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TEACHER EDUCATION & DEVELOPMENT | RESEARCH ARTICLE

From student to beginning teacher: Learning strengths and teaching challenges

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Abstract: This research examined how the professional practice of Canadian beginning elementary teachers was influenced by their own early learning experiences in school. Six teachers were observed and interviewed in their classrooms five times over the first three years of their teaching career. Case studies were developed for each teacher and themes were explored across cases. The findings from this study suggest that pre-service and in-service teacher education programs need to provide teachers with opportunities to critically examine how their relative strengths and weaknesses as pupils may affect their performance and identity as teachers.

Subjects: Language & Literacy; Language Teaching & Learning; Mathematics & Numeracy; Mathematics Education; Primary Education—Teacher Education & Training; Teacher Education & Training; Teachers & Teacher Education

Keywords: teachers' lives; early literacy; early numeracy; elementary teaching; professional development; teacher identity

> I was pretty high with my math skills [as a child], but I'm not always able to recognize when someone else is having difficulty because I never had difficulty in math. (Kendra, second year teacher)

> I struggled with reading the whole way through [school] but [as a teacher] I try to be really enthusiastic and read different kinds of books, and use different methods, and have them read to me. I don't want them to fall through the cracks like I did. (Gail, first year teacher)

1. Introduction

Teachers around the world begin their careers with a lifetime of memories of their own schooling. However, there has been limited research published on the degree to which teachers' own experiences as school children influence their teaching, particularly in the areas of literacy and mathematics. As

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PUBLIC INTEREST STATEMENT

All teachers were once students. Although they need to study current educational theory and practice to obtain their teaching credentials, research has shown that their own schooling remains a powerful influence on how they teach. This study examines how teachers who were strong students in certain school subjects find it difficult to teach those subjects. The opposite appears to be also true for the teachers in this study: the subjects that were challenging for them to learn as students are the ones that are the easiest for them to teach. Teacher education programs need to pay more attention to how teachers' own learning histories impact their teaching practice.

exemplified in the quotes above, teachers' own experiences can either restrict or enhance their approach to teaching those subjects to their students. Considerable research has shown that teachers' beliefs and personal experiences plays a significant role in their decision-making and practice. Teachers' beliefs about pedagogical issues and about themselves as teachers are ongoing subjects for research (Lamote & Engels, 2010; Snider & Roehl, 2007, van Uden, Ritzen, & Pieters, 2014). This area of the literature includes research on teachers' beliefs about teaching literacy (Maloch et al., 2003; Quirk et al., 2010; Wilson, 2012) and about teaching mathematics (Bruce, 2005; Lannin et al., 2013; Philipp, 2007). A particularly interesting line of research on teachers' beliefs involves the investigation of beliefs about learning and teaching that arise from teachers' personal habits, abilities, and experiences (Benevides & Peterson, 2010; Johnson, 2008; Nathanson, Pruslow, & Levitt, 2008).

This paper reports on a research study that examined how the professional practice of six beginning elementary teachers in Ontario, Canada, was influenced by their own early childhood learning in the areas of literacy and mathematics. The participants' childhood learning and elementary teaching were explored to examine the ways in which their early learning experiences influenced their understanding of themselves as teachers, their classroom practices, and their understanding of their students. The participants' early learning experiences varied greatly as did the ways in which those experiences intersected with their teaching practice. Specifically, this paper looks at the way participants taught literacy and mathematics within their own classrooms was influenced by the ease with which they learned these same subjects when they were in school. The purpose of the study was to explore how the early learning experiences of the beginning teachers influenced their teaching practice.

The theoretical framework developed by Kelchtermans and Vandenberghe (1994) in their work with Belgian primary teachers informed the design of this study and the analysis of the findings. The authors posit that teachers' professional behavior and development can only be understood as situated in the context of their career and personal life history. They refer to this as a biographical perspective on teacher professional development. According to this perspective, teachers' subjective interpretation of their past life history and current professional context is highly influential in their professional behavior. Teachers' life experiences influence their perception, which in turn influences their daily decisions and behavior. Their interpretation of their life and context also leads to a sense of a professional self and a subjective educational theory. Kelchtermans and Vandenberghe (1994) define professional self as including, "the knowledge, opinions, and values about his/her professional activities" (p. 46), and subjective educational theory as, "the means by which teachers make sense of their professional situation" (p. 49). Both of these combine to form their professional autobiography.

Teachers construct their sense of their professional career through an understanding of critical incidents, that are personal and not generalizable, and critical persons, "whose presence and behavior strongly influenced the professional self and subjective educational theory of the teacher" (Kelchtermans and Vandenberghe, 1994, p. 52). Whereas Kelchtermans and Vandenberghe (1994) used their framework to retrospectively reconstruct the professional careers of experienced teachers, this framework is used in this study to explore how beginning teachers, who were still in the early stages of constructing a professional self and subjective educational theory, considered the influence of their early life history as pupils on their teaching in their current context.

2. Literature review

Personal history studies suggest that student teachers use their own experiences as students to generalize when interpreting and making decisions about their own teaching (Carter & Doyle, 1996). Carter and Doyle recommend that teachers' personal history narratives be given a prominent place in teacher education, because if left unexamined, new teachers are likely to perpetuate conventional practice. Furthermore, Wolf, Ballentine, and Hill (2000) argue that in order to respond to the needs of their students, pre-service teachers need to examine their own beliefs and learning history. Feiman-Nemser (2001) considers teachers' own schooling and early teaching experience to be far

more influential than the typical pre-service program. She states, "The typical pre-service program is a weak intervention compared with the influence of teachers' own schooling and on-the-job experience" (p. 1014). This study elicited teachers' perspectives on how their own learning histories were implicated in their literacy and mathematics teaching practice over their first three years of teaching.

Research illustrates that some teachers have had negative learning experiences in elementary school. With respect to literacy, many have poor attitudes toward reading, and do not engage in much reading for pleasure (Applegate & Applegate, 2004; Nathanson et al., 2008; Sulentic-Dowell, Beal, & Capraro, 2006). There are some studies (Asselin, 2000; Johnson, 2008; Sunstein & Potts, 1998) that point to pre-service program initiatives that may help address negative attitudes including having pre-service teachers write and analyze their own literacy learning stories, create literacy portfolios or engage in reading response activities. Although there is a growing body of research on teacher stories and teacher life history (Carter & Doyle, 1996; Wolf et al., 2000), very little has been written about elementary teachers' early literacy stories, both inside and outside of school, or about how these early experiences influence their understanding and teaching of literacy. Of the few studies that do address teachers' early literacy learning (Johnson, 2008; Nathanson et al., 2008; Sunstein & Potts, 1998), the focus is on pre-service teachers.

The literature on mathematics education illustrates that most pre-service teachers experienced traditional mathematics programs as students (Bruce, 2005) and therefore may struggle to teach using a problem-based approach that is advocated in many school districts in Canada and around the world. Research has shown that mathematics anxiety is prevalent in pre-service elementary teachers (Grouws, 1992; Hembree, 1990). This has caused concern regarding their ability to effectively teach mathematics as well the potential for communicating this anxiety to their students (Lannin et al., 2013; Philipp, 2007; Ponte & Chapman, 2006). Several studies have pointed to potential remedies for this situation including a focus in pre-service education on National Council for Teachers of Mathematics (National Council of Teachers of Mathematics, 2000) recommended pedagogy, peer tutoring (Henderson & Rodrigues, 2008), and including assessment of mathematics teaching in schools as part of practicum placements (McNab & Payne, 2003).

One of the early learning experiences that may have an influential role in teachers' practices is their many years as witnesses of their own classroom teachers. This is what Lortie (1975) calls the "apprenticeship of observation" (p. 61). He argues that pre-service teachers' many years as students provide them with a type of apprenticeship into the profession in that they have observed and interacted with teachers for many years before entering their teacher preparation programs. Their individual experiences with particular teachers inform their image of teaching. However, because of their perspective as students, they are not privy to teachers' goal setting, preparation, or analysis (Lortie, 1975). Moreover, they do not, "perceive the teacher as someone making choices among teaching strategies" (Lortie, 1975, p. 63). Lortie was concerned that teacher preparation does not do enough to dispel the individual, simplistic, and often traditional notions of teaching with which many new teachers enter the profession (Lortie, 1975). Loughran (2006) exhorts teacher educators to help pre-service teachers overcome these limitations by allowing them to "see and hear the pedagogical reasoning that underpins the teaching that they are experiencing" (p. 5). He argues that making the tacit knowledge of teaching explicit (Loughran, 2006, p. 9) is essential if pre-service education is to move from "teaching as telling" to "teaching for understanding" (Loughran, 2006, p. 10).

Darling-Hammond (2006) further argues that in addition to their "apprenticeship" experiences in teaching, pre-service teachers bring other personal attributes and experiences that may get in the way of learning to teach effectively. Ironically, one of these may be their strong academic ability. It may be more difficult for teachers with a history of high academic achievement to support student learning because they have few personal experiences of academic struggle (Darling-Hammond, 2006). Bullough and Gitlin (2001) remind us that pre-service teachers, as well as practicing teachers,

always filter what they learn through "a set of biographically embedded assumptions, beliefs, or pre-understandings" (p. 223). Bullough and Gitlin (2001) caution that, "Ignoring the past does not make it go away. It lingers, ever present and quietly insistent" (p. 223).

In their review of the literature on teacher identity, Beauchamp and Thomas (2009) emphasize the importance of paying attention to the complex issue of identity as teachers shift from students to practicing teachers and throughout their careers. They exhort teacher educators to pay attention to the key role played by reflection in the development of teacher identity. In particular, they note the strong influence of teachers' own experience as learners in schools as well as their current teaching context. They make a link between identity and agency as, "a heightened awareness of one's identity may lead to a strong sense of agency" (p. 183).

In Finland, Estola (2003) had student teachers explore their burgeoning teacher identities through interviewing experienced teachers and then writing their own autobiographies as prospective teachers. This was seen as a powerful tool for making the moral dimensions of teachers' identities visible. Using a similar approach, Furlong (2013) asked student teachers in Ireland to write about what kind of teacher they wished to be. She found a tension between their aspirations to be progressive teachers and their desire to embody many traditional practices that they had experienced as children. She argues that teacher education ignores the power of the teacher identities formed through life history. She calls on teacher education programs to include multiple opportunities for student teachers to critically evaluate these identities and to build on them in light of research-based pedagogy. In a recent study in Quebec, Canada, Chang-Kredl and Kingsley (2014) asked pre-service teachers to write biographical narratives of the memories that influenced their reasons for choosing teaching as a profession. They found that the students' own experience in primary school was the most frequent source of these memories. They found that the student teachers who were most positive about the people and events that motivated them to enter the teaching field were best able to articulate their expectations about teaching.

Haggarty and Postlethwaite (2012) studied student teachers in England at the end of their pre-service program and again near the end of their first term as qualified teachers. They explored their changes in thinking about their roles as teachers of science and mathematics and the effects of the induction program that was in place to support them as new teachers. The new teachers were surprised that their subject matter expertise was insufficient in their attempts to teach their students, and they felt that they needed more support with class management. The researchers concluded that their growth as teachers was constrained by the ideas about teaching that they brought from their early learning and life experience.

Given the impact of teachers' experiences, assumptions, and beliefs on their identity, understanding, and practice, it is imperative that more attention be paid to teachers' lives in pre-service and in-service teacher education. In this study, the early mathematics and literacy learning experiences of six beginning elementary teachers were explored in relation to their teaching beliefs and practices in these subjects over the first three years of their classroom teaching.

3. Methodology

This study was designed to explore the perspectives of beginning elementary teachers with respect to the influence of their early personal learning history on their teaching practice in literacy and mathematics. A modified grounded theory case study approach was used. While some ideas from the literature influenced the design of the study, it was not built around a fixed theory but rather theory was generated inductively from the data using a set of techniques and procedures for collection and analysis (Charmaz, 2014; Punch, 2014). A qualitative research approach was chosen because it matched the goals of the inquiry. Since this research was seeking to understand this from the participants' perspectives, a qualitative approach was most appropriate (Patton, 2002). I chose to collect the data in the teachers' own classrooms, their "natural setting", in an attempt to understand the meanings

that the participants brought to their work (Bogdan & Bilken, 1998; Denzin & Lincoln, 2005) The research approach allowed for collection of information from the participants' perspectives and gave them an opportunity to reflect on their own learning and teaching.

Multiple case studies, with each of the participants constituting a case, were developed, and then themes were explored across cases. The purpose of case studies in qualitative research, according to Patton (2002), is to "gather comprehensive, systematic, and in-depth information about each case of interest" (p. 447). The data are then organized by specific cases in a way that is in-depth, holistic, and context sensitive. The stories of six beginning elementary teachers each formed a case, and the six cases were compared and contrasted. Data were collected through classroom observations, interviews, and document analysis. Each participant was observed while teaching in his or her classroom and interviewed five times over three years. My goal was to explore the "big picture" of the teachers' early learning context and their literacy teaching context. In addition, details of specific early learning experiences, beliefs about learning and teaching, and specific teaching strategies were explored. The research questions guiding in this study were:

(a) How do beginning teachers draw on their own early learning experiences as pupils in their work as teachers?

(b) How does the relative ease with which they learned school subjects as pupils relate to the ways in which they approach their teaching of those subjects as beginning teachers?

3.1. Participants
The six participants in this study were self-chosen from a group of 22 beginning elementary teachers who were already participants in a larger longitudinal study of literacy teachers. An invitation was sent via email to all of the beginning teachers in the larger study. The participants were the first six to respond to an invitation to be part of this study. All teachers had an undergraduate degree in a discipline other than education and were graduates of a 1-year post-baccalaureate Bachelor of Education program involving university-based coursework and school classroom practicum placements. Four of the participants qualified to teach in the primary/junior level (K–Grade 6), and the other two participants qualified to teach in the junior/intermediate level (Grades 4–10).

The university-based coursework included the following courses: Teacher Education Seminar; Psychological Foundations of Learning and Development; School and Society; Curriculum and Instruction courses; and a Related Studies course. The Curriculum and Instruction courses consisted of broad-based methodology in seven subject areas including: language arts, mathematics, social studies, science, health and physical education, music, and visual arts. The junior/intermediate pre-service teachers in this program also had to take a subject-specific methodology course. In addition to university-based coursework, the pre-service teachers all completed three 4-week-long practicum placements in schools.

When the study began they were in their first year of elementary classroom teaching in the same large urban center. The teachers all taught at urban schools which differed in terms of the size and socioeconomic and cultural backgrounds of their neighborhoods. They were all classroom teachers of grades ranging from Kindergarten to Grade 8. Four of the participants were female and two were male. Their ages ranged from 23 to 40. For half of the participants, teaching was their first career (ages 23, 23, and 24). For the other half, teaching was a second career (ages 30, 32, and 40). In terms of ethnicity, two were Asian and four were Caucasian. Pseudonyms are used but the gender is correct.

3.2. Data collection
In this study, six elementary classroom teachers were interviewed individually in May 2009, in March and May of 2010, and March and May of 2011, during their first, second, and third years of teaching. Interviews took place in their classrooms after the researcher had observed them teaching. The

teachers were also asked to provide samples of documents related to teaching and learning such as school district curriculum guidelines, teacher resource books, program plans, and lesson plans. The use of these three data collection methods, interview, observation, and document review, allowed for triangulation of the findings (Merriam, 1998).

The semi-structured interviews in the first year asked general questions about their experiences as first year teachers. The interviews in the second year focused on the participants' early childhood learning at home and transition to school. For the interviews in the third year, the participants were asked to reflect on similarities and differences between their own early learning and their teaching. The participants reviewed their transcripts and case studies and provided feedback to the researcher. These main data sources were supplemented with field notes and emails between the participants and the researcher over the course of the 3-year study.

3.3. Data analysis
Data was analyzed using a form of grounded theory (Strauss & Corbin, 1990). Transcripts of interviews, observation notes, and field notes were read several times during and after the 3-year period of data collection. Each piece of data was identified by participant, data type, and date. After the first round of interviews and observations, a process of "open coding" began (Strauss & Corbin, 1990, p. 61). Events and ideas were labeled and then grouped together into categories (Strauss & Corbin, 1990). For example, the open codes "family learning practices," "transition to school," and "teaching strategies" were developed. These emerging categories influenced subsequent rounds of data collection. For example, in the first set of interviews the participants were asked about family literacy practices and how they may have influenced their teaching practices. One participant described how her family's support of her involvement in sports influenced her teaching. As a result, all of the participants were asked about their childhood extra-curricular activities in subsequent interviews. As the study progressed, "axial coding" was used (Strauss & Corbin, 1990, p. 96). Using the analytic principles of constant comparison (Glaser & Strauss, 1967), connections were made between categories to develop larger themes. For example, the axial codes, "connection between home learning and school learning" and "connection between early school experiences and teaching focus" were developed. A chart was created for each participant listing the emerging themes and the data that supported those themes. A common set of categories was created for the individual case studies which encompassed the main findings in the study. Following the creation of charts for the data on individual participants, another chart was created which compared and contrasted the themes from the six individual case studies. For the purpose of this report, interview data are the focus.

4. Limitations
This study examined beginning teachers' perspectives on how their learning as pupils influenced their teaching practice. This study is small in size, with only six participants. While this allowed for the collection of rich, in-depth data, it restricts the generalizability of the results. Moreover, the participants had many factors in common. They all attended the same teacher education program and taught in the same city. However, the participants' childhood learning experiences were quite diverse as were the types of schools and neighborhoods in which they taught. The ratio of female to male participants (4 to 2) may over-represent the presence of male teachers, who are a significant minority in elementary teaching. The open-ended nature of the interview questions in the study resulted in significant variation in the participants' answers. This limited the ability to directly compare their responses, but did allow for a complex picture of the ways in which the participants' early learning intersected with their early teaching.

5. Findings
The participants were all graduates of a well-respected Bachelor of Education program, yet in their early years of teaching they did not find what they had learned in their pre-service program to be very helpful to their lives as teachers. In general, they found that their university-based courses had been overly theoretical and lacking in specific teaching strategies. They found that their practicum

placements were more helpful, yet did not give them sufficient practice to allow them to feel prepared to teach their own classes. They attempted to fill in the gaps with on-going formal and informal professional development, and through looking back to their own experiences as school children.

Four key findings from the study will be described in this paper. They were chosen because they are strong themes that arose from the analysis of the six participant case studies. The findings from this study revealed that the school subject that the participants' found the easiest to learn as pupils was the one that they found the hardest to teach as a beginning teacher. Moreover, they spent more time preparing lessons and engaged in more professional development in the subjects that were the most challenging for them to learn as pupils. As beginning teachers, they were able to use their own childhood experiences of struggling with learning to help their students who were struggling. As a result, they reported a greater sense of accomplishment when teaching subjects that were challenging for them to learn as pupils. While all six participants' experiences are represented in each theme, one longer participant case narrative has been included in each theme to give a fuller picture of the influence of early learning on beginning teaching.

The following table summarizes the findings from the individual case studies. In Table 1, the six participants' experiences are summarized according to their early math school experiences, early literacy school experiences, early math teaching approach, and early literacy teaching approach.

5.1. Easy to learn, challenging to teach
To their surprise, the participants found that the subjects they enjoyed the most, and learned the most easily as pupils, were the hardest to teach. The opposite was also true: the subjects that had caused them difficulty as pupils were the ones that they found the easiest to teach. They had not expected this to be the case. Kelly, Mike, and Darren did not have any significant struggles in school, yet they all had an area in which they were less comfortable as students than others. This area of discomfort as students became an area in which they felt most comfortable as teachers. For Kelly and Mike, the subject with which they had the least comfort as students, mathematics, became the one they had the most confidence in as teachers. They used more professional resources and attended more professional development in mathematics than in literacy. Moreover, they spent more time preparing and implementing their mathematics lessons than their literacy lessons. In contrast, when teaching literacy they had many questions and were confused and overwhelmed by the array of resources and expectations. They were unsure how to approach teaching literacy, and were surprised by students who struggled with basic skills. Darren, who had the greatest strengths in school learning of all of the participants, recognized that his teaching challenge spanned the whole curriculum: meeting the needs of special education students. His area of challenge, oral presentations, became the focal point of his teaching through the use of Drama.

Kendra, Gail, and Rachel were all strong mathematics students, yet they found mathematics more difficult to teach than literacy. Planning, instruction, assessment, and tailoring their approach to meet specific learning needs were all challenging for them when teaching mathematics. However, due to the challenges they had with literacy learning as students, Kendra, Gail, and Rachel found that literacy teaching was less of a mystery. They came to literacy teaching with an understanding that literacy learning and teaching are complex, and that it takes a great deal of knowledge and planning to meet the wide range of learning needs that every teacher encounters. Over their first three years of teaching, they developed their knowledge of specific teaching skills, strategies, and resources in response to their understanding of the demands of literacy teaching. Kendra's story illustrates this phenomenon.

5.1.1. Kendra
Kendra considered herself to be "pretty high with [her] math skills," but she found it a challenge to understand when her students were struggling with mathematics because it came so easily to her when she was a student. As she explained, "I'm not always able to recognize when someone else

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Table 1. Early learning and teaching

Participant	Early literacy experiences at home and in the community	Literacy experiences during elementary school	Grades taught in first three years of practice	Understanding of role as a literacy teacher and goals for students	Literacy teaching approach
Kelly	Parents are classroom teachers Lots of reading and writing by adults and children Dramatic play with sisters Included in dinner time conversation Regular library visits	No challenges academically or socially Confidently reading and writing by Grade 1 Entered a Gifted program in Grade 4 Won a creative writing award	Grades 6, 7, and 8 Physical Education and Health Grades 6 and 8 Math and Language	Offers exciting and engaging literacy experiences Helps students to feel safe and secure academically Wants students to be confident communicators, particularly orally	Integrates literacy throughout the curriculum Often does not have a separate literacy time Reads to students Group discussion of higher level thinking questions and "big ideas" Little focus on basic skills, formal assignments or tests Informal assessment
Mike	Mother is a school librarian Lots of reading and writing by adults and children Grandfather wrote stories with grandchildren as characters Included in dinner time conversation Regular library visits Involved in community theater	No challenges academically or socially Confidently reading and writing by Grade 1 Switched to an Arts focused school in Grade 4	Combined Grade 2 and 3 class Combined Junior and Senior Kindergarten	Creates an inviting and encouraging classroom atmosphere Fosters a positive attitude toward reading and writing Wants students to value reading and writing	Play-based program with many "hands-on" learning opportunities Most of the time spent in active learning centers Reads to students Developmental approach—children will learn when they are ready Little focus on basic skills, Paper and pencil tasks, or tests Informal assessment through photographs
Darren	Both grandmothers were teachers Lots of reading and writing by adults and children "one room schoolhouse" Included in dinner time conversation Included in mother's weekly discussion group Involved in church and community music	No challenges academically or socially Confidently reading and writing by Grade 1	All grades from Kindergarten to Grade 8 as a long-term occasional or daily supply teacher	Engages students through a nurturing, positive environment Create passion and excitement for reading Want students to feel confident to take risks with reading and writing	Integrate literacy throughout the curriculum Reads to students, particularly picture books Collaborative drama-based literacy activities Basic skills will develop when students feel comfortable expressing ideas Informal assessment

(*Continued*)

Table 1. (Continued)

Participant	Early literacy experiences at home and in the community	Literacy experiences during elementary school	Grades taught in first three years of practice	Understanding of role as a literacy teacher and goals for students	Literacy teaching approach
Kendra	Little reading or writing by adults or children No dinner time conversations Did not attend community programs Parents believed that school would take care of literacy learning Spoke some English before school	Difficulty adjusting to school routines and co-operating with other students English language learning a challengeHigher level thinking skills more challenging than basic skills	Grade 4, all subjects other than French and Music Grades 7 and 8 English, Math, and Science	Offers a relaxed, positive learning atmosphere Helps students "find their voice" Wants students to contribute and share their knowledge and experiences	Specific focus on literacy learning and teaching Large block of time for literacy activities such as literature circles and readers' theater Reads to students One-on-one reading and writing conferences to monitor and assess student learning
Gail	Father read to himself, mother not a reader, little reading to children Parents rarely wrote, but grandmother was a regular letter writer Little dinner time conversation Active in sports and arts activities in the community Parents expected her to do well in school	Strong lower level skills such as spelling and decoding Disliked reading Difficulties with reading comprehension Difficulties with oral presentations	Junior and Senior Kindergarten	Offers a positive literacy environment Offers a variety of literacy resources and teaching strategies Wants students to enjoy reading and to have a deep understanding of what they read	Specific focus on literacy learning and teaching Large block of time for literacy activities that her students enjoy and can successfully accomplish Reads to students Regularly tracks student progress to ensure that they are learning
Rachel	Grandfather and uncle were teachers in Hong Kong Parents read to themselves and to the children in English and Chinese Parents attempted to teach her to read in English and Chinese Little dinner time conversation Regular library visits Studied piano	Difficulty learning to read in French, English, and Chinese (at Chinese school) Frustrated by learning to read and "gave up" Difficulties with spelling and organization in written work Difficulties with reading comprehension	Grade 4 and Grade 5 Extended French program (half-day in English, half day in French)	Offers a caring and welcoming learning environment Focuses on oral-language development in French and writing in English Wants her students to have a positive experience with literacy	Integrates literacy throughout the curriculum More focus on French literacy than English literacy Reads to students Observes her students to determine the types of assistance they need to improve

is having a little difficulty because I never had difficulty in [mathematics]." Although she did not struggle with mathematics learning, she knew from her struggles with literacy that teachers can overlook or misunderstand a struggling learner. She also knew from her own experiences that it may be difficult for a struggling student to ask for help publically. In order to address both of these issues, she had her students keep a mathematics journal where they could ask her questions privately. She explained, "It takes the pressure off them having to identify themselves as being deficient in any way."

Kendra also found it a challenge to teach those aspects of literacy that came easily to her as a child. She learned spelling and grammar easily as a student, but as a teacher she had difficulty understanding how to help children for whom it did not come easily. She also struggled when she felt that she couldn't use a teaching approach from her own early learning that had worked for her. As a child, she was successful at the drills that her teachers used to teach spelling and grammar skills, although she did not find them particularly enjoyable. As a teacher, she felt caught between what was easy and effective for her, and what she believed to be appropriate according to her pre-service and in-service teacher education. She didn't feel that it was appropriate to use the strategies that her teachers had used with her. She explained:

> I tend to rely on other people's hints or textbooks to kind of teach [spelling and grammar]. It's because when I was younger, I was drilled on how to spell, drilled on the grammar rules, and we don't do that anymore .... I don't want to do the drills, but they certainly do help in a way.

Conversely, the areas of literacy that were most challenging for Kendra as a student were the easiest for her to teach. As a student, Kendra was shy and lacked confidence. She had great difficulty forming and expressing an opinion, interpretation, or argument, particularly if she was required to do these orally. Yet as a teacher she made it a priority to help her students to come to understand their thinking, to gain confidence in expressing their opinions, to be flexible enough to change their opinions, and to have the strength to persevere.

The expectations that the participants had of their strengths as teachers coming out of their pre-service program were not realized during their early years as classroom teachers. Their identities as teachers who were strong in certain subject areas were turned on their heads by their experiences over the first three years of their careers.

5.2. More time and professional development in subjects that were challenging to learn

The participants in the study devoted more time and effort toward developing their teaching knowledge and strategies in subjects that were challenging to them as pupils. Perhaps because they were most worried about teaching the subjects with which they had struggled as pupils, they spent most of their planning time preparing for teaching these subjects and engaged in more professional development in these subjects than in any other. Kelly's approach to professional development was typical of the rest of the group.

5.2.1. Kelly

Kelly had more confidence in her mathematics teaching than her teaching of literacy, though less confidence in her knowledge of the subject. As a student, she had to work at mathematics to be successful, particularly in high school. She did not take any mathematics courses in her undergraduate degree prior to entering her pre-service program. As she said, "I was never great at math. I was always okay and worked hard and got it. But I don't have that background." Perhaps because she felt less knowledgeable in mathematics content, she worked harder on her mathematics teaching than her literacy teaching. She spent a great deal of effort to make her mathematics teaching relevant to her students. She said, "I've worked hard to make it applicable to their lives." In fact, she took an additional qualification course in mathematics, which was the only in-service course she took in her first three years of teaching. She also regularly consulted the department of education guideline for mathematics, but rarely the one for literacy.

Feeling less confident in mathematics motivated Kelly to spend more time on developing and implementing her mathematics program than her literacy program. It may be that this greater focus, as well as the professional development she completed on mathematics, contributed to her confidence and enjoyment in teaching mathematics.

Although Kelly enjoyed all subjects in elementary school, and was successful in each of them, she was particularly successful in literacy. She was a prolific reader and writer as a child, and even won a national competition for student creative writing. As an adult she still loved to read, but as a literacy teacher she lacked confidence. When she began teaching, Kelly did not feel confident that she had the knowledge necessary to put together an effective literacy program. She had difficulty making sense of official curriculum documents, teaching strategies, advice, and resources from a variety of sources. She explained:

> I had no idea what I was going to be doing in Language, and I still have no idea what I'm doing. I'm overwhelmed with how much is out there and how many different things are out there and all these different tools …. You know, everyone says you've got to do these wikis, graphic organizers, and then there's- I just can't get it straight, it's frustrating.

She did have a clear sense that teaching literacy is very important, and cannot be reduced to a simple formula. This is evident in her response to pre-packaged literacy programs. She said, "Can you believe someone saying 'This is how you teach literacy?' Literacy is not just reading and writing." As a beginning teacher, she struggled with teaching basic literacy skills in particular, perhaps because she learned them informally in her literacy-rich family context. In her teaching, she preferred to focus on higher level discussions and integrated projects, the kinds of literacy activities that she found engaging as a student. However, she worried that she might not be meeting the needs of all of her students.

5.3. Teachers use their experiences of struggle to help students who struggle

The beginning teachers in the study used their own experiences of struggle as pupils to help them to understand and accommodate their students who struggled. Those participants who struggled with aspects of literacy learning as children, remembered more of the specific teaching strategies that their teachers employed, and consciously employed them in their own teaching practice with their students who struggled. Through meaningful hands-on activities, individualized instruction, and integration of the arts, Gail, Rachel, and Kendra tried to replicate the teaching practices that had helped them. The participants who struggled with mathematics, Kelly, Mike and Darren, focused on real-life applications and connections with other subject areas when teaching math to their struggling students, teaching practices that they found helpful as pupils. Moreover, the participants who struggled the most as pupils appeared to have the greatest insight into how to support struggling learners. Gail was particularly aware of how her own former struggles informed her teaching.

5.3.1. Gail

Gail was a strong mathematics student. Yet, she found it more difficult to plan her mathematics lessons than her literacy lessons because she couldn't always anticipate what might be challenging for her students. When teaching literacy, she could use her own experiences as a struggling pupil to guide her. When she saw her teaching partner, who had been a strong literacy student as a child and was still an avid reader, fail to take into consideration the needs of their struggling students when planning literacy lessons, she realized that she might have been doing the same thing with her mathematics teaching. Gail's struggles with literacy, as well as the experience of witnessing her teaching partner's lack of sensitivity for literacy strugglers, made Gail reflect on her teaching of mathematics:

> [My teaching partner] is a reader who loves reading. And so I think she takes certain things for granted. But then it makes me realize that I shouldn't do that [with mathematics]. When I'm teaching math, the students need to understand and communicate with symbols, like in literacy. Math was easy for me, but I know what it is like to struggle with something, so I try to have that viewpoint.

Gail also recognized that it was a challenge for her to help students who were having difficulty with basic decoding; this was an area of literacy learning that was easy for her as a student. She said, "The students that are having trouble even just decoding, this is something that I am challenged with as a teacher." Because she did not struggle with this particular aspect of literacy learning, she didn't immediately know what to do. As a response, she provided them with a variety of experiences and supports in the hope that something would help.

Gail's greatest area of need as a student, reading comprehension, was the area in which she felt she was best able to help her struggling students. She was aware of the department of education guidelines, and made a general teaching plan, but she was comfortable following her students' lead in this area of her teaching. She was confident that she knew when her students were engaged and learning, and she could adjust her teaching to both keep their interest and develop their skills.

As we have seen, Kendra, Gail, and Rachel all struggled with aspects of literacy learning, yet as teachers they found that they were best able to help students who struggled in this area. They knew what it looked and felt like to struggle, and they remembered the teaching strategies that helped them as students. However, they did not employ just the particular strategies that had worked for them. They knew from experience that different strategies work for different students, and so they experimented with a variety of strategies to ascertain what worked best for particular students. All three were strong mathematics students, and yet found mathematics teaching challenging. They did not have direct experience with struggling in this subject area and so had more difficulty planning for and recognizing student problems. Moreover, they struggled with offering alternate explanations or developing alternate teaching strategies. However, they did not leave it there. They knew that their teaching limitations in this area were a problem and they sought to remedy the situation. Reflecting on their experiences of significant struggle in their early schooling in one subject area provided them with an outlook that motivated them try to help their students who struggled in other subjects. For example, Kendra provided her students with mathematics journals to record their questions and problems privately, Gail thought of mathematics as a form of communication to help her to relate it to her literacy teaching, and Rachel had her students act as mathematics resources for one another. In the absence of direct experience of struggling with mathematics learning, their reflection on their literacy struggles allowed them to extrapolate strategies that could help their struggling mathematics students. The teachers who struggled less in school, Kelly, Mike, and Darren, did not seem be able to carry over their understanding of struggle from one subject area to another to the same degree.

5.4. A greater sense of accomplishment in teaching subjects that were challenging to learn

Participants reported a greater sense of accomplishment and confidence when teaching subjects that were an area of struggle for them as pupils. Although the participants were initially nervous about teaching subjects which they had not been strong in as pupils, by the end of their third year of teaching they reported the most satisfaction in this area of their teaching. Mike, who had been a highly accomplished literacy learner but for whom math was not easy, had more confidence in teaching math. He said, "I guess I have always felt more confident teaching math than literacy. It just seems easier and more natural to me." Gail, whose childhood struggle was in literacy, reported her greatest sense of accomplishment as a teacher came when her students were engaged and learning in literacy. She found she could adjust her teaching to match their interests and developmental levels. Rachel's example highlights this concept.

5.4.1. Rachel

Rachel was a strong mathematics student and continued to study mathematics and science in her undergraduate degree prior to entering her pre-service program. She called herself a "left brain person," preferring what she saw as the logical and sequential thinking in mathematics to the more subjective thinking in literacy. Although she was a successful mathematics student and had a strong academic background in mathematics, she found it a difficult subject to teach. For the first two years

of her teaching she followed the mathematics textbook closely. In the third year she tried to branch out, but she did not feel that she was very successful. She explained:

> I tried. I really tried to look at things outside of the textbook because the textbook is very one-dimensional. So I've tried to integrate things more and keep them more current. And I don't think I've done a really good job because I always get overwhelmed by all the stuff that needs to get done.

In addition to having difficulty with planning and organizing her mathematics teaching, Rachel was sometimes at a loss when her students did not understand a mathematical concept that she was teaching. She often did not know how to identify the problem, or know how to explain the concept in a different way. When this happened, she relied on her students to help each other.

Because Rachel valued mathematics education, she tried to experiment with strategies beyond the textbook, and used her students as resources, yet she was still frustrated with her teaching in this area. One of her main goals was to become a better mathematics teacher. However, she believed that she was not meeting her students' mathematics learning needs because a number of them were going to mathematics tutors. She acknowledged that she wanted this to change. She said, "I would know that I'm improving as a math teacher when I can see the number of students who need to go to an outside tutor decrease because I am filling in the gaps." By the end of third year of teaching, she did not report a strong sense of accomplishment or derive much satisfaction from her teaching of mathematics.

Many aspects of literacy learning were difficult for Rachel as a student, and she found many aspects of literacy teaching difficult. However, the area of literacy with which she had the most difficulty, that is, comprehending and responding to questions based on written material, had become the area of teaching in which she had the most satisfaction. She described her literacy teaching as becoming more directed and integrated over time.

By her third year of teaching, Rachel had stopped trying to do what the other teachers in the school were doing in literacy, stopped following a commercial literacy program closely, and stopped worrying about the literacy coach's initiatives. These approaches were confusing and overwhelming for her. They reduced her confidence in her teaching. She found herself in the same situation she had been as a child: unsure what was expected of her, feeling unsuccessful, and not knowing what to do about it. However, when she took a stand and developed her own literacy goals and expectations, this area of teaching became the one in which she had the most confidence.

It is interesting that she was able to take a stand and develop her own program, standards and goals in an area in which she struggled as a child, and admitted to still struggling with as an adult. In contrast, she felt tied to the textbook and "frozen" when a child did not understand her teaching in mathematics, which had been an area of strength for her as a student. Creating her own standards in her literacy teaching could be problematic if she were not grounding her approach on the students' needs, but in Rachel's case, she appeared to be tailoring her program to meet what she perceived to be her students' literacy learning needs. She had a great sense of satisfaction in her growth as a literacy teacher and reported that it was the area of her teaching of which she was the most proud.

All six participants had areas of their school learning as students that were stronger, and those that posed some learning challenges. As we have seen, their strengths as students became their challenges as teachers, and their areas of challenge as students became their areas of focus and confidence as teachers. However, there appears to be a difference between the participants who experienced significant challenges in elementary school, and those who had only minor challenges. Those with minor challenges in an area of school learning, Kelly, Mike, and Darren, became more confident in, and focused on, that area of their teaching, and spent more time preparing and

implementing their lessons. However, while they had some understanding and empathy for students who struggled in that area, they did not seem to gain significantly in their understanding how to help struggling learners. Moreover, they were not able to transfer their understanding of struggle in one area of the curriculum to their teaching in areas of the curriculum in which they had been strong students.

The three participants who had struggled significantly as students, Kendra, Gail, and Rachel, also have the greatest confidence in, and most focus on, the areas of the curriculum with which they struggled. Their literacy struggles appear to have given them insight into how to support struggling literacy learners. However, they were able to bring their insights into their teaching of the school subjects that were areas of strength for them as students, and were therefore better able to support struggling students across the curriculum.

6. Discussion

The findings from this study support much of the research literature in this area. The biographical perspective (Kelchtermans & Vandenberghe, 1994) which asserts that past life history and current teaching context are highly influential in professional behavior appears to be borne out in this study. These teachers' beliefs, opinions, and values do appear to have influenced their teaching practice (Chang-Kredl & Kingsley, 2014; Lamote & Engels, 2010; Wilson, 2012). Moreover, their personal habits, abilities, and experiences played a key role in their literacy teaching (Benevides & Peterson, 2010; Nathanson et al., 2008). With respect to the literature on mathematics teaching, and mathematics anxiety in particular (Lannin et al., 2013; Philipp, 2007; Ponte & Chapman, 2006), the findings of this study support the assertion that some beginning teachers bring anxiety over mathematics and teaching mathematics into their early teaching years. However, this study suggests that there may be some advantages to being anxious about teaching mathematics. The findings from this study illustrate that over the first few years of practice, teachers who struggled as pupils in mathematics and are anxious about teaching mathematics may be the most motivated to develop in this area of their teaching. Kelly and Mike, who were most anxious about teaching mathematics, engaged in more formal and informal professional development on mathematics teaching, spent the most time preparing their mathematics lessons, and felt more able to help their students who struggled with mathematics learning than in any other subject by the end of their third year of teaching.

The beginning teachers in this study reported using their own experiences as students as an aid to understanding their students' learning needs. This supports Carter and Doyle's (1996) observation that teachers generalize about students based on their own experiences and also supports Wolf et al.'s (2000) assertion that teachers need to critically examine their own history and beliefs in order to respond to the literacy needs of their students. While all six participants initially assumed that the teaching practices that worked for them as children would work equally well for their students, only the participants who struggled significantly as children experimented to determine if this were true. From their own experiences they knew that not all strategies work for all students. They observed their students closely to determine the extent to which particular strategies and approaches were working for particular children.

However, the participants who experienced learning success with all the teaching approaches they encountered as pupils, employed the strategies they enjoyed most as children in their teaching. This appears to be because they were confident that these approaches would be equally relevant and enjoyable for all of their own students. As teachers, they approached teaching in a way that was similar to how their own early teachers had. They believed that all of their students would experience the same heightened level of engagement and motivation as they had as children. When this did not happen for all of their students, they were perplexed. This finding suggests that pre-service programs need to alert pre-service teachers to pay attention to the assumptions they may hold about how children learn school subjects, and to how they expect to respond when their teaching strategies are not working for students, particularly in the subjects that were a strength for them as students. If pre-service teachers are better prepared to expect that not all students will learn as they

did, and that they must be equipped with a range of strategies, they will be in a better position to support their students.

For the participants in this study, their professional self (Kelchtermans & Vandenberghe, 1994) as a teacher appears to have sprung, at least in part, from critical incidents (Kelchtermans & Vandenberghe, 1994) of success or struggle as students in particular subject areas. These early critical incidents, in combination with the critical persons (Kelchtermans & Vandenberghe, 1994) of their early teachers, helped to form their subjective educational theory (Kelchtermans & Vandenberghe, 1994). They were able to use this theory in their practice as teachers to help them to understand and support students who were like them, and to varying degrees, students who struggled in different areas and in different ways.

All of the participants in the study were surprised that the reality of their teaching lives in the first three years was so different from their expectations. Their identities coming into teaching from pre-service appear to have been highly influenced by their early school lives. They had expected that their area of strength as learners would be the school subject that was the easiest to prepare and teach, and would be the area in which they would be best able to help their students. They also expected that this area of their teaching would give them the greatest sense of accomplishment as teachers. They were initially baffled that this was not the case. The confusion and disorientation they experienced in the reversal of their teaching strengths and weaknesses from what they had expected led to a significant identity shift (Beauchamp & Thomas, 2009, p. 182) from pre-service to beginning teachers. This echoes Haggarty and Postelthwaite's (2012) finding that pre-service math and science teachers, who were confident that their own prowess in these areas would lead to teaching success, were surprised that subject matter expertise was not enough to be successful as a teacher.

The findings from this study also challenge some of the assertions in the literature on teacher beliefs and practices. Both Carter and Doyle (1996) and Furlong (2013) assert that if beginning teachers are not reflective about their own early learning, they are likely to perpetuate conventional practice. This is in spite of graduating from teacher preparation programs that espouse progressive teaching practices. They argue that this is problematic because their students would not be benefitting from current educational theory and recommended practice. The participants in this study were all graduates of teacher preparation programs that advocated progressive approaches to teaching literacy and mathematics, but as school children they were subject to a range of teaching practices in their school learning lives, from the very traditional to the very progressive. Although as new teachers none of them employed a completely traditional literacy or mathematics approach in their classroom, they did plan and implement programs that varied greatly along the continuum. Contrary to the predictions in the literature (Carter & Doyle, 1996; Furlong, 2013), the participants who reported having the most difficulty meeting students' learning needs were the ones who attempted to reproduce the most progressive aspects of their own early learning in gifted and arts-based programs. These participants were perplexed when all of their students did not benefit from their programs in the way that they had as children. However, the participants who employed a range of strategies, including some more traditional ones from which they benefitted as struggling students, reported finding more success in meeting their students' needs. They appeared to more critically consider which approaches might benefit particular children. This suggests that it is not the perpetuation of conventional practice that is the problem, but the reproduction of teachers' own early learning experiences in the absence of critical reflection. In the absence of such reflection, even the most progressive strategies may fail some students.

The findings from this study support some aspects of Lortie's (1975) notion of the apprenticeship of observation and challenge others. It appears that Kelly, Mike, and Darren may be attempting to reproduce aspects of their own early teachers' approach without fully appreciating their teachers' planning and assessment processes. Because their teachers' approaches were appropriate and successful for them, their teachers' deliberate pedagogical choices remained invisible. These participants reproduced the aspects of their role models' pedagogy that was visible, such as engaging

integrated or arts-focused projects and activities, but without the detailed planning and assessment that happened outside of their view. Darling-Hammond's (2006) caution that those with high academic abilities may face challenges in meeting the needs of struggling learners appears to be supported by this research. The findings from these participants suggest that teachers who were successful students may need to engage in more reflection on their early learning to overcome the shortcomings of their apprenticeship of observation and of their own academic success.

In contrast, however, Kendra, Gail, and Rachel did not seem to fall prey to the negative effects of the apprenticeship of observation to the same degree. They seem to have a less simplistic view of teaching. As students, they were painfully aware that their teachers were making different pedagogical choices in their literacy program, many of which did not work for them. It may be that the complexity of the learning process is more evident to those who struggled with learning. As beginning teachers, they were more aware that teaching is also a complex process that required them to make appropriate choices among the many teaching strategies available to them in order to meet the needs of all of their students. It may be that teachers who struggled as learners have an "outsider" perspective that protects them from some of the limitations of the apprenticeship of observation. While pre-service and in-service programs need to make all prospective and beginning teachers aware of the negative effects of the apprenticeship of observation, it may be the academically strongest teachers who need to hear this message the loudest.

7. Conclusion

Based on the findings, it seems clear that the participants' teaching practices were influenced by their own experiences as pupils. The findings from this study suggest that beginning teachers need to be encouraged and supported to examine the implications of their own learning history to ensure that they are teaching in their students' best interests, rather than from memories, attitudes, and perspectives that arise from their own experiences. If pre-service programs are able to successfully implement this type of reflection, beginning teachers may be spared some of the shock and confusion of the early years of teaching. They could be more prepared for the fact that they may need to devote considerable time and resources into supporting their teaching in the areas in which they were strongest as students. These findings may also relieve some of the stress and anxiety beginning teachers feel about their ability to teach in the areas in which they were weaker as students. They may take some comfort in knowing that while they will likely need to do a considerable amount of professional development in their "weaker" area, their own struggles may become an asset when helping struggling students. Beginning teachers can be better prepared both emotionally and practically for the identity shift that they may undergo when they begin to teach.

It is significant that the participants who struggled the most as learners were more focused on understanding and meeting the needs of diverse learners in their classrooms. They were also more focused on developing as teachers than the participants who were more academically successful as students. Typically, in pre-service education we strive to enroll candidates with the highest academic marks without considering that marks alone may not guarantee success as a teacher. This study suggests that perhaps we should be looking beyond academic success in prospective teachers. Having experienced some struggle as a student and having a critical and reflective approach to learning and teaching may be more important in a teacher candidate than early and persistent ease with academic learning.

Pre-service and in-service teacher education must pay more attention to supporting teachers as they reflect on the influence of their own early learning on their teaching. For example, during pre-service education, whenever curriculum content or teaching strategies are introduced, teacher candidates could be asked to reflect on what and how they learned as children and how they expect those experiences will influence their teaching. In addition, during the first few years of teaching, in-service workshops that encourage beginning teachers to examine their teaching in light of their own early learning could be offered. The experience of this 3-year study revealed that asking beginning teachers about their early learning and their teaching provided the opportunity for them to

critically examine their learning and teaching, and to begin to be more intentional in their decision-making and planning processes and the reconstruction of their teaching identity.

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