the games quickly so they would have more time to play. One of the

children talked about reading the instructions and looking at the pictures and examples on the instruction sheet…One child talked about the instructions being difficult to follow until you saw the game pieces or until they attempted to set the game up. Another child talked about some of the instructions being helpful but not all of them. (Field note March 10, 2011)

As the children and I talked I decided I would no longer insist the children read the instruction sheets before opening up the games and puzzles since some of the children had found this strategy not helpful. Instead when the children received new games and puzzles the next games and puzzles class period I would allow them to choose what strategies they would like to use to learn how to play.

As described in my interim text at the beginning of this chapter, many of the children chose to read the instruction sheets in the fifth class period even after I instructed they could learn to play the games and puzzles using any strategies or methods they wanted. The children then seemed much more successful at learning how to play their ThinkFun games and puzzles in the fifth class period, including the groups of children learning to play River Crossing®, Pete's Pike, and Hoppers® games which caused the children difficulty in previous games and puzzles playing class periods.

Why My Resonating Moment Resonated With Me

Inquiring into my experiences teaching the seven ThinkFun games and puzzles I began to gain insight into why my experience during the fifth class period resonated with me. I realized the children suddenly choosing to read the instruction sheets was a place of tension for me. In previous class periods when I had asked the children to carefully read the instruction sheets before opening up their games and puzzles, most had not done so and several groups of children experienced difficulty learning how to play their games or puzzles. However, when I allowed the children to figure out how to play the games and puzzles using any strategies they wanted, most of the children chose to read the instruction sheets at some point in time, including some of those children who suggested during reflection time that reading the instructions was not a good strategy. Then the children seemed much more successful at learning to play the games and puzzles. I wondered why reading the instruction sheets suddenly became important to the children.

As I wondered about the children reading the instruction sheets my thoughts returned to a past experience I had as a teacher when I was required by my school division to teach my mathematics classes using a single textbook program. I remembered I felt being mandated to use a single textbook program restricted my ability to make professional decisions and seized a part of my professional identity. I wondered if the children in Amy's fifth-grade mathematics class felt the same way when I tried to force them to follow my plan that they first read the games and puzzles instruction sheets in order to learn how to play the games and puzzles. Just as I had wanted to have a say in what curriculum resources I would use in my mathematics classroom, had the children wanted to have a voice in what strategies they would use to learn how to play the games and puzzles? Had the children later chosen to read the instruction sheets because I had involved them, giving them an opportunity to "learn from one another's stories and see themselves as new characters both in their own stories and in the story being constructed in the classroom" (Clandinin, 2008, p. 10)?

To help me understand my wonders and questions surrounding my place of tension I decided to reread my field notes about my experiences teaching the seven ThinkFun games and puzzles and reflect more deeply upon my experiences with the children and the games and puzzles instruction sheets.

Unpacking My Decision to Plan for Reading of the Instruction Sheets

Rereading my field notes I was struck by how adamant I was for the children to follow my plan for them to learn how to play the games and puzzles by first reading the games and puzzles instruction sheets. When I handed out the bags containing the games and puzzles in each of the four class periods leading up to my resonating moment in the fifth class period I told the children they must read the instruction sheets before doing anything else. Each time the children were given the signal to open the game bags and several children did not begin by reading the games and puzzles instruction sheets, I found myself darting about the classroom insisting the children learn how to play the games and puzzles in the way I had planned for them to do so. When the children who still did not read the instruction sheets were unsure of how to play their games and puzzles, I decided to teach them a lesson. I refused to help them, hoping they would see the importance of my plan for them to first read the instructions. Even though in the third

class period I gave the children an opportunity to be involved in identifying successful strategies for learning to play the games and puzzles, I still hoped they would mention reading the instruction sheets and then learn to play the rest of the ThinkFun games and puzzles using this strategy as I had planned.

Reflecting more deeply on my actions I wondered if my plan for the children to learn to play the games and puzzles by first reading the instruction sheets had been necessary. Did the children really need to read the games and puzzles instruction sheets first before opening up their games and puzzles? Would it not have been acceptable if they had read the instruction sheets after they had taken out and inspected their game and puzzle pieces? I wondered if it had even been necessary for me at all to decide to plan how the children would learn to play the games and puzzles. In the end as long as the children were familiar with how to play the games and puzzles, did it really matter what strategy/ies they used to learn how to play them?

This reflecting on my actions returned me to writing I had done early in my graduate program about one of my childhood experiences playing school. In this writing, while playing the role of teacher, I planned everything from how my pretend classroom would be set up and organized to how my make-believe students would complete the activities and assignments I planned for them. My game of school unfolded as I had planned, including which of my students succeeded overall. My favorite dolls, who I imagined always following along with my plans, listening to my lessons and following my instructions, rules, and procedures, often had the best averages. Thinking about the planning I did both in the role of teacher in my childhood games of school and while teaching the games and puzzles in my inquiry, I wondered about myself as a teacher. To learn about my teacher stories[27] I decided to inquire into my experiences of teachers and teaching over time.

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[27] Teacher stories are the stories teachers "live and tell of who they are and what they know" (Clandinin et al., 2006, p. 7).

My Experiences of Teachers and Teaching Over Time

Inquiring into my experiences of teachers and teaching as a child, a pre-service teacher, a beginning teacher, and in my last teaching position I began to unpack the stories of teachers[28] I have lived and told, gaining insight into my teacher stories.

Childhood Experiences of Teachers

As a child in school I experienced my teachers planning all aspects of a classroom including the set up and organization of the physical classroom space, its rules, procedures, disciplinary measures, what would be taught each day and how it would be taught, and the methods in which learning would be assessed and evaluated. I remember as a child I worked hard to follow classroom rules and procedures and learn what my teachers taught in the way they wanted me to learn it. I was successful by working hard at following my teachers' plans as evidenced in the following word image created using teacher comments from my kindergarten through Grade 12 report cards:

> Very polite and orderly and never had to be disciplined
> Always doing work neatly and correctly
> Doing excellent work
> A model student
> Participates…Gets along well with classmates
> Always get her best effort
> Prompt and uses her time wisely
> Satisfied with only her best
> Alert, attentive, and thorough
> Dedicated
> Very precise
> Cooperative and hardworking
> Excellent Achievement
>
> (Field text January 8, 2016)[29]

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[28] Thinking about how Clandinin et al. (2006) describe stories of school, stories of teachers can be thought about as the "stories composed by others and told to others about what [teachers] are about" (p. 7).

[29] Each of the thirteen lines in this word image represents one of each of the thirteen years I attended Cottonwood School from kindergarten to Grade 12, beginning with a teacher comment form my kindergarten report card on the first line, a teacher comment from my Grade 1 report card on the second line, and so on and so forth to Grade 12.

In the comments they made on my report cards my teachers rewarded me for following their plans for me to focus on doing the work of schooling, participating, following rules and expectations, being diligent and organized, and in general being a good classroom citizen (according to them).

Reflecting deeper I realized my childhood experiences of teachers and teaching influenced the story of being a teacher I had as a child. At a young age I came to know stories of good teachers as those who plan and whose plans were followed by their students. In my childhood games of school I enacted these dominant stories when I played the role of teacher and my dolls were my students.

Pre-service Teacher Experiences of Teachers

In my teacher education program I learned about the importance of planning. My curriculum studies courses and my student teaching experiences emphasized the components and processes of preparing well-planned lessons and units. Besides planning, my curriculum studies courses also focused heavily on constructivism. A constructivist theory of learning "places students at the center of the [learning] process – actively participating in thinking and discussing ideas while making meaning for themselves" (King, 1993, p. 30). Under a constructivist theory of learning the teacher's role is to "facilitate students' interaction with the material and with each other in their knowledge-producing endeavor" (King, 1993, p. 30). The teacher "orchestrates the context, provides resources, and poses questions to stimulate students to think up their own answers" (King, 1993, p. 30). I demonstrated what I learned about planning in my curriculum studies classes and student teaching experiences by preparing lesson and unit plans for a variety of school subject areas. My lessons and units featured teaching methods such as experiential, inquiry, and problem-based approaches to show what I had come to know about the constructivist theory of learning.

Reflecting on my experiences as a pre-service teacher I thought about how I had been an outstanding planner. Not only did I earn high grades in my curriculum studies courses' lesson and unit planning assignments, but also I was praised in my student teaching evaluations for good planning and when my lessons and units unfolded as I had planned. As a pre-service teacher I was also recognized for good planning when one of my professors asked me to present one of my unit plans at a provincial mathematics and

science teachers conference. Later this same unit plan was published as an exemplar in my college's internship manual. My excellent planning skills also helped me secure several student employment positions including a summer position planning and assisting with the design and layout of interactive lessons, tutorials, and quizzes for a high school mathematics internet/software program.

Reflecting deeper I realized my pre-service teacher experiences confirmed the dominant stories of good teachers as those who plan and whose plans are followed I came to know as a child. Even though learning about the theory of constructivism influenced the teaching methods I used in my planning, I still planned every moment in my lessons and units including what would be taught, when it would be taught, what resources would be used, how children would interact with these resources and each other, and what questions I would ask. Since I also anticipated the responses and actions of my students, I planned that my lessons and units would unfold a certain way. I did all this planning because my pre-service teacher experiences had reiterated what I had come to know as a child about the importance of planning for good teaching. Being successful and rewarded for being a good planner also confirmed my understanding of good teachers as those who plan and whose plans are followed.

Beginning Teacher Experiences of Teachers

Thinking about myself as a beginning mathematics teacher in my first teaching position I connected with Frakes and Kline (2000) when Frakes described herself as a mathematics teacher:

> In my view of myself as a teacher, I was what I call a 'displayer of techniques' and a 'supplier of information.' I *showed* my students how to make a pattern or extend a given pattern. I asked a lot of questions but I *supplied* students with the necessary information in the working of my questions so that little thinking was required. (p. 377)

Like Frakes during my first few years teaching mathematics I planned what mathematics my students would learn and how it would be learned. If my students learned mathematics in the way I planned, they were successful in my classes.

Inquiring further into my experiences as a beginning teacher I remembered I had also connected with Frakes and Kline (2000) when Frakes described her experiences

implementing a new kindergarten mathematics program focusing on learning through exploration and encouraging children to invent their own strategies and approaches:

> I felt disequilibrium many times. I felt at times that I was no longer in control of my students' learning, because they were able to go in so many different directions with the explorations in the program…I also found it incredibly challenging to ask good, thought-provoking questions without supplying the answers…It seemed too overwhelming to think of questions in the heat of the "teaching moment." (p. 377)

Revisiting Frakes and Kline's words reminded me how as a beginning teacher I suddenly felt uncomfortable with the teaching methods I had learned about and practiced in my teacher education program. I came to see no matter how well I planned my lessons and anticipated and prepared for what might happen as I taught them, I could not always predict the responses and actions of my students as they were making meaning for themselves. The children in my classroom were not like my dolls in my childhood games of school. They did not just quietly do as I had planned. Unable to predict what would happen as I was teaching I worried I would not always know what to do and/or I would handle situations in the wrong way. As a new teacher seeking tenure, it was important to me to be successful and I thought successful teaching meant always knowing what to do and how to do it. Feeling more comfortable and sure of myself when my lessons unfolded as I had planned, I became what Frakes and Kline describe as a displayer of techniques and a supplier of information. I lived theses teacher stories as a beginning teacher because the teaching methods I had learned about in my teacher education program did not allow me to enact the dominant stories of teachers as those who plan and whose plans are followed I came to know as a child and in my pre-service teaching. As a pre-service teacher I did not realize in planning every aspect of the child's interaction in my lesson and unit plans I was not considering the lives the children would bring to the classroom.

Experiences of Teachers in My Last Teaching Position

Reflecting on my experiences in the last teaching position I held before beginning my graduate program[30] I found myself living and telling different teacher stories than I lived and told as a beginning teacher. Over the years as I became a more experienced teacher, more knowledgeable, comfortable, and confident, I began experimenting with and practicing in my classrooms the methods I had learned as a pre-service teacher. As I experimented, I discovered the richness of teaching and learning in unplanned moments and I began to understand constructivism in a deeper manner. Besides good planning I learned good teaching also involves "those 'teachable moments' and a flexibility to go with the flow of students' interests and needs" (Schnackenberg & Burnell, 2013, p. 22). As my teacher stories shifted away from the dominant stories of teachers I lived as a child, a pre-service teacher, and a beginning teacher, the directed teaching methods that filled my lesson plans in my first few years of teaching were replaced with lessons involving experiential, inquiry, and problem-based approaches.

Unpacking my experiences of teachers and teaching over time I gained insight into the dominant stories of teachers as those who plan and whose plans are followed I have lived and told. I came to see these stories have shaped me as a teacher, that is, my teacher stories. With a better understanding of my teacher stories I returned my thoughts to the class periods where I spent teaching Amy's class the seven ThinkFun games and puzzles.

Living Dominant Stories of Teachers While Teaching the Games and Puzzles

Revisiting my experiences teaching the seven ThinkFun games and puzzles to Amy's class I began to gain insight into my decision to plan for the children to first read the instruction sheets before opening up the games and puzzles. My decision told stories of how I once again lived dominant stories of teachers as those who plan and whose plans are followed. Even though it may not have mattered which strategy/ies the children used to learn to play the games and puzzles, I planned how the games and puzzles would be learned anyway because of stories I had that planning is what good teachers do. I insisted

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[30] When I began my graduate program I took a part-time leave from my teaching position. Eventually I resigned to pursue graduate studies full-time.

the children follow along with my plan for them to first read the instruction sheets and became upset when they did not because I lived stories that the plans of good teachers are followed by their students. Even when I involved the children, giving them a voice in deciding what strategies to use when learning to play the games and puzzles, I was focused on my plans unfolding as I had planned. I hoped the children would recognize reading the instruction sheets and then use this strategy when learning the rest of the games and puzzles.

Reflecting more deeply on my experiences in my inquiry I began to understand why I once again lived dominant stories of teachers as those who plan and whose plans are followed when teaching Amy's class how to play the ThinkFun games and puzzles. I remembered I wrote the following field note during my inquiry:

> Sometimes I think I am taking a step forward and beginning to understand narrative inquiry and other times I feel I haven't really moved forward at all and I am still unsure about what it means to be a narrative inquirer and conduct a narrative inquiry…Not firmly moving forward towards knowing what it means to be a narrative inquirer and conduct a narrative inquiry is bothersome to me because I am the type of person who…wants to know how to do things and be on the 'right' path. I am terrified that I will get to the end of my twelve weeks of data collection in my study and I will find that I was doing, looking for, and writing down the 'wrong' things. (Field text, April 6, 2011)

As a first time narrative inquirer researcher I wanted to be successful but felt scared and unsure of myself. I did not know what to expect as my narrative inquiry unfolded and I was afraid I might not be conducting a narrative inquiry in the right way. When I experienced similar feelings as a beginning teacher I also turned to living dominant stories of teachers as those who plan and whose plans are followed.

The opportunities Amy's fifth-grade class had to interact with the games and puzzles interrupted my living of dominant stories of teachers as those who plan and whose plans are followed while teaching the seven ThinkFun games and puzzles. Each time I made a plan in the moments of teaching the games and puzzles, my plans did not unfold as I had planned. While playing the games and puzzles the children in Amy's class were not dolls who quietly followed along with my plans and did exactly what I

asked them. Instead, the children brought in their "living presence" (Aoki, 2005, p. 161) when interacting with the games and puzzles and as a result, curriculum I experienced or lived was not the curriculum I planned.

According to Aoki (2005), curriculum-as-lived is often different than curriculum-as-plan. Curriculum-as-plan "assumes a fiction of sameness" (Aoki, 2005, p. 161). In other words, curriculum-as-plan expects curriculum will be experienced in the same way by teachers and children. It "disavows the living presence of people…views a teacher…and children…without unique names, without freckles, without missing teeth, without private hopes and dreams" (Aoki, 2005, p. 161). What actually happens, curriculum-as-lived, will be different because teachers and children are unique individuals who will experience and live out curriculum-as-plan in unique ways.

Reflecting further on Aoki's (2005) words about curriculum-as-lived I began to gain insight into the children in Amy's class eventually choosing to read the instruction sheets in the fifth class period. When I first reflected on my tension with the children in Amy's class suddenly choosing to read the instructions, I thought the reading might have suddenly became important to the children because of my plan to involve them in the learning process. I provided the children an opportunity to say reading the instruction sheets was a strategy for learning to play the games and puzzles they had lived and/or they had heard others like them had lived rather than something I told them to do. I now had come to the possibility of a different understanding of why reading the instruction sheets might have become important to the children. I wondered if in the class periods leading up to the fifth class period the children had noted how important it was to me that they learn to play the games and puzzles by reading the instruction sheets. I had asked the children to first read the instruction sheets each time they were given their black bag containing the games and puzzles. I then circulated the room reminding the children to follow my instructions. Maybe the children even noticed my frustration with those groups of children whom I felt did not read the instruction sheets or how excited I was when one of the children mentioned reading the instruction sheets when I involved the children in discussing strategies for successfully learning how to play the games and puzzles. I began to think reading the instruction sheets became important to the children, not because of my plans to involve the children and let their voices be heard, but because

they noticed through my words and actions that reading the instruction sheets was important to me. A curriculum of reading the instruction sheets was lived outside of my curriculum-as-plan.

As curriculum maker I learned I must indwell between the worlds of curriculum-as-plan and curriculum-as-lived, "[giving] a hearing to both [worlds] simultaneously" (Aoki, 2005, p. 161). It is still important for me to plan to co-compose curriculum with children but I now realize I must also attend to what curriculum I am co-composing through my words and actions with children outside of my curriculum-as-plan. Not only is it important to attend to curriculum-as-lived in the things I say and do, but also in the things I do not say and do. Attending to both curriculum-as-plan and curriculum-as-lived will help me better understand how I co-compose curriculum with children and what curriculum I co-compose with them.

A Curriculum of the Games and Puzzles

Moving forward I see it is important to open up spaces in my future classrooms where stories of teachers I live and tell can be interrupted. Based on my experiences in Amy's fifth-grade classroom, a curriculum of the games and puzzles is that they open up these spaces for me. Just as in Chapter 3, in the moments of teaching the seven ThinkFun games and puzzles, I was not aware the games and puzzles were interrupting the stories I was living. However, it was the interruptions that kept me reflecting on, returning to, and wondering about my experiences. This led me to eventually inquire into my experiences teaching the seven ThinkFun games and puzzles, and in doing so I came to better understand the stories of teachers I live and tell from my past experiences of teachers and teaching and how they have shaped me as a teacher, that is my teacher stories. Better understanding my teacher stories helped me gain insight into my experiences teaching Amy's class how to play the seven ThinkFun games and puzzles and myself as a curriculum maker. Continuing to learn about the stories of teachers I live and tell will help me continue to better understand my teacher stories and experiences in schools and myself as a curriculum maker.

CHAPTER 5

THE MULTIPLICITY OF CURRICULUM

Searching for Resonating Threads or Patterns

I began this research interested in better understanding curriculum-making experiences with games and puzzles in a mathematics class. Wondering what I have come to understand overall now that I had reached the end of my inquiry, I decided to look back over the chapters of this thesis I had already written for "resonant threads or patterns" (Clandinin et al., 2010).[31]

Emerging Threads or Patterns About My Thinking About Curriculum

Rereading the chapters of my thesis I noticed threads or patterns emerging about ways I had been thinking about curriculum. At the beginning of Chapter 1 I first thought about curriculum as binders of Saskatchewan curriculum documents containing pages of outcomes and indicators telling what children are to learn and what they might do or say to show that learning. Reading Clandinin and Connelly (1992) I then began to think about curriculum as more than a course of study; I thought about curriculum as a course of life.

Reading on into Chapter 2 I realized even though I came to think about curriculum as a course of life in Chapter 1, I was only thinking about children living a curriculum, specifically mathematics subject matter content. When it came time to write research texts, I wrote in Chapter 2 that I expected to write about mathematics curriculum unfolding for children when they interact with games and puzzles as I had read about in my literature review. I had learned when children interacted with games and puzzles similar to those in the Math Tickle Trunk, Goldberg (1980), Fluck (1981), Krulik and

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[31] To understand the experiences of those who leave schools Clandinin et al. (2010) examined the narrative accounts of their nineteen research participants "for resonant threads or patterns" (p. 71).

Rudnick (1983), Keller (1990), Mani and Kalletta (n.d.), Mani and Call (n.d.), Lach and Sakshaug (2005), and Gorman (1997) reported improvements for children in areas such as problem solving, independence, confidence, attitude, motivation, involvement in learning, perseverance, communication skills, social skills, and ability to connect culture and mathematics, all considered beneficial for success in mathematics according to the NCTM (2000).

However, in Chapters 3 and 4, when I inquired into moments in my inquiry that resonated with me throughout multiple readings of my field texts I did not write about mathematics curriculum unfolding for children. Instead I wrote about curriculum unfolding for me in relation to some of my stories to live by. I learned I live stories of labeling children and stories of teachers as those who plan and whose plans are followed. According to Clandinin and Connelly (2000), it is not surprising I learned about some of my stories to live by:

> [A]s narrative inquirers we work within the space not only with our participants but also with ourselves. Working in this space means that we become visible with our own lived and told stories. Sometimes, this means that our own unnamed, perhaps secret, stories come to light as much as those of our participants. (pp. 61-62)

Narrative inquirers often learn about themselves in their narrative inquiries.

Reflecting on patterns and threads in my writing I have come to a different understanding of curriculum than when I wrote Chapter 1 and 2 of this thesis. During curriculum-making experiences with games and puzzles in a mathematics class, I learned children are not the only ones who live a curriculum; I also live a curriculum. I also learned curriculum is not just about subject matter. I learned about myself, my stories to live by.

A Call to Be Wide-Awake to My Stories to Live By

According to Clandinin and Connelly (1988), it is important for teachers to learn about themselves, their stories to live by:

> We say that understanding our own narrative is a metaphor for understanding the curriculum of our students, we are saying that if you understand what makes up the curriculum of the person most important to you, namely yourself, you will

better understand the difficulties, whys, and wherefores of the curriculum of your students. There is no better way to study curriculum than to study ourselves. (p. 31)

Indeed in this inquiry, better understanding my curriculum, that is the stories I live by, did help me better understand the children in my inquiry. In Chapter 3, learning about my stories of labeling children helped me gain insight into Jeffrey's stories to live by. As I began to interpret my experiences with Jeffrey in regular mathematics class differently, I storied him more as a less challenging child rather than a difficult child to have in mathematics class. In Chapter 4 being aware of who I am and the stories I live by helped me better understand how I co-composed curriculum with the children in Amy's class and what curriculum I co-composed with them. I came to see as I lived dominant stories of teachers while teaching the children in Amy's class the seven ThinkFun games and puzzles, I co-composed a curriculum of reading the instruction sheets with the children through my words and actions, without realizing it.

Understanding the importance of learning about myself I see I must continue to become what Greene (1978) refers to as wide-awake to who I am, my stories to live by. "The social philosopher Alfred Schutz has talked of wide-awakeness as an achievement, a type of awareness, 'a plane of consciousness of highest tension originating in an attitude of full attention to life and its requirements'" (as cited by Greene, 1978, pg. 42). Greene says those who are not wide-awake "live their lives immersed, as it were, in daily life, in the mechanical round of habitual activities…simply aced[ing] to the imposition of patterned behavior and the assignment of roles…allow[ing] themselves to be programmed by organizations and official schedules or form" (p. 42). Coming to this inquiry I was not wide-awake to some of the stories I live. As suggested by Greene, not awake to the stories I live, I lived them out in my inquiry mechanically and out of habit, without thinking about it or realizing it. I am now wondering what other stories I am not awake to that I live in classrooms in this way.

In order to become wide-awake to other stories I live by, I must further attend to Greene (1978) who wrote that individuals "have to break the mechanical life, to overcome their own submergence in the habitual, even in what they conceive to be the virtuous, and ask the 'why' with which learning and moral reasoning begin " (p. 42).

They have to develop an "attentiveness…[an] interest in things" (Greene, 1978, p. 46). Thinking about Greene's words and reflecting deeper on Chapters 3 and 4 I realized the games and puzzles helped me begin to awaken to the stories I lived by in my inquiry. In both chapters I wrote about a curriculum of the games and puzzles for me. I learned the opportunities Amy's fifth-grade class had to interact with the games and puzzles interrupted the way I was living stories to which I was not awake. In the moments these interruptions took place, I did not recognize the stories I was mechanically and habitually living or that they had been interrupted, but later when I was re-reading my field texts and thinking about potential research texts these moments resonated with me. As suggested by Greene my resonating moments grabbed my attention, sparked my interest, and made me ask why.

In order for me to be awake to other stories I live by, I see that it is important to incorporate new experiential contexts for me into my future teaching. The opportunities I gave to Amy's class to interact with the games and puzzles were spaces where I could not as easily live the stories I live by in more traditional classroom situations. As the stories I live by were interrupted, I experienced tensions which made moments with the games and puzzles resonate with me.

In the new experiential contexts I incorporate into my future classrooms I must inquire into any resonating moments. Greene (1978) said individuals become awake when they "think about their condition in the world, inquire into the forces that appear to dominate them, to interpret the experiences they are having day by day" (p. 44). Indeed, it was in taking a closer look at my resonating moments and identifying and inquiring into my places of tension where I became wide-awake to some of the stories I live by and came to the possibility of living differently. For me each resonating moment in my inquiry was what Kennedy (2001) described as a liminal space, "the in-between space, the space between what was and what might be, where one engages with future possibilities" (p. 130). My resonating moments were turning points between me not being wide-awake and moving towards wide-awakeness.

What I Have Come to Understand Overall

As I examined the chapters of my thesis for resonating threads or patterns, I gained insight into what I have learned after inquiring into curriculum-making

experiences with games and puzzles in a mathematics class. I learned curriculum not only unfolds for children, the learners, but also for me, the teacher. The curriculum that unfolded for me in my inquiry was about the stories I live by and how curriculum making I was part of was so significantly shaped by these stories. I learned it was important for me in my inquiry and it will be important for me in the future to continue to attend to the stories I live by. When I understand my stories to live by, I will better understand learners in my classroom, how curriculum is co-composed with them, and what curriculum is co-composed. To continue to learn about myself and curriculum making, I realize it is important for me to incorporate new experiential contexts, milieus, into my future classrooms. Inquiring into my places of tension I experience in those contexts will make me wide-awake to some of my stories to live by and I will continue to come to the possibility of living differently.

As I reflect on what curriculum unfolded for me in my inquiry my thoughts turn to Schwab (1973). According to Schwab, when talking about curriculum one must address four commonplaces. One must pay attention to the teacher, learners, milieu, and subject matter. Indeed in better understanding curriculum-making experiences with games and puzzles in a mathematics class I have come to understand something about each of Schwab's commonplaces. Overall this inquiry has made me realize curriculum is much more than subject matter, which Schwab says is often viewed as "the ruling commonplace" (p. 510). Curriculum involves all the commonplaces and the interactions between them.

Final Thoughts Looking Forward

As I come to the end of this thesis and reflect on what I have come to understand overall about the multiplicity of curriculum, that is that it involves the interaction of all Schwab's (1973) commonplaces, I find myself revisiting the words of one of my past teaching colleagues, Carol:

> In her school division consultant role, Carol organized professional development sessions for teachers. On the days her professional development sessions took place, Carol was responsible for introducing and thanking the session presenter. After thanking the presenter at the end of a session I remember Carol always asked the teacher participants attending the session to take one idea or method

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they learned and use it in their classroom. She asked teachers not to overwhelm themselves with implementing everything that had been presented in the session, but instead focus on making one small change in their classroom. (Memory construction, May 24, 2016)

When Carol ended professional development sessions in this way I remember thinking the implementation of one small change in a classroom seemed to be a very manageable way to bring forth changes in teacher practice. Making small changes in a classroom over time seemed easier than putting many new ideas and methods into action all at once. Resonating with the way Carol ended professional development sessions, I used Carol's words in my own professional development work with teachers.

Continuing to reflect on the way I came to end professional development sessions in the same way as Carol, I began wondering about the teachers who attended my sessions. What were their experiences implementing small changes in their classrooms and was the end result change to their practice? Turning my thoughts back to my experiences implementing small changes to my classroom following Carol's professional development sessions, I was reminded of my classroom filing cabinet full of teaching ideas and methods that never became a part of my practice. Even though I left professional development sessions with the intent of using one new idea or method in my classroom as Carol suggested, I found that when I did I experienced tension. The new ideas or methods I tried to implement in my classroom did not always unfold in the ways discussed by the session presenters. Experiencing tension with implementation often led me to eventually abandon the incorporation of the new ideas or methods introduced at the professional development session into my classroom, leaving my teaching practice for the most part unchanged.

My inquiry has helped me gain insight into why asking teachers to make small changes in their classrooms is tension-filled and not likely to bring about changes in their practice. When Carol or I asked teachers to choose one idea or method to use in their classrooms, we did not acknowledge the complexity of classrooms. Early on in my graduate program when I reflected on my experiences implementing a mandated textbook program, I read the work of Brown (2009), the El Barrio-Hunter College PDS Partnership (2009), and Schwab (1983). I learned it is impossible for a single curriculum resource to

address all possible classroom situations because classrooms are complex places. Now drawing on Clandinin and Connelly's (1992) concept of curriculum as a course of life, Aoki's (2005) curriculum-as-lived as different than curriculum-as-plan, and what I have come to understand overall in this inquiry about the multiplicity of curriculum, I better understand the complexity of classrooms. In each classroom there are different teachers, learners, milieus, and subject matter and that each teacher and learner brings their lives and their living to the classroom and live a curriculum. The complexity of classrooms makes changes to classrooms, even small changes, tension-filled.

I now see that in order for professional development to bring forth teacher change, even in small ways, asking teachers to incorporate one idea or method into their classrooms is not enough. For teachers to commit to making even small changes in their classrooms and be willing to endure the tension-filled complexities of implementation, they must come to see and value the multiplicity of curriculum that emerges from living changes in their classrooms. I cannot help wonder what might have happened if this inquiry had not led me to come to understand a multiplicity of curriculum unfolds during curriculum-making experiences with games and puzzles in a mathematics class. When I first considered the Math Tickle Trunk in relation to Clandinin and Connelly's (1992) concept of curriculum as a course of life, I only thought about curriculum as subject matter lived by children. I expected I would write research texts about mathematics content unfolding for children when I exited my research site. If I had remained focused on curriculum as subject matter lived by children, specifically mathematics content, and not found this focus resonating with me, I would not have thought it worthwhile to endure the tensions involved in changing the ways I incorporate the Math Tickle Trunk into my future classrooms. My teaching practices with the Math Tickle Trunk in the future would likely then remained unchanged. I would continue to use the items in the Math Tickle Trunk as I have done in the past, as extra activities for children who are finished their assignments or as rewards for good class behavior.

In order for teachers to come to see and value the multiplicity of curriculum that emerges when making changes in their classrooms, they must inquire into their experiences implementing changes in their classroom and consider all aspects of Schwab's (1973) commonplaces. Indeed it was inquiring into my experiences with the

games and puzzles in Amy's class and thinking about curriculum as more than subject matter lived by children, that I learned a multiplicity of curriculum unfolds during curriculum-making experiences with games and puzzles. I was then left wondering what else I might learn about each of Schwab's commonplaces if I continued to provide opportunities for learners to interact with games and puzzles in the future. I was also curious about the multiplicity of curriculum that would unfold for me if I found ways to incorporate other items in the Math Tickle Trunk in my future classrooms. Learning more about myself, the learners, the milieu, the subject matter, and the ways all these commonplaces interact with each other, I wondered how I would continue to better understand my experiences in schools and myself as a teacher and a curriculum maker, altering my future teacher stories in what Clandinin et al. (2006) describe as educative ways. With this renewed interest in the curriculum potential (Ben-Peretz, 1975, as cited by Clandinin & Connelly, 1992, p. 376) of the Math Tickle Trunk, I find myself committed to incorporating the Math Tickle Trunk in new ways into my future classrooms. I know my future experiences with the Math Tickle Trunk will be different than what I experienced in Amy's fifth-grade classroom given the complexities of classrooms and I will likely experience tensions as I negotiate these complexities. However, thinking about the multiplicity of curriculum that will unfold for me and for learners and the ways it will help me continue to grow as a teacher, it is worthwhile for me to endure these tensions.

Reflecting on what I have come to understand about professional development and bringing forth teacher change I am wondering about the teacher stories I will live and tell in regards to my future professional development work alongside teachers in relation to the Math Tickle Trunk. Over the past ten years I have presented three professional development sessions about the Math Tickle Trunk, the first of which led me to my research wonder for this inquiry and is described in a narrative at the beginning of Chapter 1. I wonder how my future professional development sessions about the Math Tickle Trunk will be different given what I have learned in this inquiry. How will I share with teachers what I have come to understand about the multiplicity of curriculum? In what ways will I encourage teachers to inquire into their experiences implementing changes in their classrooms, such as incorporating the contents of a Math Tickle Trunk?

As a multiplicity of curriculum emerges for teachers, will they be willing to endure the tension-filled complexities of implementing changes in their classroom? Will the changes in their classrooms then become part of their long-term practice? I leave this inquiry reflecting on these questions. However, since I began this thesis with a narrative about a professional development session I presented in the past about the Math Tickle Trunk, I end this thesis with a fictional narrative about a Math Tickle Trunk session I might facilitate in the future. In this fictional narrative I demonstrate how at this point in time I imagine my practices as a professional developer will be different as a result of what I have learned in this inquiry:

The school noon hour bell rings just as I finish organizing my session materials and displays. On a typical school day, children would be entering the classroom and beginning to prepare for their afternoon class periods. However today is different. All the students in the school are dismissed at the beginning of the noon hour so the teachers in the school can take part in professional development sessions during the afternoon. I am a session presenter for one of the professional development sessions.

As teachers begin entering the classroom I invite them to find a place to sit and begin playing the various Rush Hour® games and puzzles I have set up on their tables as they wait for my session to begin. As I listen to the sounds of teachers chatting and various Rush Hour® games and puzzles pieces clattering on tables and clicking and sliding around game boards, I am reminded of the afternoon professional development session I spent with these teachers about a month ago. During that first afternoon session the teachers were introduced to and had opportunities to play many different interactive games and puzzles, including the various versions of Rush Hour®.

Continuing to think about my first afternoon session with this group of teachers, I remember how the interactive games and puzzles were introduced to the teachers as part of the contents of my Math Tickle Trunk. After I had explained more about my Math Tickle Trunk idea including why I created it, its other contents, and how I felt the Math Tickle Trunk helped me motivate and meet the diverse needs of children in my past mathematics classrooms, I shared with the

teachers how I came to wonder more about curriculum making in relation to the Math Tickle Trunk. I explained how my wondering led me to conduct a narrative inquiry into curriculum-making experiences with games and puzzles in a mathematics class and that I would be sharing what I had learned during the four remaining afternoon professional development sessions we would spend together this school year. I then ended the session explaining that I would be leaving class sets of games and puzzles at the school for teachers to sign out from the school librarian. I invited the teachers to incorporate games and puzzles playing times into their classrooms.

My thoughts about my first afternoon professional development session with the group of teachers are interrupted when I notice the time has come for this second afternoon professional development session with them to officially begin. After interrupting the playing of the Rush Hour® games I ask the teachers to share their experiences of incorporating games and puzzles playing times in their classrooms. I begin the discussion by asking the teachers to share what worked, what did not work, what they might do differently, any moments of intrigue during implementation, and how they feel about continuing to incorporate games and puzzles into their classrooms in the future. As teachers are sharing, it is evident that each teacher's experience implementing the games and puzzles was different and at times complex and tension-filled.

Following the discussion I present the teachers with a narrative about a moment that intrigued me the first time playing the Rush Hour® games and puzzles with the group of Grade 5 children in my inquiry. In my narrative I talk about the ways a child, Jeffrey, was positioned as not able to complete a more challenging version of Rush Hour® and the games and puzzles interrupted this understanding of him.[32] After sharing my narrative I ask the teachers to reflect on and discuss my experience with the neighboring teachers in their groups, thinking about what curriculum might be unfolding.

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[32] The narrative I share is based on the interim text at the beginning of Chapter 3 of this thesis.

When I ask the teachers to share what they discussed in their groups, many find it difficult to identify curriculum that may be unfolding. I tell them I too had difficulty until I began writing research texts in my inquiry. I take this moment to talk about curriculum making and Clandinin and Connelly's (1992) concept of curriculum as a course of life and how at first I only thought about curriculum as subject matter content lived by children. After the fifth-grade children in my inquiry interacted with games and puzzles from my Math Tickle Trunk for sixteen weeks I anticipated I would write solely about subject matter that had unfolded for the children, specifically mathematics content, as I had read and written about in my literature review. Instead I found myself wondering about my experience with Jeffrey the first time I introduced and played the Rush Hour® games and puzzles with his fifth-grade mathematics class.

I ask the teachers to reflect on and discuss my narrative again in their groups, this time asking them to think about curriculum as more than subject matter. I pose questions that encourage them to think about what might be learned about myself and Jeffrey's teacher, Jeffrey, Rush Hour® games and puzzles playing times in a classroom, and mathematics. After a few minutes, I ask the teachers to share their thoughts and discussions. I record the ideas on the white board at the front of the classroom, organizing the ideas about myself and Jeffrey's teacher under the heading teacher, Jeffrey under the heading learner, Rush Hour® games and puzzles playing times in a classroom under the heading milieu, and mathematics under the heading subject matter.

Following the discussion I share with the teachers that like our discussion today, I learned something about each of Schwab's commonplaces: teacher, learner, milieu, and subject matter, when I inquired deeper into my experience with Jeffrey and the Rush Hour® games and puzzles. I came to learn something about my stories of labeling children, and in doing so I also learned about Jeffrey's potential stories to live by, and how in new experiential contexts for me, such as playing games and puzzles, I live differently. I also share how I started to think about what it means to be good at mathematics. If Jeffrey was considered a weak student in mathematics, I wondered why he was successful at playing the

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games and puzzles. I explain to the teachers that this is when I came to understand the multiplicity of curriculum. Curriculum is not just subject matter lived by children as I originally thought. Curriculum also unfolds for teachers and curriculum involves all of the commonplaces and the interactions between them. Thinking about the multiplicity of curriculum, I now ask the teachers to revisit in their groups the moments of intrigue they shared at the beginning of today's session. I ask them to think about the multiplicity of curriculum being lived in these moments. When we reconvene as a large group, each groups shares their discussions.

As my session comes to a close I encourage teachers to continue to sign out the games and puzzles from the library and play them in their classrooms. I ask them to pay attention to moments that intrigue them and bring these moments to share at our next afternoon professional development session. As I watch the teachers exit the classroom, I wonder about the multiplicity of curriculum that will unfold the next time we meet and inquire into the moments of intrigue the teachers share. As they come to understand the multiplicity of curriculum that unfolds during curriculum-making experiences with games and puzzles in their own classrooms, I wonder how many of the teachers will commit to incorporating games and puzzles in their classrooms in the future and endure the tension-filled complexities of implementation. As I begin collecting and packing up my session materials, I am excited for what might emerge from this series of afternoon professional development sessions that incorporates what I learned in my narrative inquiry. For the first time since I began offering professional development opportunities for teachers, I might actually be influencing teachers to bring forth changes to their practice in their classrooms. (Fictional narrative, May 2016)

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APPENDIX A: GAMES AND PUZZLES

These interactive games and puzzles from the Math Tickle Trunk were featured in this inquiry. The games and puzzles mentioned in the chapters of this thesis are described in more detail at the end of the list.

Bedlam Brand Puzzles
Mini Bedlam Cube

Beverly Enterprises Brand Puzzles
Pineapple Glass Puzzle

Damert Company Puzzles
3D Construction Puzzle

Hanayama Games and Puzzles
Carmel Cube Puzzle
Hamburger Puzzle
Meiji Milk Chocolate Puzzle
Mushroom Mountain

Imagination International Puzzles
Tetrus Cube

Lonpos Puzzles
Lonpos 101 Rectangular Puzzle

Popular Playthings Games and Puzzles
Bumper Cars
Hedgehog Escape
Hoodoo Loop
Kayak Cove
Outa Gas
Sink or Swim

Recreation Brand Puzzles
Wooden Brain Benders

Rubik's Puzzles
Rubik's Cube
Rubik's World

ThinkFun Inc. Games and Puzzles
Brick by Brick®
Dog Puzzle
Chocolate Fix®
Hoppers®
Hot Spot
Pete's Pike
Raging Rapids
Railroad Rush Hour®
River Crossing®
Roadside Rescue
Rush Hour®
Rush Hour® Jr.
Safari Rush Hour®
Scrambled Egg
Serpentiles ^{TM}
Shape by Shape®
Square by Square®
Sudoku 5x5 ^{TM}
Tangram Puzzle
Tip Over®
Tip Over®: Spiderman Edition
Treasure Quest®
15 Puzzle

Unknown Brand Puzzles
IQ Blocks
Ultimate Puzzle

Chocolate Fix®

Chocolate Fix® involves "placing chocolates in a tray according to clues…[that] get progressively more difficult to follow, encouraging players to hone their logical deduction skills" (Crawford, 2008).

Hoppers®

"Hoppers…is a classic peg solitaire game" ("Hoppers," 2010, para. 1).

Mini Bedlam Cube

Mini Bedlam Cube is a miniature version of the Bedlam Cube puzzle consisting of thirteen three-dimensional pieces that must be assembled into a cube.

Mushroom Mountain

Mushroom Mountain is a sliding piece puzzle produced by Hanayama. Players must slide the mushroom pieces so they are all either facing inward or outward.

Pete's Pike

Pete's Pike is "played on a seven-inch circular board (designed to resemble a snow-covered mountain) that has 25 recesses forming a 5 x 5 grid follow the simple rules of play and see if you can get Pete to the top of the mountain (center recess on the grid)" (Homce & Homce, 2007).

River Crossing®

In River Crossing® "the challenge is to help a hiker cross a river full of alligators, snakes, and piranha [using]… a few planks of various lengths, and some tree stumps standing in the river bed" (Roufberg, 2003).

Roadside Rescue

Roadside Rescue is a version of Rush Hour®.

Rubik's Cube

"The Rubik's Cube is a 3-D mechanical puzzle invented in 1974" ("Rubik's Cube", 2010, para. 1).

Rush Hour® Games

"Rush Hour is a sliding block puzzle invented by Nob Yoshigahara in the late 1970s and first sold in the United States in 1996…[There are also] *Rush Hour* spin-offs *Rush Hour Jr.*, *Safari Rush Hour*, and *Railroad Rush Hour*" ("Rush Hour (board game)," 2014, para. 1-2).

Scrambled Egg

In Scrambled Egg "players are provided with 36 silhouettes which they must replicate…[with] colored pieces" (ThinkFun Inc., n.d.).

Shape by Shape®

"Shape by Shape® is an advanced Tangram-style game, made more difficult because you must fill in the frame in addition to making each shape" (ThinkFun Inc., 2010).

Square by Square®

In Square by Square® "the object is to arrange 14 puzzle pieces to match one of 60 puzzle cards" (Roufberg, 2004).

Sudoku 5x5^{TM}

Sudoku 5x5^{TM} is a "Sudoku-inspired game [that] incorporates colors and shapes, as well as numbers" (Roufberg, 2006).

Treasure Quest®

In Treasure Quest® "kids must escape with the treasure safely in hand…Players will dodge dead ends, cryph, paths and unmovable artifacts to create a successful path" (Auerbach, 2007).