2018

The Value of Reflective Thinking Among Public Elementary Teachers in Ontario, Canada

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Recommended Citation

ABSTRACT

THE VALUE OF REFLECTIVE THINKING AMONG PUBLIC

ELEMENTARY TEACHERS IN ONTARIO, CANADA

by

Margeaux Natalie-Ann Levy

Chair: Lee Davidson

ABSTRACT OF GRADUATE STUDENT RESEARCH

Dissertation

Andrews University

School of Education

Title: THE VALUE OF REFLECTIVE THINKING AMONG PUBLIC
      ELEMENTARY TEACHERS IN ONTARIO, CANADA

Name of researcher: Margeaux Natalie-Ann Levy

Name and degree of faculty chair: Lee Davidson, Ed.D.

Date completed: September 2018

This research study investigated the perceived value of reflection among in-service teachers in Ontario, Canada. The surveys were randomly distributed to 140 teachers within the Toronto District School Board (TDSB; the largest school board in Canada). The teachers all had Ontario teaching certification, were surveyed at their current school, and had taught from one to 35 years.

I investigated to what extent in-service teachers engage in reflective thinking, specific aspects of the teaching process that teachers reflect about, and sought to determine whether engagement in reflective thinking is related to years of teaching experience, elementary teaching levels (primary, junior, intermediate), and teacher preparation programs. The data were collected using the Perceived Value of Reflective

Thinking Survey created by Dr. Sarah Russback (2006), and the data were evaluated and analyzed using Statistical Package for the Social Sciences (SPSS) 22.

In this study, self-reflection was regarded as a useful practice by most in-service teachers. The participants had a highly positive perception of improving as an overall reflective practitioner, neutral perceptions of reflecting through the writing process, and moderate perceptions of barriers of personal reflection. They also reflected moderately often on the eight aspects of the teaching process (student level of understanding, student engagement, future goals, classroom management, student assignments, pedagogy, assessment practices, and student grades). However, there was no significant relationship between engagement or reflective thinking and teaching level and years of teaching. I recommend that further research be conducted involving both pre-service and in-service teachers who teach at all levels.

Andrews University

School of Education

THE VALUE OF REFLECTIVE THINKING AMONG PUBLIC

ELEMENTARY TEACHERS IN ONTARIO, CANADA

A Dissertation

Presented in Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

by

Margeaux Natalie-Ann Levy

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APPROVAL BY THE COMMITTEE:

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LIST OF ABBREVIATIONS

ABC[1]   Affect, Behavior, and Cognition

ABC[2]   Affective, Behavioral, and Cognitive

ALACT   Action, Looking Back on the Action, Awareness of Essential Aspects,
            Creating Alternative Methods of Action, Trial

ANOVA   Analysis of Variance

CTC   Commitment to Change

EFA   Exploratory Factor Analysis

FFS   Feedback Facilitating Strategy

GRAS   Groningen Reflection Ability Scale

ICED   Ideas, Connections, Extensions, Decisions

KMO   Kaiser-Meyer-Olkin

LEaP   Learning from your Experiences as a Professional

MANOVA   Multivariate Analysis of Variance

MAP   Minimum Average Partial

QQR   Questions, Quotes, Reflections

RT   Reflective Trigger

SAM   Self-Assessment Manual

SPSS   Statistical Package for the Social Sciences

SRIS   Self-Reflection and Insight Scale

SRM   Structured Reflection Model

TDSB   Toronto District School Board

ACKNOWLEDGMENTS

This dissertation could not have been completed without the encouragement and support of several people in my life. First and foremost, I would like to thank God for giving me the opportunity to study at Andrews University. This process has been a life-changing experience, and I am truly grateful for the journey of doing this task at a Christian institution, where God is the center of the academic experience.

The love and support of family members such as my husband, Jayson, and children, Kaylon and Isabel, have also helped me persevere and continue my studies until completion. Despite occasional challenges, my husband never gave up on me. He was always there to help, support, and keep me focused. I will forever cherish the love and support that I received from Jayson. My mother, Karen Bailey, has encouraged me from birth never to give up and to follow my dreams. Thank you, Mom, for always pushing me to reach for the stars.

My chairperson, Dr. Lee Davidson, has been with me throughout this process as a constant mentor and guide. I am grateful that he has continued to support me and ensure that I remained on the right track during my PhD studies. A special thanks is also extended to Dr. Jimmy Kijai and Dr. Tammy Overstreet who have also served on my committee and provided me with an unlimited amount of insightful feedback.

All of the people mentioned, along with additional family, friends, and fellow classmates who are not mentioned, have helped me achieve this goal, and for that, I will be forever grateful.

CHAPTER 1

INTRODUCTION

Statement of the Problem

Minimal research has focused on analyzing the perceptions of reflection of in-service teachers, particularly in Canada. Reflection is important because it is the process that enables teachers to learn from their educational experiences and, at the same time, offers meaning to their teaching practices (Zhao, 2012). More literature on teacher reflection is necessary because a teacher's ability to grow through his or her experience is crucial. In *For Maxine Greene: The Teacher's Responsibility, the Flesh, and Aesthetic Meaning*, James Palermo (2010) mentioned that a "teacher's responsibility is to guide." Teachers who reflect will understand how their concerns and personal theories affect their teaching decisions as they guide students (Poulou, 2007). Furthermore, experience is valuable in helping teachers reflect on how they learn, particularly on how, as learners, they experience the interplay between cognition and meta-cognition. This is crucially important in shaping the effectiveness of learning and in influencing students' motivations to learn (Webb, 2001).

According to Oikonomidoy (2009), reflection has been recommended as an essential element in the growth of pre-service teachers. For instance, teacher education programs in Ontario have been helping pre-service teachers build on their reflective practices. As such, the University of Toronto, according to the Times Higher Education's

(2018) World University Rankings, is among the top 20 universities in the world. It recommends in its teacher education handbook that teachers "engage in reflection about their learning" (University of Toronto, 2012, p. 4). York University, another one of Ontario's twelve teacher education programs, requires reflection in the practicum element of pre-service training, "teacher candidate's understanding of classroom observation, inquiry, reflection, school structures portfolios, lesson planning, curriculum design, classroom management and assessment" (York University, 2008, p. 387). These policies coincide with the thinking of Grant and Zeichner (1984) and Marzano, Boogreen, Heflebower, Kanold-McIntyre, and Pickering (2012). They believed that reflective teaching is crucial "if teachers of tomorrow are to contribute to the revitalization and renewal of our schools" (Grant & Zeichner, 1984, p. 17).

Nevertheless, the process of becoming a reflective teacher is, in several ways, challenging for beginning teachers as they are merely trying to survive (Ferguson, 1989; Poulou, 2007). Reflection must not be overlooked because it is a major element in their professional growth and is necessary for all those who want to grow within their career, especially teachers (Snyder, 2011). The reflective process involves constantly asking questions in response to observations and classroom experiences and then reframing questions as new ideas arise (Cavanagh & Prescott, 2010). Therefore, learning to become a reflective educator can be a difficult task especially when what is considered to be a good teacher in university does not coincide with the teaching habits during a student teaching practicum (Cavanagh & Prescott, 2010).

Teacher education does not end after teachers complete their teacher education program (Barrett, Solomon, Singer, Portelli, & Mujuwamariya, 2009), which is one

reason why teacher induction programs have been implemented among beginning teachers. Induction "influences employee engagement and performance success" (Veasey, 2012, p. 24). Teacher induction, from a theoretical perspective is different for pre-service and in-service programs. According to Ingersoll and Strong (2011), "pre-service refers to the education and preparation candidates receive before employment" and "in-service development refers to periodic upgrading and additional professional development received on the job, during employment" (p. 203).

Among beginning teachers, learning through peripheral participation can occur at work through reflection on (Shanks & Robson, 2012) and discussion of specific challenges (Schön, 1983). The process of problem-solving and reflection among teachers needs to be facilitated to "help learners reframe their knowledge base" (Raelin, 2010, p. 135). Consequently, additional research must be completed on in-service teacher reflection practices and their value. Investigating teachers' reflective practices after they leave educational institutions will make a significant contribution to literature on teacher reflection and will also help teachers identify how reflection impacts their current teaching practice.

Purpose of Study

This study will involve a data analysis of in-service (beginning and experienced) teachers' responses to the Perceived Value of Reflective Thinking Survey (Russback, 2010). Reflection, as cited in McLaughlin and Hanifin (1995), is defined as "the open active communication channel between the social context and the inner self" (p. 223). It is a dialogue that benefits an individual and his or her professional practice (McLaughlin & Hanifin, 1995). The first purpose will be to determine to what extent in-service

teachers engage in reflective thinking. The second purpose is to determine what aspect(s) of the teaching process teachers reflect about. The third purpose is to determine if reflective thinking is related to years of teaching experience, levels (primary, junior, and intermediate), and teacher preparation (traditional vs. alternative). Individual factors deduced from survey items by Sarah Russback (the creator of the survey) were as follows: (a) usefulness of reflection, (b) support and barriers to reflection, (c) reflection outcomes, and (d) modes of reflection.

Research Questions

The study will be guided by the following questions:

1. To what extent do in-service teachers engage in reflective thinking?

2. What aspect of the teaching process, including pedagogy (delivery), classroom management, student engagement during the lesson, student level of understanding during the lesson, student assignments/tasks, assessment practices, student grades/results, and future goals, do teachers reflect about?

3. Is engagement in reflective thinking (as measured by the six subscales of the modified Perceived Value of Reflective Thinking Survey) related to years of teaching experience, elementary teaching levels (primary, junior, intermediate) and teacher preparation (traditional vs. alternative)?

Significance of the Study

A reflective practitioner should practice guided reflection in order to have continual development and growth (Marzano et al., 2012). Thus, research of this nature will empower teachers, administration, and school board officials by allowing them to

become aware of the reflective practices of experienced educators, which will provide them with information to conduct further research and create professional development opportunities. Consequently, the research, practice, and policy implications of this study are as follows:

Teacher reflection in the K-12 education system has not been fully adopted (Marzano et al., 2012, p. 4), so there is a void. Therefore, this study will help to fill the void of in-service teacher reflection literature. Since the data that will be available from this study will provide an indication of teacher attitudes from the largest school district in Canada, the findings will be generalizable to in-service teachers within major cities in Canada. Finally, attitudes about reflective practice are diverse and can include a lack of knowledge about the process and an individual's hesitation to question his or her own practice (Davies, 2012). Thus, this research, which is designed to foster understanding and to compare the perceptions and practices of reflection among in-service teachers, will contribute fundamental information for subsequent analysis of the perceptions of teacher reflection among in-service teachers.

Theoretical Framework

A theoretical framework is the foundation on which a research project is based. It develops, describes, and elaborates relevant associations among variables that are relevant to the problem (Sekaran & Bougie, 2013). The framework used to explain the relationship between variables in this study is taken from micro-organizational behavior. Attitude studies are appropriate to the nature of attitudes which have three components: emotional, behavioral, and cognitive, which is known as a tri-componential viewpoint (Oppenheim, 2005). According to Oppenheim, attitudes are associated with beliefs

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(cognitive component), usually influencing strong feelings (affective component) that can result in a specific behavior (the action tendency component). An example of understanding the teacher reflective process attitude is demonstrated by Sparks-Langer, Colton, Pasch, and Starko's (1991) framework for reflective thinking. It can be described using three approaches: the cognitive, critical, and narrative approaches. The cognitive approach emphasizes decision-making through gathering and processing information. The critical approach focuses on moral and ethical aspects of teacher experiences and values, and the narrative involves teachers' own experiences in the classroom, which may include personal narratives, case studies, and action research to focus on decision-making situations.

The framework for reflective thinking can be considered beneficial because "the three aspects illustrate how the field of research on teaching is moving from a predominantly behavior-oriented paradigm of teaching to a reflective paradigm" (Sparks-Langer et al., 1991, p. 31). The study of attitudes came about almost a century ago through significant researchers such as Likert (1932), Thurstone, (1928), and Thurstone and Chave (1929). Shortly after, there were strategies that measured the level that individuals' attitudes influenced their behavior (LaPierre, 1934). The concept of attitude has had a significant role in the history of social psychology, which means it is no surprise that "attitude consistency has been a major area of research" (Saleh & Swe Khine, 2011, p. 7). Attitudes are an integral part of our lives and impact us in numerous ways (Phillips & Silverman, 2012). Therefore, attitude research is a suitable framework for analyzing teachers' attitudes towards reflection.

The goal of developing reflective practitioners has led to a substantial amount of

research that focuses on teachers' being reflective researchers and inquiring about their own practice (Cochran-Smith & Lytle, 1993; Dewey, 1933; Schön, 1983; van Manen, 1977). Researchers believe reflection to be a vital component for teachers to understand the complexities of the classroom (Zeichner & Liston, 2011). According to Zeichner and Liston (2011), a reflective teacher

- "examines, frames, and attempts to solve dilemmas of classroom practice" [the barriers of reflective thinking];
- "is aware of and questions the assumptions and values he or she brings to teaching" [usefulness of reflective thinking];
- "is attentive to the institutional and cultural contexts in which he or she teaches" [the support for reflective thinking];
- "takes part in curriculum development and is involved in school change efforts" [mode used for reflective thinking]; and
- "takes responsibility for his or her own professional development" [the outcomes of reflective thinking] (p. 6).

Because attitudes are formed when people encounter a specific situation or object (Eagly & Chaiken, 1992), an analysis of teacher reflection attitudes in the classroom is important. Therefore, the perception of teachers' reflective practices is conceptualized as follows in this study. If teachers at different stages in their career (beginning and experienced) consider their attitudes toward independent variables (total years of teaching experience, years of teaching experience at their current school, grade level that they teach, and teacher preparation program), then the process of reflective thinking will provide an understanding of their reflective practices (dependent variable). However, if these same factors are not considered to be important to the teachers, then their level of professional growth could be inhibited. Generally, people display behaviors that they value (Petty & Cacioppo, 1996), so measuring teachers' attitudes/values toward reflection deserves research attention. Therefore, attitudes of teachers applied to independent variables would provide an understanding of their actions, what they deem to be

important, and the reflective practices that they are currently involved in within their classrooms.

According to Ajzen (2012), "we gain an understanding of the factors that motivate people's behavior by examining their beliefs about the behavior's likely consequences and how these beliefs produce an attitude toward the behavior" (p. 24). Therefore, assuming that micro-organizational behavior reflects teachers' attitudes toward reflection, it logically follows that the independent variables (total years of teaching experience, years of teaching experience at their current school, grade level that they teach, and teacher preparation program) contribute to the outcome of the dependent variable, the perceived value of reflection that beginning and experienced in-service teachers have towards reflection.

Delimitations

1. The study will be limited to information gathered from teachers in the Toronto District School Board (TDSB).

2. The study's sample will include all elementary schools that are a part of the TDSB.

3. The study is limited to teachers who are employed within only one public school year.

4. This study will focus specifically only on teachers within the TDSB and not on other public school boards.

5. The survey data will be limited to teachers who will be selected by their principal and who agree to participate.

Limitations

1. The measures of the participants' values of reflection will be limited to individuals who completed the survey.

Definitions of Terms

Alternative Teacher Certification: An Ontario teaching license that has not been completed at an Ontario university teacher certification program.

Beginning Teachers: Researchers define beginning teachers as teachers with one to four year(s) of teaching experience (operational term for the purpose of this study).

Elementary Teacher: A teacher who teaches kindergarten to Grade 8. A primary teacher teaches kindergarten to Grade 3, a junior teacher teaches Grades 4-6, and an intermediate teacher teaches Grades 7 and 8.

Experienced Teacher: Experienced teachers are defined by researchers as teachers with five or more years of teaching experience (operational term for the purpose of this study).

Induction: "Induction influences employee engagement and performance success and helps preserve a collegiate, team-task culture" (Veasey, 2012, p. 24). According to Ingersoll and Strong (2011), "pre-service refers to the education and preparation candidates receive before employment" and "in-service development refers to periodic upgrading and additional professional development received on the job, during employment" (p. 203).

Reflection: As cited in McLaughlin and Hanifin (1995), reflection is defined as "the open active communication channel between the social context and the inner self"

(p. 223). It is a dialogue that benefits an individual and his or her professional practice (McLaughlin & Hanifin, 1995).

Reflective Practice: Reflective practice can be defined as disciplined inquiry about the motives, methods, materials, and consequences of educational practice (Yost, Senter, & Forlenza-Bailey, 2000). It happens when teachers consciously take on the role of being a reflective practitioner, which means they consider their own beliefs about teaching and learning through critical analysis. They also become fully responsible for their actions in the classroom while trying to improve their teaching practice (Farrell, 2007; Jay & Johnson, 2002; Valli, 1997).

Reflective Teaching: Reflective teaching is "thinking about and critically analyzing one's own teaching in order to improve teaching practice" (Reflective teaching, n.d.).

Traditional Teacher Certification: An Ontario teaching license from an Ontario university teacher certification program.

Organization of the Study

The first chapter will provide an introduction. Chapter 2 will include the literature on reflection, in general; the usefulness of reflection, support and barriers of reflection, reflection outcomes, and modes of reflection are explored. Chapter 3 will outline the survey design and methodology. Chapter 4 will provide information on the survey responses, and tables will display the responses and show comparisons between the different groups (beginning, experienced, elementary, secondary). Finally, Chapter 5 will provide a conclusion and provide suggestions for additional research.

CHAPTER 2

LITERATURE REVIEW

Abstract

This study evaluates the perceived value of reflection among in-service teachers

in the TDSB. It examines the history of reflection by exploring John Dewey and

development within the field of education through contributors such as Donald Schön,

Linda Valli, Georgea Sparks-Langer, and Amy Colton. Within the general area of

reflection, we will also investigate throughout the study such concerns as the usefulness

of reflection, support and barriers of reflection, reflection outcomes, and modes of

reflection. The literature review closes with a discussion on the importance of attitudinal

studies. Various online search engines such as ResearchPro and Academic Search

complete were used to collect the data.

Reflection

Reflection is a window through which the practitioner can view and focus self within
the context of her own lived experience in ways that enable her to confront,
understand, and work towards resolving the contradictions within her contradiction,
the commitment to realizing desirable work and understanding why things are as they
are. The practitioner is empowered to take more appropriate action in future
situations. (Johns, 2009, p. 34)

Reflection is grounded in a constructivist learning theory as its goal is to identify,

evaluate, and consider the beliefs and assumptions that influence one's actions (Osterman

& Kottkamp, 2004). In the process of reflection, learning is an active process where the

learner (teacher) forms new ideas based on prior knowledge or experiences. Reflection

can be conceptualized as a problem-solving and professional development strategy

(Osterman & Kottkamp, 2004). Reflection leads to a greater understanding of areas that

could have been overlooked by teachers (Milner, 2003). An influential reason for the

drive towards reflection is rooted in the theory of "praxis." Praxis occurs when reflection

encourages a dialogue between theory and practice that helps to develop a new

understanding of one's practice and a new ability to change practice (Bulman & Schutz,

2008; Nairn, Chambers, Thompson, McGarry, & Chambers, 2012). Below are key

individuals who contributed to reflection.

<div align="center">John Dewey</div>

Dewey is considered the founder of reflection and believed that it was essential in

order for learning to take place (Milner, 2003). Reflective thought was an "active,

persistent and careful consideration of any belief or supposed form of knowledge in the

light of the grounds that support it and the further conclusions to which it tends" (Dewey,

1933, p. 9). Sequence and consequence are "at the heart" of reflective thinking (Dewey,

1933; Valli, 1997, p. 68).

Little is known, however, about the perceptions of reflection among in-service

teachers. An understanding of this phenomenon can be understood through examining

research on reflection. The purpose of this chapter is to review literature on individuals'

perceptions of reflection with respect to its usefulness, support and barriers, outcomes,

and modes.

> Reflective thought in teaching was considered to be essential because it emancipates
> us from merely impulsive and merely routine activity…enables us to direct our
> activities with foresight and to plan accordingly to end-in-view, or purposes of which

we are aware…to act in deliberate and intentional fashion…to know what we are about when we act. It converts action that is merely appetitive, blind and impulsive into intelligent action. (Dewey, 1933,   p. 17)

Reflection occurs when teachers are faced with challenging situations within their teaching practice and are forced to evaluate them (Dewey, 1933).

Donald Schön

Reflection-in-action is the ability of professionals to "think about what they are doing while they are doing it" (Waters, 2004, p. 631) and is considered to be a key skill. Schön noted that people should be able to think on their feet while applying their former experiences to new situations (Schön, 1983, 1987). In two of his writings, *The Reflective Practitioner* (1983) and *Educating the Reflective Practitioner* (1987), Schön described the teaching profession as very uncertain and used the term "technical rationality" to explain the relationship between theory and practice. This was a problem because technical rationality did not acknowledge the fact that thought is not responsible for guiding action (Valli, 1997). Schön's theories led to other studies in teacher thinking and helped to identify methods that successful teachers use to reflect.

Linda Valli

According to Valli (1997), a reflective person is someone who "thinks on what is seen and heard, who contemplates, who is a deliberate thinker" (p. 68). In addition, a reflective person is also considerate of the voices, opinions, and advice of others, and the process of reflective teaching requires careful thought and judgment (Valli, 1997). There are five different ways that teacher educators can help their pre-service teachers become

more reflective; three of the five can also be used and considered for in-service teachers who engage in reflection (Valli, 1997).

1) Action Research. In this method, teachers inquire about their own teaching practice and context. It is similar to problem-solving because it allows teachers to reflect on what they are doing and what is happening in their classroom with the hope of leading towards some type of improvement. Through this process, teachers take an active role in trying to improve their own teaching. They may also receive feedback from peers in this process.

2) Journaling and Writing Assignments. Journals and writings of this nature are less formal and can be used for various reasons such as to keep track of one's learning process and/or reflect on "what they know, how they feel, what they have done in the classroom, and why they did it" (Valli, 1997, p. 83). Journal writing may also be autobiographic in nature or be used to review goals, accomplishments, and failures in order for teachers to develop and grow.

3) Case Studies. Teachers may read over a case study with a detailed description of a teaching experience that includes particular teaching principles. The in-service teacher would reflect on the case in order to develop an understanding of the theoretical perspectives and work through any existing problems or conflicts.

The last two processes of reflection that Valli suggested are supervision by a university instructor and classroom activities and discussion. Both of these forms of reflection would not be applicable to an in-service teacher who is not enrolled in a university teacher education program. All forms of reflection should be used in combination in order to balance any deficits (Valli, 1997).

Georgea Sparks-Langer and Amy Colton

Reflective practice can be organized into three elements: the cognitive element, the critical element, and the narrative element (Reagan, Case, & Brubacher, 2000). The cognitive element refers to the knowledge that teachers must possess in order to make good decisions related to their teaching practice. The critical element refers to the moral and ethical aspects of education and the narrative element involves the teacher's own experiences in the classroom. Both of these elements can contribute to the metacognitive process and reflection.

Metacognitive Reflection

"Reflection is a metacognitive process that creates a greater understanding of both the self and the situation so that future actions can be informed by this understanding" (Sandars, 2009, p. 685). Grossman (2009) mentioned that a significant level of reflection includes metacognitive reflection, which is defined as "the awareness of and knowledge about one's own thinking" (Zimmerman, 2002, as cited in Grossman, 2009, p. 17). In particular, teachers need to contemplate the role that emotion plays on their reflective writing process (Felton, Gilchrist, & Darby, 2006). According to Efkildes (2009), metacognition has no access to behavior, but influences behavior though cognition. He mentions that the monitoring of cognition can occur through examining a person's inner states and allowing him or her to reflect on them.

The characteristics and attributes of a reflective teacher include believing that it is important, asking questions to structure experiences, having the ability to communicate what he or she wants to know, and knowing how he or she functions in an interpersonal relationship (Korthagen & Wubbels, 1991). Extensive practice and reflection are

necessary within the construction of metacognitive knowledge (Schraw, 1998, p. 118),

and the metacognitive knowledge of personal variables is fundamental in relation to

teachers' content knowledge, teaching behaviors, and teaching effects (Ya-Hui, 2012).

Overall, metacognition and metacognitive reflection help a learner understand his or her

thinking and may have an impact on the learning outcome if it is encouraged (Cornish &

Jenkins, 2012).

Usefulness of Reflection

Reflection, as a thoughtful and a caring act, goes to the heart of the instructional
relationship. It is not only a tool of skilled practice, but also a feeling that helps
educators to teach effectively and intelligently rather than unthinkingly, dogmatically
or prejudicially. (Roskos, Vukelich, & Risko. 2001, p. 617)

Literature in teacher education suggests that reflection helps prospective teachers

develop a pattern of continually learning by putting their assumptions and biases aside.

According to Whipp (2003), it involves evaluating problems from various perspectives,

critiquing problems in larger sociopolitical and moral perspectives, and taking action that

is informed by reframing. Whipp (2003) used a design experiment to compare patterns

and levels of reflection in two semesters of her students' email discussions and field

experiences. The research questions sought to answer what patterns and levels of

reflection about field experiences were evident in the email discussion, and what seemed

to scaffold higher levels of reflection within the discussions. Data analysis was

conducted through e-mail messages, student surveys, and portfolio papers. Whipp's

(2003) results confirmed that these discussions should be structured in order to produce

high levels of reflection and discussion. The results also affirmed that scaffolds in online

discussions that refer to experiences about social and moral issues could also result in higher levels of dialogue.

A framework was provided for beginning teachers by Hiebert, Morris, Berk, and Jansen (2007) to encourage them to reflect on cause and effect relationships and to develop their analytical skills. This framework helps beginning teachers understand teaching through studying teaching (self-reflection) (p. 16). As cited in Hiebert et al. (2007), the researchers' framework is grounded on the work of others (e.g., Hiebert, Morris, & Glass, 2003; Santagata, Zannoni, & Stigler, 2007), and although it is a persuasive argument, it can lead to additional growth. Hiebert et al. (2007) suggested that teachers set goals for their teaching methods of instruction and collect empirical observation such as looking at students' work and responses to teaching. They also suggested that teachers develop a hypothesis on what worked or did not work, and finally, use the analysis to improve their teaching. One of the researchers' major reasons for using this method is that it encourages teachers to analyze their practice and improve their teaching method.

Another example of the usefulness of reflection can be seen in Goldenberg, Saunders, and Gallimore (2004) who, in their research, determined that emphasizing teacher improvement could improve student learning. The teachers in their study met weekly, set learning goals for their students, examined their students' work, and used the findings of the analysis to improve their classroom teaching. Reflection is a learned behavior (Danielson, 2007) and is useful when beginning teachers initiate their teaching career, particularly when what they perceive to be a reality may not be what they experience in their classroom (Melnick & Meister, 2008; Nahal, 2010).

Research has been conducted in an attempt to understand what is being said and done in the area of teacher reflection. Marcos, Miguel, and Tillema (2009) sought to find out if what is stated theoretically about teacher reflection's key characteristics is validated by empirical research. Their research used 49 written sample reflective accounts by teachers in order to determine what teachers do when reflecting in action. The content within the articles was evaluated based on four steps: (a) selection of text fragments, (b) identification of the propositions, (c) identification of the figures being referred to, and (d) a topical analysis. The analysis revealed that teacher's goals and values made up a high percentage of reflections, "meaning that they intended to solve problems (aim at solutions) by reflection" (Marcos et al., 2009, p. 198). The reflective samples also showed that there was more of an emphasis on the positive aspects of actions than on negative actions (Marcos et al., 2009, p. 199).

Wilson and Demetriou (2007) focused on findings from a longitudinal survey study and interviews with ten new teachers during their first two years of teaching. In the context of the study, "teacher learning is defined as the process of reflection and action through which teachers develop skills, and acquire knowledge and expertise" (Wilson & Demetriou, 2007, p. 214). Types of teacher knowledge were classified into two categories: academic knowledge based on cognitive knowledge and practical knowledge, a form of procedural knowledge. At the end of the study, Wilson and Demetriou (2007) concluded that their findings coincided with other large-scale findings such as those of Pedder, James, and MacBeath (2005). They noted that "teachers tend to value a wide range of intra- and interpersonal learning, and they did not seem to attribute high value or to use educational research knowledge as a source of learning" (Wilson & Demetriou,

2007, p. 226). The intra- and interpersonal learning that occurs when teachers reflect can be used to assess various areas of teaching and can be accomplished using a variety of methods (Purcell, 2013).

Valli (1997) described reflective teachers as those who are able to analyze their own practices and the context in which it occurs; reflective teachers are expected to be able to stand back from their own teaching, evaluate their situation, and take responsibility for their own future (p. 141). Freese (2006) worked with a pre-service teacher and monitored his growth over a two-year period in order to determine the complexities of his learning to teach. After the extensive study, he concluded that the student's growth and development were the result of many factors; however, a significant factor was his ability to improve in his teaching through reflection (Freese, 2006). The process of reflection enables individuals to become self-directed learners (Davies, 2012). Reflection combines experience and knowledge and creates new learning (Kathpalia & Heah, 2008); the process finds new ways to face challenges inside and outside the classroom (Butke, 2006). Through the learning that takes place through reflection, a teacher's classroom practices can be influenced, especially if there is support to implement reflection.

Translating Learning into Practice: Support of Reflection

Teacher reflection cannot be mandated as it contributes to one's level of professionalism and requires ownership and commitment (Helterbran, 2008). Literature on reflection suggests that reflection allows beginning teachers to become continual learners as their experiences encourage them to evaluate their biases and assumptions and identify problems from multiple perspectives (Whipp, 2003). However, former

educational experience and culture can become a barrier to teachers when reflecting on an experience (Platzer, Blake, & Ashford, 2000). There are four hierarchical levels of reflection: habitual action/ learning, understanding, reflection, and critical reflection (Kember et al., 2000). Habitual action uses minimal thought and engagement and is unreflective in nature. Understanding is comprehension that does not involve personal experiences; learning stays within the boundaries of preexisting perspectives. At the reflection level, learning is connected to personal experiences. The reflection level challenges biases and preconceived notions with the intention of trying to improve. Intensive reflection, the highest level of reflection where a teacher is aware of how he or she thinks, may even lead to change (Peltier, Hay, & Drago, 2005).

In the Netherlands, the teacher competences required for developing the reflection skills of nursing students was measured using a 7-point Likert-type scale ranging from "not" (1) to "optimal" (7), (Dekker-Groen, van der Schaaf, & Stokking, 2010). The researchers developed a framework of teacher competencies which included (a) preparation of reflection education, (b) learning goals, (c) instruction and assignments, (d) coaching reflection skills, (e) developing through feedback, and (f) reflection conversations and assessments. The competencies were divided into 15 tasks which represented 91 indicators. The participants ($N = 28$) consisted of 18 teachers, four managers, and six researchers, and all independently filled out the questionnaire in two rounds in order to rank thinking activities underlying reflection in round 1 and to rank task domains in round 2. The Statistical Package for the Social Sciences (SPSS) version 16 was used to compute the means of the 91 indicators and six task domains. On average (from "most important" to "least important"), the results revealed that giving feedback

and setting goals was ranked fairly high, which suggests the importance of dialogue and setting personal goals when reflecting.

Kyles and Olafson (2008) conducted a mixed-method investigation to measure 15 pre-service teachers' measures of hope, motivation for teaching, and efficacy for teaching. The teacher candidates ($N = 15$) who were placed in urban settings for their teaching practicum investigated their personal beliefs and former experiences with cultural diversity through writing reflective response letters and cultural autobiographies. Each participant completed pre- and post-tests using the *Hope Scale*, the *Motivation for Teaching Scale*, and the *Teacher Efficacy Scale*. The qualitative data source was each student teacher's response letters. In the first response letter, students discussed their goals for teaching and ways that they planned to meet their goals; in the second response letter, they formed a list of items related to the schools they attended, family values toward education, and the role of school in life, and any prior non-schooling teaching. The third letter required students to explain their beliefs about cultural integration models in the classroom. The correlational analysis determined the strength of relationships among seven variables: age, personal teaching efficacy, general teaching efficacy, agency, pathways, intrinsic motivation, and extrinsic motivation. Other than age, which was positively correlated with professional beliefs about teaching ($R = .578$) and the fact that personal beliefs about diversity were negatively correlated with personal efficacy ($R = -.525$), no other significant relationships were found within the sample.

Students who had participated in teaching practices in multicultural settings were asked to participate in different reflective writing exercises such as reflective response letters and cultural autobiographies. The majority of the students' response letters

reflected an uncovering of their beliefs at their simplest level of description. In addition, not all participants were able either to deconstruct or reconstruct their beliefs in order to move toward a deeper commitment to multicultural education (Kyles & Olafson, 2008). The results revealed that one semester of critical reflection focused on diversity while being placed in a diverse practicum setting is not enough for meaningful change (Kyles & Olafson, 2008). Therefore, the pre-service teachers needed more experiences in their program on which to reflect.

In Turkey, Ulas, Kolac, and Sevim (2011) believed that an educator's level of acceptance, adopting, and questioning reflective thinking is important to his or her profession. In their study, they sought to determine the reflective thinking abilities of Turkish language teachers ($N = 96$) as it relates to the following:

- The attitude level of teachers who participated in the research towards reflective thinking.

- The level of teachers who participated in the research in using effective and questioning teaching.

- The level of teachers who participated in the research in the situation of assessment related to their teaching.

- The perspective of teachers who participated in the research towards their profession.

- The level of teachers who participated in the research in appreciating the opinions of students and other teachers.

Ulas et al. (2011) used the Reflective Thinking Tendency Scale (Semerci, 2007) to collect data with a Cronbach alpha coefficient of .908. The scale has a total of 35

questions (20 negative and 15 positive) that used a Likert scale, which ranged from (1) "I totally disagree" to (4) "I totally agree."

The randomly selected participants had graduated from various facilities and had a wide range of seniority in the teaching profession. The SPSS version 18 was used to analyze the data and the percentage of participants who replied to each question response was calculated. The researchers indicated that almost all of the teachers (91.7 %) often or always think critically when it comes to their educational goals, and that 60.4 % are honest when evaluating themselves as teachers. The researchers reported that "the result was found to be very positive in terms of reflective thinking teacher's making status assessments, valuing students' opinions, thinking critically and assisting other teachers at all times" (Ulas et al., 2011, p. 402). A total of 80% of teachers responded well to looking at events from different perspectives and being open to questions and suggestions. The overall results of the Reflective Thinking Tendency Scale revealed that the participants were using their reflective characteristics in learning and teaching activities.

In an attempt to promote self-reflection among clinical nurses in China, Ip et al. (2012) evaluated the effect of a structured reflective program on their participants. The Johns' Structured Reflection Model (SRM; Ip et al., 2012) was used as a framework for the education program and has been useful in helping individuals reflect individually and in groups. The model includes structured learning and practice and uses guided questions in order to achieve a high level of self-reflection among participants. The purpose of the researchers who used Johns' SRM was to improve the levels of reflection among the participants and to assess how useful the nursing students found the structured education

program. The Student Opinion Scale, which uses a 5-point Likert scale, was used to collect the participants' views on the structured education program.

Data were collected from 173 undergraduate nurses at the University of Hong Kong to determine the levels of reflection. Each nursing student submitted three diary entries. One was collected before the structured education program (pretest), and two following the education program (posttests 1 and 2). A three-level coding scheme was used to assess the quality of reflection and levels of reflection (1 = non-reflector, 2 = reflector, and 3 = critical reflector); then the coder read all the entries again to determine the level of reflection. A Friedman two-way analysis of variance (ANOVA) and the Wilcoxon Signed Ranks Test between subjects was used to compare the levels of reflection. The frequency and percentage of participants who demonstrated a higher level of reflection at post-test 1 ($Z = 4.93$, $p = 0.005$) and posttest 2 ($Z = 4.56$, $p = 0.000$) was more significant than the levels of the pre-test. The score of the Student Opinion Scale was 30.88 ($SD = 3.99$), which ranges from 13 to 37. This means that the participants found the program useful in developing their self-reflection skills.

Electronic tools can also be used as a way of reinforcing reflection and provide opportunities for learners to self-instruct themselves where they do not have to rely on an instructor to reflect and stimulate their learning (Verpoorten, Westera, & Specht, 2012). In the Netherlands in 2012, Verpoorten et al. (2012) conducted a comparative study through an online course and sought to determine if reflective triggers (RTs) within a study task engage active reflection, and if reflection positively affected their performance. Two secondary research questions were included: Do multiple RTs have a greater effect than one single RT? Is there an observable difference of the effects between

the types of RTs used? The two-hour course created for an e-learning forum on Moodle

exposed participants ($N = 50$), divided into five groups, to five different RT treatments.

Group 1 (control): no reflection trigger

Group 2: all RTs provided

Group 3: RT 1/ (yardstick)-students compared aspects of their learning experience

with an external yardstick (teacher, peer, expert, classroom average, etc). They

were able to compare the number of actions they performed to the number of

actions performed by a previous group.

Group 4: RT 2/ (rating) asked learners to provide insight on their behaviors and

performance through a rating scale.

Group 5: RT 3/ (comment box) asked participants to produce a mental or written

discourse about particular aspects of their learning.

In order to determine the learners' reflective skills and metacognitive capacity, a

background questionnaire was distributed. It included the Mindful Attention Awareness

(Brown & Ryan, 2003), the Need for Cognition Form by Cacioppo and Petty (1982), and

the Metacognitive Awareness Inventory (Schraw & Dennison, 1994). In addition, a test

was taken (after the study session) to measure levels of achievement. Participants were

responsible for keeping behavioral logs and a second online survey was taken to get

feedback from the participants on the RTs. The questionnaire included the Reflective

Thinking Scale of the Constructivist On-Line Learning Environment Survey (COLLES)

and opinions on the RT (weak and strong points). The alpha level of 0.05 was used for

all of the statistical analysis. For the Reflective Thinking Likert scale of the COLLES

questionnaire, three out of four treatment groups (except Group 5) had significantly

higher intensities of reflection compared to the control group. Particularly for the items

"I often reflect" or "I almost always reflect," the scores were significantly lower in the

control group than in the aggregated treatment groups x^2 (4, $N = 54$) = 11.444, $p = .022$.

These significant differences were confirmed by separate chi-square tests. Consequently,

reflection must be an intentional act where the participant is fully aware, not only how it

can be supported, but also how to deal with potential obstacles that inhibit the reflection

process.

Translating Learning into Practice: Barriers of Reflection

Often the process of exploring one's assumptions and building more conscious and
justified ways of interpreting and acting is not linear, but includes moments of
"roadrunning," of falling back to earlier ways of thinking before the next step is
possible. (Malkki & Lindblom-Ylanne, 2012, p. 36)

According to McArdle and Coutts (2010), many people find reflection difficult,

whether they are exposed to it or not, and when individuals reflect through conversations

or writing, they are usually not able to fulfill the reflective goal that they have set out to

achieve. Barriers to teacher reflection include the location where teachers engage in

reflection, the fact that reflection may be less suitable for beginning teachers as they have

fewer experiences to draw from, and the fact that the process of reflection requires skills

such as noticing, reasoning, and analysis, which not all teachers are exposed to (Mustafa,

2005). Additional barriers may also include educators who may consider reflection to be

an administrative burden and not take it seriously, and several teachers may not have had

exposure to the genre of reflective writing (Mustafa, 2005).

Al-Jabri (2009) sought to determine the extent to which English teachers reflect

on their teaching, and to what extent the teachers felt it was important to reflect on their

teaching and understand what factors, according to teachers, hinder reflection. A sample of 60 participants (38 female, 22 male) working within Muscat, Oman was distributed questionnaires that included three sections. The first section explored their background information, the second section asked questions about their reflective practices, and the third section asked about teachers' beliefs about reflection. The data collected from the questionnaire used a Likert scale (except the three open-ended questions) and was analyzed using SPSS. The two most significant obstacles to reflection included having a heavy workload (75.0) and the stress of being observed (68.3). Surprisingly, a lack of understanding of what reflection entails was not identified as a barrier to teacher reflection.

In Ontario, Canada, additional research examined how the use of reflection to facilitate learning had been integrated into the clinical practices of health professions. Lowe, Rappolt, Jaglal, and MacDonald (2007) collected quantitative data from the Self-Reflection and Insight Scale (SRIS) and Commitment to Change (CTC) statements. The data were collected immediately after a short course that occupational therapists attended and then again, two to three months later. The participants ($N = 41$) completed the SRIS and CTC to measure their self-assessed engagement in reflection by using a 6-point scale ranging from "strongly disagree" to "strongly agree." The CTC was used after the course had been completed to evaluate the way participants' implemented what they had learned into their practice. In the final phase, 10 participants who varied in their implementation of learning after the course were selected for an interview.

The results focused on the data gathered from the 10 participants (26-49 years old) who were interviewed. Out of the four participants who had a high self-reflection

subscale deleted brackets scores (68-72), three had low CTC achievement and one had

high CTC achievement. Out of the six participants who had low self-reflection subscale

scores (36–52), four had high CTC achievement and two had low CTC achievement.

Generally, participants reported that reflection was used in a variety of instances before,

during, and after the course; however, "although some participants identified barriers to

implementing their intended practice changes after the course, their reflections on these

barriers did not necessarily lead to actions to eliminate these barriers" (Lowe et al., 2007,

p. 147). Therefore, reflection plays several roles, is ongoing, and is influenced by the

individual, the process and context factors (Lowe et al., 2007) and may not lead to a

change in action due to dissatisfaction and a lack of motivation (Malkki & Lindblom-

Ylanne, 2012).

Daniel, Auhl, and Hastings (2013) reported on the challenges that pre-service

teachers engaging in the process of collaborative reflection faced. Fifty-two pre-service

teachers participated in a program that focused on developing core practices of teaching.

Over a twelve-week period, the pre-service teachers worked on developing a different

skill that was modeled by an experienced teacher, and then were video-recorded in small

groups of two to four by the pre-service teachers. A structured feedback framework was

then used to provide reflection between the pre-service teacher and the mentor. The data

collected included weekly feedback documentation and two questionnaires (at the

beginning and end of the program). The students had to give brief responses to open-

ended questions and answer Likert scale questions that evaluated their perceptions of

participation in the program.

The initial results revealed that the collaborative feedback process was challenging for pre-service teachers and that one third of them questioned its value (34%). The pre-service teachers, despite finding the feedback helpful, also expressed concern that they did not have the skills to give meaningful feedback. The feedback process, although challenging at the beginning of the program, was an essential tool in the reflection process (Daniel et al., 2013). Towards the end of the program, the pre-service teachers expressed the fact that they had a greater understanding and value of their experiences (18.5% decreased from 34.5%). When the reflection process is valued and understood as seen in this study, it will most likely lead to a beneficial reflective outcome.

Reflection Outcomes

Reflective practice is a deliberate pause to assume an open perspective, to allow for higher-level thinking processes…for [the purpose of] examining beliefs, goals, and practices, to gain new or deeper understanding that lead [s] to actions to improve learning for students. (York-Barr, Sommers, Ghere, & Montie, 2001, p. 6, as cited in Helterbran, 2008)

Doganis (2008) monitored pre-service teachers' ability to teach music. Through a questionnaire, video observations, discussions, and reflective journals, beginning teachers were able to overcome their fears and make use of prior knowledge and previous experiences. The reflective journals were particularly important in helping them make connections between facts and theories. This process is important because teaching is putting a theory into practice through learning, and then applying it, as it involves including both theory and practice (Doganis, 2008).

Fatemi, Shirvan, and Rezvani (2011), through the use of a reflective teaching instrument (Akbari & Behzadpour, 2007), conducted ten unstructured interviews and

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investigated the relationship between the self-reflection of 100 Iranian teachers of English as a first language and their students' writing achievement. The instrument created was based on a five-point Likert scale (A- "rarely" to E "always") and was designed based on six factors—cognitive, metacognitive, affective, practical, critical, and moral. The Pearson correlation co-efficient formula and an independent T-test formula were used to analyze data.

The first research question, "Is there any significant relationship between English as a first language teachers' reflection and their students' writing achievement?" had a moderately high correlation (0.78), which meant that teachers' reflection leads to better student achievement in writing. The second research question was "Are there any significant differences between the writing achievement of the learners whose teachers are high reflective and that of those whose teachers are low reflective?" The mean score of learners whose teachers are high reflective was 86.20 and the mean scores of those whose teachers were low reflective was 77.50. This means that the learners with high reflective teachers have a higher writing achievement score than those with low reflective teachers. Thus, the findings of this indicated significant correlation coefficients between participant teachers' reflection and their students' writing achievement (Fatemi et al., 2011). Interview sessions were conducted among 10 participants who were both high and low reflective teachers. The participants were asked to speak freely about their attitudes towards reflection $N = 20$). The high reflective teachers indicated higher levels of motivation than low reflective teachers (nine out of 10) who were unaware of the reflective teaching paradigm. Generally, high reflective teachers believed that their professions had benefited significantly from reflective practice.

Nieto (2003), in a qualitative study, sought to answer the question, "What keeps teachers going- in spite of everything?" Through documenting the transcripts of meetings, writings, and field notes from 1999 to 2000, seven major themes were identified: autobiography, love, hope and possibility, anger and desperation, intellectual work, democratic practice, and the ability to shape the future. He noted that good teachers do not occur overnight, but are always "becoming" through dialoguing back and forth (Nieto, 2003, pp. 395, 396). Therefore, the reflective process should not be undervalued, as it is extensive in nature. Reflection requires hard work and should not be considered a leisurely pursuit or an idle indulgence. The process of reflection requires rigorous thought (Hedberg, 2009, p. 11) in order for teachers to develop and improve their teaching performance.

A three-year investigation was conducted to determine if there is a relationship between new teachers' performance during final evaluations and their teacher reflectivity (Pultorak & Barnes, 2009). The study included 98 novice teachers (K-12) enrolled in their final teaching practicum. The participants had to reflect over clinical interviews and in written products of reflection. The procedures were advanced in order to identify the level of reflection; that level was then compared to their teaching performance, which was based on their final evaluations.

To ensure reliability, a written rubric was used to identify levels of performance. The 11 performance categories were aligned with the National Council for the Accreditation of Teacher Education teaching standards. The ratings were on a scale of 0-3 and in order to determine the relationship of reflection and teaching performance, SPSS calculated the Pearson correlation coefficients for each item. Subsequently, as reflection

increased, so did the teaching performance of teachers (Pultorak & Barnes, 2009, p. 42).

Therefore, reflection can be linked to professional development, efficacy, and teaching

practices (Sparks-Langer et al., 1991; York-Barr et al. 2001).

In China, a course for first year social work students ($N = 38$) was developed to

increase their level of self-reflection (reflexivity of self with self), increase the student's

openness to knowledge (reflexivity of self with knowledge); and to expand the

perspectives of the students in understanding social problems (Chow, Lam, Leung,

Wong, & Chan, 2011). The SRIS (Grant, Franklin, & Langford, 2002) was distributed

three times throughout the course. It consisted of 20 items loaded into two factors: self-

reflection subscale and insight subscale. Self-reflection is further divided into

"engagement in self-reflection" and "need for self-reflection." The individual items of

the scale were rated on a six-point scale from 1 (disagree strongly) to 6 (agree strongly)

with a Cronbach alpha for subscales ranging from 0.71 to 0.91.

One-way ANOVA was used to determine the mean scores over a period of time.

Statistically significant within-subjects time effects were found in all of the three scales

of the SRIS. The self-reflection subscale mean scores yielded were as follow: T1 $m =$

47.85, T2 $m = 51.18$, and T3 = 55.26; the engagement in self-reflection yielded these

scores: T1 $m = 22.65$, T2 $m = 24.38$, and T3 = 27.44; the need for self-reflection yielded

T1 $m = 25.21$, T2 $m = 26.79$, and T3 = 27.82; and insight subscale were T1 $m = 26.50$, T2

$m = 28.24$, and T3 = 33.74. These findings indicated not only the awareness of self-

reflection and its importance, but also the significance of action, which means that the

participants' engagement of reflection also increased (Chow et al., 2011).

Modes of Reflection

A well-known model for reflection includes Korthagen's Action, Looking Back on the Action, Awareness of Essential Aspects, Creating Alternative Methods of Action, Trial (ALACT) model (Korthagen & Vasalos, 2005) which identifies three steps to promote reflection after experiencing an event: (a) looking back on the action, (b) being aware of essential aspects, and (c) creating alternative methods of action. Step three is a very important step in the reflection process (Korthagen & Vasalos, 2005).

Van Manen (1977) mentioned that "when teachers are involved in the process of daily planning, adapting materials, developing courses, arranging subject matter content, teaching, evaluating and so forth, they do so largely uncritically and unreflectively" (p. 206). Experiences to reflect on must be made available in order to discover how one's thinking can lead to good practice (Law, 2011; Watts & Lawson, 2009). There are numerous methods that can be used to promote reflection such as case studies, autobiographical and collaborative reflection, and experiences including dialogue through writing and action research (Etscheidt, Curran, & Sawyer, 2012). Although there are many approaches to reflection, for the purpose of this review of literature, the focus is on individual reflection (i.e., journaling, personal assessment of reflection) and collaborative/group reflection as most of the literature focuses on these areas.

Journaling

Reflective practices must start with the individual; "the process of understanding and improving one's own teaching must start from one's own experience" (Zeichner & Liston, 2011, p. 6). The practice of journaling can be a useful tool to record one's thinking/reflecting and develop critical thinking skills (Dyment & O'Connell, 2003).

Journals can also deepen the quality of learning in the form of critical thinking or developing a questioning attitude, and enable learners to understand their own learning processes. It can also increase active involvement in learning and personal ownership of learning, enhance professional practice or the professional self in practice, and enhance the personal valuing of self toward empowerment. Finally, journaling has the ability to enhance creativity by making better use of intuitive understandings, and free up writing and the representation of learning (Alterio, 2004, p. 322).

Individual reflective journaling can be done in many forms. Fry, Klages, and Venneman (2013) explored the efficacy of two different reflective journal techniques among 96 randomly assigned participants. In seeking to identify the hypothesis as to whether there will be a difference in the use of inquiry-based reflective thinking between two different journal techniques, forty-seven students used the Ideas, Connections, Extensions, Decisions (ICED) condition and forty-nine used the Questions, Quotes, Reflections (QQR) technique; students were asked to respond in their journals. The Pedagogical Model of Inquiry (Fry, Klages, & Barnhill, 2010) was used to determine the cognitive levels of inquiry-based reflection that students displayed in their journals. The percentage of each student's work that contained the level of the pedagogical model was compared between the two journaling techniques—ICED or QQR. The differences between the two groups' level of reflection was investigated with ANOVA. The results revealed that QQR and ICED for Introspective, was $F = 4.967$ (94,1) $p = .O28$, partial eta squared $= .050$ with an observed power of .597. For evaluative Inquiry: $F = 4.334$ (94,1) $p = .040$, partial eta squared .044 with observed power of .540 and a highly significant

difference was identified for Didactic $F = 9.644$ (94,1) $p = .003$, partial eta squared .093

with observed power of .867.

These results suggested that the QQR technique was superior to the ICED

technique because the journal form was open-ended. Fry et al. (2013) concluded that

reflection should become a method to provide effective classroom instruction.

Mariko (2011) researched the effectiveness of reflection in pre-service teachers'

practice journal entries and through examining and analyzing their entries. He was able

to come up with the dimensions of reflection that they experienced within their entries.

Through an extensive literature review, Mariko determined that there were four

dimensions of reflection:

1. Technical reflection: focus on the skills and technical knowledge in the

classroom.

2. Reflection-in-action: knowing in action while the action is being undertaken.

3. Reflection-on-action: a spontaneous reflection in the middle of one's action.

4. Reflection-for-action: the desired results of both reflection-in-action and

reflection-on-action.

Mariko sought to find out what types of experiences teachers reflect on, what the

dimensions of reflection were, any patterns that were present, and factors that influenced

the entries. The data were collected through journals and an open-ended questionnaire

and the findings indicated that the beginning teachers "reflected on a range of

experiences that related to classroom teaching and learning moments, issues and events

[…] used [the] reflective journal as a window to foreseeing the realities and dilemmas

they would deal with in their teaching profession" (Mariko, 2011, p. 80).

Uline, Wilson, and Cordry (2004) investigated the responses of 86 pre-service teachers enrolled in three different semesters of coursework and who had been given the same instructional treatment. Although the beginning teachers were trained in various areas, they were required to write about "My Most Significant Learnings" and on average, submitted five entries per journal. The journals were all evaluated by documenting the different topics that were covered. The results indicated that classroom management, teacher flexibility, and time management were the most significant concerns among teachers during their teaching practicum. Uline et al. (2004) noted at the end of their study that, although beginning teachers are provided with the materials that they need, the hands-on experience of teaching in a classroom reveals the complexity of managing student behavior. Acquiring feedback through reflective journals was also considered to be beneficial to the theory-and-practice curriculum that beginning teachers are exposed to (Uline et al., 2004).

Boyd and Boyd (2005) had a recommendation for teachers who are involved in journaling, which can be valuable to both beginning and experienced teachers. Keeping a journal and, more important, reading that journal, create more accountability and preserve observations and ideas about teaching so they can benefit future students. Used most effectively, a journal is not just about reflection, but about reflection that leads to action and action that creates improvement (p. 111).

Therefore, the reflection journaling process itself is not enough. In order for it to be effective and beneficial, an educator must be committed to using the process to lead to positive changes.

A literature-based reflective learning guide was created to enhance the reflective

writing skills within medical education. Aronson, Niehuas, Lindow, Robertson, and O'Sullivan (2011) reported on the development of their literature-based reflective guide and pilot study to determine whether their guide enhances reflective writing skills in medical students and identify whether the reflective scores correlate with participant demographics and satisfaction. The researchers conducted a literature review survey at the Undergraduate Medical Education at the University of California, San Francisco. They surveyed all required courses and found that 18 exercises were distributed across the department. Surprisingly, none of the exercises provided information about reflection and, in most settings, the learners were not provided with the skills to reflect. A reflection guide was then created with the following parameters: ability to be completed in one hour, having a focus on promoting reflective thinking, justification for the requirement of the curriculum exercise, being able to function as a stand-alone tool, and making the steps for reflection clear.

All 115 participants were asked to complete at least a one-page written reflection on professionalism, using a prompt. They were divided into six blocks and participants in blocks 1 and 2 received the prompt ($N = 78$), while participants in blocks 3-6 received the prompt ($N = 37$) and a Learning from your Experiences as a Professional (LEaP) guide (developed by the researchers) on written reflections and a demographic questionnaire. The reflections were scored with the use of a previously validated rubric and the demographics and satisfaction survey studied the effects of gender and satisfaction using independent t-tests and Pearson's correlations. A qualitative analysis of optional written areas was also done. The pilot study showed significant differences between the average reflection scores of students who used the LEaP guide, as most

students without the guide scored below 3 ($m = 2.6$) and of the students who used the

guide, more earned higher scores ($m = 3.6$) because they incorporated many elements of

reflection such as reframing their experience through past experiences, and learning. The

satisfaction survey yielded the fact that the top three benefits of LEaP were that it helped

students gain insight ($m = 3.0$, $SD = 1.2$), formulate a plan ($m = 2.8$, $SD = 1.1$), and be

challenged by the guide ($m = 3.1$, $SD = 0.9$). Independent writing tasks having the

structured LEaP guide was seen to be a useful tool.

Individual (Guided) Reflection

Guided reflection requires participants to systematically and deliberately engage

in the reflective process. For instance, the Self-Assessment Manual (SAM) (Nolan &

Sim, 2011) was developed for early childhood educators and student teachers to evaluate

their levels of reflection and provide a defined level of analysis for the evaluator. The

SAM includes six levels of reflection:

Level 1: Returning to experience: Reflection recounts past experiences so the

reflections are based on a recollection of actual events.

Level 2: Attending to feelings: Allows individuals to share their feelings and

helps them understand their emotions in the learning process.

Level 3: Association: New knowledge is related to pre-existing knowledge and

multiple perspectives are considered.

Level 4: Integration: Synthesizes old and new knowledge, which forms new

insight.

Level 5: Validation: Involves testing and synthesizing; participants conceptualize

ways to include a new concept.

Level 6: Appropriation: Requires the use of reflection in daily practices and

routines, which will lead to a transformation.

This method is just an example of an organized guide for practitioners to assess their

reflection process. Assessing the levels and quality of reflection is achievable through

several other methods.

Aukes, Geertsma, Cohen-Schotanus, Zwierstra, and Slaets (2007) developed the

Groningen Reflection Ability Scale (GRAS) with Cronbach alpha's of 0.83 and 0.74 to

measure the personal reflection ability of medical students. The 23-item scale could be

scored on a 5-point Likert scale, with a range of score varying between 14 (very low

reflection) and 70 (very high reflection). In 2008, the same researchers used the GRAS

to perform a pre-/post-test design to identify the personal reflection ability of medical

students (Aukes, Geertsma, Cohen-Schotanus, Zwierstra, & Slaets, 2008). The exposure

group ($N = 394$) were first-year students (response 98%) and the control group ($N = 403$)

consisted of 198 second-year students (response 63%) and 205 third-year students

(response 60%). Students' growth was analyzed with multilevel analysis because not

every student completed the questionnaires at every measurement moment.

Due to the fact that not all of the students responded at every measurement

moment, the measurements were from the same year, but not necessarily from the same

students. The data were analyzed with a multilevel computer program (MLwiN version

2.02). The results revealed that the participants had a moderate to high level of personal

reflection, as the average scores were > 50. The multilevel analysis showed the

significant effects for all variables. The first-year students began with a low personal

reflection score ($m = 50.2$ after one month), but after 14 months, had a higher reflection

mean score ($m = 55.1$), which revealed that it was almost as high as the mean of the second-year students' mean score after two years ($m = 55.6$ after 28 months) and the third-year students' mean score ($m = 56$) after 33 months. Overall, that study revealed that the personal reflection growth of the exposure group students who were engaged in the experiential learning program occurred significantly faster than the growth of the control group students.

In order to determine the use of reflection-in-action and self-assessment to promote critical thinking, 94 undergraduate pharmacy students at the University of Toronto were given a 24-item handwritten test instrument, which had been previously validated (Austin, Gregory, & Chiu, 2008). The study included two separate testing conditions. In order to have equal representation and to control potential age-related differences in the participants' reasoning skills, they were sorted based on chronological age and then randomly put in condition 1 or 2. The participants completed the test in a captive situation in groups of 10-15, but no communication was permitted during the test. In condition one, the participants had to answer the questions in order and could not go back to questions that they had not previously answered; no external promptings or questions were asked. In condition 2, the same 24-item test was administered. However, for items 13 and 18 of the test, two additional cueing questions were included. The first question focused on self-assessment and the second question focused on reflection-in-action. Questions 13 and 18 were selected so that 50% of the test for conditions 1 and 2 would be the same and to reinforce the self-assessment and reflection-in-action three quarters of the way through the test.

Researchers had previously determined the answer to each question and in order

to motivate the participants to do well, the researchers offered a $50 certificate as a prize.

A t test ($p = 0.05$) was used to compare the results of both groups on (a) the test overall, (b) the first 12 items, (c) items 13-18, and (d) items 19-24 (followed by a second external prompting). The results indicated that there was a significant performance difference after the prompt for participants to self-assess and self-reflect in condition 1 ($m = 13/52$ %) and condition 2 ($m = 16/68$ %). The results of this study coincide with Halpern's (1998) argument that encouraging people to think, instead of just respond, can improve their overall performance (as cited in Austin et al., 2008). The study also determined that reflection-in-action and self-assessment may not come naturally, and that individuals may not automatically reflect without external prompting.

A well-known template for reflection is the Affect, Behavior, and Cognition (ABC[1]) of reflection by Welch (1999). It was established to address the affective, behavioral, and cognitive (ABC[2]) dimensions of reflection among faculty and university students. The ABC[2] method of reflection has three purposes: to guide an individual through reflection exercises and include affect, behavior and cognition; to use the content of the student's reflection statements as an instructional tool; and to determine quantitatively the level of reflective statements. The first step in assessing the ABC[2] dimensions is providing one point for each of the ABC[1]s that the participant touches on. Only when reflection addresses all three components can it be eligible for three points. Step 2 involves identifying the level of reflection and "is delineative in nature as only one level of awareness is identified and therefore delineated from the other two" (Welch & James, 2007, p. 279). This means that Level 1 earns an indicator of "1," Level 2 earns an indicator of "2," and Level 3 earns an indicator of "3." The third step is the

quantitative rating and involves adding the scores of the ABC[1]s with a delineative

marker of levels, which creates a 6-point scale to rate the level of richness and depth.

Welch and James (2007) used the ABC[2] method of reflection among pre-

service teachers ($N = 26$) enrolled in two different sections in a course entitled

Introduction to the Exceptional Child in a Midwestern, private, faith-based university in

the United States. Sections A and B of the course were taught by two different professors

and a requirement for both courses included a 12-hour service-learning experience

observing a special education classroom and submission of a reflection journal. Section

A ($N = 13$) was given traditional instructions for reflection and was asked to record and

respond to events that took place in the classroom. Section B ($N = 13$) was introduced to

the ABC[2] method of reflection and, at the end of the semester, the journals were

evaluated using the ABC[2] method. The mean scores for each group was calculated and

a one-way ANOVA was used to compare the group means. Section A, which only used

the traditional guidelines, had a mean score of 2.64 and Section B had a mean score of

3.95. The one-way ANOVA of the group means showed a significant difference: $F(1,25)$

$= 20.866, p < .001$. Overall, the ABC[2] method provided the student teachers with a

concrete method for framing reflection and helped them develop reflective skills that they

can use in their profession as educators (Welch & James, 2007).

In 2012, researchers hypothesized that reflective ability scores on written

reflections would be higher in students using critical reflection guidelines (Aronson,

Niehaus, Hill-Sakurai, Lai, & O'Sullivan, 2012). Third-year medical students ($N = 149$)

were given the definitions for reflection and critical reflection and then randomly

assigned to groups. One group ($N = 68$) of students received a structured reflective

guideline known as LEaP, and a second group received no reflection guidelines ($N = 81$).

The guideline provided guidance on strategies for critical reflection, used a four-step

process of structured questions: Subjective, Objective, Assessment, and Plan, and then

answered frequently asked questions about the method and purpose of critical reflection.

The reflections were submitted electronically and each participant was given a five-digit

number so he or she could not be identified.

Two faculty members who had been trained as raters (with an inter-rater

reliability correlation coefficient of 0.91 between them) scored the reflections on a rubric

that had been previously validated. The rubric scores were given in increments of 0.5 on

a scale of 0-6 (0 = "failure to address assignment" and 6 = "analyses experience and

feedback, identifies lessons learned, crafts plan for the future, and cites a means of

determining the plan's success") (Aronson et al., 2012, p. 810). Half of the students

within both groups then received written feedback on their reflective skills by two faculty

members.

Using descriptive statistics, the means and standard deviations for reflection

scores were calculated and a repeated-measures ANOVA was carried out with two

between-groups factors (LEaP versus non-LEaP group, and Feedback group: Content

versus Feedback group: Content + Process) and one within-subjects factor (Time). The

SPSS version 17 was used and the level of significance was set at 0.05. The results

indicated that the scores were higher for participants who received the guidelines for

reflection (LEaP) than the participants who did not. The LEaP group mean scores were

the following: first reflection: $m = 3.76$; second reflection: $m = 3.86$; mean of both

reflections: $m = 3.81$. The Non-Leap group's mean scores were the following: first

reflection: $m = 2.32$; second reflection: $m = 2.22$; mean of both reflections: $m = 2.33$. The researchers concluded that having reflective guidelines improved those participants' level of performance.

Nursing students at a liberal arts college in the United States were given the opportunity to develop their critical thinking skills; then researchers examined their perceived levels of confidence for using their thinking skills when completing two types of clinical assignments (Marchigiano, Eduljee, & Harvey, 2011). The researchers used a descriptive, cross-sectional design to report undergraduate nursing students' ($N = 51$) confidence in using thinking skills when creating a clinical care plan and journal. The independent variable included the clinical care plan and journal (assignment formats) and the dependent variables were the confidence ratings for seven thinking skills. For this pilot study, the participants were required to complete two care plans which included five components: assessment, diagnosis, goal-setting, intervention and evaluation, and two journal formats, which required responses to 10 patient care-related questions. In order to establish content validity, seven cognitive skills for nursing practice were selected based on (a) Facione's (1990) report about critical thinking and (b) components of the nursing process. The survey had 14 questions and participants rated them using a seven-point scale with scores that ranged from 1 = quite a lot of confidence to 7 = very little confidence. Every question on the survey focused on one of the seven critical thinking skills and students were instructed to rate their confidence for using that particular skill when completing the journal format.

The data were analyzed using SPSS and paired t-tests and Wilcoxon's matched pairs signed were used to measure the perceived confidence based on the seven critical-

thinking skills between the care plan and journaling formats. Descriptive statistics were also calculated and an alpha level of 0.05 was used for all of the statistical tests. The mean scores for the care plan format ($m = 3.41$, $SD = 1.13$) were significantly higher than the journal format ($m = 2.29$, $SD = 0.692$). In the care plan format, the participants were least confident in their ability to choose appropriate information ($m = 3.84$, $SD = 1.53$) and most confident in their ability to set priorities ($m = 2.78$, $SD = 1.30$). When using the journaling format, the respondents were most confident in their ability to make connections ($m = 2.04$, $SD = 1.06$) and least confident in evaluating outcomes ($m = 2.49$, $SD = 1.16$). The results indicated that participants' confidence in six out of the seven measured thinking skills were significantly higher when using the journal format and that using the journal format took less than half the time to complete than the care plan (2.88 hours vs. 6.75 hours). This reveals the fact that the participants were more confident in developing their thinking skills (reflection) through a guided journal format.

Peer Reflection

Higher levels of reflectivity have been shown when facilitated in small groups compared to personal methods, such as through reflective journals (Nairn et al., 2012). Peer reflection helps individuals become self-aware and analyze their perception and the values of their environment. It can also result in transformative learning, critical thinking, and encouraging an individual to reach an increased level of reflection (Glaze, 2001; Platzer et al., 2000; Williams, 2001 as cited in Nairn et al., 2012).

In the United Kingdom, 124 psychologists who had participated in a clinical psychology course between 1986 and 2007 completed the Reflection Practice Group Questionnaire (RPGQ), which had factors 1 and 2 cronbach alpha coefficients of 0.97

and 0.88 respectively (RPGQ; with factors 1 and 2 Cronbach alpha coefficients of 0.97 and 0.88 respectively; Knight, Sperlinger, & Maltby, 2010). The final version of the questionnaire included 113 items—98 required items used a 7-point Likert-scale to rate how strongly they agreed or disagreed with the statements, and the remaining 15 questions were qualitative open-ended questions. The purpose of the research was to assess the impact and development of the RPGQ, which included identifying reflective methods from which respondents felt they learned about reflective practice and assessing how attitudes toward the value /challenges of reflective practice groups changed. The SPSS version 15.0 was used to assess the survey data and thematic analysis was used to describe the features of the open-ended questions numerically.

The results revealed that 71% ($N = 74$) rated the reflective group practice group as valuable, and 43% ($N = 45$) reported that the groups were highly distressing. When the participants were asked how they saw the value of the group since completing their training, the frequency count of responses determined that 45% ($N = 47$) saw the value of the group as being somewhat positive to very much more positive. The additional results revealed that 49% ($N = 51$) stated no change or viewed the value of the group the same as previously, and 6% ($N = 7$) reported that they viewed the group more negatively. The researchers noted that group size was also a factor and that groups of 14 or more were rated to be more distressing and not as valuable for learning about reflective practice as groups of 10-13 people. Generally, the results of study determined that despite the challenges experienced in the reflective practice groups, it was worthwhile (Knight et al., 2010).

Narrative inquiry is a form of peer reflection that is appealing for teachers

because there is comfort in telling and listening to stories (Clandinin, Pushor, & Orr, 2007) as teacher narratives are stories written by and about teachers (Sparks-Langer et al., 1991). They are also a good way to share and identify knowledge and are "well suited to the transmission of history, values and identity because stories of the past can guide future behavior" (Vosberg, 2008, p. 43). There are three commonplaces of narrative inquiry: temporality, sociality, and place (Connelly & Clandinin, 2006). Temporality refers to events and people always being under transition (past, present, future) and narrative inquirers are focused on personal and social conditions (sociality). Finally, place refers to where the inquiry takes place (Connelly & Clandinin, 2006). All three commonplaces provide a conceptual framework for narrative inquiry (Clandinin et al., 2007).

Teacher narratives through reflection can also lead to coaching dialogue and can expand the coachee's reflective space as coaching can be used as a tool for self-reflection (Stelter & Law, 2010). Coaching sessions through narratives can lead to coaching as a reflective space, coaching to make meaning, and coaching to support reflective and value-based leadership. Connell (2005) discovered through his dissertation that pre-service teachers, through weekly discussions, were provided with opportunities to learn. The process provided a safe community for them to share and, in Connell's analysis of conversations, their conversations were valuable for their growth as teachers.

In a western Australian university where many pre-service teachers do not graduate, Glass (2012) conducted a qualitative study. Narrative-constructed, semi-structured interviews were conducted among pre-service teachers ($N = 4$). Glass used a conceptual framework derived from Luke and Freebody (1999)—the Four Practices of

the Reader—and refined it to reflect the teacher education experience. The four practices included personal history, the technical skills of teaching, relational (the social act of teaching), and critical reflection. The teacher candidates were interviewed three times within the academic school year, and there was a focus on the lived experience of becoming a teacher. Glass (2012) concluded that the pre-service teachers "relied on what they brought to the program to help them understand the text of teacher education and the process of becoming a teacher" (p. 39).

The ability to reflect through teacher narratives in any form are important because it can reveal an individual's history and help in "finding the words, speaking for oneself, and feeling heard by others" (Britzman, 2003, p. 43). Generally, the critical, reflective teacher understands how the teacher self is being constructed in the teaching/learning process and can identify broader perspectives, which may include governments and school boards (Glass, 2012). However, "experience alone does not lead to learning; reflection on learning is essential" (Loughran, 2002, p. 3). Narrative inquiry finds a way to blend these two elements.

In the Netherlands at Utrecht University, a mixed-method study was conducted to compare the effects of two feedback strategies on the quality of reflection by teachers (Boerboom et al., 2011). The strategies included a self-evaluation questionnaire, feedback from students' evaluations and self-assessments, and a written self-reflection on teaching practice. The Maastricht Clinical Testing Questionnaire (MCTQ) was used for student feedback and self-evaluation (of teachers) and included 15 items that were divided into five domains: (a) general learning climate, (b) modeling, (c) coaching, (d) articulation, and (e) exploration. The research questions sought to identify (a) what types

of reflection clinical teachers demonstrate in a pre-structured, written reflection report after feedback facilitating strategy (FFS) and whether reflection changes when a peer reflection meeting is added to the strategy, and (b) how clinical teachers evaluate the two different feedback facilitation strategies.

The 54 participants in the study were divided into two groups (FFS 1 and FFS 2) using matched random sampling and were matched in the two subgroups based on age, department, gender, and participation in faculty development and mean score on the MCTQ. Only FFS 2 participated in peer reflection meetings of between one and a half and two hours, and then both groups (FFS 1 and FFS 2) completed an online reflection report with pre-structured questions based on Korthagen's ALACT model. Upon completion of their report, the participants completed a feedback questionnaire, which used a five-point Likert scale (1 = fully disagree; 5 = fully agree) to answer the statements related to their teaching practice, alternative methods of action to their teaching practice, altering methods of their teaching practice, and the effect of their feedback facilitation process. The statements were followed by an open-ended question where teachers described their experiences. The SPSS was then used to calculate the mean, median, and standard deviation scores for every step and an independent t-test was used to identify the significant difference between the two groups. The results concluded that the peer group reflection engaged in deeper critical reflection (79%) than FFS 1 ($m =$ 34.8%).

In the 1940's, Stephen Corey was one of the first people to make use of action research in the field of education. However, in the 1950s and 1960s, the practice of action research declined because it was not considered to be a genuine form of research

(Pine, 2009). Action research "is a process of concurrently inquiring about problems and taking action to solve them" (Pine, 2009, p. 29). It is designed to improve teaching practice, the understanding of teachers, and the situations that they are in (Pine, 2009). According to Ferrance (2000), action research is "a process in which participants examine their own educational practice systematically and carefully, using the techniques of research" (p. 1). It generally provides a vision for school improvement, encourages problem solving and decision-making, promotes reflection, forms a commitment towards improvement, and empowers the teacher (Glanz, 1999).

Souto-Manning and Mitchell (2010) engaged in a responsive teaching cycle and used narratives as a way to document and interpret classroom events. They used the responsive teaching cycle to frame events contextually and to re(imagine) collectively spaces for transformative action. Their cycle included (a) collecting data anecdotally and through journaling and (b) interpreting the anecdotal notes narratively and making instructional decisions based on the interpretations. Within the preschool teacher setting, the researchers concluded that the teacher's journey "highlights practices and processes that are situated in social, historical and cultural contexts" (Souto-Manning & Mitchell, 2010, p. 275). They recommended that teachers become learners alongside their students because in doing so, they would not only honor diversity, but also come to recognize the cultural construction of knowledge and practices (Souto-Manning & Mitchell, 2010).

In order to determine the meaning of reflection among professors in Canada who teach students to be reflective and to determine whether a better pedagogical approach can be implemented to help professor teach/ practice reflection, Wong (2009) researched Christian faculty members who engaged in a collaborative action research project. With

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the intention of devising a plan that could be implemented among faculty, a group of six professors met regularly to "support and discuss reflective practice and good pedagogy" (Wong, 2009, p. 176). Data were collected from 20 meetings that occurred over a two-year period. Analysis included rereading the data and making notes of topics/issues, making connections to actions, and finally, mapping the progress of the project over two-years. Wong (2009) concluded, "Construction of self is important in reflection as it related to identity" (p. 182). He realized that the identity construction that the faculty's students were involved in was focused on the individual and lacked having a sense of community.

Teachers and Reflective Thinking

Reflection is not properly defined and there is not a large consensus on what it involves; therefore, authors have created their own instruments and models of reflection (Kalk, Luik, Taimalu, & That, 2014). Although it has been known to "modify and strengthen ideological practices, illustrate forces for change, and express to serve different interests" (Pihlaja & Holst, 2013, p. 184). Several studies have revealed that teachers do not have a clear understanding of what it means to be reflective simply because there is a lack of clarity and guidance (Cimer & Palic, 2012). Despite these factors, reflection has accounted for leading both pre-service and in-service educators to become more culturally responsive (Durden & Truscott, 2013), helping them understand the challenges of working with special needs students (Doody & O'Connor, 2012), and also aid in the process dealing with challenging students (Spilt, Koomen, Thijs, & van der Leij, 2012).

One way to involve teachers in the change process through reflection is to have

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them "critique their own pedagogy through scaffolded critical reflection on their own and other teachers' practice" (Long, 2011, p. 145). Ryan (2013) argued that within higher education, students should be taught how to reflect in a deep, critical, and transformative way. This can be done through the process of creating an environment that leads to intellectual challenge where new challenges for curriculum design, assessment, and professional development are considered (Smith, 2011). When this happens the reflection process will lead to change and teachers may create their own teaching philosophies (Galea, 2012). The process of reflection will also continue and the phases of when reflection should be introduced, revisited, and emphasized will be understood (Kaasila & Lauriala, 2012).

Importance of Attitudinal Studies

Until recently, not very much attention was given to the functional study of attitudes for two reasons. The first reason was that the many constructs when using this approach were unclear and the second reason was that it was challenging to operationalize the hypothesized functions of attitudes (Kristiansen & Zanna, 1991; Lutz, 1981). Attitude, according to the Oxford Dictionary (Attitude, 2015), is defined as "a settled way of thinking or feeling about something." It provides information on emotions, feelings, and attitudes; it may also "represent residues of past experience which guide, bias or otherwise influence behavior" (Gotze, 2010) and research in education uses both quantitative and qualitative surveys to represent data of this nature.

The intent of attitudinal research is to understand and measure an individual's belief. There are three general components of attitude: the cognitive component, the affective component, and the action component. The cognitive component includes

knowledge, belief, opinion, and information about the subject of observation. The

affective component involves likes, dislikes, and expectations. Finally, the action

component is the expectation of future conduct (Fajgelj, 2004; Havelka, Kuzmanoviý, &

Popadiý, 1998; Jocic & Krajnovic, 2014).

A major assumption of the concept of attitudes is that it, in some way, guides,

influences, directs, shapes, or predicts a person's behavior. According to Kraus (1995),

there are many reasons that have contributed to the popularity of attitudes.

"Conceptually, attitude provided a framework for research on phenomena such as

information processing, social influence, and individual differences. Operationally,

attitude measures had become more quantitative and more reliable yet also easier to

construct and administer" (p. 58). Consequently, this type of research has become more

popular in the 20th century among social sciences (Kraus, 1995).

The purpose of surveys is to gain information on people's views and attitudes

about social circumstances through collecting descriptive, behavioral, and attitudinal data

(Parker & Rea, 2012). Attitude scales attempt to find out an individual believes,

perceives or feels (Gay, Mills & Airasian, 2012; Jocic & Krajnovic, 2014). Attitudinal

questions are beneficial because they are more sensitive than factual questions.

Oppenheim (2005), when referring to single questions being used to measure attitudes,

states that researchers should use sets of questions because they are more reliable than

single opinion items, and they also give more consistent results. The Perceived Value of

Reflective Thinking Survey, when measuring attitudes, has sets of more than one

question for four out of the six areas being researched (general reflection, its usefulness,

outcomes, and modes of reflection).

Overall, attitudinal surveys are successful because they combine "the ancient but extremely efficient method of obtaining information from people by asking questions" (Schuman & Presser, 1996, p. 1); modern random sampling procedures allow a relatively small number of such people to represent a much larger population. Researchers also tend to use this approach because, by examining attitudes, the researcher is able to gain beneficial information about the group of individuals being studied and/or its relation to other groups. Because attitude is a convenient way to study areas within one's social life, it is considered to be a useful tool (Strauss, 1945).

Conclusion

"Teaching is hard-work and reflection on teaching is also hard work" (Amobi, 2006, p. 24). There has been a large amount of research done in pre-service teachers' reflective practices within North America. The encouragement of reflective practice for teacher candidates is considered to be a mission and essential element of the preparation program (Etscheidt et al., 2012). If teacher education programs are preparing their students to be reflective practitioners, further research needs to be conducted to see how they are continuing their practice within the field.

In Ontario, Canada, most teacher education programs are a two-year consecutive program which already requires candidates to have a four-year undergraduate degree. Breidenstein (2002) mentioned the challenges of teaching qualitative research to develop and promote reflective practice in a similar program in Texas. Therefore, among Ontario beginning teachers, additional research needs to be conducted to understand how they continue reflective practices within their own classrooms. It can be a difficult process and may not solve all of the issues such as helping teachers understand issues of gender

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and race (Webb, 2001); however, it is beneficial to the development and growth of

teachers. Although reflection is often misunderstood and misrepresented because it

means different things to different people (Loughran, 2002), it is an essential element in

being an educator.

CHAPTER 3

METHODOLOGY

Purpose of Study

The first purpose of this study was to determine to what extent in-service teachers engage in reflective thinking. The second purpose was to determine whether reflective thinking is related to years of teaching experience, levels (elementary vs. secondary), and teacher preparation (traditional vs. alternative). Reflection, as cited in McLaughlin & Hanifin (1995), is defined as "the open active communication channel between the social context and the inner self" (p. 223). It is a dialogue that benefits an individual and his or her professional practice (McLaughlin & Hanifin, 1995). This study involved a data analysis of in-service (beginning and experienced) teachers' responses to the Perceived Value of Reflective Thinking Survey (Russback, 2010). Individual factors deduced from survey items by Sarah Russback (the creator of the survey) were as follows: (a) usefulness of reflection, (b) support and barriers to reflection, (c) reflection outcomes, and (d) modes of reflection. This chapter will discuss the research questions, research design, population and sample, definition of variables, instrumentation, data collection, data analysis, the schedule, and budget.

Research Questions

The study was guided by the following questions:

1. To what extent do in-service teachers engage in reflective thinking?

2. What aspect of the teaching process, including, pedagogy (delivery), classroom management, student engagement during the lesson, student level of understanding during the lesson, student assignments/tasks, assessment practices, student grades/results, and future goals do teachers reflect about?

3. Is engagement in reflective thinking (as measured by the six subscales of the modified Perceived Value of Reflective Thinking Survey) related to years of teaching experience, elementary teaching levels (primary, junior, intermediate), and teacher preparation (traditional vs. alternative)?

Research Design

Quantitative research is a scientific investigation and includes experiments and other systematic methods where quantified measures of performance and control are emphasized (Proctor & Capaldi, 2006). According to Hoy (2010), measurement and statistics are important in quantitative research because they are what connect empirical observation and mathematical expressions of relations.

Quantitative relational research that includes a cross-sectional survey research design was used to determine the perceived value of reflective thinking among beginning and experienced teachers. Beginning and experienced elementary teachers were surveyed to determine their perceptions of the value of reflective thinking, and a comparison of their responses was conducted. Survey research was used because it is a key factor of scientific inquiry and strives to collect reliable and unbiased data in "an efficient, reasonably inexpensive, and adaptable way from a representative sample of respondents" (Mazzarello, Clemons, Graham & Jacobs, 2015, p. 44). Cross-sectional

survey research designs are appropriate when the focus of a study is to collect data related to that "cannot be directly observed, but are self-reported such as opinions, attitudes, values, and beliefs" (Liu, 2008, p. 171). Cross-sectional research designs are also appropriate when a time sequence is not required to demonstrate interaction between variables. Cross-sectional designs are preferred for the administration of surveys "at one point in time and only once to a particular sample of respondents" (Nardi, 2016, p. 127). In contrast, longitudinal studies follow study participants over long periods and investigate "changes in behaviors or attitudes over time" (Nardi, 2016, p. 127). The focus of the study was to investigate teachers' perceptions of reflective thinking at one point in time only. The study did not investigate changes in perception, but is a systematic approach designed to collect data relative to the current perceptions of the participants. Thus, a cross-sectional survey research design was employed for this study.

Population and Sample

The population for this study included the 11,100 elementary teachers who are currently employed in the TDSB. A priori power analysis was established to determine the minimum number of participants needed for an 80% probability of finding a statistically significant relationship between the six dependent variables (the six subscales of reflective thinking), and the three independent variables [(years of teaching experience, levels (primary, junior, intermediate), and elementary teacher preparation (traditional vs. alternative)]. Multivariate Analysis of Variance (MANOVA) was proposed to test the hypotheses that there is no relationship between any of the dependent variables and the independent variables. Hence, the power and sample size calculation was based on using the MANOVA to test for the multivariate linear hypothesis. Formula

discussed in Muller and Peterson (1984) was used for the computation of power. According to Cohen (1988), for three dependent variables, $R^2 = 0.15$ (the multivariate measure of association) corresponds to a medium effect size. Assuming Pillai-Bartlett trace statistic (Olson, 1976) will be used for hypothesis testing, the minimum sample size required to achieve a power of 80% for the study is 61 participants with a medium effect size, nine dependent variables and 10 predictors. Thus, assuming a 70% response rate for the survey, a sample of approximately 88 (61/0.7 = 88) elementary teachers teaching within the school board was randomly selected (based on their school) from the 472 elementary schools that are currently elementary teachers within the board. I randomly selected schools using data software.

Instrumentation

The instrument of this study consists of three sections: the modified Perceived Value of Reflective Thinking Survey, the survey for measuring areas of teacher reflection, and the demographics.

The Modified Perceived Value of Reflective Thinking Survey

Permission was granted by Dr. Sarah Russback to use an adapted version of the Perceived Value of Reflective Thinking Survey which she created in 2010 for her dissertation. Her survey instrument was developed from adapted questions from the dissertation studies of Dr. Molly Keogh (2005) and Dr. Cecile Komara (2006). Dr. Russback's survey originally consisted of twenty questions, demographic questions, and an open-ended question. To provide further detail, the survey questionnaire was modified with four questions added to the 20 questions and a section B was added, which

includes specific areas that teachers reflect on. Section A consists of 24 6-point Likert scale questions, with 1 = strongly disagree, 2 = disagree, 3 = tend to disagree, 4 = tend to agree, 5 = agree, and 6 = strongly agree. Section B, consists of eight 6-point Likert scale questions, with 1 = not at all, 2 = rarely, 3 = sometimes, 4 = often, 5 = very often, and 6 = always. The entire survey is designed to measure the extent that in-service elementary teachers engage in reflective thinking.

The 24 Likert scale questions can be categorized into the following six subscales of reflective thinking: reflective thinking in general, the usefulness of reflective thinking, the barriers of reflective thinking, the support for reflective thinking, the outcomes of reflective thinking, and the mode of reflective thinking. The first subscale, reflective thinking in general, consists of four questions (questions 2, 4, 6, and 20), and measures teachers' general perception of reflective thinking. The second subscale, usefulness of reflective thinking, consists of six questions (questions 1, 3, 5, 8, 11, and 18), measuring teachers' perceptions of usefulness of reflective thinking. The third subscale, barrier of reflective thinking, consists of three questions (questions 9, 21, and 22), measuring teachers' perceptions of outside pressures as a barrier to reflective thinking. The fourth subscale, support of reflective thinking, also consists of three questions (questions 10, 23, and 24), measuring teachers' perceptions of school culture as a support of reflective thinking. The fifth subscale, outcomes of reflective thinking, consists of four questions (questions 5, 7, 15 and 19), measuring teachers' perceptions of having changed the way they teach. The sixth subscale, mode of reflective thinking, consists of five questions (questions 12, 13, 14, 16 and 17), measuring teachers' modes of reflective thinking. For each of the six subscales of reflective thinking, a composite score can be calculated by

averaging the responses across the corresponding questions. The scores range from 1 to 6. Higher scores indicate stronger agreement toward the subscale of the reflective thinking.

The Cronbach's alpha was 0.77 for the original 20 Likert-scale items of the survey questionnaire (Russback, 2010), indicating acceptable internal consistency of the instrument (Cronbach, 1951).

The Survey for Measuring Areas of Teacher Reflection

The survey for measuring teachers' value of reflection consists of eight 6-point Likert scale questions regarding eight aspects of the teaching process, including pedagogy (delivery), classroom management, student engagement during the lesson, student level of understanding during the lesson, student assignments/tasks, assessment practices, student grades/results, and future goals that teachers reflect about. The responses of the 6-Likert scale questions include 1 = not at all, 2 = rarely, 3 = sometimes, 4 = often, 5 = very often, and 6 = always.

Demographics

The last section of the survey questionnaire consists of five demographics questions regarding gender, types of teachers' elementary teaching (primary, junior, intermediate level), type of certification, years of teaching experience, and years with current school. It was designed to determine whether reflective thinking is related to years of teaching experience, levels (primary, junior, intermediate), and teacher preparation (traditional vs. alternative).

Data Collection

The data collection process began after approval had been received by the

Andrews University Institutional Review Board (IRB). There were two phases of data

collection: pilot testing (phase I) and actual data collection (phase II).

Phase I-Pilot Testing

This pilot test involved oral feedback from 15 in-service elementary teachers'

responses to the Perceived Value of Reflective Thinking Survey (Russback, 2010). All

of the participants, after being given an understanding of the context of the study, notified

me that they had an understanding of all of the survey questions. Therefore, no major

changes were made.

Phase II-Actual Data Collection

This actual data collection involved in-service (beginning and experienced)

elementary teachers' responses to an adapted version of the Perceived Value of

Reflective Thinking Survey (Russback, 2010).

Before collecting data, written approval was received from the Andrews

University IRB and the TDSB. Four hundred and fifty-one elementary schools were

numbered and randomly selected using data software. The administrators from each

school was then contacted via email and asked whether he or she would allow the

teachers at the school to participate in the study. If the administrators were willing to

have their school participate, arrangements were made to distribute the teacher invitation

letters, consent forms, and surveys at an appropriate date and time. On the day that

survey was scheduled to be distributed, I went into the school staffroom and an

announcement was made over the public address system. Teachers who were willing to participate made their way down to the staffroom and completed the survey. All participants received a $5.00 Tim Horton's gift-card for their participation.

Definition of Variables

In this study, there were six dependent variables (i.e., the composite scores of the 6 subscales of reflective thinking), including reflective thinking, in general, the usefulness of reflective thinking, the barriers of reflective thinking, the support for reflective thinking, the outcomes of reflective thinking, and the mode of reflective thinking.

There were four independent variables in this study: total years of teaching experience (a continuous variable), years of teaching experience at current school (a continuous variable), levels (a categorical variable with three levels: primary, junior, intermediate), and teacher preparation (a categorical variable with two levels: traditional vs. alternative).

Data Analysis

Data was taken from the written completed surveys and entered through data entry into Excel. The SPSS version 22 (IBM, 2013) was used to analyze the data.

Frequency tables were used to present the data collected via the survey questionnaire, including the 24 Likert-scale questions regarding engagement in reflective thinking, the eight Likert scale questions regarding the aspects of the teaching process teachers reflect about, and the five demographic questions. Descriptive statistics, such as

means and standard deviations, were used to summarize the responses of the Likert-scale items.

Research question 1 asked the following: To what extent do in-service teachers engage in reflective thinking? Descriptive statistics of individual items and the composite scores for the six subscales of reflective thinking (reflective thinking in general, usefulness of reflective thinking, barriers of reflective thinking, support for reflective thinking, outcomes of reflective thinking, and mode of reflective thinking) were used to answer research question 1. Histogram plots of the composite scores for the six subscales of reflective thinking were also created to demonstrate the sampling distributions.

Research question 2 asked what aspect of the teaching process—including, pedagogy (delivery), classroom management, student engagement during the lesson, student level of understanding during the lesson, student assignments/tasks, assessment practices, student grades/results, and future goals—teachers reflect about. Frequency tables and descriptive statistics were used to summarize the responses of the eight questions regarding the aspects of the teaching process teachers reflect about.

Research question 3 asked whether engagement in reflective thinking related to years of teaching experience, elementary levels (primary, junior, intermediate), and teacher preparation (traditional vs. alternative)? For research question 3, there are six dependent variables (the six subscales of reflective thinking) and three independent variables (total years of teaching experience, years of teaching experience at current school, and elementary level). Teacher preparation was not analyzed as all teachers had Ontario certification (traditional). One-way MANOVA measures the strength of the relationship between multiple dependent variables and one independent variable (Johnson

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and Wichern, 1992). Thus, One-way MANOVA was used to determine whether

engagement in reflective thinking related to elementary level. Box's *M* test was used to

test for homogeneity of the variance-covariance matrices. Canonical correlation analysis

was used to determine whether engagement in reflective thinking related to years of

teaching experience (total years of teaching experience and years of teaching experience

at current school). A p-value < 0.05 indicates that the test is significant at the 0.05 level

of significance.

CHAPTER 4

RESEARCH RESULTS AND DISCUSSIONS

Introduction

The purpose of this study was two-fold. The first purpose was to determine to what extent in-service teachers engaged in reflective thinking. The second purpose was to determine whether reflective thinking was related to years of teaching experience, levels (primary, junior, intermediate), and teacher preparation (traditional vs. alternative). The following three research questions were investigated:

1. To what extent did in-service teachers engage in reflective thinking?

2. What aspect of the teaching process, including, pedagogy (delivery), classroom management, student engagement during the lesson, student level of understanding during the lesson, student assignments/tasks, assessment practices, student grades/results, and future goals, did teachers reflect about?

3. Was engagement in reflective thinking (as measured by the subscales of The modified Perceived Value of Reflective Thinking Survey) related to years of teaching experience, elementary teaching levels (primary, junior, intermediate) and teacher preparation (traditional vs. alternative)?

In this chapter, the process and results of data cleaning and subjects-removal due to missing and/or invalid responses were discussed. The reliability and validity of the Perceived Value of Reflective Thinking Survey were investigated and discussed. The

demographics of the participants and the analysis results of the research questions were then presented. Finally, the major findings of this research study were summarized.

Data Cleaning

The survey consisted of three sections: (a) the 24 6-point Likert-scale items of Perceived Value of Reflective Thinking Survey, (b) the 6-point Likert-scale items about the eight teaching areas of reflection, and (c) the five demographic questions regarding gender, certification, level of teaching, total years of teaching, and years of teaching in current school. According to the a priori power analysis, the minimum sample size required for this study was 88 for an 80% probability of finding a statistically significant relationship between the six dependent variables (the six subscales of reflective thinking), and the three independent variables (years of teaching experience, levels, and elementary teacher preparation). One hundred and forty participants were recruited to join the survey, which was more than the minimum required sample size and hence, ensured the power of the study for detecting significant relationships among the study variables. There were no invalid responses, that is, all responses were within the plausible range (1-6 for Perceived Value of Reflective Thinking Survey and reflection on areas of teaching). Table 1 shows the frequency and percentage of missing responses of Perceived Value of Reflective Thinking Survey and reflection on areas of teaching. Over half of the participants (55.7%) had completed all items on the Perceived Value of Reflective Thinking Survey and nearly all participants (97.9%) had fully answered the items for reflection on areas of teaching.

Table 1

Frequency of Number of Missing Responses for Perceived Value of the Reflection Survey and Reflection on Areas of Teaching

Survey	Number of Missing Responses	Frequency (%)
Perceived Value of Reflective Thinking Survey	0	78 (55.7)
	1	40 (28.6)
	2	6 (4.3)
	3	8 (5.7)
	4	1 (0.7)
	5	1 (0.7)
	6	1 (0.7)
	7	2 (1.4)
	10	2 (1.4)
	24	1 (0.7)
Reflection on areas of teaching	0	137 (97.9)
	1	1 (0.7)
	2	1 (0.7)
	8	1 (0.7)

Participants with four or more missing values in the Perceived Value of Reflective Thinking Survey or eight missing values in the reflection on areas of teaching were excluded from the data analyses. The final sample size for this study was 131.

Participants Characteristics

Tables 2 and 3 show the demographic characteristics of the 131 participants. The majority of the participants were female (78.0%). All teachers had Ontario certification

Table 2

Demographics

Variable	Level	Frequency (%)
Gender	Male	27 (22.0)
	Female	96 (78.0)
Certification	Ontario certification	125 (100.0)
Level of teaching	Primary level (Kindergarten to Grade 3)	55 (57.9)
	Junior level (Grade 4 to Grade 6)	24 (25.3)
	Intermediate level (Grade 7 or Grade 8)	16 (16.8)

Note: N = 131. Eight missing responses for gender; six missing responses for certification; 36 missing responses for level of teaching.

Table 3

Descriptive Statistics of Years of Teaching Experience, Overall and at Current School (N = 131)

	M (SD)	Min	Max
Total years of teaching experience	14.65 (6.90)	1	35
Years of teaching at current school	8.95 (6.37)	1	27

(100.0%). Over half of the participants (57.9%) taught at primary level, that is, kindergarten to Grade 3. The average total years of teaching experience was 14.65 (*SD* = 6.90), and the average years of teaching experience at the current school was 8.95 (*SD* = 6.37).

Preliminary Analysis: Reliability and Validity of the
Perceived Value of Reflective Thinking Survey

Cronbach's coefficient alpha (Cronbach, 1951) was used to determine the

reliability of the six sub-scales of the Perceived Value of Reflective Thinking Survey

(Table 4). The general guidelines for alpha values: 0.90 to 1.0 are excellent, 0.80 to 0.89

are good, 0.70 to 0.79 are acceptable, 0.60 to 0.69 are questionable, 0.50 to 0.59 are poor,

and below 0.50 are unacceptable (Cronbach, 1951). As none of the alpha values for the 6

sub-scales were greater than 0.7, Exploratory Factor Analysis (EFA) was performed to

determine the underlying dimensions of the Perceived Value of Reflective Thinking

Survey.

Table 4

Reliability of the Six Sub-scales of the Perceived Value of Reflective Thinking Survey

Sub-scale	Items	Cronbach's Alpha
Reflective thinking, in general	2, 4, 6, 20	0.574
Usefulness of reflective thinking	1, 3, 5, 8, 11, 18	0.311
Barrier of reflective thinking	9, 21, 22	0.614
Support of reflective thinking	10, 23, 24	0.640
Outcomes of reflective thinking	5, 7, 15, 19	0.425
Mode of reflective thinking	12, 13, 14*, 16, 17	0.624

The EFA (Pett, Lackey, and Sullivan, 2003) was used to explore the underlying

dimensions of the 24 items of the Perceived Value of Reflective Thinking Survey. The

estimation method of EFA used in this study was the principal axis method (Pett et al.,

2003) and the prior communality estimate for each variable was set to its squared

multiple correlation with all other variables. The oblimin rotation method (Pett et al.,

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2003) was implemented in order to allow for some correlation among the factors.

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (determining whether the partial correlations among variables are small) and Bartlett's test of sphericity were reported (testing whether the correlation matrix is an identical matrix) to help determine whether the common factor model was appropriate (Pett et al., 2003). Any KMO value of 0.6 and above indicated an appropriate factor model (Tabachnick & Fidell, 2013). The KMO and Bartlett tests revealed that the factor analysis was appropriate ($KMO = 0.648$ and $p < 0.001$ for Bartlett test).

Factor structure (items associated with each factor) was determined based on the factor structure matrix of the oblimin rotation (Pett et al., 2003). Comrey and Lee (1992) suggested that the general rules (also possibly based on researchers' preferences) of the loadings in excess of 0.71 are considered excellent; 0.63 loadings are very good; 0.55 loadings are good; 0.45 loadings are fair; and 0.32 loadings are poor. I used the 0.40 value in this study to determine the items associated with each factor.

In order to determine the number of factors that should be retained, Kaiser's criterion, Cattell's scree plot, parallel analysis, and Velicer's Minimum Average Partial (MAP) test were implemented (O'Connor, 2000; Pett et al., 2003). The numbers of factors that should be retained were eight (Kaiser's criterion), eight (Cattell's scree plot), seven (Parallel analysis), and two (MAP test). Since there was no consensus about the number of factors that should be retained, I performed factor analysis with the number of retained factors ranging from two to eight. The items associated with each factor for the factor models with the number of retained factors ranging from two to eight and the reliability (Cronbach's alpha) were examined. Factors with low reliability (Cronbach's

alpha < 0.70) were not considered. Considering the original six sub-scales of the

Perceived Value of Reflective Thinking Survey, at the end, the following three factors

(Table 5) obtained from the 3-factor model would be used as the three dimensions of

engagement in reflective thinking in this study.

Table 5

Results of EFA (Factor Loadings)

	Factor		
	1	2	3
7. I have changed the way I teach as a result of reflection.	0.777	0.024	0.075
4. Reflecting helps me become a better problem solver.	0.757	0.131	0.024
5. Knowing how to reflect on my teaching is useful.	0.736	-0.018	0.171
8. Reflecting on my teaching is important to my professional development.	0.698	0.200	0.317
23. I am deeply committed to reflective thinking.	0.673	0.173	-0.127
3. Discussing my reflections with others is useful.	0.596	0.090	0.017
6. Reflecting on my teaching helps me gain confidence in myself.	0.596	0.196	0.125
1. Reflecting about my experiences is useful.	0.566	0.065	-0.074
2. I feel comfortable reflecting about my teaching experiences.	0.518	-0.176	-0.154
24. I continually work towards improving my self-reflection skills.	0.465	0.251	-0.176
13. Writing reflections can help me improve my teaching.	0.101	0.801	0.016
16. My main mode of reflective thinking is writing a log or journal.	0.152	0.687	0.151
14. Writing reflections is just busy work.	0.130	0.650	0.091
15. Being able to see my growth as a teacher through my reflective writing is important to me.	-0.115	0.634	0.132
12. Portfolio development has helped to develop my reflective thinking skills.	0.150	0.440	-0.101
21. Not knowing how to appropriately reflect on my teaching practice can be a barrier to my reflective thinking	0.067	0.128	0.860
22. Not having an appropriate time and place to engage in reflection can be a barrier to my reflective thinking.	0.114	0.101	0.507
% variance explained by the factor	20.65	9.13	5.87
Cronbach's alpha	0.86	0.83	0.68

- Factor 1 (Improving as an overall reflective practitioner): items 1, 2, 3, 4, 5, 6, 7, 8, 23, and 24, measuring teachers' perceptions of improving as an overall reflective practitioner.

- Factor 2 (Reflecting through the writing process): items 12, 13, 14, 15, and 16, measuring teachers' reflective thinking via the writing process.

- Factor 3 (Barriers of personal reflection): items 21 and 22, measuring teachers' perceptions of barriers regarding reflective thinking.

Note that there were no cross-loadings on the 3-factor solution as the factor loadings for items not belonging to the specific factor were all less than 0.40. For example, item 7 was under Factor 1 and the factor loadings for item 7 were 0.777 (Factor 1), 0.024 (Factor 2), and 0.075 (Factor 3).

Analysis Results of Research Question 1

Research question 1 asked, "To what extent do in-service teachers engage in reflective thinking?" The descriptive statistics (Table 6) of the three sub-scales of reflective thinking (improving as an overall reflective practitioner, reflecting through the writing process, and barriers of personal reflection) were used to answer research question 1.

The skewness of the first factor "improving as an overall reflective practitioner" was -0.73 (negative skew), indicating the tail on the left side of the probability density function for improving as an overall reflective practitioner was slightly longer than the right side and the bulk of the data lay to the right of the mean (skewed to the left). The average score of improving as an overall reflective practitioner was 5.14 ($SD = 0.58$),

Table 6

*Descriptive Statistics of the Three Dimensions of Reflective Thinking (*N *= 131)*

Dimension of reflective thinking	*M*	*SD*	Skewness
Improving as an overall reflective practitioner	5.14	0.58	-0.73
Reflecting through the writing process	3.89	1.12	-0.65
Barriers of personal reflection	3.42	0.60	0.34

indicating participants had highly positive perceptions of improving as an overall reflective practitioner.

The skewness of the second factor, "reflecting through the writing process," was -0.65 (negative skew), indicating the tail on the left side of the probability density function for reflecting through the writing process was slightly longer than the right side and the bulk of the data lay to the right of the mean (skewed to the left). The average score of reflecting through the writing process was 3.89 ($SD = 1.12$), indicating that participants had neutral perceptions of reflecting through the writing process.

The skewness of the third factor, "barriers of personal reflection," was 0.34 (positive skew), indicating the tail on the right side of the probability density function for barriers of personal reflection was slightly longer than the left side and the bulk of the data lay to the left of the mean (skewed to the right). The average score of barriers of personal reflection was 3.42 ($SD = 0.60$), indicating that participants had moderate perceptions of barriers of personal reflection.

In addition, the summary of the survey responses for the individual items of the three sub-scales of reflective thinking (improving as an overall reflective practitioner,

reflecting through the writing process, and usefulness of reflective thinking) was also

presented to show the items that mostly represent activities that teachers reflect on

(Tables 7-9). For improving as an overall reflective practitioner, the average response

scores ranged from 5.62 (1. Reflecting about my experiences is useful) to 4.14 (23. I am

deeply committed to reflective thinking) (Table 7).

Table 7

Item Level Statistics for Improving as an Overall Reflective Practitioner

Item	M	SD	% agree
1. Reflecting about my experiences is useful.	5.62	0.61	93.1
8. Reflecting on my teaching is important to my professional development.	5.47	0.70	87.8
2. I feel comfortable reflecting about my teaching experiences.	5.45	0.65	93.1
4. Reflecting helps me become a better problem solver.	5.42	0.70	89.3
5. Knowing how to reflect on my teaching is useful.	5.37	0.71	87.8
7. I have changed the way I teach as a result of reflection.	5.29	0.87	86.3
3. Discussing my reflections with others is useful.	5.26	0.86	81.7
6. Reflecting on my teaching helps me gain confidence in myself.	5.16	0.84	78.6
24. I continually work towards improving my self-reflection skills.	4.22	1.13	49.6
23. I am deeply committed to reflective thinking.	4.14	1.16	45.5

Note: % agree = % of participants answered "tend to agree," "agree," or "strongly agree."

For reflecting through the writing process, the average response scores ranged

from 3.82 (13. Writing reflections can help me improve my teaching) to 2.56 (16. My

main mode of reflective thinking is writing a log or journal) (Table 8). For barriers of

personal reflection, the average response scores ranged from 4.11 (22. Not having an

appropriate time and place to engage in reflection can be a barrier to my reflective

Table 8

Item Level Statistics for Reflecting Through the Writing Process

Item	M	SD	% agree
13. Writing reflections can help me improve my teaching.	3.82	1.16	25.2
12. Portfolio development has helped to develop my reflective thinking skills.	3.70	1.10	18.3
15. Being able to see my growth as a teacher through my reflective writing is important to me.	3.57	1.19	21.4
14. Writing reflections is just busy work.	3.48	1.43	27.5
16. My main mode of reflective thinking is writing a log or journal.	2.56	1.26	10.7

Note: % agree = % of participants answered "tend to agree," "agree," or "strongly agree."

Table 9

Item Level Statistics for Barriers of Personal Reflection

Item	M	SD	% agree
22. Not having an appropriate time and place to engage in reflection can be a barrier to my reflective thinking.	4.11	1.28	49.1
21. Not knowing how to appropriately reflect on my teaching practice can be a barrier to my reflective thinking	3.67	1.29	40.6

Note: % agree = % of participants answered "tend to agree," "agree," or "strongly agree."

thinking) to 3.67 (21. Not knowing how to appropriately reflect on my teaching practice

can be a barrier to my reflective thinking) (Table 9).

Analysis Results of Research Question 2

Research question 2 asked, "What aspect of the teaching process—pedagogy

(delivery), classroom management, student engagement during the lesson, student level

of understanding during the lesson, student assignments/tasks, assessment practices,

student grades/results, and future goals—do teachers reflect about?" The responses

regarding the aspects of the teaching process teachers reflect about were summarized with frequency tables and descriptive statistics (Table 10). The mean responses of the eight questions regarding the aspects of the teaching process that teachers reflect on ranged from 4.3 (student grades/results) to 5.08 (student level of understanding during the lesson), indicating that the eight aspects of the teaching process were reflected moderately often. Furthermore, the results indicated that teachers reflected on "student level of understanding during the lesson" the most, and "student grades/results" the least.

Table 10

Summary of Aspects of the Teaching Process Teachers Reflect About

	N	*M*	*SD*	%[a]	%[b]	%[c]
Student level of understanding during the lesson	130	5.08	0.84	0	1.5	98.5
Student engagement during the lesson	130	4.92	0.88	0	6.9	93.1
Future goals for my class	130	4.81	0.92	0	8.5	91.5
Classroom management	130	4.72	1.05	0	13.8	86.2
Student assignments/tasks	128	4.66	0.85	0	8.6	91.4
Pedagogy (Delivery)	130	4.49	1.05	0.8	17.7	81.5
My assessment practices	130	4.46	0.94	0	17.7	82.3
Student grades/results	129	4.30	0.97	0.8	19.4	79.8

[a] % Not at all. [b] % rarely / sometimes. [c] % Often / very often / always.

Analysis Results of Research Question 3

Research question 3 asked, "Was engagement in reflective thinking (as measured by the subscales of the modified Perceived Value of Reflective Thinking Survey) related to years of teaching experience (a continuous variable), elementary teaching levels (a categorical variable with three levels: primary, junior, intermediate), and teacher

preparation (a categorical variable with two levels: traditional vs. alternative)?" Note that in the analysis,

- engagement in reflective thinking was measured by the following validated three sub-scales of the Perceived Value of Reflective Thinking Survey: Improving as an overall reflective practitioner, reflecting through the writing process, and barriers of personal reflection.

- as all teachers had Ontario certification, teacher preparation was not considered in the data analysis.

One-way MANOVA was used to determine whether engagement in reflective thinking (as measured by the subscales of the modified Perceived Value of Reflective Thinking Survey) related to elementary teaching levels (a categorical variable with three levels: primary, junior, intermediate). Canonical correlation analysis was used to examine the relationship between the set of reflective thinking variables (Improving as an overall reflective practitioner, reflecting through the writing process, and barriers of personal reflection) and years of teaching experiences (total and current school).

Table 11 shows the mean scores of the three sub-scales of engagement in reflective thinking by teaching level. Teachers teaching at different levels had (a) highly positive perceptions regarding improving as an overall reflective practitioner ($M = 5.18$ for primary, $M = 5.11$ for Junior, and $M = 5.01$ for intermediate), (b) neutral perceptions regarding reflecting through the writing process ($M = 4.08$ for primary, $M = 3.72$ for Junior, and $M = 3.66$ for intermediate), and (c) moderate positive perceptions of barriers of personal reflection ($M = 3.64$ for primary, $M = 3.15$ for Junior, and $M = 3.36$ for intermediate).

Table 11

*Mean (*SD*) of the Three Sub-Scales of Engagement in Reflective Thinking by Teaching Level*

Teaching level	Factor 1	Factor 2	Factor 3
Primary (*N* = 55)	5.18 (0.52)	4.08 (1.06)	3.64 (0.64)
Junior (*N* = 24)	5.11 (0.64)	3.72 (1.26)	3.15 (0.53)
Intermediate (*N* = 16)	5.01 (0.74)	3.66 (1.26)	3.36 (0.57)

Note: Factor 1 = improving as an overall reflective practitioner, Factor 2 = reflecting through the writing process, and Factor 3 = barriers of personal reflection.

The analysis results of MANOVA are presented in Table 12. The results of the Box's *M* test of equality of covariance matrices indicated that the observed covariance matrices of the dependent variables were equal across groups (Box's $M = 12.335$, $p = 0.484$). Thus, Wilks's Lambda of the multivariate tests was used to determine whether engagement in reflective thinking (as measured by the subscales of the modified Perceived Value of Reflective Thinking Survey) related to elementary teaching levels. The results of the MANOVA indicated that there was no relationship between engagement of reflective thinking and teaching level (Wilks's Lambda = 0.872, $F(6, 180) = 0.872$, $p = 0.052$).

Canonical correlation analysis was used to examine the relationship between the set of reflective thinking variables (improving as an overall reflective practitioner, reflecting through the writing process, and barriers of personal reflection) and years of teaching experiences (total and current school).

Means, standard deviation and Pearson's correlation coefficients are reported in Table 13. Teachers in this sample reported an average of 14.65 total years of teaching (*SD* = 6.9) and 8.95 years of teaching experience in their current school (*SD* = 6.37).

Table 12

Multivariate Tests

	Value	*F*	Hypothesis df	Error df	*p*	Partial Eta squared
Pillai's Trace	0.130	2.102	6	182	0.055	0.065
Wilks's Lambda	0.872	2.127	6	180	0.052	0.066
Hotelling's Trace	0.145	2.150	6	178	0.050	0.068
Roy's Largest Root	0.131	3.975	3	91	0.010	0.116

Note: Box's $M = 12.335$, $p = 0.484$.

Table 13

Means, Standard Deviations and Pearson's Correlation Coefficients of Reflective Thinking Variables and Years of Teaching Experiences

Variables					Variables		
	M	*SD*	2	3	4	5
1. Improving as an overall reflective practitioner	5.14	0.58	0.34*	0.12	0.10	-0.04
2. Reflecting through the writing process	3.89	1.12		0.24*	-0.03	-0.11
3. Barriers of personal reflection	3.42	0.60			0.11	0.02
4. Total years of teaching	14.65	6.90				0.58*
5. Years teaching in current school	8.95	6.37				

*p < 0.01

Correlation between these two years of teaching experiences is 0.58 ($p < 0.01$).

Tables 14 and 15 summarize the results of the canonical correlation analysis. There are as many roots as there were variables in the smaller of the two variable sets. In this analysis, one set of reflective thinking variables contains three variables and the other set of years of teaching experiences variables contains two variables. Thus, the smaller

Table 14

Eigenvalues and Canonical Correlations

Root No.	Eigenvalue	Percent	Canonical Correlation	Squared Correlation
1	0.036	70.79	0.187	0.035
2	0.015	29.21	0.121	0.015

Table 15

Dimension Reduction Analysis

Roots	Wilks's Lambda	*F*	Hypothesis df	Error df	*p*
1 to 2	0.951	1.068	6	252	0.382
2 to 2	0.985	0.945	2	127	0.391

variable set contains two variables and the analysis generated two roots.

"Percent" (Table 14) represents the proportion of explained variance in the

canonical variates attributed to a given canonical correlation. "Canonical Correlation"

(Table 14) are the Pearson correlations of the pairs of canonical variates. The first pair of

variates, a linear combination of the reflective thinking measurements and a linear

combination of the years of teaching experiences measurements, had a correlation

coefficient of 0.187. The second pair has a correlation coefficient of 0.121. The square

of the correlation (Table 14) represents the proportion of the variance in one group's

variate explained by the other group's variate.

"Roots" (Table 15) is the set of roots included in the null hypothesis being tested.

The null hypothesis is that all of the correlations associated with the roots in the given set

are equal to zero in the population. By testing these different sets of roots, one can

determine how many dimensions are required to describe the relationship between the

two groups of variables. The Wilks's lambda test statistic was used for testing the null hypothesis that the given canonical correlation and all smaller ones are equal to zero in the population. The first test of dimensions (Roots: 1 to 2) tested whether both dimensions combined were significant (they were not as $p = 0.382$), the next test (Roots 2 to 2) tested whether dimension 2, by itself, was significant (it was not as $p = 0.391$). Therefore, dimensions 1 and 2 were both not significant.

In sum, in this analysis, there were two possible canonical functions. The canonical correlation between the first pair of variates was 0.187 (Wilks's lambda = 0.951, $F[6, 252) = 1.068$, $p = 0.382$] and 0.121 for the second pair of canonical variates (Wilks's lambda = 0.985, $F[2, 127] = 0.945$ $p = 0.391$). These results suggest that reflective thinking (improving as an overall reflective practitioner, reflecting through the writing process, and barriers of personal reflection as a set) was not related to years of teaching experiences (total years of teaching, and years teaching in current school as a set).

Summary of Major Findings

Data of 131 participants were analyzed in this study. The majority of the participants were female (78.0%). All teachers had Ontario certification (100.0%). Over half of the participants (57.9%) taught at primary level, that is, Kindergarten to Grade 3. The average total years of teaching experience was 14.65 ($SD = 6.90$) and the average years of teaching experience at the current school was 8.95 ($SD = 6.37$)

As none of the alpha values for the six sub-scales was greater than 0.7, EFA was performed to determine the underlying dimensions of the Perceived Value of Reflective Thinking Survey. Three dimensions of engagement in reflective thinking in this study

were validated: Improving as an overall reflective practitioner, reflecting through the writing process, and barriers of personal reflection.

The analysis results of research question 1 indicated that participants had highly positive perceptions of improving as an overall reflective practitioner, neutral perceptions of reflecting through the writing process, and moderate perceptions of barriers of personal reflection.

The analysis results of research question 2 indicated that the eight aspects of the teaching process—pedagogy (delivery), classroom management, student engagement during the lesson, student level of understanding during the lesson, student assignments/tasks, my assessment practices, student grades/results, and future goals for my class—were reflected upon moderately often.

The analysis results of research question 3 indicated that there was no relationship between engagement of reflective thinking (improving as an overall reflective practitioner, reflecting through the writing process, and barriers of personal reflection as a set), and teaching level and years of teaching experiences (total years of teaching and years teaching in current school as a set).

CHAPTER 5

CONCLUSION

Introduction

In the previous chapter, data analysis results, including process of data cleaning, reliability and validity of the Perceived Value of Reflective Thinking Survey, demographics of the participants, and the analysis results of the research questions, were discussed in detail.

In this chapter, the purpose of the study is first presented, followed by a brief summary of the literature review and research methodology. The major findings of the data analysis for the survey data are also summarized and presented. The findings of this study, such as perception of reflection, areas teachers reflected about, and factors that affected teachers' reflection, are then compared and contrasted to previous research. Recommendations for practice and future research are discussed before the conclusion of the study.

Purpose of the Study

The purpose of this study was two-fold. The first purpose was to determine to what extent in-service teachers engaged in reflective thinking. The second purpose was to determine whether reflective thinking was related to years of teaching experience, levels (elementary vs. secondary), and teacher preparation (traditional vs. alternative).

The following three research questions guided this study:

1. To what extent did in-service teachers engage in reflective thinking?

2. What aspect of the teaching process—pedagogy (delivery), classroom management, student engagement during the lesson, student level of understanding during the lesson, student assignments/tasks, assessment practices, student grades/results, and future goals—did teachers reflect about?

3. Was engagement in reflective thinking (as measured by the subscales of the modified Perceived Value of Reflective Thinking Survey) related to years of teaching experience, elementary teaching levels (primary, junior, intermediate), and teacher preparation (traditional vs. alternative)?

Summary of the Literature Review

The literature review of this study first examined the history of reflection. The areas within reflection, such as the usefulness of reflection, support and barriers of reflection, reflection outcomes, and modes of reflection, were then elaborated.

The founder of reflection, John Dewey, defined *reflection* as an "active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends" (Dewey, 1933, p. 9). Literature in teacher education suggests that teacher reflection could be beneficial as reflection helps prospective or beginning teachers develop a pattern of continually learning and ability to improve in teaching (Burke, 2006; Davies, 2012; Freese, 2006; Hiebert et al., 2007; Kathpalia & Heah, 2008; Melnick & Meister, 2008; Nahal, 2010; Whipp, 2003), and emphasizing teacher improvement could improve student learning (Goldenberg et al., 2004).

The process of reflection enables individuals to become self-directed learners (Davies, 2012). Through the learning that takes place through reflection, a teacher's classroom practices can be influenced, especially if there is support to implement reflection. Support of reflection, such as dialogue and setting personal goals when reflecting (Dekker-Groen et al, 2010), more experiences in the program on which to reflect (Kyles and Olafson, 2008), structured reflective programs (ex: Johns' SRM; Ip et al., 2012), and electronic tools as a way of reinforcing reflection and provides opportunities for learners to self-instruct themselves (Verpoorten et al., 2012) could help translate what has been learned through reflection into practice (Daniel et al., 2013).

Reflection must be an intentional act where the participant is fully aware of the not only how it can be supported, but also how to potential obstacles that inhibit the reflection process. According to McArdle and Coutts (2010), many people find reflection difficult. Barriers to teacher reflection include the location where teachers engage in reflection, the fact that reflection may be less suitable for beginning teachers as they have fewer experiences to draw from, and the fact that the process of reflection requires skills such as noticing, reasoning, and analysis, which not all teachers are exposed to (Law, 2011; Mustafa, 2005). Other significant obstacles to reflection may be considering reflection to be an administrative burden and not taking it seriously, no sufficient exposure to the genre of reflective writing, heavy workload, and the stress of being observed (Al-Jabri, 2009; Mustafa, 2005).

When the reflection process is valued and understood, as seen in this study, it will most likely lead to a beneficial reflective outcome. Reflection using rigorous thought also helps teachers develop and improve their teaching performance and efficacy (Chow

et al., 2011; Hedberg, 2009; Nieto, 2003; Pultorak & Barnes, 2009; Sung, Chang, Yu, & Chang, 2009). Additionally, teachers' reflection leads to better student achievement in writing (Fatemi et al., 2011).

Although there are many approaches to reflection (case studies, autobiographical and collaborative reflection, and experiences including dialogue through writing and action research) (Etscheidt et al., 2012), for the purpose of this review of literature, the focus is on individual reflection (i.e. journaling, personal assessment of reflection) and collaborative/group reflection.

The practice of journaling can be a useful tool to record one's thinking/reflecting and to develop critical thinking skills (Dyment & O'Connell, 2003). Advantages of journaling include deepening the quality of learning in the form of critical thinking or developing a questioning attitude, enabling learners to understand their own learning processes, increasing active involvement in learning and personal ownership of learning, enhancing professional practice or the professional self in practice, enhancing personal valuing of self toward empowerment, enhancing creativity by making better use of intuitive understandings, and freeing up writing and the representation of learning (Moon as cited in Alterio, 2004, p. 322). The effectiveness of reflection via journaling has been shown in several studies (Boyd & Boyd, 2005; Mariko, 2011; Niehaus, Rudasill, & Rakes, 2012; Uline et al., 2004).

Individual guided reflection requires participants to engage in the reflective process systematically and deliberately. Several models have been proposed for the assessment of the reflection process including, the SAM) (Nolan & Sim, 2011), the GRAS (Aukes et al., 2007), and the ABC[1]s of reflection (Welch, 1999; Welch &

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James, 2007). The effectiveness of reflective guidelines has been shown in several studies (Aronson et al., 2012; Austin et al., 2008; Marchigiano et al., 2011).

Peer reflection helps individuals become aware of self and analyze their perception and the values of their environment, and can result in transformative learning, critical thinking, and encouraging an individual to reach an increased level of reflection (Glaze, 2001; Platzer et al., 2000; Williams, 2001 as cited in Nairn et al., 2012). Several studies have shown the values of peer reflection (Boerboom et al., 2011; Clandinin et al., 2007; Connell, 2005; Glanz, 1999; Glass, 2012; Knight et al., 2010; Souto-Manning & Mitchell, 2010; Stelter & Law, 2010; Vosberg, 2008; Wong, 2009). Furthermore, higher levels of reflectivity have been shown when facilitated in small groups compared to personal methods such as through reflective journals (Nairn et al., 2012).

Reflection has accounted for leading both preservice and in-service educators to become more culturally responsive (Durden & Truscott, 2013), helping them understand the challenges of working with special needs students (Doody & O'Connor, 2012) and also aid in the process dealing with challenging students (Spilt et al., 2012). The encouragement of reflective practice for teacher candidates is considered to be a mission and essential element of the preparation program (Etscheidt et al., 2012). Reflection is not any easy process and may not solve all of the issues such as helping teachers understand issues of gender and race (Webb, 2001); however, it is beneficial to the development and growth of teachers and is an essential element in being an educator (Loughran, 2002).

Summary of the Research Methodology

This quantitative study that included a cross-sectional survey research design was

used to answer the following three research questions:

1. To what extent did in-service teachers engage in reflective thinking?

2. What aspect of the teaching process—pedagogy (delivery), classroom management, student engagement during the lesson, student level of understanding during the lesson, student assignments/tasks, assessment practices, student grades/results, and future goals—did teachers reflect about?

3. Was engagement in reflective thinking (as measured by the subscales of the modified Perceived Value of Reflective Thinking Survey) related to years of teaching experience, elementary teaching levels (primary, junior, intermediate), and teacher preparation (traditional vs. alternative)?

The population for this study included the 11,100 elementary teachers who are currently employed in the TDSB. Given the results of the a priori power analysis and assuming a 70% response rate for the survey, a sample of approximately 88 elementary teachers teaching at that time within the school board were randomly selected, based on their school, from among the 472 elementary schools represented.

The instrument of this study consisted of three sections: The modified Perceived Value of Reflective Thinking Survey (Russback, 2010), the survey for measuring areas of teacher reflection, and the demographics. The modified Perceived Value of Reflective Thinking Survey consisted of 24 6-point Likert scale questions (1 = strongly disagree, 2 = disagree, 3 = tend to disagree, 4 = tend to agree, 5 = agree, and 6 = strongly agree), and was designed to measure the extent that in-service elementary teachers engage in reflective thinking. The 24 Likert scale questions can be categorized into the following six subscales of reflective thinking: reflective thinking in general, the usefulness of

reflective thinking, the barriers of reflective thinking, the support for reflective thinking, the outcomes of reflective thinking, and the mode of reflective thinking. For each of the six subscales of reflective thinking, a composite score can be calculated by averaging the responses across the corresponding questions. The scores range from 1 to 6. Higher scores indicate stronger agreement toward the subscale of the reflective thinking.

The survey for measuring teachers' value of reflection consisted of eight 6-point Likert scale questions regarding eight aspects of the teaching process—pedagogy (delivery), classroom management, student engagement during the lesson, student level of understanding during the lesson, student assignments/tasks, assessment practices, student grades/results, and future goals—that teachers reflect about. The responses of the 6-Likert scale questions include the following: 1 = not at all, 2 = rarely, 3 = sometimes, 4 = often, 5 = very often, and 6 = always.

The last section of the survey questionnaire consisted of five demographics questions regarding gender, types of teachers' elementary teaching (primary, junior, intermediate level), type of certification, years of teaching experience, and years with current school. It was designed to determine whether reflective thinking is related to years of teaching experience, levels (primary, junior, intermediate), and teacher preparation (traditional vs. alternative).

Data were taken from the written completed surveys and entered through data entry into Excel. The SPSS version 22 (IBM, 2013) was used to analyze the data. Frequency tables were used to present the data collected via the survey questionnaire, including the 24 Likert-scale questions regarding engagement in reflective thinking, the eight Likert scale questions regarding the aspects of the teaching process teachers reflect

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about, and the five demographic questions. Descriptive statistics, such as means and standard deviations, were also be used to summarize the responses of the Likert-scale items. The EFA (Pett et al., 2003) was used to explore the underlying dimensions of 24 items of the Perceived Value of Reflective Thinking Survey. Frequency tables and descriptive statistics were used to answer research questions 1 and 2. Multivariate Analysis of Variance and canonical correlation analysis were used to answer research question 3.

Summary of the Major Findings

Data of 131 participants were analyzed in this study. The majority of the participants were female (78.0%). All teachers had Ontario certification (100.0%). Over half of the participants (57.9%) taught at primary level, that is, kindergarten to Grade 3. The average total years of teaching experience was 14.65 ($SD = 6.90$) and the average years of teaching experience at the current school was 8.95 ($SD = 6.37$)

As none of the alpha values for the six sub-scales was greater than 0.7, EFA was performed to determine the underlying dimensions of the perceived value of the reflection survey. Three dimensions of engagement in reflective thinking in this study were validated: improving as an overall reflective practitioner, reflecting through the writing process, and barriers of personal reflection.

The analysis results of research question 1 indicated that participants had highly positive perceptions of improving as an overall reflective practitioner, neutral perceptions of reflecting through the writing process, and moderate perceptions of barriers of personal reflection.

The analysis results of research question 2 indicated that the eight aspects of the

teaching process—pedagogy (delivery), classroom management, student engagement during the lesson, student level of understanding during the lesson, student assignments/tasks, my assessment practices, student grades/results, and future goals for my class—were reflected upon moderately often. Furthermore, the results indicated that teachers reflected on "student level of understanding during the lesson"/ "student level of understanding during the lesson" the most, and "student grades/results" the least.

The analysis results of research question 3 indicated that there was no relationship between engagement of reflective thinking (improving as an overall reflective practitioner, reflecting through the writing process, and barriers of personal reflection as a set) and teaching level and years of teaching experiences (total years of teaching, and years teaching in current school as a set). Nonetheless, teachers teaching at different levels had (a) highly positive perception regarding improving as an overall reflective practitioner ($M = 5.18$ for primary, $M = 5.11$ for Junior, and $M = 5.01$ for intermediate), (b) neutral perceptions regarding reflecting through the writing process ($M = 3.64$ for primary, $M = 3.15$ for Junior, and $M = 3.36$ for intermediate), and (c) moderate perceptions of barriers of personal reflection ($M = 4.08$ for primary, $M = 3.72$ for Junior, and $M = 3.66$ for intermediate). The parameter estimate of years of teaching on each sub-scale of engagement in reflective thinking (shows the effect of years of teaching on each sub-scale) indicated that for one unit increase in years of teaching, the score of support of reflective thinking would increase by 0.02 units, the score of mode of reflective thinking would decrease by 0.003 units, and the score of usefulness of reflective thinking would increase by 0.013 units.

Discussion of Findings

Reflective thinking has emerged as a beneficial practice and one primary context of learning in teachers' professional development at all levels of education, for both pre-service and in-service teachers (Kapoor, 2014; Saylor & Johnson, 2014; Zhao, 2012). Professional growth for teachers is developed through reflective practices such as peer observations, exploring new things and perspectives, and developing intellectual interest about teaching and learning (Musanti & Pence, 2010). Furthermore, ongoing professional learning for individual teachers can be consistently improved by analyzing and reflecting on students' needs, as "teaching is a nuanced dance in which teachers integrate their knowledge and pedagogical content knowledge, in order to be responsive to students' needs" (Timperley, 2011, p. 16).

In this study, reflective thinking was regarded as a useful practice by all teachers as participants had highly positive perceptions of improving as an overall reflective practitioner, (although the results may have been slightly altered due to the $5.00 gift-card incentive), particularly in items 1, 8, and 2 (reflecting about my experiences is useful, reflecting on my teaching is important to my professional development, and I feel comfortable reflecting about my teaching experiences). This view is consistent with findings from previous research such as, Al-Jabri and Region (2009), Nolan (2013), Russback (2010), and Saylor & Johnson (2014).

Ninety-five of the teachers who participated in the study ($N = 60$ English teachers of Oman taught at post-basic level [Grades 11-12]) conducted by Al-Jabri and Region (2009) agreed that reflection can improve their teaching strategies. Studying the perceived value of reflective thinking among preservice and new teachers in Missouri,

United States (Russback, 2010) found that teachers had strongly positive perception regarding the usefulness of reflective thinking. Among the 84 elementary, middle, or secondary teachers with various length of teaching experience in a rural Midwestern town of the United States, 20% agreed that teacher reflection could become a valuable tool for improving teaching practice (Nolan, 2013). The meta-synthesis conducted by Saylor and Johnson (2014) concluded that a sizable number of studies had reported positive results and findings on the aspect of professional development in terms of elementary mathematics and science teachers' professional reflection.

Nonetheless, a well-known issue in teaching is that teachers tend to act before they even have an understanding of how things work or how the situations have developed (Oosterheert & Vermunt, 2001). As a result, the decisions teachers make may be impetuous, impulsive, or simply based on past routines (McClanahan, 2008). Reflective thinking provides the opportunity for teachers to make more appropriate and deliberate decisions that will, in turn, improve their teaching practices that affect their students (Larrivee, 2008). In addition, while teachers gain experience via reflective practices, unexpected classroom issues become more manageable and pedagogy becomes more substantial (Robichaux & Guarino, 2012).

Teacher reflection is an idea of lifelong learning or teacher-as-learner concept, as pointed by Boody (2008): "Teacher reflection can be thought of as taking the necessary steps to analyze and articulate problems before taking action. This allows for more constructive action to be taken rather than implementing a quick fix" (p. 169). With most survey statements having high levels of agreement (10 out of 14 items with over 60% responses as "Agree"), Al-Jabri and Region (2009) suggested that the 60 Grades 11-12

English teachers in Oman felt that they did engage to a considerable degree in practices which involved or provided opportunities for reflection. Ulas et al. (2011) revealed that Turkish language teachers ($N = 86$) had reflective thinking tendencies since approximately 80% of the teachers responded positively regarding aspects such as looking at events from different angles, being open to any questions, reactions and suggestions related to educational applications, valuing educational activities and consequently reviewing educational acquisitions. In a study conducted in the United States, Nolan (2013) stated that 81% of the 84 elementary, middle, or secondary teachers agreed that they often spent time reflecting on teaching practices.

In this study, it appears that participants had only neutral perceptions of reflecting through the writing process since 25% of the teachers surveyed agreed that writing reflections could help improve their teaching, and a mere 10% mentioned that they reflect through writing a log or journal (Table 8). The observed attitudes of teachers regularly practicing reflective thinking was slightly lower than results found in other studies such as those by Al-Jabri and Region (2009), Ulas et al. (2011), Sharplin, O'Neill, and Chapman (2011), and Nolan (2013).

In practice, many teachers find reflection difficult, whether or not they are well inclined to it from the beginning (McArdle & Coutts, 2010). In practice, it is often seen that reflection fails to get started, lacks any substance, or just quickly falters (McArdle & Coutts, 2010). A key factor that is seen to hinder reflection is teachers' workloads (i.e., with heavy workloads, teachers have no time to reflect upon lessons); the stressful nature of observation was another factor that may hinder reflection (Al-Jabri & Region, 2009). Sharplin et al. (2011) indicated that all teachers in Western Australia participating in their

study ($N = 29$) employed reflective practice to investigate problems and generate solutions. In addition, a list of aspects that may be a reason for teachers' inability to improve teaching despite engaging in reflection include lack of experience, knowledge or alternative strategies for teaching, fear of risk taking, and personal characteristics may cause the process of reflection to fail in the phase of initiation, completion, or implementation (Mälkki & Lindblom-Ylänne, 2012).

Though it is difficult to nurture and sustain reflection in practice settings, support from the institutions, such as encouragement or mandatory requirement of engagement in reflective activities (e.g., peer observation and writing reflections after lessons), may help teachers understand the value of reflection and hence, help sustain reflection in practice (Al-Jabri & Region, 2009). Participants in this study had moderate perceptions of barriers of personal reflection. Canada has created opportunities for teachers to engage in school-focused research and development. Teachers in Canada are provided time and support for studying and evaluating their own teaching strategies and school programs and are encouraged to share their findings with their colleagues through conferences and publications (Darling-Hammond, Wei, & Andree, 2010). For example, the School Effectiveness Framework is designed as a tool to support reflective and informed practice and school improvement planning, serving as a key resource for educators as they work to identify areas of strength, areas requiring improvement and processes for their remedy, and collaboratively pursue inquiry focused on student learning, achievement, and well-being that inform goals and practices/strategies for effective teaching and learning (Ontario Ministry of Education, 2013).

In addition, school districts in British Columbia have been involved in a

provincially designed and funded initiative called Changing Results for Young Readers aimed at building the instructional and collaborative capacity of classroom teachers via reflective practice, that is, the professional learning communities (Kelly & Cherkowski, 2015). The Changing Results for Young Readers module seemed to function well since (a) many teachers documented successful experiences in their changes in teaching practice throughout the year after participating in the intervention; (b) all of the case study students showed achievement in some aspects of literacy; (c) teachers described how their professional conversations allowed them to see in a new way that their challenges are often similar and shared, and that they can work together to solve or support one another; and (d) the teachers all spoke about the overwhelming support they felt in the group (Kelly & Cherkowski, 2015).

Reflection is often seen to be shallow and concerned with merely technical matters, such as academic knowledge and teaching skills (Halliday 1998; McArdle & Coutts, 2010). In this study, teachers have reflected on 8 areas moderately often, with "student level of understanding during the lesson" being reflected on the most, followed by "student engagement during the lesson," "Future goals for my class," "Classroom management," "Student assignments/tasks," "Pedagogy," "My assessment practices," and "Student grades/results." This finding is similar to a recent qualitative study conducted by Iksan & Rahim (2017) where the majority of teachers ($N = 17$) focused on students' participation in their reflections more than on teaching methods and materials. Nonetheless, although not investigated in this study, it should be noted that areas of reflection may depend on teaching level (Khan, Fazal, & Amin, 2014) and teachers' resilience (Leroux & Théorêt, 2014). In particular, Khan et al., (2014) found that a clear

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majority from the student teachers group (i.e., pre-service teachers), in comparison to the

teacher educator group of teacher preparation programs, had their focus on more

technical and practical connotations of reflection. Improvement of the technical skills of

teaching, classroom management, lesson planning and delivery, and dealing with

behavioral issues on a day-to-day basis were some of the main issues that student

teachers presented as the sources and focus of their reflection (Khan et al., 2014). In a

qualitative study conducted by Leroux and Théorêt (2014) with 23 elementary teachers in

Montreal, Canada, analysis of four representative cases according to their reflection has

shown that low resilience seemed to be related to an increased emphasis on the problems

instead of the solutions, and on the environmental instead of the personal reflective

contents, and inversely.

This study had found no significant relationship between engagement of reflective

thinking (improving as an overall reflective practitioner, reflecting through the writing

process, and barriers of personal reflection) and teaching level and years of teaching.

However, studies have found some association between engagement of reflective

thinking and several factors. According to the findings of the qualitative study conducted

by Kaasila and Lauriala (2012), the breadth and the depth of the pre-service teachers'

reflection processes greatly varied, and their former experiences as learners of

mathematics seemed to have a great impact on their reflection when teaching

mathematics for the first time (i.e., negative learning experiences in mathematics may

result in more emotionally laden reflection). Khan et al. (2014) revealed that although

there was some variation in terms of the comparative understanding of reflection,

compared to teacher educators and student teachers from Pakistan, teacher educators and

student teachers from the United Kingdom, in general, have a much deeper understanding of reflection in terms of its connotation and implementation.

In a three-phased mixed-design study interviewing 10 participants at the third phase, Lowe et al. (2007) noted that reflection was influenced by a range of factors associated with the course (e.g., difficulty of the content, pace, novelty, and volume of the material), practice context (e.g., availability of resources (time, staffing levels) and practice culture (learning environments, openness to innovation, expectations, and management support)), and the individual (e.g., level of motivation, preparation for using reflection, and knowledge of course topic). Analyzing data of the 84 elementary, middle, or secondary teachers with various lengths of teaching experience in a rural Midwestern town of the United States, Nolan (2013) found that elementary/middle school teachers were more likely to spent more time reflecting and seeking advice from peers, rather than secondary teachers. Yaman (2016) collected data from 514 volunteer preservice teachers and 466 experienced teachers teaching science, math, English, Turkish, and primary classes in Turkey and concluded that (a) experienced teachers of English, science, Turkish, and primary education did not attain significantly higher reflection scores when compared to preservice teachers of the same subject areas; (b) experienced teachers of math attained significantly higher reflection scores when compared to pre-service teachers of the same subject area.

The research collected from this study, along with the incorporation of reflection in terms of what it is, how it is enacted in practical teaching learning situations, and why it is important to include it in educational practices, will help lead Ontario decision-makers to conclusive long-term organizational decisions on putting reflection and

reflective teaching into disciplines of teacher education and practice.

Conclusion

Development of the ability to reflect on one's teaching is one of the underpinnings of the teaching profession (Robichaux & Guarino, 2012). As Lyngsnes (2012) pointed out, "reflection is a critically important characteristic of a professional teacher and that promoting reflection is vital to the teachers' professional learning" (p. 2). It is important that teacher educators and institutional administrators recognize the relationship between reflective practice and professional development and implement the process of reflection in teacher preparation programs, along with encouraging both pre-service and in-service teachers to reflect about their teaching experiences (Binks, Smith, Smith, & Joshi, 2009). To foster reflection, it is also important to understand and discover barriers to reflection (Mälkki & Lindblom-Ylänne, 2012). Examples of barriers may be previous negative experiences, lack of motivation, lack of time, expectations of others and oneself, and fear of failure.

Recommendations for Practice

Incorporation of complex, but useful concepts such as reflection will likely result in a more sophisticated understanding of the process of education among educators and researchers. In order to reflect, teachers need to have some characteristics such as willingness to change, being open-minded to suggestions, and having the ability to recognize their strength and weakness in teaching. As school and society are constantly changing, teachers must be reflective in order to cope effectively with changing circumstances and recognize that reflection is an idea of lifelong learning. In addition,

effective teaching involves a balance of thought and action. Teachers must translate the results of reflective practices into teaching practices in order to enjoy fully the benefits of reflection. Reflection is not an easy process and needs support at all teaching levels.

Educators and administrators may consider providing support for pre-service and in-service teachers within current educational practices such as prep time focused on reflection through sharing experiences or journaling and/or incorporating a specific reflection component in teaching practicums. Educational leaders can also integrate opportunities for reflection into courses by giving learners time to reflect on a daily and consistent basis, and in some cases providing individuals with opportunities to document and share personal growth stories.

They may also allot time during staff meeting or professional development sessions where educators can engage in reflection collaboratively. This can be done through workshops and training sessions that are specifically focused on reflection. Consequently, educators in various capacities should also establish a standard process that encourages them to be accountable for their actions and promotes overall growth. This growth can be impactful and can begin solely with one individual who develops the habit of continually seeking to understand why he or she is making decisions and the impact those choices have on the greater educational community at large (staff, students, and the surrounding community).

Recommendations for Further Research

Future studies concerning reflective practice for teachers at all levels are imperative. I would recommend studies involving pre-service teachers and in-service teachers from all levels (i.e., primary, junior, intermediate, senior, and

college/university). In addition, exploring reflective practices in both the public and private school boards would be useful, as it would reveal whether there were any differences among sectors. Administrators (principals and vice-principals) and other school board leaders (i.e., superintendents) were not involved in the research. Examining how administrators and school leaders are involved in the process of reflection individually and through their role of supporting teachers is also worth being investigated.

The analysis results revealed that *student level of understanding during the lesson and student engagement during the lesson* were the aspects that were the most reflected upon by teachers in the study, and assessment practices and *student grades/ results* were the least reflected upon. It would be beneficial to do further investigation on these specific areas mentioned as it could provide further detail why they are regarded as most or least important in one's teaching practice. This information could be collected through qualitative data via focus group discussion, journaling, mentoring between beginning and experienced teachers, which would gain full insights of a wide range of teachers' perceptions of reflection.

The research found that there was no significant relationship between engagement of reflective thinking and teaching level and years of experience. All of the participants had received their certification within Ontario. In future studies, participants who have studied at a wider range of institutions both in the United States and Canada should be considered. Identifying how specific teacher education programs/training influence teachers' understanding and ability to become a reflective practitioner and grow would also be useful.

A longitudinal study following a group of pre-service teachers through their first ten years of teaching may reveal interesting facts regarding how the perception of the value of reflective thinking has changed over time. Generally, more in-depth studies of how teachers have changed their way of teaching through the reflection process should be considered, as it will lead to growth within education.

APPENDIX A

IRB APPROVAL DOCUMENTS

June 15, 2018

Margeaux Levy
Tel: 416-460-3645
Email: margeaux2323@gmail.com

RE: APPLICATION FOR APPROVAL OF RESEARCH INVOLVING HUMAN SUBJECTS
IRB Protocol #:15-174 **Application Type:** Original **Dept.:** Curriculum & Instruction
Review Category: Exempt   **Action Taken**: Approved **Advisor:** Lee Davidson
Title: The perceived value of reflection among teachers in Ontario.

Your IRB application for approval of research involving human subjects entitled: *"The perceived value of reflection among teachers in Ontario" IRB protocol # 15-174* has been evaluated and determined Exempt from IRB review. You may now proceed with your research.
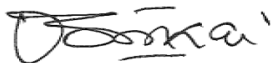
Please note that any future changes (see IRB Handbook pages 10-11) made to the study design and/or informed consent form require prior approval from the IRB before such changes can be implemented. Incase you need to make changes please use the attached report form.

While there appears to be no more than minimum risks with your study, should an incidence occur that results in a research-related adverse reaction and/or physical injury, (see IRB Handbook pages 11) this must be reported immediately in writing to the IRB. Any research-related physical injury must also be reported immediately to the University Physician, Dr. Reichert, by calling (269) 473-2222.

We ask that you reference the protocol number in any future correspondence regarding this study for easy retrieval of information.

Best wishes in your research.

Sincerely,

Mordekai Ongo
Research Integrity & Compliance Officer

Institutional Review Board - 4150 Administration Dr Room 322 - Berrien Springs, MI 49104-0355
Tel: (269) 471-6361 Fax: (269) 471-6543 E-mail: irb@andrews.edu

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January 18, 2016

Dear Margeaux Levy,

Re: *The Perceived Value of Reflections Among Teachers in Ontario*

On behalf of the External Research Review Committee (ERRC), I've reviewed and accepted your revised application and responses to address the comments raised in our previous letter. Your revisions and the significant reduction in the number of schools and participants now at the elementary level only are much appreciated.

While this letter acknowledges our final ERRC approval, a few minor edits are still recommended before you begin:

- The inclusion of a statement about the guarantee of confidentiality and data security in the Teacher's Study Invitation /Information Letter

- Some minor edits to the survey question at the end about teacher certification and grade levels (e.g. "Please check all that apply…."; I am an elementary teacher; I teach primary level)

You should also be aware that this ERRC approval does not obligate any schools or staff to participate and the invited individuals may make the final decision about their own involvement. For our own record-keeping, we would appreciate receiving a final list of the TDSB schools who do agree to participate once that has been confirmed.

As a further condition of this approval, ERRC will also look forward to receiving both an electronic and paper copy of your final report upon completion, and which you anticipate will be available in February 2017.

Sincerely,

Sally Erling, Chair
External Research Review Committee, TDSB
E-mail: ERRC@tdsb.on.ca

2015-2016-34

APPENDIX B

SURVEY INVITATION

Dear TDSB Elementary Teacher:

My name is Margeaux Levy and I am an elementary teacher and a graduate student at Andrews University in Berrien Springs, Michigan. For my final project, I am examining the Perceptions of Reflection Among Teachers In Ontario. The External Research Review Committee of the Toronto District School Board has approved the research study. Because your school was randomly selected to participate in this study, I am inviting you to participate in this research by completing the survey.

The following questionnaire will require approximately 10 minutes of your time to complete. If you choose to participate in this project please inform me verbally and then answer all questions on the survey as honestly as possible. Participation is strictly voluntary and you may refuse to participate. **All participants will be given a $5.00 Tim Horton's gift card for their willingness to complete the survey**.

Thank you for taking the time to assist me in my education endeavors. The data collected will provide useful information regarding the reflection practices of teachers in Ontario. All responses are confidential and no names or identifiers will be used. The completed surveys will be stored in a locked cabinet. Any questions about this research study should be directed to me, at margeaux2323@gmail.com, and/or my dissertation chairperson Dr. Lee Davidson at rld@andrews.edu. Questions about the rights as a research participant should be directed to the Andrews University - Institutional Review Board Office at 269-471-6361.

Thank you.

Best Regards,

Margeaux Levy
Permanent Elementary Teacher
Toronto District School Board

APPENDIX C

STUDY SURVEY

Perceived Value of Reflective Thinking Survey

This survey has statements about reflective thinking. In Section A, after reading each statement, please indicate the extent to which you agree or disagree by circling the number to the right of each statement. Please respond to all statements. **If you feel a statement does not apply to you, leave it blank.** There are no correct or incorrect responses. If at any time you wish to stop this survey, please feel free to do so.

1=Strongly Disagree 2=Disagree 3=Tend to Disagree 4=Tend to Agree 5=Agree 6=Strongly Agree

Section A

	Strongly Disagree	Disagree	Tend to Disagree	Tend to Agree	Agree	Strongly Agree
1. Reflecting about my experiences is useful.	1	2	3	4	5	6
2. I feel comfortable reflecting about my teaching experiences.	1	2	3	4	5	6
3. Discussing my reflections with others is useful.	1	2	3	4	5	6
4. Reflecting helps me become a better problem solver.	1	2	3	4	5	6
5. Knowing how to reflect on my teaching is useful.	1	2	3	4	5	6
6. Reflecting on my teaching helps me gain confidence in myself.	1	2	3	4	5	6
7. I have changed the way I teach as a result of reflection.	1	2	3	4	5	6
8. Reflecting on my teaching is important to my professional development.	1	2	3	4	5	6
9. The stress of various pressures and demands in my classroom can be a barrier to my reflective thinking	1	2	3	4	5	6
10. The culture of the school is supportive of reflective thinking.	1	2	3	4	5	6
11. Video-taped lessons of myself teaching can help improve my reflective thinking skills.	1	2	3	4	5	6
12. Portfolio development has helped to develop my reflective thinking skills.	1	2	3	4	5	6
13. Writing reflections can help me improve my teaching.	1	2	3	4	5	6
14. Writing reflections is just busy work.	1	2	3	4	5	6

15. Being able to see my growth as a teacher through my reflective writing is important to me.	1	2	3	4	5	6
16. My main mode of reflective thinking is writing a log or journal.	1	2	3	4	5	6
17. My main mode of reflective thinking is using thought processes to look back and reflect.	1	2	3	4	5	6
18. I use reflective thinking for my own personal improvement and do not feel the need to share with others.	1	2	3	4	5	6
19. Spending more time reflecting on my own teaching would help me improve as a teacher.	1	2	3	4	5	6
20. I routinely schedule time for personal reflection.	1	2	3	4	5	6
21. Not knowing how to appropriately reflect on my teaching practice can be a barrier to my reflective thinking	1	2	3	4	5	6
22. Not having an appropriate time and place to engage in reflection can be a barrier to my reflective thinking.	1	2	3	4	5	6
23. I am deeply committed to reflective thinking.	1	2	3	4	5	6
24. I continually work towards improving my self-reflection skills.	1	2	3	4	5	6

Section B of the survey seeks to identify how often you reflect on particular areas. After reading each statement, please indicate the extent to which you reflect or do not reflect on the area listed by circling the number to the right of each statement. Please respond to all statements. **If you feel a statement does not apply to you, leave it blank.** There are no correct or incorrect responses. If at any time you wish to stop this survey, please feel free to do so.

1=Not at all 2=Rarely 3=Sometimes 4=Often 5=Very Often 6=Always

Section B

How often do you reflect on the following areas of your teaching?	Not at all	Rarely	Sometimes	Often	Very Often	Always
Pedagogy (Delivery)	1	2	3	4	5	6
Classroom Management	1	2	3	4	5	6
Student Engagement during the lesson	1	2	3	4	5	6
Student level of understanding during the lesson	1	2	3	4	5	6
Student assignments/tasks	1	2	3	4	5	6
My Assessment Practices	1	2	3	4	5	6
Student Grades/ Results	1	2	3	4	5	6
Future Goals for my class	1	2	3	4	5	6

Please respond to the question below or circle the second option

I identify my gender as _____

Prefer not to disclose

Please check the **all** that apply

____ I am an elementary (K-8) teacher with Ontario certification.
____ I am an elementary teacher (K-8) with alternative certification.

____ I teach primary level (Kindergarten to Grade 3)
____ I teach junior level (Grade 4 to Grade 6)
____ I teach intermediate level (Grade 7 or Grade 8)

*Alternative Teacher Certification: an individual who has been awarded an Ontario teaching license who has <u>not</u> completed the traditional Ontario teacher certification program.

Please answer the following questions.

In total, how many years have you been teaching? _____
How many years have you taught in your current school? _____

REFERENCE LIST

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