Development of the teacher as metacognitive agent

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Abstract

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Within teacher education programs and professional development there is a

tenuous assumption that we all have the same understandings of reflection. Generic

approaches to understanding reflection simply help teachers amass a repertoire of skills to

apply in a relatively unvaried manner. Concerned about written reflections that focus on

overly technical accounts of a mastery of methods and skills, this investigation inquires

into understanding the metacognitive dimension of a reflective process and the

development of the teacher as a metacognitive agent. This is a qualitative value driven

study that attempts to reduce uncertainties and to clarify a particular stance on reflective

thought in order to contribute to the development of theories and concepts that generate

further investigations. Included in this study is a self-analysis of the researcher as a

teacher educator exploring a transformative process with teachers-as-students. What do

teachers say about what they do, and what can be learned from the language in their

written and oral responses? From an analysis of data collected for this study, criteria

emerged distinguishing the technical thinker from the metacognitive thinker. Contrasting

the technical thinker and the metacognitive thinker revealed the various patterns of

thinking evident in a metacognitive agent and the vast array of pathways learners take to

attain understandings, dismissing the notion that simply any experience is educative.

What emerges in the language that represents the thinking of the learner is that it is the

interpretations of lived experiences that generate new learning – the anatomy of thinking

about one˝s own thinking.

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Introduction

Background of Research Problem

While working as a reading specialist in a large school district in a small New England state, every day I saw teachers exhausted and burdened by fragmented curriculum, and an avalanche of content, scripts, and scientific methods – "a structured pedagogical plan" for dealing with situations that are not always predictable. They faced problems, issues, and trends we couldn't imagine would exist. Everything is rushed because everything has to be covered in an urgency to speed things up. These teachers worked in environments holding on to one perspective; "… the educational process often is oriented toward controlling rather than learning, rewarding individuals for performing for others rather than cultivating [their] natural curiosity and impulse to learn" (Costa in York-Barr, et al., 2006, p. xv). Such environments are closed to questions, reexamination, and critique.

Working in an educational system striving for sameness, standardization, and centralized instruction, these teachers got lost in an archaic system that ignores the dimensions of pluralistic perspectives – people's collective life; a system that has historically ignored skepticism, experience-base, and multiple perspectives as positive tools. Presented with pre-planned curricula and scripted lessons, these "teacher-proof" materials imply teaching literacy or teaching in general can be simplified for teachers in a boxed program that anyone ought to be able to "do". Learning is interpreted for them as information transfer, and

they are considered "instructivist" in an assembly-line system of pre-established educational programs designed for technicians. They have limited time to think and no time to pause.

The power to transform thinking and knowledge lies far beyond the "scientific methods as the panacea" assumption. Rather than providing opportunities for continuous growth, education is a field where nothing ever stays the same, yet someone is always trying to keep it the same either through "depersonalization, automatization, or routinization of life" (Greene, 1978, p. 161). While many characteristics of effective teachers have been detailed, they portray the technical and managerial aspects of the teaching profession not the metacognitive aspects of the teacher as learner.

As a member of the adjunct faculty at a small New England university teaching reading and writing courses in the College of Graduate Studies, I see graduate students stuck in a paradigm prevalent in the field of education – learning is something done to the student rather than something the graduate student does. They "dally through" great amounts of information crushed into concepts and principles of teaching decisions and practices. They uncritically accept and apply the interpretations, purposes, beliefs and values, and knowledge produced by others. This is evident in their written reflections and research papers that merely summarize snapshots and superficial understandings. In a simple analysis on the practicalities of a lesson they present technical anecdotes about what ought to be done in their lessons or how they ought to teach. Action plans and inquiries are submitted where all things seem equally important and equally unimportant. Written reflections are about what happened, not why, and what practice is, not what it is for. As Debbie Miller (2007) says in her book, *Teaching with Intention*, teachers are "looking outside themselves for answers, when most of them are already inside them" (p. 52).

The instructional practices and decisions that exist within the environment of school are part of a complex process drawn from experiences, experiments, and purposeful adaptations. However, in the graduate program, students" writings about these practices focus on the technical aspects of their teaching. In his essay on Dewey"s philosophy of education, James Garrison (1998) describes what Dewey called, "the philosophic fallacy". To think that "things, essences and identities" are eternal in a changing universe impedes the improvement of skills of inquiry. "Things and people are continuously open to further reconstruction as needs, interests, and purposes change" (LaBoskey, 1994). There is far more to teaching than being "proficient craftsmen".

Graduate students live in two worlds whose circumstances and perceptions should connect, but often do not connect. They bring experiences from social influences, cultural assumptions, and personal beliefs and values, yet they neglect to connect their learning and their experiences to some kind of modification in "outlook, attitude, or skill"; in other words to apply Dewey"s principle of transaction between the learner and what is learned. They have been conditioned to absorb rather than interpret, generate, and create. According to Zeichner and Liston"s (1996) conceptualization of reflective teaching, "So much of teaching is rooted in who we are and how we perceive the world" (p. 23). It is not the technical aspects of education that generate new learning, it is the interpretation of experiences – the anatomy of thinking about one"s own thinking.

Self - Study

A metacognitive examination from the vantage point of the teacher educator. The journey to this investigation began with my observations of graduate students in my courses of study, and focuses directly on a process of thinking through change in an attempt to understand

what can be learned from transforming technical thought to metacognitive thought. Joelle Jay (1999) captures this best in her paper examining issues related to reflective teaching, "My goal for this paper is … to disentangle some of my own thoughts without actually unweaving the strands of reflection itself, for its beauty lies in its complexity" (p. 2).

For over ten years I have been an adjunct professor for a graduate course in the Reading and Writing Specialist program of studies focused on research in reading and writing. The intent in this course of study is to purposefully stay away from requirements that deliberate on student‟s elaborations of their knowledge and skills, yet their written responses and reflections on their own learning in the inquiry process are statements of accumulated knowledge from someone else‟s interpretations. Their accounts elaborate on academic perspectives rather than personal transactions with learning. These experiences suggest a reason to clarify the reflection process for teacher educators and graduate students. These experiences warrant consideration of metacognition as a dimension of reflection; opening a possibility of transforming the focus of teacher education programs from developing skillful practitioners to developing metacognitive agents.

These graduate students are knowledgeable professionals with the potential to contribute to both research and practice. How can a teacher educator help teachers recognize their strengths, interests, and needs as learners so they can move beyond the "illusion of control"? How do graduate students in a master‟s degree program become comfortable as learners? In what ways can teachers in graduate studies transfer how they are learning and thinking to their students? In a report from the Committee on Developments in the Science of Learning and the Committee on Learning Research and Educational Practice, Banford, et al.(2000) state, "Successful programs involve teachers

in learning activities that are similar to ones that they will use with their students"
(National Research Council, p. 204).

Assuming that at the graduate level students think on their own, as a teacher educator, I neglected to take into consideration the environment from which students are coming - an industrial age design for learning. Rather than merely accepting what is being presented as best practice from mandates and directives, the purpose of this study is to search for ways in which graduate students can look at complex issues and trends in education in the spirit of inquiry using their cultural and personal values as a frame of reference. As a researcher, I intend to look for ways in which graduate students can experience the rigor of intellectual curiosity when faced with perplexities.

Every semester as a teacher educator, I attempted a different method of questioning or another tool or design to help graduate students reveal their full range and depth of understanding – to think about the complex nature of teaching and learning – with little success at getting to the metacognitive dimension of reflection. In a constant search for models that develop habits of examining, exploring, and testing, the results ended up being nothing that ever consistently reflected a construction of new meaning. Participation in journal writing, group discussions or study groups, or written responses do not qualify as reflection when students simply chronicle what it is like to look into a mirror rather than probe into one‟s mind.

Meandering along a path in a search for a mental model or structure to scaffold students‟ written reflections by making their thinking visible, I was introduced to a language called Thinking Maps® developed by David Hyerle. "Thinking Maps are eight fundamental thinking skills defined and animated by maps, and introduced as *a common*

visual language for thinking and learning …" (Hyerle, 2004, p. 2). Initially these maps appeared to offer a possibility because they present multiple ways of thinking through an inquiry using questions to impel the thinker forward. This study began with an exploration into Thinking Maps® with the intent that this program might provide a temporary method of structured support to help graduate students gain insights into their thinking.

The initial intent of this inquiry was to plan a literacy course of study for graduate students in which Thinking Maps® would be used to scaffold the reading and writing required in the course. The onset of the investigation centered on the connection of the thinking skills embedded in the maps to graduates students" experiences in the technical, practical, and critical aspects of teaching in order to untangle the puzzles of practice leading to a more reflective articulation of new understandings. Dewey (1991) says, "Demand for the solution of a perplexity is the steadying and guiding factor in the entire process of reflection" (p. 11).

Over the course of two semesters as a researcher I explored and experimented with Thinking Maps® at various levels. Initially, I provided students with an overview of the maps. Thinking it was not necessary for them to have the intensity of a long-term training session, since the purpose for using the maps was not for school-wide implementation. We created maps during class meetings, working through the process together. After reading a chapter in one of the required texts we used various maps to represent key ideas in the chapter. These superficial attempts at Thinking Maps® were getting in the way of using them purposefully. Looking back at those initial mapping experiences, it is evident that the thinking on the maps was very literal and lacking in

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underlying principles, concepts, and relationships. The maps were basically an

organization of information that was right there in the book. This monitoring led to

further revisions of thoughts and understandings.

One of the groups with whom I was working as a teacher educator was connected

to an outreach program of studies being offered through a partnership with the university.

As a member of the adjunct faculty at the university, I have been teaching courses for this

group since 2005; each year designing a new three credit graduate course around a

literacy topic on which the teachers chose to focus – embedded professional

development. In 2007, the district administrators offered a district wide implementation

of Thinking Maps®. This decision was unrelated to the use of Thinking Maps® in this

study, it was happen-stance. A parent of one of the students in the school system was

using Thinking Maps® in her course work with college students. Many teachers attended

a one-day training session. In addition, teachers representing the elementary, middle and

high school grade levels continued on for two more days of training to become Thinking

Maps® Trainers of Teachers. I attended those sessions along with them. The training led

to a deeper understanding of the possibilities for considering the use of the maps in a

course of study, not only with the group in the outreach program but in core courses

offered on campus.

During the summer of 2008, I attended the International Thinking Maps

Conference. The more experiences with the maps, the better my understandings of when,

where, and why to use the thinking and language of these tools. The next time the maps

were put in use, as a teacher educator, I began by building some background knowledge

with the students about the intent of the maps and the possible connections to this study.

By adapting many of the activities that were in the one day training session, students were able to get to know and understand the language and thinking embedded in the maps. We were beginning to mark off the trivial from the important. However, at this time the focus on getting them to write more reflectively was a distraction. We were taking the thinking "off the map" before we had even developed an understanding of the metacognitive process that goes into constructing the meaning of an experience. Finally at the fork in the road, the path to choose became more evident. Don't hobble along the given path simply looking to solve the problem with an answer; follow the growth path where change is expected, where possibilities exist, and a truth emerges. In his book, *How We Think*, Dewey says,

> The traveler whose end is the most beautiful path will look for other considerations and will test suggestions occurring to him on another principle than if he wishes to discover the way to a given city. The problem fixes the end of thought and the end controls the process of thinking. (Dewey, 1991, p. 12)

In consideration of this perspective, the need to clarify terms and understandings became a fundamental phase of this study. Asking graduate students to write reflective pieces and to synthesize the evolution of their thinking was unfair without having defined the process of reflection. If the event is the development of a metacogniitive agent, what does one need to understand in order to accomplish that end? To delve deeper into this puzzle my thinking was guided by the following questions: How does one learn? What is the value in being a metacognitive agent? How does a metacognitive agent think about learning? What is the nature of reflection? For me, as the researcher, these questions were essential to mediate the interconnected ideas in experiences while trying to understand the development of the metacognitive agent.

To follow up a pilot study, "The influence of Thinking Maps® on the way teachers think when learning about literacy", was undertaken in 2009 to help me as a researcher explore, define, prioritize, classify, create and interpret how to more effectively use these tools as structures to scaffold reflective thought. At the onset of this revised study, the maps were used as a means for making my thinking visible to the students. The maps guided students through the multiple ways of thinking to reflect on and synthesize new information. The maps became the language to bridge abstract and concrete concepts. What does it mean to synthesize one"s responses to the readings? What ways of knowing help one reflect on learning in an inquiry? What does thinking about one"s own thinking mean and what does that look like?

The maps bridged the way through ambiguity. During class meetings we used the maps together to represent multiple ways of interpreting the readings. After each encounter we discussed where the application of the map was taking us. In one course during the 2009 winter term of the pilot study, the graduate students experimented with the maps we created in class to create a metaphor representing their interpretations of the course of study through a passion they have unrelated to education – an ungraded experiment. Two students connected five essential ideas from each of the texts to their passions for hiking and skiing. Another student presented a Power Point of her own children engaged in activities that illustrated her essential ideas about literacy and the principles she would hold on to from the readings.

Using her passion for pottery design, another student metaphorically illustrated the relationship of the essential elements of pottery design to the learning that occurred over the course of studies with a Bridge Map, a map for creating analogies. Some

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examples of the language she used on her map are: "making pottery is a metaphor for fervent learning; the first firing, the wait time, and the cracked pot are metaphors for the gradual release of responsibility, re-teaching, and making adjustments in one"s teaching; and the glazing bisque ware and decision making are metaphors for higher order thinking, a synthesis of ideas, and changes in thinking". This thinking was framed by the filters in her personal, social, and cultural worlds that influenced her interpretations – "a search for understanding, all learning is social, losing oneself in passion and identity, the need to know, and metacognition". In the introduction to *Reflective Practice to Improve Schools* by York-Barr, et al. (2006), Arthur Costas says, "We never really understand something until we can create a model or metaphor derived from our unique personal world" (p. xv).

Overall each student selected the map that best captured the thinking that determined how they would explain their new understandings and transfer of knowledge. The focus of their learning was on the multiple patterns of thinking and the frames of reference used to create and express a way to see and understand the world. Each metaphor represented their interpretation of a graduate course of study as a network of interconnected ideas.

My own personal experiences with the maps opened new discoveries and presented possibilities for their use with adult learners. For some adults using the structure of the maps got in their way. For others, they liked the way the maps visually represented their thinking, and they took the thinking "off the maps" to compose their papers. For graduate students who were only using the maps in the course of study on campus and whose training sessions were limited, they often strayed from the design template of the maps as presented in the Thinking Maps® program. Their tendency was

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to create a similar but more personally adapted version of the original template. After the courses of study on campus, it was not uncommon for students to give me unsolicited feedback about how they continued to use the maps in other course work as well as in their teaching.

For the graduate students who were working in the school district implementing the program, the elementary teachers tended to work only with the map structures of which they felt most comfortable, initially. On the other hand, the middle school teachers experimented with all eight maps. An aspect of using the maps common to both groups was the necessity to be concise when selecting the information that represented the domain of thought.

In the courses of study both on campus and in the outreach program, as a researcher and as a teacher educator, I continued to use the maps to present visual representations defining and describing the course requirements. The maps included essential questions to guide reflections. Many students liked the idea of having specific questions and a visual to guide them. However, this approach resulted in students answering the essential questions without considering "the structures of assumptions through which we understand our experiences" (Schön, 1983). The students were not really connecting to the subtle issues within their personal and professional experiences, nor were they posing or solving problems. Time to rethink.

In *Reflective Practice to Improve Schools*, Costas (2006) says that to be reflective means to mentally wander through where you have been and try to make sense of it (p. xvii). Looking back on the maps and thinking about those experiences, as a researcher I realized the focus was more on content not thinking, on interpreting not interacting. There

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was no transaction of the learner with the learning. Students were not attending "to the ways in which they construct the reality in which they function" (Schön, 1983, p. 310). In retrospect, as a teacher educator I perpetuated the old paradigms of college teaching. Missing was the conscious awareness of who they are, what influenced what they attend to, and what influenced how they view their experiences. This is how students will know change is necessary.

At this point, the purpose and rationale for this investigation shifted. After the experience with the metaphoric views from the 2009 winter term, as a researcher, I revisited the *frame of reference* connected to the Thinking Maps® program. Hyerle (in Costa and Kallick, 2008) describes the frame as "a central dimension of the Thinking Maps language" (p. 165). He identifies it as a "metacognitive frame" for these questions: What is influencing how you are thinking? What experiences and beliefs are influencing how you are seeing this information? What are your sources? How are you approaching this problem? If this is what you know, what is unknown? Perhaps this element of the mapping program held more significance to supporting the development of the metacgonitive agent.

The possibility of applying this new perspective drew me to the works of Donald Schön and Jack Mezirow, each bringing more insight to the concept of frame of reference. For Schön framing a problem is a way of defining a situation, and then the situation starts to "talk back" in a way that either confirms or denies the suggested framing; "Their frames determine their strategies of attention and thereby set the directions in which they will try to change the situation, the values which will shape their practice" (Schön, 1983, p. 309).

From Schön‟s perspective, framing fits into a circular learning process of experimenting, evaluating, and reframing. In a problem setting process one selects what

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one will attend to, sets the boundaries of attention, determines what is wrong and in what direction the situation needs to change framing the context of the situation. It is through the process of framing a problematic situation that one organizes and clarifies the ends to be achieved and the means for achieving them. According to Schön the reflective practitioner creates new knowledge through experimentation and reflection. The idea of naming and framing is part of the process of reflection-in-action.

In Mezirow"s transformation theory of adult learning "a defining condition of being human is that we understand the meaning of our experience" (1997, p. 5). As one experiences life one develops frames of reference through which he or she makes meaning of the world. These frames of reference are made up of structures – associations, values, habits of mind, points of view – that influence how one understands experiences. For adult learners learning requires more than simply developing a new skill or acquiring new knowledge; learning requires that new information takes on new meaning perspectives. When one opens his or her frame of reference by seeing alternatives, or discarding previous assumptions or beliefs, or considering one"s view in a different light a new meaning perspective develops; and according to Mezirow (1997) "an adult learner may have to be helped to transform his or her frame of reference to fully understand an experience" (p. 10).

What if the questions that guide the frame of reference were changed for adult learners to elicit consideration of one"s own thinking from more historical, ethical, and social perspectives? What if there were a more significant position of the frame of reference in helping graduate students envisage the influences of beliefs and values, assumptions and presumptions, and personal and professional histories on what they do and think? What if the frame of reference could be used as the temporary structure to engage

graduate students in thinking about what influences the paths they take, the decisions they make, and their ways of knowing why change is necessary? In what ways can reflecting on one‟s points of view make one aware of who one is and what one believes about the experiences at hand? In what ways does the language in teachers‟ written and oral reflections indicate they are thinking like metacognitive agents?

In a personal reflection, as a researcher these questions led me to think about the diverse concepts that have evolved from the various criteria that make up the traditions of reflection and reflective practice. So much inconsistency attached to reflection has turned the concept into a generic notion. Arguing against generic models of reflective teaching, Zeichner (1990) establishes a need for "clear priorities for the reflection that emerges out of a reasoned educational and social philosophy" (p. 56). Developing a stance on reflective teaching, Zeichner (1990) believes "the range of acceptable action needs to be narrowed … or we are in the position to accept anything that a teacher does as long as she reflects about it" (p. 58). Drawing from his work, as a researcher I moved away from the concept that as long as teachers are reflecting about something teacher educators are facilitating the development of reflective teachers.

What really is the nature and purpose of this investigation? What emerges from my own thinking is that reflection is more than just a requirement of the course. Graduate students in the field of education need to be making sense of their own thinking. They need to understand who they are as learners and how they transact with their learning, as well as, how personal histories and others‟ perspectives influence their meaning perspectives. Working from this viewpoint, if teachers develop as metacognitive agents who synthesize learning from the course work with knowledge of self and their accumulated experiences, it

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is the premise of this study they will continue to reflect on their learning long after course work has ended. As one teacher from the partnership program said to me in unsolicited feedback, "I have enrolled in a Masters Degree program as a result of taking this course with you because you helped me see who I was as a learner and I have the confidence to continue my studies."

In his book, *Transformative Dimensions of Adult Learning,* Mezirow (1991) describes goals that a practitioner of andragogy must fulfill to assist adults to learn in a way that guides them to be self-directed learners. According to Mezirow fostering adult learning involves helping the learner unveil the relationship of new data to underlying assumptions, beliefs, feelings, interpretations and decisions and to understand why one sees new data as they do – being cognizant about the learning experience. In Mezirow"s (1991) words, "Helping adults elaborate, create, and transform their meaning schemes … through reflection on their content, the process by which they were learned, and their premises… is what andragogy is about" (p. 201). Graduate students need to experience learning through an awareness of the ways in which they think and learn.

The next step in this process was to redesign the course work to redirect attention to the teacher as learner. In the course work with the teachers in the partnership program we used Thinking Maps® as structures to share knowledge from the text readings and then shifted the focus to the frame of reference using the questions that David Hyerle used in his frame. In the course, Research in Reading and Writing, these steps were proposed as students researched a literacy topic:

- Reflect on and confront an uncomfortable or puzzling situation you are experiencing.

- Come to terms with the dilemma by thinking about the reasons this situation is troublesome. How are you seeing it and what is influencing how you see it?

- Research the topic to find out what others are saying.

- As you inquire into this topic, pay attention to what you are attending to in the research process. How are you reading the research? What is influencing what you attend to and when did your thinking change?

- Consider the implications of these new perspectives on your learning, student learning, and the social context in which you experience this dilemma?

The focus remained on the frame of reference but the questions were redesigned within the frame to capture more metacognitive thinking from an adult learner perspective. (Appendix A) The frame provided a visual to analyze one's own biases, assumptions, and beliefs to understand why change may be necessary; a temporary way to visually guide the learner to a purposeful transformation. The following questions made up the frame of reference:

- What are the points of view, beliefs, values and assumptions that structured the way I interpreted, and subsequently made sense of this experience?

- How did I approach this dilemma?

- If this is what I learned, what more do I need to learn?

- Through what lens did I look upon the world before this experience, and through what lens do I look upon the world as a result of this experience?

- In what ways am I thinking about my own thinking?

Statement of the Problem

        After listening to teachers in graduate studies collaborate and engage in small group discussions and after reading written reflections in response to text readings and teacher inquiry, as a teacher educator I wonder how to engage graduate students in reflective thought. In-class discussions are a search for the constant and the known rather than an engagement in a growth process of problem solving transferable from one complex situation to another.

        The working environments of teachers in graduate studies center on a knowledge base of methods and practices about how teaching ought to be. Conflicted by situations in which they are required to use programs of one-size fits all, scripts for all, and fit all this into your day, graduate students struggle to cope with the instability caused by the impact of multiple reforms. These experienced teachers possess the "wisdom of practice", a vanishing source of knowledge. Yet at the same time, when they research topics in literacy they confront mixed messages about best practices and competing interests that often conflict with the situations and circumstances in which they are teaching. They exist in complex situations. They face crises and skepticism in the profession, yet they are given little or no time to pause and process. There is a mismatch of wisdom from experience with current issues and trends.

        The students in teacher education programs, even at the graduate level, remain passive recipients evaluated on a basis of demonstrating specific competencies. Recent trends have emphasized that teacher preparation and professional development should foster reflective capacities of creative interpretation, synthesis, evaluation, connections and

relationships. Within teacher education programs and professional development there is a tenuous assumption that we all have the same understandings of reflection.

This investigation inquires into the development of the teacher as a metacognitve agent in order to address the problem of how to shift the knowledge base in a graduate program of studies from methods and prescriptions to a conceptual framework of thoughtful inquiry and creative problem-solving that fosters growth and continuity in learning. Rather than judge teachers as reflective or non-reflective, this study is a search for a reflective process to guide students to consciously view the realities of their personal and professional experiences and think about their own thinking. Reflective practice in graduate studies needs to be intensified. Students in graduate studies simply shouldn't be finding their way through volumes of information. At a graduate level teacher educators should teach to facilitate experiences in learning that include an active search for whom one is as a learner and thinker, helping the learner to be mindful that each new understanding in experiences informs the next experience and shapes how one sees one's world.

Rather than merely conforming to trends being promoted as best practice and complying with the research of outside sources, graduate students need to look at complex issues in education in the spirit of inquiry using their cultural and personal values as a frame of reference. Instead of waiting for experiences to be forced upon them, they should experience the challenges of confronting intellectual perplexities. To move from principles of performance to principles of learning necessitates a shift in teacher education programs, especially when graduate students ask questions such as the following: What do you want this paper to look like? How many pages should the paper be? What are you looking for in this paper? What should we include in this paper? What do you mean when you say

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reflection? Questions like these necessitate a shift from an emphasis on learning the right answer, the right way, and the most effective way to an intentional examination of thinking. Thinking that develops meaningful perspectives on learning and the learner. Thinking that moves the teacher from one experience to the next as a metacognitive agent understanding each experience with new meaning.

Focus

Initially this investigation focused on finding application of Thinking Maps® as temporary structures to actively engage graduate students in a reflective thinking process. Believing that this imagery mode of representing thinking was a way for graduate students to see relating factors in academic experiences, field experiences, and personal experiences, as a researcher I was intent on assisting students as they take the thinking off the maps to create a synthesis of knowledge in the form of a written reflection. However along the way, dilemmas presented themselves.

Typically, reflective practice is inherent in the teacher educator‟s courses of study and various sources compile the tools utilized to promote reflection – journaling, personal narratives, response pagers, response journals, passion posters, discussions, reflecting on errors, literacy action plans, and action research. Reflecting on the use of these techniques reveals an approach to educating graduate students that perpetuates reflection as a tenuous assumption. This process of continually changing the method of reflection, and emphasizing the use of existing knowledge without encouraging the appraisal or analysis of that knowledge typifies what Mezirow (1997) terms as "thoughtful actions", a non-reflective action. The various forms of written and communicative reflections described what happened, not why or how that knowledge was relevant to knowing. The learning

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remained unconnected to ethical, social, personal and professional situations; book learning with no significant relevance to personal or practical experiences.

Realizing these attempts were mere acquisitions of prescribed amounts of knowledge from text as a result of a pilot study, the focus of this investigation shifted to an inquiry into how graduate students in advanced teacher education programs studying and researching reading and writing theories, practices, and principles develop into metacognitive agents. From the pilot study emerged the need to develop more critical reflections with graduate students. What would the process of doing this look like? How does one guide students to delve deeper into who they are as learners, to consider the influences that filter what they learn, how they learn, and how they think about their own thinking? To develop teachers as metacognitive agents the focus of this investigation dwells in the ideas of purposefully guiding students in graduate studies to understand who they are as learners and thinkers using their cultural backgrounds and biographies. Jack Mezirow (1997) calls this concept, "frames of reference" (p. 5), in his description of the transformation theory of adult learning.

Current thinking calls for a shift from reflection on practices and teaching to reflection on thinking and the significance of one‟s own thinking. Instead of trying to improve some practical situation, the focal point of this investigation will be on transforming learning by focusing on the learner as a metacognitive agent. What is the conception of the reflective thinker? When graduate students reflect on their own learning what concepts in their language indicate they are thinking as a technician and what concepts in their language indicate they are thinking as a metacognitive agent?

In their article challenging educators to move beyond the seemingly simplistic phrase "reflective teacher", Raines, and Shadiow (1995) encourage educators to move from reflection as a point of view to reflection as a process of intentional examination. The problem stance is not thinking about one‟s teaching, but rather shifting learners to deeper, more profound thinking about their own thinking – attending to how a situation "talks to you".

Considering Dewey‟s principle of continuity, merely taking a course that includes reflective practice does not result in a more thorough or substantive level of understanding. Fostering reflective learning that results in transformation requires far more than putting in a course requirement asking students to reflect. As such reflective thought inherent in teacher education programs overlooks the capacity of reflection as a means for finding patterns in one‟s learning and linking new understandings from one experience to another. "The power of reflection lies in the way it thrives on the complexity of educational life" (Jay, 1999, p. 15).

The sense within advanced teacher education is that reflection is built into the programs of study. My experience is this is a perspective of reflection on practice and teaching and not on thinking and learning. This inquiry will shift the focus on reflection from the notion of amassing technical knowledge and skills to Dewey‟s concept of "a meaning making process that moves the learner from one experience to the next with deeper understanding of its relationship and connections to other experiences and ideas" (Rodgers, 2002, p. 845).

The problem posed for this investigation is finding a way to assist learners in extracting from their physical (texts, articles, responses to readings), personal (beliefs,

principles, and values), and social (conversations, discussions, collaborations) surroundings all that they have to contribute as reflective learners to the concept of personal and intellectual growth – "continuous growth" (Dewey, 1959). How does the setting of a university classroom construed as a place for the transmission of knowledge transform the learner into a metacognitive agent? What are the criteria that distinguish a metacognitive thinker from a technical thinker?

For the purpose of this investigation, the focus will be on how the teacher acting as a metacognitive agent transacts with learning experiences in a process of continuous growth. In what ways do graduate students reveal themselves as metacognitive thinkers? What are the "needs and capacities" of learners to become metacognitive agents? What is the deeper, more transformative side of being a metacognitive agent? This study will be guided by these main research questions.

Teacher language from responses to a series of open-ended questions, on-line discussions, and written reflections will be the source for uncovering ways of thinking. In this investigation the use of Thinking Maps® with graduate students will be considered as a possible application for implementing temporary structures to visibly guide them through an active inquiry that puts their beliefs to a test and presents opportunities to recognize different ways of knowing and thinking. How can Thinking Maps® provide a scaffold for seeing how ideas generate and multiple perspectives link together to form new insights and understandings about teaching, thinking, and learning? Dewey (1991) says that *depth* is the phase of thought training that is the most untaught (p. 37).

Purpose

The central purposes in this study will be threefold. The first purpose is to investigate development of the teacher as a metacognitive agent. It is a study to investigate how "[t]hrough reflection we *see through* the habitual way that we have interpreted…" (Mezirow, 1991, p. 102.). The second purpose is to narrow the concept of reflective thought by investigating teachers" language for criteria that characterize either technical thinking or metacognitive thinking in order to uncover the metacognitive dimension of a reflective process. The third purpose is to look at Thinking Maps®, in particular an adaptation of the frame of reference, as a temporary structure to foster reflective writings. By using the frame of reference to make visible those personal, social, and professional histories that influence how one makes sense of the world, it is the premise of this investigation this will lead to the development of more reflective accounts of how one thinks and learns. "If we don"t provide intellectually stimulating environments for teachers, why do we think they will provide that for students?" (Costas in York-Barr, et al., 2006, p. xxi)

The essential purpose in this study then is to focus not on learning to do, but on understanding the thinking that resides in the mind of the learner as he or she develops into a metacognitive agent. This is an investigation into how to posture the graduate student to become a problem poser, an intentional learner, who engages in a process of creating a transaction between himself or herself and what, at the time, constitutes his or her environment (Dewey, 1959). "As an individual passes from one situation to another, his world, his environment, expands or contracts. He does not find himself living in another world but in a different part or aspect of one and the same world" (Dewey, 1959, p. 42).

This investigation stands on the knowledge of self as learner and thinker, and the transformation of student to metacognitive agent. Concern about written reflections that focus on overly technical accounts of a mastery of methods and skills necessitates a reexamination of the nature and purpose of reflection; a reexamination for the purpose of understanding the metacognitive dimension of a reflective process.

Relevance

Carol Rodgers (2002) writing to restore clarity to the concept of reflection by going back to the work of John Dewey shares concern that reflection has suffered from a loss of meaning, "In becoming everything to everybody it has lost its ability to be seen" (p. 843). Drawing on the concept of bringing depth to the understandings of reflection, this study is important for three reasons. First, as a member of the adjunct faculty in the College of Graduate Studies at a state university in New England I read written reflections, action plans, and summaries of text where what is learned, in the way of knowledge and skills, is presented as learning more things to do, regardless of the personal significance of the learning experiences. Graduate students assimilate explanation and interpretation from the instructor as sufficient. An essential component in Mezirow"s (1997) theory of transformative dimensions of adult learning is "a defining condition of being human is that we have to understand the meaning of our experience" (p. 5). Therefore, this element of the investigation is relevant in order to move from the notion of the reflective teacher or practitioner to the reflective learner; to promote reflection as a way of thinking or learning in an experience which subsequently modifies or uncovers a new way of understanding.

Finding a way to promote reflection as a process of knowing how the learner is learning and thinking is significant given the path on which reflective practice has landed.

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It is essential to understand the reasons why the learning is personally meaningful; and to

"view teaching and learning as a continuous process of reconstruction of experience"

(Dewey, 1959, p. 11). Explaining the relationship of transformative learning to

autonomous, responsible thinking Mezirow says,

> The U.S. Department of Labor's SCANS report (1991) identifies
> acquiring and using information, identifying and organizing resources,
> working with others, interpreting information, and understanding complex
> interrelationships as essential competencies and skills. … The common
> presumption in these lists is that the essential learning required to prepare
> a productive and responsible worker for the twenty-first century must
> empower the individual to think as an autonomous agent in a collaborative
> context rather than to uncritically act on the received ideas and judgments
> of others. Workers will have to become autonomous, socially responsible
> thinkers. (1997, p. 8)

Although this information was identified eighteen years ago, it remains a significant

concern today and confirms the relevancy of this study. "Critical reflection is not

concerned with the how or the how to of action, but with the why, the reasons for, and the

consequences of what we do" (Mezirow, 1990, p. 13).

In his essay on Dewey's philosophy of education, Garrison (1998) says, "Growth

for Dewey has a rhythmic pattern that moves from equilibrium, to disequilibrium to the

restoration of equilibrium" (para. 18) – a continuous reconstruction of meanings. So the

second aspect of the relevancy of this study comes from thinking about the need for

understanding the notion of using the self as a way of knowing. How does the learner find

ways of knowing when faced with puzzling situations? The relevancy of this aspect of the

study emerges from efforts to deal with a disequilibrium – how does a metacognitive agent

think? In his theory of transformative learning Mezirow (1990) states, "Anomalies and

dilemmas of which old ways of knowing cannot make sense become catalysts or "trigger

events" that precipitate critical reflection and transformations" (p. 14). In order to modify

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courses to include a structure to guide students to be metacognitive agents, as a researcher I will determine what it is that teachers say that distinguishes them as metacognitive thinkers versus technical thinkers. When a teacher talking about teaching writing and showing students how to write paragraphs says, " That is the way I have been taught …", is she applying a way of knowing that leads to change in meaning perspectives or simply addressing the way something ought to be done because that"s the way it has always been done?

The third aspect of the relevancy of this investigation is that once an understanding of reflection is revealed, students need support to think as metacognitive agents. Using a frame of reference structure as the filter for making meaningful interpretations and changes will make visible the assumptions through which one understands experiences. In his theory of transformative learning Mezirow (1997) says, "Frames of reference are the structures of assumptions through which we understand our experiences" (p. 5). Connecting the frame of reference in the Thinking Maps® program in relation to the "frame of reference" in Mezirow"s theory is a potential way to foster the development of a more profound and thoughtful level of reflection that Dewey recognized as "critical reflection", where all possibilities are examined? Fostering reflection on learning from Mezirow"s perspective of the individual learning "to negotiate meaning, purposes, and values, critically, reflectively, and rationally instead of passively accepting the social realities defined by others" (1997, p. 3) is the essence of developing metacognitive agency. It is the premise of this research that by modifying the questions within the frame of reference from the Thinking Maps® program, this tool will have more relevancy as a guide

for fostering an awareness of feelings, perceptions, thoughts and actions within a more ethical, social, and attitudinal framework.

Summary

This investigation originated from the belief that graduate students need to test their beliefs and recognize different ways of thinking, knowing, and making sense that engage them in a process of continuous growth. They need to move from reflections made for efficiency – what is the right way to do this, to reflections made on a value judgment - why is this the right thing to do? According to Larrivee (2000), "Becoming a perpetual problem-solver involves synthesizing experiences, integrating information and feedback, uncovering underlying reasons, and discovering new meaning" (p. 297). After going through a process of reflecting on learning by grappling with what reflection means, as a researcher I shifted the focus of this investigation from reflection on teaching and practices to transforming graduate students from passive learners to metacognitive agents who reflect on experiences, their own and others, in a transaction that reveals different aspects of the same world. In her book *To Understand,* Ellin Keene (2008) describes the "struggle for insight" in this way,

> If we neglect to talk to children about how *our feelings, beliefs, and knowledge* change over time and are influenced by forces in the world, how can they gain insight into what it means to understand? If we don"t model ways in which our actions can be a force for positive change, how can we reasonably expect our students to mobilize their intellect and act to make changes in their world? Nothing is as certain as change, and nothing so fundamental to understanding. (p. 167)

The works of Dewey, Schön, and others remind us of the complexity, rigor, and intellectual and emotional endeavors that make up the reflective process. Believing it is not possible to define a step-by-step procedure for developing a metacognitive agent, this

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investigation examines criteria that compare the technical thinker and the metacognitive thinker – "conditions which give each present experience a worthwhile meaning …" (Dewey, 1959, p. 51). This is an investigation to understand the ways in which graduate students "create and enrich the meanings of life" or reveal their transformations. Which questions will reveal the criteria that determine the meaning and value of an experience? The possibilities emerge from sample questions like these: What are graduate students reflecting on as learners? What language indicates reflective thought? What role do social acts play in students" reflections on themselves as learners? How do graduate students rationalize and appraise the experiences they have? What evidence is there of a transaction between the learner and what is learned? How did the learner modify an outlook, attitude or skill as a result of his or her learning experiences?

In order to move graduate students beyond the surface level of reflection, they will need some form of constructed guidance to get started. In describing the development of a tool to assess a teacher"s level of reflection, Barbara Larrivee (2008) takes the position that "even novice teachers can deepen their reflection with powerful facilitation and mediation within an emotionally supportive learning environment" (p. 345). Mezirow (1997) believes learners need practice and assistance "in recognizing frames of reference and using their imaginations to redefine problems from a different perspective". He encourages the teacher educator to function as a "*facilitator"* to foster critically reflective thought gradually allowing the learner to become a more autonomous thinker.

Drawing on these ideas this study will include the use of Thinking Maps®, eight thinking-process maps developed by David Hyerle (2008), as a temporary visible lens to frame and reframe learning. In particular this investigation will employ the use of a frame

of reference as the structure through which graduate students understand the purposes,

values, beliefs, and emotions of their experiences. Rather than try to persuade graduate

students to be reflective, I want to make provisions for teachers to experience thinking

about their learning.

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Chapter II

Literature Review

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Variations on Reflection

Reflective practice has been in and out of attention as an element of professionalism. Problematic in the review of literature on reflective practices in graduate programs is the use of the term reflection and the role of reflective practice in education. Some form of reflection is an integral part of teacher education and professional development as a mechanism for understanding how a learner develops. Much of the work on reflection has a focus on learning about and improving practice and expanding knowledge about teaching. Teaching is characterized by uncertainty, diversity, and value conflicts that require a metacognitive mode of thinking. It is a profession that has been more concerned about educating teachers to be proficient in technique than educating them in diverse ways of posing problems to be analyzed and critiqued. In a New York Times article, "Upon Further Reflection, a Few Random Thoughts", Samuel Freedman (2006) "reflects" on the buzzwords in the field of education, "… reflection as both word and action may be the trendiest trend in all of education". He wonders "how a common sense concept got glorified as if it were a brilliant innovation". This investigation is interested in how reflection serves as a means for understanding how the teacher as learner thinks about his or her own transactions with learning experiences leading to new perspectives on old ways of knowing.

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In the review of literature the rich diversity in the investigations into reflection include both current thinking and the wisdom of the past. In Betting and Clift‟s abstract (1988*)*, "Reflection upon Reflection: The Classical and Modern Views"*,* the thoughts of Socrates capture the essence of the transaction of the learner and the learned,

> Socrates advocated reflection as opposed to observation, an activity dependent upon a principle that is important to any theory of reflective method: what we are trying to do is not discover something of which until now we have been ignorant, but to know better something in which in some sense we know already; to know it better in the sense of coming to know it in a different and better way. (Waxman, 1988, p. 11)

Reflective thought and reflective practice in teacher education indicates many perspectives and interpretations with John Dewey and Donald Schön‟s fundamental concepts at the core. Looking at the interpretations of both Dewey (Zeichner and Liston, 1996,Carol Rodgers, 2006, York-Barr, et al., 2006,Garrison, 2007) and Schön (Zeichner and Liston, 1996, Marchant, 2001, Russell, 2005, Pedro, 2005, York-Barr, et al., 2006), Spalding and Wilson (2002) capture the typology for teaching reflection between Dewey and Schön. "Just as Dewey has been fundamental to understanding the nature of reflective thought, Donald Schön (1987) has been fundamental to understanding the nature of reflective practice" (p. 1395). Both view reflection resulting from a puzzling event or disequilibrium. Schön talks about reflective practice as framing and reframing problems and Dewey as restoring disequilibrium; both paths of thought involve purposeful and systematic inquiry resulting in the development of a new course of action. Schön employs the terms *reflection-in-action* and *reflection-on-action.* Dewey says the need to restore equilibrium constitutes continuity and growth, and the need to straighten out the disequilibrium drives the thinking. In his essay, "John Dewey‟s Philosophy as Education"*,* James Garrison (1998) says, "Growth for Dewey has a rhythmic pattern that moves from

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equilibrium, to disequilibrium, to the restoration of equilibrium" (para. 18). According to

Dewey this rhythm is the guiding factor in the process of reflection. "We learn and grow by

establishing continuities" (Garrison, 1998, para. 16). We learn when we establish

connections between disequilibrium and the restoration of equilibrium. In Garrison,

"Educational experiences exemplify continuity and growth" (1998, para. 15).

Among the arguments for teacher candidates to become thoughtful and alert

students of education, Dewey (1904) states, "Unless a teachers is [such] a student, he may

continue to improve in the mechanics of school management, but he cannot grow as a

teacher, an inspirer, and a director of soul-life" (Giovannelli, 2003, p. 294). Synthesizing

Dewey"s contributions to reflective thought, York-Barr et al. say, "Reflective thinking

involves a systematic, scientific process of describing experience, articulating questions

that arise from experience, generating hypotheses which include considering sources

outside oneself, and taking intelligent action to test hypotheses" (2006, p. 5).

Dewey identifies thinking within an analytic process guided by validity testing.

Zeichner and Liston"s (1996) writings include three attitudes from Dewey"s thinking

integral to reflective action. The first, open-mindedness, is described as a desire to consider

alternatives and a willingness to listen to more than one side. The second, responsibility, is

thinking about the consequences of one"s teaching from three perspectives: (a) the effects

of one"s teaching on student self-concepts; (b) the effects of one"s teaching on students"

intellectual growth; and (c) the projected effects of one"s teaching on the life chances of

various students (p. 11). The third, wholeheartedness, is a teacher"s willingness to examine

her own assumptions, beliefs, and results of her actions, and to believe she can always learn

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something new. "Reflective teachers are simply and unabashedly committed to the education of all their students and to their own education as teachers" (p. 12).

Carol Rodgers (2002) defining reflection from three resources authored by John Dewey; *How We Think, Democracy and Education, and Education and Experience*, characterizes his concept of reflection through four criteria: reflection is a meaning-making process moving the learning into deeper understanding with each experience; reflection is a disciplined way of thinking with roots in scientific inquiry; reflection happens in interaction with others; and reflection requires attitudes that value personal and intellectual growth in oneself and others (p. 845). She summarizes Dewey‟s precision in his description of reflective thought by stating that teachers need to adhere to the rigor inherent in his definition of reflective thought. "…once teachers learn to think, they can teach their students to do the same, for teachers teach best what they understand deeply from their own experience." She goes on to say, "How to think reflectively … is not a bandwagon issue. … but perhaps the most essential piece of what makes us human, of what makes us learners" (p. 864).

In another interpretation of Donald Schön, Joan Pedro (2005) reflecting on teacher education discusses Schön‟s introduction of the dimensions of *reflection-on-action*, learning from experience, and *reflection-in-action*, in the moment adjustments, while Zeichner and Liston (1996) include his concept of *knowledge-in-action*, knowledge that is embedded in teacher practices. They point out that reflection-in action and reflection-on-action are thinking processes reflective practitioners use to continually develop and learn from their experience, adding that as teachers think about their teaching and as they teach, they continually create knowledge. These attempts to create

meaning in a problematic situation through "problem setting" and "problem solving" lead to a "re-framing" of the problems in ways that make sense – "seeing as". Pedro (2005) refers to Schön‟s thoughts of reflection as a purposeful, systematic inquiry into practice, and stresses the importance of teachers framing and reframing problems through the values, beliefs, knowledge, and practices they bring to their experiences. In consideration of so many terms and concepts York-Barr, et al. (2006) say, "…the answer is not „either/or‟ of Dewey and Schön but „both/and‟ " (p. 7). Reflection for the purposes of this investigation will focus on intentional reflections contemplated by the learner after an event that may have consequences and influence on future experiences.

In "Untying the Knots: Examining the Complexities of Reflective Practice" Jay (1999) investigates reflection from four different angles; reflection as a problem-solving technique, reflection as a frame analysis, reflection as a bridge between theory and practice, and reflections as Zen-like mindfulness, teaching in the moment. A frame determines ones strategies for solving a problem. "Reflective teachers might purposefully examine their own perspectives question their own assumptions – an essential step in avoiding "tunnel vision" (Jay, 1999, p. 10). Of particular interest to this researcher is Schön‟s "frame analysis".

> At any given time in the life of a profession, certain ways of framing problems and roles come into good currency …Their frames determine their strategies of attention and thereby set the directions in which they will try to change the situation, the values which will shape their practice. (Schön, 1983, p. 309)

As Schön (1983) points out, "Frame awareness tends to entrain awareness of dilemmas" (p. 310). Lack of attention to frames leads to "blind spots, misconceptions, and unchallenged assumptions". According to Schön, frame analysis determines what is

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attended to and sets the direction for change. Awareness of ones frames opens up possibilities beyond the given reality.

> When a practitioner becomes aware of his frames, he also becomes aware of the possibility of alternative ways of framing the reality of his practice. He takes note of the values and norms to which he has given priority, and those he has given less importance, or left out of account altogether. (Schön, 1983. p. 310)

This frame analysis "offers potential for helping teachers attempting to surface hidden, implicit problems that they often don"t even realize exist" (Jay, 1999, p. 10).

Mezirow (1991) uses meaning perspective in a similar context as frame analysis. "Frames are collectively held meaning perspectives that, unlike paradigms, are tacit" (p. 47). According to Mezirow (1991) a meaning perspective selectively orders what we learn and the way we learn it paralleling Schön"s thinking about the professional, "The problems he sets, the strategies he employs, the facts he treats as relevant, and his interpersonal theories of action are bound up with his way of framing his role" (1983, p. 210). Frames hold the meaning perspectives that influence how a problem is posed, how experiences are linked, how one sees aspects of one"s world, and how one transacts with learning.

In *Reflective Practice to Improve Schools: An Action Guide for Educators*, York-Barr, et al. (2006) share a collection of literature on the evolution of reflective thinking from Buddha and Socrates to Dewey, Schön, and Van Manen to more contemporary researchers that reveals a multitude of perspectives and understandings, yet at the same time acknowledge a number of common themes - deliberate thinking, framing and reframing practices, an active process of constructed learning, metacognition, mindfulness, learning and understanding. Zeichner and Liston (1996) acknowledge

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reflection as a process, "the process of interpreting and framing our teaching experiences and then reinterpreting and reframing them is a central element of a reflective stance" (p. 17). Langer refers to this as "mindfulness" (Rogers, 2001, p. 47). In *Transformative Dimensions of Adult Learning*, Mezirow (1991) includes Langer's "mindfulness" in other interpretations of reflection. He describes her concept as a "learning orientation that focuses on the processes of creative problem solving" (p. 115), an active involvement with an experience. At the core of transformative learning theory is the notion that we make sense of the world through experiences. Using what we know happens or we expect to happen, we develop a frame of reference for understanding the world. When something different happens we confirm, modify, or reconstruct our meaning perspectives.

Both Dewey and Mezirow hold that not every thoughtful action implies reflection. According to Mezirow's transformative theory, "Through reflection we *see through* the habitual way that we have interpreted the experience of everyday life in order to reassess rationally the implicit claim of validity made by a previously unquestioned meaning scheme or perspective" (p. 102). Both Dewey and Mezirow agree that the central function of reflection is justifying one's beliefs; "When we stop and think about what we do or have done we reflect on the strategies and procedures of problem solving …" (Mezirow, 1991, p. 104). The depth of reflective thought lies within the similarities and differences we find connected to what we experience and what we bring to the situation at hand. "Transformative learning involves reinterpreting an old experience (or new one) from a new set of expectations, thus giving a new meaning and perspective to an old experience." (Mezirow, 1991, p. 11)

For Mezirow the process of reflection involves a critical assessment of the content, the process and the premise of our efforts to gain new perspectives. According to Mezirow (1991) premise reflection, "Leads to more fully developed meaning perspective because this is the process by which our belief systems become transformed (p. 111). This process of reflection captures a way of looking at things differently; a way in which the learner transacts with the learned. It is a reflective review of what the learner learned, how the learning happened, and whether the learner"s presuppositions are warranted. Being consciously aware of why we perceive, think, feel or act as we do characterizes the learner as a metacognitive agent. Referring to the learner as a metacognitve agent brings reflection to an affective dimension.

In a "Synthesis of Research on Teacher"s Reflective Thinking", Sparks-Langer and Colton (1991) indicate some researchers found "the experiences, values, and beliefs stored in memory certainly have influence on how a new piece of information is perceived and interpreted" (p. 38). They continue to say these "culturally based filters" result in "more attention to how preconceptions about the aims of education can influence what college students do (and do not!) learn from teacher education programs"(p. 38). They hold three elements in importance in teacher"s reflective thinking: how teachers process information and make decisions (Hollingsworth, 1990 and Ross, 1990); the substance that drives the thinking – experiences, goals, values, and social implications; and third teachers own interpretations of the events that occur within their particular contexts. In her paper on the development of reflective practice through journal writing, Pavlovich"s (2007) synthesis of the literature on the reflection process is summarized in Kennison and Misselwitz"s (2002) definition:

> Reflection is the purposeful contemplation of thoughts, feelings, and happenings that pertain to recent experiences. With thoughtful consideration, one challenges one‟s initial thinking and feelings embedded in a meaningful experience. With further review and exploration, one creates and clarifies the personal meaning of the lived experience. (p. 239)

Metacognition

In a review of the relevant literature pertaining to metacognition, the primary source of metacognition is in the value of the learning experience. Research on metacognition is fundamentally concerned with the development of a process associated with how one thinks about complex situations. Pugach and Johnson relate reflective thinking to the concept of metacognition. Reflection in teaching as they promote it "encourages the habitual use of more disciplined thinking processes with which teachers can approach the complexity of their work". (in Waxman, 1988) They shift the focus from the teacher as a technician to the learner as a thinker.

New understandings generate new challenges and additional reflection broadens and deepens perspectives on learning experiences. The meaning perspective in which learning is embedded is in the conscious awareness of who one as a thinker and a learner. By thinking about how one thinks with one‟s own voice rather than passively accepting realities defined by others, the learner develops identity and autonomy. In a concept analysis of reflection in higher education, Rogers (2001) writes that reflection provides a vehicle to shape and refine primary experiences into meaningful learning (p. 52). Quoting Dewey (1933) he continues on to explain, "Metacognition is possible through …constant reflection upon the meaning of what is studied."(p. 48)

In an Australian study by Grushka, McLeod, and Reynolds (2005) presenting a mosaic of reflective perspectives student teachers must partake in to be truly reflective

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practitioners, the researchers develop strategies to assist student teachers to reflect on their meaning making process based on these thoughts from Habermas (1976);

> The mind is not cognition alone, but rather the capacity of individuals to construct and organize meaning in their thinking, feeling, and relating to self and others, What is subject and object for us is not permanent, but rather changes as we adjust to account for new experiences. (p. 243)

What becomes apparent from a review of the literature is the significance of the active and conscious reexamination of one‟s knowledge through metacognition. This deliberate and conscious awareness allows the learner to make choices about what will change or not change. Fellows and Zimpher describe steps in the metacognitive process as follows; recapture or live in the action in the experience, think about it, "mull it over", and evaluate/validate it (in Waxman, 1988). They define reflection as a "…reasoned, principled response through either pre-planned or spontaneous but conscious action in which awareness of past experience and understandings are linked with present experience to lead to new understandings and appreciations" (p. 19).

They found significant values to the process of reflectivity. First, it encourages learning and teaching as responsible and mindful endeavors. Secondly, it is a continued and unending exploration, a process for learning how to learn, what Dewey conceptualizes as the "learning loop". Third, the reflective process is a complex blend in which both feelings and cognition are closely interrelated and interactive. Fourth, reflective inquiry encourages diversity and personal relevance in understanding. Finally, the act of reflection establishes with the teacher and the students "an open-mindedness and discernment, rational judgment, and creativity"(in Waxman, 1988, p. 19).

As Sparks-Langer and Colton (1991) discuss in their synthesis on reflection, the metacognitive process places the learner in the position to monitor the consequences of an action taken as well as the cognitive processes applied to make decisions. "Dewey (1933) observed wisely that it is not our belief in inferences that misleads us, but our belief in *untested* inferences" (1991, p. 38). Metacognition provides the means to interconnect the thinking, beliefs, and personal and professional histories that influence how one transacts with the learning experience. It is a deliberate process to bring about change. Through metacognition the learner self-monitors and modifies or transforms what is already known.

Reflection as a Social Process

Teachers in graduate studies enter with different orientations of what they believe to be true, to be valuable, and to be real. These basic differences reflect a complex interaction of social, ethical, cultural, and environmental factors. Living in silence perpetuates the lonely enterprise of teaching and gets in the way of coming to understand who one is as a learner. In their article on reflection and teaching, Raines and Shadiow (1995) build on the substantive base for reflection provided by Schön and Dewey as a means to move teachers from simply "telling" about their experiences to transforming their knowledge into a process of "conscious and voluntary effort to establish belief upon a firm basis of reasons". (Dewey, 1991, p. 6) According to them placing inquiry and problem-setting in the foreground positions the teacher as the learner examining his own knowledge; "thinking about the doing" and beyond the doing to deliberative development. They refer to the work of Freema Elbaz who "found that it was important for teachers to generate and exchange different views in a group

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process and to envision concrete alternative courses of action if they are to become self-sustaining in the reflective process" (1995).

Zeichner and Liston (1996) point out that one of the criticisms of Schön's conception of reflection, apart from the context of mentoring, is disregard for the social process taking place within a learning community. "Much recent work on reflective teaching … stresses the idea of reflection as a social practice and makes the argument that without a social forum for the discussion of their ideas, teacher development is inhibited because our ideas become more real and clearer to us when we can speak about them to others"(Solomon, 1987 in Zeichner and Liston, 1996).

In *Landscapes of Learning* (1978), Maxine Greene says, "We all learn to become human, … within a community of some kind or by means of a social medium. The more fully engaged we are, the more we can look through others" eyes, the more richly individual we become" (p. 3). Stephen Brookfield (1995) describes one of the lenses in the critically reflective process as "the lens provided by our colleagues" perceptions and experiences" when teachers engage in critical conversations about practice. He says, "One of the hardest things teachers have to learn is that the sincerity of their intentions does not guarantee the purity of their practice" (p. 1). "Our colleagues serve as the critical mirrors reflecting back to us images of our actions that often take us by surprise" (p. 35). Given that we are social creatures, we discuss ideas and perspectives with colleagues. Accessing multiple perspectives through interactions with others helps us shed new light on our own views. (Mezirow and Associates, 2000)

Raines and Shadiow (1995) writing about the challenges of thinking beyond the doing in reflection and teaching state that other writers are reiterating reflective practice

is "neither a solitary or meditative process … [It is] a challenging, demanding, and often trying process that is most successful as a collaborative effort" (Osterman and Kottkamp, 1993, p. 29). Looking at the work of several researchers on engagement in reflection that leads to self-sustainment, they say "Elbaz found that it was important for teachers to generate and exchange different views in a group process …" (p. 29).

A common theme from contributors to Mezirow"s book, *Fostering Critical Reflection in Adulthood* (1990), is "a recognition that adult learning takes place both in a social context and in the context of a meaning perspective" (p. 364). Mezirow (1990) says, "Transformative learning is an interactive and intersubjective process in which a perspective is transformed through exposure to alternative perspectives and participation in critical discourse with others" (p. 394). In *Experience and Education* Dewey says, "The principle that development of experience comes about through interaction means that education is essentially a social process" (p. 65).

In her study on reflection in teacher education, Eli Ottesen (2007) analyzed conversations between student teachers and their mentors to explore how they reflect and what they seem to accomplish through reflection. To capture and theorize reflection in the social interactions of student teachers and their mentors they cite Jordan and Henderson (1995), "Knowledge and action are fundamentally social in origin, organization, and use, and are situated in particular social and material ecologies" (p. 41). For the purposes of her study she envisaged that the actual discourses of student teachers and their mentors were where reflection transpired.

Analyzing the practice of teacher preparation during the 1930s at Bank Street College of Education, an alternative institution to the traditional universities, colleges,

and normal schools offering a progressive teacher education program, Gerardo and Grinberg (2002) render evidence the meaning of experiences is constituted by interactions and relationships. "The teacher as collaborator, who is also a student of teaching, is strongly connected with the idea of learning communities in which scholarship does not happen in isolation but is socially constructed." (p. 1443) In their action guide on reflective practice for educators, York-Barr et al. (2006) say, "As human beings, we have an internal drive for learning and growth. We are also social beings who naturally seek connections to others: to be and to be connected, not to just do" (p. 246). The social process of reflection allows the learner to examine untapped and underused personal and professional wisdom. Social interactions draw the learner into multiple perspectives and multiple ways of knowing by examining and monitoring both internal and external knowledge.

Thinking Maps

  Temporary structures to foster reflection on learning. What emerges in the review of the literature to foster reflection on learning is the need for structure and purpose. In a study to enhance learning at the doctoral level through reflection Klenowski and Lunt (2008) concluded that if professional doctorate programs are to use a process of critical reflection as a means to enhance learning, structure and purpose are necessary components as part of the process. Spalding and Wilson (2002) in a study of pedagogical strategies that encourage reflective journal writing with pre-service secondary teachers found that reflective skills need to be actively taught and modeled in a variety of ways to demystify the concept of reflection. They supported this approach by stating, "Dewey believed that thinking was natural but that reflective habits of mind

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needed to be taught" (p. 1395). The implications of this study are that "teacher educators must teach – not simply assign – reflection …" (p. 1415).

Russell (2005) and Marchant (2001) believe that reflective practice can be taught. According to Russell, three elements of Schön"s reflection-in-action – a puzzling event, developing a new course of action stimulated by a new perspective, and carrying out the new course of action – can and should be considered as strategies for teaching reflective practice (p. 200). Marchant (2001) believes the principles that guide the teaching of metacognitive teaching strategies for students- knowing what strategies to use, how to use them, and when to use them – are the same principles that guide the training of reflective teaching. "The metaphor for reflective teaching is the metaphor of learner" (Marchant, 2001, p. 488).

> Learning is propelled by curiosity, by the confidence to embrace and enter the unknown and accept ambiguity, and by the willingness to or even the delight in loosening the conventions of one"s knowledge and experience to entertain the possibility that there is something new to discover." (Larry Alper in Hyerle, 2009, p. 138)

In addition to the theoretical perspectives of reflective thought, I have also been looking at research on visual representations, in particular Thinking Maps®, as a way to shape reflective thought – to connect experience and theory to enhance depth of knowledge in graduate programs of teacher education. David Hyerle, developer, and researcher of Thinking Maps®, supports the deliberate use of maps as tools for reflection because they generate multiple ways of thinking and lead to the consideration of and attention to others" perspectives. In his book, *Visual Tools for Transforming Information into Knowledge* (2009), Hyerle discusses how the research of Dr. George Lakoff at the University of California at Berkeley helped him understand the influence of metaphor,

mental models, and „framing" on human cognition. "The theory of *frame semantics* became a guiding concept for me in learning how cognitive processes and dynamic schemas work together in an awkward dance to make sense of incoming experience to the brain and the mind" (p. 118).

In both his books, *Classroom Instruction That Works* and *The Art and Science of Teaching*, Robert Marzano synthesizes the research that supports the processing of information in both linguistic and nonlinguistic ways. He points out that a way to help students effectively interact with new knowledge is through nonlinguistic formats and reflecting on their learning. In *Classrooms That Work* (2001)*,* he says, "Nonlinguistic representations should elaborate on knowledge. In simple terms, elaboration involves „adding to" knowledge …. When a student generates a nonlinguistic representation of knowledge, by definition, she has elaborated on it" (p. 74). He goes on to say that creating nonlinguistic representation is probably the most underused instructional strategy to help students develop new understandings in content (2001). Hyerle says, "even if we believe that some individuals are more kinesthetic, auditory, or visual learners – or more global or analytic – we need to consider research showing that each of us still processes far more information visually than through other modalities" (in Costa and Kallick, 2008, p. 153); supporting the premise, that empowering students at every level transforms *static* information into *active* knowledge (Hyerle, 2009, p. 8). This information is relevant to this study because the research supporting the notion of deliberate attention and support to facilitate reflection opens the door to consider Thinking Maps® as temporary tools to provide opportunities for teachers to examine

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patterns in their own thinking about how they learn, what influences their learning, and who they are as learners.

Constructing maps and then taking the thinking off the map to compose written reflections is a possible temporary process for cultivating the development of depth of knowledge and reflective thought – "the training of the mind" (Dewey, 1933 in Rogers 2001). Moving beyond the classroom setting to the university level, how can these principles apply to teachers in a graduate program of studies? In what ways do nonlinguistic representations in the form of Thinking Maps® move teachers beyond technical expertise to "thinking beyond the doing"? (Raines & Shadiow, 1995). Wilson, Shulman, and Richert (1987), in their chapter on the roles representations of knowledge play in teaching in the book *Exploring Teachers"Thinking,* say,

> Successful teachers cannot simply have an intuitive or personal understanding of a particular concept, principle, or theory. Rather, in order to foster understanding, they must themselves understand ways of *representing* the concept for students. They must have ways of transforming the content for the purposes of teaching. (in Calderhead, 1987, p. 110)

Analyzing the concept of reflection and its implications for higher education, Russell Rogers (2001) examined several major theoretical approaches to reflection and found several techniques to foster reflection. One method among the techniques was the use of structured experiences; concluding that "reflection is most likely to be facilitated with the use of deliberate and planned techniques" (p. 47). "These experiences provide a framework for guiding individuals in broadening and deepening their analysis and synthesis of challenging situations and integrating these challenges effectively to enhance their professional effectiveness" (p. 47). Rogers delves deeper into reflection in a discussion on the antecedents of reflection, elements that get in the way of engaging

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students in reflective thought. He says that "many students … want, and even expect, their educational experiences to be easy, simple, and unchallenging" (p. 50). He suggests that educators need to find a balance of challenge and support conducive to teach students how to reflect and learn without devaluing the challenges by "establishing an environment rich with factors that support reflection" (p. 51). Included in this support are careful planning and "on-going attentiveness as the reflective process unfolds" (p. 51). In higher education educators play a key role in the learning experience, whether as a coach, a model, or in guiding the intended learning. They need to let their students see and hear them reflecting. "Altering one's approach to incorporate an awareness of the present moment radically changes the lens through which one views the world". (Rogers, 2001, p. 53)

In his book, *Fostering Critical Reflection in Adulthood* (1990), Mezirow includes a chapter on conceptual mapping. His purpose for including this is to relate this idea to transformative learning through critical reflection, reconstruction, and validation of assumptions through critical thought and dialogue. The author of the chapter, David Deshler, points out that through the creation of concept maps educators can introduce a way to transform linear material into more holistic visual imagery leading to new ways of synthesizing, perceiving, and evaluating.

York-Barr, et al. (2006) discuss the idea of mapping as a way to visually represent and communicate big ideas and relationships among main ideas and supporting details. They say, "The process of constructing maps requires higher-order thinking about the content and creates a framework for which future information can be added" (p. 98).

How can these visual records temporarily support verbal explanations connecting experience and theory to reflective thought transforming the teacher from the student learning how to teach to the thinker who understands learning?

Ellin Keene (2008) in her new book, *To Understand: New Horizons in Reading Comprehension*, includes creating models to help us remember as a dimension of understanding. She says,

> Models show us how we can go from an occasional "happy accident" to far more predictable and productive learning behaviors. Models also help us to synthesize and make manageable an enormous amount of information about promising practices in teaching and learning. (p. 22)

Considering teaching as a professional thinking activity, Calderhead says, "Teaching is a complex process that can be conceptualized in many different ways, using alternative models, metaphors, and analogies" (1987, p. 1). Eli Otteson examining reflection in education says, "Understanding emerges at the intersection of scholarly knowledge and practical experience. What has been taught is recontextulaized in practical actions, while at the same time, practical experiences mediate new understandings of what is taught" (2007, p. 34). In what ways can the cognitive structures of Thinking Maps® mediate understanding of scholarly knowledge and practical experience?

Arthur Costa in York-Barr, et al. (2006) says, "We never really understand something until we create a model or metaphor derived from our unique personal world. … Humans don't get ideas, they make ideas" (p. xv). Reflective thought embodies knowledge and experience of concepts and knowledge and experience of practice. Thinking Maps® represent the cognitive domains that ground thinking and learning. Otteson (2007) says, "… an important asset of reflection is the possibility for exploration

of ideas and undertakings in an off-line manner; that is to engage in a totally risk-free construction of alternatives; what could be done rather than what should be done" (p. 41).

Combining the research on reflection, metacognition, and visual representations as a technique to foster reflective thought, the process of reflection is a continuous flow of challenging situations leading to reflection leading to new interpretations leading to new challenges leading to additional reflection. This continuous flow of learning and knowledge requires structure and guidance to make covert thought processes overt especially, but not exclusively, for teachers new to reflective thought. York-Barr, et al (2006) acknowledge an emerging consensus of research "that guided or structured reflection, sometimes including specific instruction about types of reflection and reflection strategies, yields more satisfactory results, especially when individuals are new to engaging in reflective practices and when critical reflection is a desired intent" (p. 61). Applied to a study on the development of the teacher as a metacognitive agent, "Reflection is conducive to students' learning what to do in this world; however, it also holds the potential for expanding students' understandings of what is being done, as well as understanding this understanding" (Otteson, 2007, p. 43).

> In order for reflection to meet its full potential in teacher education, an important issue to be worked out in partnership enterprises concerns the learning of the teacher educators in schools and university, to make mentors more aware of the theoretical underpinnings of their work, and to make university teachers more aware of the embodiment of theoretical concepts in the practices of teaching. (p. 43)

How can the unveiling of thought through the temporary use of Thinking Maps® and then taking the thinking off the map to construct written reflections on practical and theoretical assumptions cultivate the development of depth of knowledge and understanding of reflective thought?

Summary

In this review of literature it is evident how over time Dewey‟s original definition of reflection, the "active, persistent and careful consideration of any belief or supposed form of knowledge in the light of new grounds that support it and the further conclusions to which it tends" (in Jay, 1999, p.4), has undergone a variety of interpretations illustrating the complexity of the process of thinking about one‟s own thinking. Traversing the landscape of reflective thought and reflective practice in the abundance of literature on teacher education, there are numerous perspectives and interpretations. The general consensus being that reflection is an in-the-head thought process driven by the kind of inquiry taken to puzzle through a situation in a search to understand. It is a social act grounded in possibilities, perspectives, and thoughts about how to develop depth of knowledge and new ways of seeing. From Dewey‟s perspective in reflection one "mentally wanders" or "travels along a path of continuity and growth" (Dewey, 1991).

Arthur Costa says, "To be reflective means to mentally wander through where you have been and try to make sense of it" (York-Barr, et al., 2006, p. xvii). Writing about the bandwagon of reflective teaching from external researchers, Zeichner and Liston (1996) contrast a vague and ambiguous view of the reflective teaching movement with a recognition that "the process of understanding and improving one‟s own teaching must start from reflection on one‟s own experience and that the sort of "wisdom" derived from the experience or research of others is impoverished" (p. 6). They say Dewey‟s contribution to reflective teaching is a "holistic way of meeting and responding to problems, a way of being as a teacher" (p. 7). Greene (1978) includes intuition, passion, and emotion in the affective side of reflection.

Every experience with reflective thought presents an opportunity for growth for educators, whether it is self-reflection in a community of learners, or with a mentor. As reflective practice and thinking about one‟s own thinking become part of one‟s identity the potential to transform information into ways of knowing becomes limitless. "As long as we are reflecting, we are learning. As long as we are learning, we are growing. As long as we are growing, we are moving close to our human potential for contributing to this world in our chosen role as educators." (York-Barr, et al., 2006, p. 63) In this guide the authors go on to say, "We are also social beings who naturally seek connections to others: to be and to be connected, not just to do" (p. 246). Promoting inquiry, seeking multiple perspectives, examining personal and professional knowledge, and nurturing connectedness are ways to satisfy growth and social needs. Interactions in a social process offer pathways to broader perspectives.

Zeichner and Liston (1996) believe "Teaching is work that entails both thinking and feeling and those who reflectively think and feel will find their work more rewarding and their efforts more successful" (p. xii). In their chapter on "Teachers‟ Practical Theories"*,* Zeichner and Liston refer to Dewey‟s criticism of "the tendency in the teacher education of his day to place too much emphasis on the immediate proficiency of the teacher, and the lack of preparing students of education who have the capacity and disposition to keep on growing" (p. 27). They recognize that reflection can be enhanced by social interactions with others; and the reflective teacher is sensitive to the "implications of one‟s beliefs, experiences, attitudes, knowledge, and values as well as the opportunities and constraints provided by the social conditions in which the teacher works" (p. 33). So much of one‟s learning, thinking and interpretations are rooted in who

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one is and how one perceives the world. How does one intermingle core values, knowledge received from others, and personal experiences into a metacognitive process?

Calderhead (1987) believes research can provide more realistic models of teaching as a "professional" thinking activity, along with a language that enables teachers to analyze and discuss teaching issues and even defend the integrity of their practice against the many questions that arise from those outside the profession. "Learning to teach is an active process involving considerable interaction between thought and action" (Calderhead, 1987, p. 18). Calderhead says it is through explorations into teachers" thinking that new conceptualizations of teaching are emerging. In his chapter, "Exploring Teachers" Thinking", David Berliner explores experience that is reflected on, "Learning from experience probably requires the application of what we now call metacognitive skills" (p. 61).

This review of literature revealed many significant studies directed toward students in classrooms, pre-service teacher education programs, or learning and leading. From these studies it is evident the issue of reflection in higher education needs clarity. While all of this research is important and relevant, teachers continue to have difficulty articulating what they know, how they know it, and how it influences who they are as learners.

Chapter III

The Method

In an article addressing the relevance of qualitative research to policy and practice, Martyn Hammersley (2000) refers to David Hargreave's critique of the inability of most educational research to contribute to the work of teachers in the classroom. With the intent of providing relevant research that would help teachers make sense of their own thinking, this investigation utilized an iterative action research approach. It would become a search by a teacher educator to better understand the lives and experiences of graduate students attempting to learn about learning. This is a qualitative value driven study that attempts to reduce uncertainties and to clarify a particular stance on reflective thought in order to contribute to the development of theories and concepts that generate further investigations. Marshall and Rossman (1999) in *Designing Qualitative Research* offer eight characteristics from Rossman and Rallis (1998) of qualitative research and researchers:

> It (a) is naturalistic, (b) draws on multiple methods that respect the
> humanity of participants in the study, (c) is emergent and evolving, (d) and
> is interpretive. Qualitative researchers (e) view social worlds as holistic
> and seamless, (f) engage in systematic reflection on their own roles in the
> research, (g) are sensitive to their personal biographies and how these
> shape the study, and (h) rely on complex reasoning that moves
> dialectically from deduction and induction. (p. 2)

These characteristics validate the qualitative viewpoint in this investigation.

This is a qualitative study in a descriptive and interpretive design that assumes the value of context and searches for a deeper understanding of the participants lived

experiences thinking about their own thinking. It is a look into the experiences, perspectives and views of the people who traditionally are the subject of research. This approach uses various validity procedures as outlined in Creswell and Miller's article (2000), **"**Determining Validity in Qualitative Research". One procedure is triangulation, the sorting through of multiple sources of data in the form of documents, responses to questions, and a transcript from an online chat room discussion to find common themes and categories describing technical or metacognitve thinking. A second validity procedure is the researcher's reflections and analyses of the process of determining the focus of the investigation, including a description of the role of the researcher; and the researcher's "prolonged engagement" working with the people in Sample A. To enhance the credibility of the study the researcher designed the process to respect as well as support the participants in the study. A third procedure for establishing validity included in this investigation is the inclusion of as much detail as possible to contextualize the experiences, interactions, and situations of the participants in the study. Creswell and Miller's position is that "… the use of validity procedures requires thinking beyond specific procedures – to acknowledge the lens being employed in a study…" (p. 129).

 The focus of the investigation is on the interpretation of the deeper meaning of experiences expressed in graduate students' own words about aspects of their learning relative to metacognition. What do teachers say about what they do, and what can be learned from the language in their written and oral responses?

This study involves examining data for common themes in order to confirm explanations, and to provide corroborating evidence collected through multiple methods. In addition to a pre and post survey consisting of open-ended response questions and

written reflections from final papers, the researcher also includes in the data collection

spontaneous feedback from a transcript when students engaged in an online chat room

discussion; as well as a self-study, my "autobiographical" narrative describing a

transformative process of framing meaning perspectives on reflection in teacher education

programs. The purpose for including this self-study is to disclose the researcher"s

assumptions, beliefs and biases through the evolution of my own process in understanding

the teacher as metacognitive agent. Creswell and Miller (2000) say, "Constructivists

believe in pluralistic, interpretive, open-ended, and contextualized (e.g., sensitive to place

and situation) perspectives toward reality" (p. 125). The use of these combinations of

inquiry demonstrates the complexity of the threads of logic woven into the search of the

development of the teacher as a metacognitive agent. The aim of this qualitative work is to

understand rather than to judge.

During the past twenty years it has become legitimate to use qualitative methods as

an acceptable form of education research. Stanovich and Stanovich (2003) writing about

research and reason, suggest that qualitative research is an effective method for education

research because it supports a context for discovery. The rich insights and "thick situational

descriptions" of this approach set the stage for more intense study of testing hypotheses or

designing interventions or justifying causal inference. In their book, *Living the Questions A*

guide for Teacher Researchers , Hubbard & Power (1999), discuss the evolution of

research in education noting that a criticism of research professionals, who considered

research their territory, was that research efforts by teachers was substandard. It lacked in

"research precision" (p. 19). Furthermore an essay by J. Henry in Hubbard and Power

(1999) challenges old assumptions about worthy research. J. Henry states, "in education

research, the subject–object dichotomy is neither impartial or objective; rather it is an increasingly controversial aspect of a rigid caste system in education that valorizes researchers but subordinates teachers, their questions, and their knowledge" (p. 199).

In a definition of a brief history of grounded theory, J.N. Magnetto (1996) discusses the significance of Glaser and Strauss' Grounded Theory "as a systematic and rigorous method of qualitative data analysis" (p. 2) because it is theory as process and it goes beyond description to explanation and interpretation. This investigation will develop a theoretical frame from the findings; theory that will perhaps generate further investigation into this topic.

Participants

The population to be studied was selected by the principal investigator, Eleanor Papazoglou, an Adjunct Faculty member in the College of Graduate Studies at a small state university. The participants were a purposive sample who volunteered to participate in the investigation. (Appendix C) They are graduate students enrolled in reading and writing courses designed by the researcher and approved by NCATE. The participants are teachers with a range of experiences from novice to veteran, teaching grades kindergarten through high school. Sample A are fifteen teachers teaching in a rural New England school district with many high risks students. They have been earning graduate credits in courses taught by this researcher through an outreach program connected to the university. These courses have been designed for specific literacy needs in this school district as determined by the teachers. Sample B are twenty-one graduate students enrolled in a graduate course, Research in Reading and Writing, offered during the summer, fall or winter terms in 2009 and 2010. These students come from a wide range of school districts, including rural and

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urban, affluent and poor, and private and public institutions. They are enrolled in either a graduate degree program of Master of Education in a selected discipline, or Master of Education in Reading and Writing Specialist.

During the 2007- 2008 school year, the Sample A teachers who came from three schools in the district were formally trained in the use of Thinking Maps®. During that time a pilot study was conducted with the elementary and middle school teachers to determine the influence of Thinking Maps® on the way teachers think when learning about literacy. For the 2009 course the curriculum coordinator, the researcher and the teachers decided to include the use of Thinking Maps® as temporary structures to foster reflection on teachers" thinking and learning in the new course of study, since all teachers had both training and experience with the use of the maps. Teachers agreed to complete a pre-course survey on reflection and to complete a follow-up survey upon completion of the course.(Appendix B) In addition to these artifacts, the teachers agreed to allow the researcher to compare written reflections from the 2008 course work and the 2009 course work with the understanding that these experiments were voluntary and were in no way connected to grades.

The teachers in Sample B did not have any formal training in the use of Thinking Maps® but agreed to experiment with them as temporary structures to foster reflection. These teachers also agreed to complete a pre and post course survey (Appendix C), in addition to allowing the researcher to analyze the written reflections included in their final paper. Teachers in Sample B also agreed to let the researcher share relevant comments from a transcript of their chat room discussion. The third experiment included in this investigation is a case study describing the metacognitive process of this teacher educator

as she reflected on and analyzed her own thinking and understandings of the development of the teacher as a metacognitve agent.

Data collection

The data collected for this investigation are written statements to a pre and post questionnaire from both Sample A and Sample B participants; a comparison of work completed before and after the use of Thinking Maps® as temporary structures of support for writing reflective papers from Sample A; written reflections from a research inquiry project from Sample B participants; and a transcript from an online chat room discussion from Sample B. Figure 1 outlines the process of data collection.

Figure 1 Data Collection

Participants	Year	Source of Data for analysis
Sample A	2008 – RL 5560 Reading Strategy Instruction	Written reflections included in final paper
Researcher	2009 – includes Thinking Maps® and redirects a focus on the frame of reference questions	Analysis of course modifications
Sample A	2009 – RL5560ST: Issues and Trends in Reading and Writing	Pre and post course responses to open-ended questions on survey Written reflections included in final paper Comparison of written reflections in course work from 2008
Researcher	2009 – summer, fall, and winter terms	Redesign frame of reference questions and framework for research
Sample B	2009 - RL5110 Research in Reading and Writing	Pre and post course responses to open-ended questions on survey Written reflections in final papers Online chat discussion

Figure 1 Data Collection

A written survey of open-ended questions was given to both Sample A and Sample B participants at the first class meeting in each of the courses. The purpose for using the written responses was to look for common patterns and themes in teachers' thinking that are often obscured or neglected. These questions were given before the course of studies to

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determine from where teachers were coming at the onset of the course and what language they used to describe their thinking and learning – their personal and professional histories. The same questionnaire was given upon completion of the course in order to compare responses.

Another set of data collected in this study included a comparison of written reflections over a two year period from two different graduate courses from the group labeled Sample A. At the end of the course, Special Topics in Reading and Writing: Issues and Trends in Reading and Writing (General Session 2009), participants were asked to write a reflection on the text as a whole. Using the maps created at the end of each chapter reading, students were asked to take the "thinking off the maps" to compose a reflection on what you have learned and understand about how language affects children's learning.

These written reflections were compared to the final papers from a 2008 course, Special Topics in Reading and Writing: Reading Strategy Instruction (General Session 2008) in which reflection was not structured by specific questions within a frame of reference. The language in the written reflections was analyzed to determine what teachers think about what they do before receiving any guidance in reflective thinking and before defining a reflective process, and then compared with the language in written reflections after having implemented modifications to the course; in particular, more attention to how they frame their experiences and how that influences how they interpret their learning experiences. The emphasis shifted to a focus on the learner and the learner's transactions with learning.

The participants in Sample B, graduate students enrolled in the graduate course Research in Reading and Writing, included students from the 2009 summer and fall terms,

and the 2009-2010 winter term. The final project for students in this sample group was to research and inquire into a dilemma they were experiencing in their teaching and understand it from a different perspective. Using the Flow Chart of a Process of Inquiry (Appendix A), they were expected to engage in an intellectual inquiry and reflect on the process through a critical examination of how a learner experiences learning. This sample is significant to the study because the analysis of their written reflections occurs after the redesign of questions in a frame of reference structure intended to guide a reflective process. In addition to the data from the open-ended responses and the written reflections from Sample B, data collection from this group included an analysis of the language in a transcript from an online chat discussion.

The purpose of using this variety of data is to analyze a variety of sources containing teacher language in order to look for patterns and common themes that give insights into how teachers think as technicians or as metacognitive agents. When we analyze the messages in teachers" voices what are they saying, what do they think, and what do they know? When given an opportunity to "tell" what they know, what is significant in their language to understanding the reflective dimension of being a metacognitive agent?

Data from this study will be used to answer the research questions I have proposed. These questions serve as study parameters without unduly constraining it. They are grounded in the naturalistic setting of university graduate studies both on campus and through an outreach program.

- How can the experiences in a university graduate program, construed as an opportunity for the transmission of knowledge, transform the learner into a metacognitive agent?

- What language from the teacher indicates a shift from thinking like a technician to thinking as a metacognitive agent?

- What is the conception of the reflective thinker?

- In what ways do graduate students reveal themselves as reflective thinkers?

Chapter IV

Analyses and Results

Analysis of the Data

The perspectives offered in this study are interpretations based on a set of criteria composed by the researcher from well-established literature on the nature of reflective thinking, transformative learning, and adult learners. These criteria were selected based on the theoretical perspectives of a variety of theorists who have undertaken similar investigations. (Dewey, 1938, 1991; Calderhead, 1987; Cranston & King, 2003; Duckworth, 1996;Garrison, 1998; Giovannelli, M., 2003; Green, 1978, Grinberg, 2002; Kember, D. et al. 2000; Larrivee, 2000, 2008; McCallister, C., 1996; Mezirow, 1991, 1997; Nagle, 2009; Rodgers, 2002; Ross, 1989; Schön, 1983; Smyth, 1989; Spalding & Wilson, 2002; Sparks-Langer, G. et al., 1990; Taggart & Wilson, 1998; Van Manen, 1977; Wong, 2007; and Zeichner & Liston, 1990, 1996). The following section is a comparison of written reflections from Sample A from the 2008 school year and the 2009 school year, an analysis and an interpretation of written reflections and online discussions from Sample B across three terms, summer, fall and winter of 2009, and written responses to the pre and post course questionnaire given to both Sample A and Sample B participants.

2008 Written Reflections – Sample A

Language from written reflections in final papers. Overall the 2008 reflections on the text readings were technical accounts retelling the personal interpretations of a researcher or someone whom the teacher considers to be more knowledgeable rather than students" creations of their own meanings about what they perceived.

"I am pleased to realize how our reading program … meets the current trends."

"Why would I think of disagreeing or challenging a "research-based" program?"

The writings are think-alouds about how to do something rather than a deeper reflection on what a conflict means. They were written as though they were writing exercises rather than opportunities to think about one"s own thinking in the process of making sense of new information. These statements ignore personal and professional wisdom as a resource. *"… not feeling adept"* implies someone else knows more than the teacher or the graduate student.

"Your classes have taught me so much but I feel like there is so much more to learn." "You think you know what you are doing and then BAM! There"s a lot to be said for continuing education?"

Once again a description of the source of knowledge as coming from the outside, placing the teacher in the position of someone who ought to be told what is best to do rather than continuing on with learning on one"s own.

In the reflections on their readings the responses were technical anecdotes, or a simple analysis of practicalities. One response states, *"I am thinking of this new information and hanging it onto other information from other sources and coming up with*

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some new thinking." This describes a kind of synthesis; yet the reflection attends more to what the teacher "needs to do" without expanding on how to address the debatable.

A real issue was how to sift through new information, *"my thinking is all over the place ...",* figuring out how to deal with the impact of and ambivalence toward current educational reforms. Students rely on the text readings as a resource to tell them what is best to do rather than an opportunity to reflect on how their personal and professional experiences influence how they understand new information. Phrases like *"key to good teaching", "constantly looking for more efficient, accurate, and informative ways"*, and *"I enjoyed reading about ..."* focus on the technical aspects of efficient operations.

Statements like this, *"I find that my 4th grade students actively make connections with their reading, but I am not always sure they (students) are doing it (making connections) for the right reason."*, describes how a teacher follows the reading program by doing what is expected, while at the same time questioning the practice. *"I constantly battle with how to…"*, identifies a response to how teachers try to cope with the impact of multiple reforms that tell them what they ought to do as the parameters of these outside sources get in their way.

"By constantly modeling the ways readers might think, I wonder if I am not just interpreting the entire text for the students rather than letting them expand their own thinking. It"s difficult to reach that middle ground…" states the difficulty teachers face negotiating between personal and professional beliefs in a search for solutions to daily pedagogical problems. Another response captures this dilemma from a different perspective. Talking about "big books" for shared reading in a kindergarten class, the teacher says

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> *"I never liked these versions because they usually have too much of*
>
> *everything in them … I was so happy to see my thoughts of what a big*
>
> *book should be coming from experts in the reading field … I do have to*
>
> *use them, but can supplement with true big books".*

Thinking like this suggests sets of values in conflict; the teacher‟s beliefs are in conflict with what she sees in her practice. How can one do this when conditions, expectations, and the environment make it so hard? Yet she continues to do what she ought to do within the constraints of dissonance.

One teacher reflected on her process of reading the chapter. She described what she did and how she applied comprehension strategies to her reading. She mentions the significance of verbalizing what a teacher is doing because that is what the research says. She is mindful of the practicalities, the application of the tried and true, yet neglects to discuss this experience in terms of its relevance to change and growth.

> *"Chapter 30 provided many practical ways …"*
>
> *"I wonder what effective … looks like…"*
>
> *"I guess the answer lies in …"*
>
> *"I‟m continuing to work on streamlining my… activities and structures as*
>
> *simple as possible".*

These statements taken from the written reflections reveal the kinds of thinking that influences teachers‟ behaviors when they do not see themselves as interactive participants in the experiences they encounter.

Phrases like *"personally struggling with", "I‟m on the right path", "do a better job", "gave me lots of ideas"*, all suggest a means to pursue answers and amass the skills to

be an effective technician. *"I was so interested in … lesson plan that I intend to use it this week with my own class."* In a further reflection the teacher said, *"The lesson certainly didn"t go as I had planned."* Larrivee (2000) in her article defining processes fundamental to reflective practice says, "If teachers latch onto techniques without examination of what kinds of teaching practices would be congruent with their beliefs, aligned with their designated teaching structures, and harmonious with their personal styles, they will have just a bag of tricks" (p. 294).

"I feel … like I have to memorize so much information in order to make the lessons seem smoother than I anticipate them to be." This is another response that suggests a means to an end. Amassing a repertoire of techniques underscores the notion of seeing experiences from multiple perspectives which help to frame and reframe how one thinks about personal and professional experiences. What does one bring to these situations? What influences how one sees different aspects of one"s world?

"It seems like I have a lot to do this summer, but once the main parts of the program as I envision it, are in place, the amount of work to do each year will decrease." From this statement we see a teacher taking some action yet misunderstands the notion of continuity, and continual evaluations of assumptions, beliefs, and values.

The reflections addressing what they learned and where they would go next suggest habits and routines, biases, and presuppositions that constrained them from seeing new ways and reframing their experiences in a course of study or in their practices. The language in their reflections describes uncritical acts based on the views of others. If a lesson or their teaching didn"t go well they looked at how they enforced "preset standards of operation" rather than taking on a stance of reconsidering or reevaluating. *"Writing a*

journal page is so hard for me, I am not a good writer" suggests the significance of teachers facing personal attitudes that can alter their perspectives.

Some teachers looked at what was happening through judgments and perceptions of their students. Their insights were prescriptive and focused on ways of knowing how rather than ways of knowing. "*Several of the group members still need…", "their discussion feels very teacher- centered",* and statements like these, *"I want to do", I want to be clearer",* and *"I hope to"* constrain the teacher from critically examining the filters that influence the meanings deep within these experiences.

An a analysis of the language in the written reflections indicates teachers struggle with a knowledge base of accumulated learning encounters that conflict with directives and mandates. Personal and professional experiences are disconnected from any new information. Teaching and learning preferences shape the way one teaches yet lack of critical judgment or self-examination impedes the possibility of things being otherwise.

The effectiveness of the teacher depends on doing as "the book" says. Reflection is linked to the notion of becoming better at methods and techniques. The learner draws on the text or an article as the means to the answer. The language of the technical thinker is concrete, academic, and prescriptive.

Pre-course Questionnaire Sample A and Sample B

Written responses to open-ended questions from the 2009 courses of study.

In what ways do you reflect on your learning in your graduate courses of study?
The responses to this question are mainly one-dimensional statements describing an acquisition of new knowledge to solve problems. Overall the language in the written statements to this question implies a generalized schema of a technical practitioner or a

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proficient craftsman. The teacher as a graduate student is in pursuit of finding answers, and amassing absolute knowledge about "how to"; any mention of change is based on "information I"ve learned" not transactions with experiences. From a technician"s stance, the graduate students write about a knowledge base of isolated sets of practical procedures. "Concerns" are seen as problems or hurdles rather than sources for continuous growth. Responses refer to tools or structures selected to foster reflection such as writing, collaboration, Thinking Maps®, discussions, and observations; yet thoughts are connected to methods and efficiency over purpose. References are made to uncritical and invalidated acts in a language that reduces the complexity of their situations.

Learning remains within pre-existing meaning schemes and perspectives, and they hand-over responsibility for constructing meaning by relying on what they consider a more expert interpretation. They see their role as "fixing what is lacking". Their responses are defined by the traditions in the situated community of educational thought and the environment of the institution in which they work. Ways of knowing include social interactions with colleagues; however, colleagues are also seen as resources for answers for doing the job right.

What in your experiences as a learner influences how you approach new learning? In these responses, graduate students" concerns are focused on practices and problem-solving rather than the complexity of situations and issues. The responses imply a pursuit to find the "right" way. Doing things well or success shadows the notion of continuous learning and growth. Teaching and learning preference shape the way one teaches and problematic situations are seen as constraints rather than sources for new learning. "*My experiences as a learner have always been a model of the teacher being the*

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"onewho always knows all. It has been hard to break that model in my own learning ..." The language in this statement implies no possibility of things existing under any other conditions than what they are.

Learning takes place under certain academic conditions, such as graduate course work, *"what I have learned about different learning styles of my students", "taking in information in ways that work for me…", "feeling successful", "a pace that is not overwhelming",* and *"how I learn best affects my attitude.."*. Learning is an accumulation of knowledge based on the imposition of a knowledgeable expert's interpretations. Seeing oneself as a "successful student" implies schooling versus a reappraisal of experiences in which learning takes place. There are few insights into the significance of what one is learning and how the learner is conscious of new growth and meaning. There are some exchanges between transactions and challenges taking place, indicating a sort of back and forth movement to challenge the old in order to make sense of the new; yet their responses neglect to subject their conflicts and dilemmas to analysis, critique, and intellectual inquiry. Teachers' own assumptions, attitudes, views and biases are evident, but how these shape their teaching and mark their ways of knowing is not.

What fosters reflective thought? Responses to this question oversimplify the nature of examining, judging, validating, transacting, and interacting. The language in the statements focused on content and methods rather than consideration of personal and professional experiences. Reflective thought was interpreted as an analysis of how others perceive one's performance and a *"desire to do better"*, a perspective that distances reflective thought from a conscious process of equilibrium and disequilibrium, or a trust in the validity of one's own self-awareness.

Reflective thought remains connected to the notion of being or becoming a better technician or craftsman; *"a trusting, nonjudgmental atmosphere"* and feeling *"relaxed at sharing my thoughts"* implies a disconnect with the principles of open-mindedness, wholeheartedness, and responsibility. The language reiterates existing paradigms and means for accomplishing ends. Reflective thought is fostered by task-oriented outlooks..

References to "time" issues interfere with the opportunity to interrogate one‴s own thinking. These issues are seen as an impediment to exploring, discussing, collaborating, and interacting. Methods and tasks overshadowed personal and professional experiences and meaning making as sources that influence or foster growth and change. *"Conversations with peers on current topics to do with reading and writing", "good readings", "exposure to new ideas", "seeing another teacher doing good work with students"*, and *"time to collaborate with others in an open-ended way"* acknowledge academic concerns in a social environment in pursuit of technical knowledge.

What transforms professional learning? The context of the responses to this question associates transformation with how best to perform or "test out" an act of doing rather than the more transactional process of "rationally examining" experiences to make meaning for the purpose of learning. *"Being able to test out my reflective thoughts in teaching"* is an academic means for accomplishing an end. Uncritical acceptance of interpretations imposed from outside sources is a perspective in which transformation is seen as equally right or wrong. *"New ideas, new information, and new ways"* oversimplify the nature of change. "*Hearing about ways others in your field solved similar issues/concerns"* presents issues as problems to be solved rather than resources for growth. *"No pressure", "common purpose",* and *"job embedded"* imply the learner sees herself or

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himself as part of a collective group – "running with the herd", unaware of how the way he or she sees the world may be different from or the same as others. One falls into the culture of the workplace rather than sees one‟s world from different aspects.

"Acting upon reflection" and *"analyzing what you/others do"* implies change is possible, yet these same responses address working within generalized schema, implementing within predetermined goals, and thinking about what ought to be taught. "*Being able to apply it successfully (and sometimes not) in the classroom and trying new things that make more learning happen for my students and myself"* suggests one can make learning happen by handing down knowledge or delivering services versus a process of constructing knowledge, challenging one‟s beliefs, and thinking about one‟s own thinking. *"Being able to apply successfully"* indicates there is a right way of getting things done.

In what ways have you engaged in reflective thought in your graduate courses of study? In these responses existing paradigms associated with "school work" were predominate and reference was to tools that foster reflection. Reflective thought is unrelated to interpretation, knowledge construction, or an internal examination. Courses are considered the means to acquire a knowledge base. Engagement in reflective thought is mainly situated in someone else‟s interpretations – *"interactivities led by the instructor"*.

Although this question referred to the teacher as a graduate student engaging in reflective thought, the responses referenced student learning in the classroom – *"thought about my own class", "tools or techniques that will enhance their learning"*, or *"thinking about school, students, learning"*. Ways of knowing are connected to the practical, to accomplishments, or to fine-tuning what is already expected – *"compare and contrast with the ‚expected" results based on the reading"*. Learning is for the moment, and unrelated or

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connected to an accumulation of experiences. When the language in the responses describes engagement in reflective thought as *"reflecting on readings/books"* and expresses views that people outside of classrooms know what is best about teaching, reflection is more of an "educational slogan". (Liston and Zeichner, 1987 in Smyth, 1989, p. 3)

What do teachers need to support growth in learning? These responses indicated teachers value support that focuses on how to and meeting objectives rather than questioning what they do or considering what influences what they do, questioning how thinking and learning works, and why thinking about one's own thinking matters. This collection of responses captures views of a "narrow process of infusing skills"(Smyth, 1989, p. 7), and they include both institutional materials – money that funds professional development, location, curriculum guides, books and articles, as well as social and collaborative opportunities. The language from these responses implies learning is learning the school versus understanding the self, understanding their world, and understanding ways of knowing.

Once again, time was a frequently mentioned issue; time to *"digest, implement, reflect, think, plan, think again". "Time - we often mean well, but classroom teachers are saddled with more and more …"* implies outside influences hinder growth in learning, set expectations, and provide the materials, resources and prescriptions that feed into the notion of one best way of doing things. The complexities in what seem like simple solutions are overlooked.

There was also this back and forth thinking between capturing thoughts about reflection and learning about schooling. *"Be willing to try new things even if it seems*

unorthodox or completely against your education. Realize that not everyone learns the same way and that trial and error can produce some incredible results. Take the time to discuss things that come up spontaneously, as you may miss a great opportunity for learning and teaching." These responses indicate thinking beyond the norms and opening possibilities; yet lack discussion of how to relate thinking to larger democratic and social issues. *"Teachers need non-threatening means…"* ignores a process of inquiry into the problematic; and yet *"opportunities to test new learning…"* opens up a cognitive process that brings attention to tentative hypotheses.

Summary of Written Reflections and Responses from Sample A and Sample B Participants

The responses to these questions indicate that graduate students view reflection as a practice for the improvement of teaching. The quality of their experiences is characterized by learning how to work more efficiently and learning how to find ways to fix things – what would be described as extrinsic values on technical and practical tasks. Reflection isn't seen as thinking about these experiences in terms of whether this way of working suits them, or how it is influenced by their personal and professional values and beliefs. It is a task oriented means of meeting objectives.

New learning is influenced by being successful in the course of study and learning the right way to teach. What should we be learning? Purposes are imposed by outside sources. References to personal histories in learning environments shape the way they approach new learning and the way they teach; yet they are reduced to routines and habitual ways of learning. These histories can also get in the way of seeing other possibilities. What is learned in the way of knowledge is translated as the answer to

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"concerns". Problems or puzzling situations are not subject to analysis, critique, or intellectual inquiry because the pursuit of learning is acquiring better methods or fine tuning. Although graduate students employ tools to foster reflective thought, reflection stalls at learning "how to".

Social interactions are an important element of their reflections; however, the language used to describe these interactions is technical and academic. In these social interactions the way one sees the world is connected to a common purpose and discussions around what the text says. In their words one *learns* from others through social interactions. Ways of knowing are situated in the traditions of the environment in which they work. Transformation takes place when one knows what ought to be done. Knowledge is handed down and is the result of finding new ideas, new ways, and new information.

Methods and tasks overshadow personal and professional histories as a means to foster growth. Growth is learning how to do school versus life. Multiple reforms create ambivalence and hinder growth. The reflective writings summarized and uncritically explained someone else's thinking. They don't necessarily latch onto new programs, but they *do* them because they have to. Intuitively they know better, yet they lack control over who they are. They write and respond as though they are under the lens rather than looking through it.

Post Course Reflections 2009

Post course questionnaire open-ended responses from Sample A participants. The second phase of this investigation with Sample A was to revisit the initial written survey questions after completion of the graduate course. For these graduate students the course focused on a book study of Peter Johnston's book, *Choice Words How Our*

Language Affects Children"sLearning. (2004) In this book, Johnston unpacks the social, moral, and personal aspects of teachers" language. He analyzes how teacher talk shapes thinking and learning and develops "literate citizens for a democratic society". Johnston leads teachers through conscious consideration of the moral and ethical implications and consequences of language choice on students learning, and ties teaching decisions to beliefs about the learning process. The choice to use this resource presented an opportunity for the teachers in Sample A to critically examine the ethical implications of how they interact with students from diverse social settings, cultural backgrounds, and abilities. In addition, since this group had training in the use of Thinking Maps® and were using them with their students, we included the use of them as structures to scaffold reflective thinking. This course was taught with purposeful attention to thinking about one"s own thinking, and thinking about who one is in the experience of constructing new meaning. Reflection was structured and supported by the teacher educator with focused questions and Thinking Maps® as models and as guidelines.

The post course questionnaire was mailed to students three weeks after the end of the course with a self-addressed stamped envelope enclosed to return the questionnaire to the researcher. Eight replies out of fifteen were returned.

In what ways do you reflect on your learning in your graduate courses of study?
In response to the first question, ways of knowing included knowing the self, the school, and children. Reflection on learning was interpreted as an interactive act influenced by social conditions – *"Conversations with other teachers and administrators and discussions with colleagues".* This stance opened up possibilities for expanding learning from multiple perspectives through social interactions. When the teacher as a graduate student reflects on

"applying what I am learning … to life in my classroom" the focus of the reflection shifts to experiences rather than tasks. The language in the responses to this question shows an increasing awareness of how graduate students are interactive participants in the situations and experiences related to thinking about learning and learners – *"relating it to what I have already learned"* and *"an ongoing process of evaluating and re-evaluating"*.

What in your experiences as a learner influences how you approach new learning? The responses to this question indicate a search for one‟s own truths. In the thoughts expressed about one‟s own thinking in response to this question, graduate students attached meanings to their experiences filtered through their own personal histories. Their language reflected how their learning and teaching is shaped by who they are. Statements about their personal preferences influence how they interpret their world or make meaning of their world; some examples*: " as an athlete I persevere when I encounter difficulty"; "I am a visual learner …"; "positive experiences …"; "I approach new learning best when …"; "I had a dynamo high school teachers who taught me how…"*. In describing what influences how one approaches new learning, graduate students consider perceptions, environments and experiences, desires, and interests as the filters that frame the transactions with the situations at hand. One can learn something new, one can expand what one already knows, or one can discard old ideas.

What they think about themselves has much influence on the choices they make in the classroom as well. When a graduate student says, *"I am a visual learner, I need to … as a result this is how I teach."* References to success, feedback, and positive experiences are conscious considerations of attitudes that shape learning and guide experiences – *"From an early age, I enjoyed learning…"; "I approach new learning best when …"*. This language

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reveals how one‟s personal screens influence who one is, what one does, and how one does it. These are the attitudes that clarify what learning is about for them. *"I have been a successful learner during my life …" "I learn something new from all my learning experiences."* When they write about their lived experiences they are thinking about themselves as learners not technicians.

What fosters reflective thought? Responses to this question focused on a process of learning and growth. – *"…there is always room for growth". "Connecting prior, present, and potential future learning …"* refers to continual integration and examination of cumulative experiences to discover new meanings.

The frequent referral to time – *"time to digest learning…, silent time to think…, quiet time"…* - acknowledges that reflection requires a slowing down of one‟s thinking process. References to discussions with colleagues, conversations, guidance, and modeling add to the significance of time for the social construction of understandings through interactions with others.

"An extremely negative or extremely positive experience when I am looking to see what things contributed to shaping the experience…" refers to the teacher interacting with the "environment at hand". The graduate student presents experiences, whether negative or positive, as opportunities for growth and is moving beyond unsubstantiated opinions. Whether negative or positive either one presents an opportunity for growth and learning. "Through interaction with the world we both change it and are changed by it." (Rogers, 2002, p. 846)

What transforms professional learning? These responses refer to an increasing awareness of how one is an interactive participant in the situations and experiences of

learning and thinking with learners – *"culture of reflection", "communities", "shared visions", "peer discussions", "collaboration"*, and *"meaningful work"*. This language addresses the notion that reflective thinking and metacognitive thought need to happen in interactions with others.

"*When you take a course and learn new techniques and philosophies you have to internalize what you have learned… making it work for you and your class."* This is the language for seeking one"s own truths. Interpreting or attaching meaning to one"s experiences lends itself to thinking about one"s own thinking.

In what ways have you engaged in reflective thought in your graduate courses of study? Engaging in reflective thought involves a social process with discourse being central to making meaning. The students attention to their reflective thought is directed both outwardly through social conditions such as *"talking with colleagues"* or *"ongoing conversations"* and *"small/large group discussions"*, and inwardly through self-questioning, personal writings, or re-thinking to re-construct experiences. Mezirow calls this "communicative understanding" when a group strives to reach an understanding of meaning or interpretation. Engagement in reflective thought also included supportive structures that foster reflection, such as, Thinking Maps®, written responses to texts readings, and journaling. Connecting meanings derived from prior experiences to new experiences was yet another way of engaging in reflective thought – *"From an early age, I enjoyed learning."*

What do teachers need to support growth in learning? Again social conditions were repeated with the added feature that these conditions, *"sharing with others", reflecting with colleagues"*, and *"opportunities to work with others"*, open up new ideas

about curriculum by recognizing the plurality of possibilities from hearing multiple

perspectives. Peer conversations, observation, current theories, books, high quality courses

and professional development addressed the significance of continuous learning through an

examination of practice. Sharing these examples of ways to support growth in learning

opens teaching practices to further investigation. In addition to this continuity and growth

the teachers included an affective dimension of learning by indicating that taking on

responsibility for one‟s professional practices and learning outcomes involves engagement

in active inquiry.

The issue of time comes up again, *"time to reflect on learning", "time to meet, talk,*
and plan". This language acknowledges that reflection is a process and thinking about

one‟s own thinking takes time in order to dwell in the experience.

Post Course written reflections from Sample A

During the course the broader issue was the interpretation of the text in relation to a

more active, persistent, and careful exploration of educational and social beliefs and

principles. After reading each chapter in *Choice Words,* graduate students selected one of

the eight Thinking Maps® to represent the kind of thinking they used to interpret the

chapter reading. The maps were used as temporary structures to help scaffold the students‟

final written reflection on the text reading by visually capturing the essence of their

thinking through each chapter – what ideas from this chapter spoke to you? I provided a

sample packet of maps that I used to capture my thinking as a model for the structure of the

assignment. I also created a map with expectations to guide the written reflection upon

completion of reading the book. The purpose was twofold, to provide a means for students

to gain visible access to a metacognitive process and to set conditions for teachers, as students, to examine their own ways of knowing, learning, and thinking.

During the first two class sessions we paid little attention to the frame of reference, which in Thinking Maps® language, is the "metacognitive frame" for reflection. (Hyerle, 2008) However I realized in order to explore personal filters that influenced the interpretations of the readings it would be necessary to visually frame these screens. So the remaining maps addressed this aspect of mapping and we used David Hyerle"s (2008) reflective questions: What is influencing how you are thinking? What experiences and beliefs are influencing how you are seeing this information? Where are your sources? How are you approaching this problem? If this is what you know, what is unknown to you? (in Costa and Kallick, 2008, p. 165)

During each class session we shared the maps, either in small group discussions or by taking a "gallery walk". The most common feedback from this component of the class was the recognition of the different ways participants captured the thinking and the multiple interpretations of the readings. These written reflections were compared to the written reflections in the final papers from the 2007 course in order to address this question, when graduate students are provided with provisions for experiencing self-reflection in what ways does their language capture metacognitive thinking?

In general these writings were interpretive. The students were in pursuit of meaning rather than on a search for the truth or facts. In light of new information and new understandings they reconsidered what they do, why they do it, and who they are. What was learned in this experience was transferred and became an instrument for seeing a new situation with different eyes. Their experiences revealed themselves in new ways as they

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judged, critiqued, and analyzed the meaning and value of their interpretations. Thinking was connected to an experience rather than a task. Their accounts articulated a transaction between the learner with what was learned through an internal examination of a thinking process.

One person related her reflection to an experience outside of the classroom. Her interpretations of the text readings were transferred to observations of a family traveling with their children and the significance of the language in the talk in which they were engaged. By applying the principles she captured in the readings, she related the course content to larger social and cultural issues. Other students addressed moral and ethical issues by thinking about the implications of their actions (language in the classroom) on the lives of their students.

> *"The experience changed my thinking as an instructor and learner and in turn changed how I interact with my students."*
>
> *"When we honor incomplete answers and thinking, we show students that learning is not an end point but a continuous journey."*
>
> *"When students respond with what seems like superficially irrelevant comments, we dismiss them. In so doing, we commit several blunders."*

When teachers think like this they reconstruct their experiences and see their world from a different aspect. These thoughts address ethical, moral, and democratic issues of how one treats students and how one interacts with them. By being cognizant of their existing social, cultural, and ethical beliefs, the graduate students consciously judge their existing attitudes through consideration of the meaning and value of their experiences.

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"In our class this spring so many of my epiphanies came from talking with

colleagues…

"Since all learners take away different pieces from instruction …"

This thinking presents a self-awareness of new possibilities drawn on insights and

experiences in interactions with others. When the graduate student thinks about the

significance of these social interactions and the community of teachers in which they

interact, their attitudes reflect

Dewey‟s principle of "open-mindedness". Recognizing and accepting the multiple

perspectives within the experience of the course sets the stage for them to transfer

opportunities like this to the classroom. By identifying these experiences in their written

reflections graduate students open the way to make things better for their students.

"I find myself pushing my students away from looking for my approval

and instead looking inside themselves and each other."

This is a paradigm shift from the teacher being in control. The graduate student is framing

who she is by knowing what to do and when to do it. With thoughtful attendance to an

experience the student is developing a plan. Her thinking is evolving into new meaning for

an old thought – a transformation in thinking. When a graduate students makes a statement

like this she is thinking about equitable conditions for learning.

One student wrote about the staff across the district looking at new spelling

programs.

"… everyone complains about a scripted program and yet that is exactly

what we are looking for because we want the program to be easy to

implement consistently across the grades and school. We are looking for

two conflicting policies in one program."

In light of new information a graduate student can interpret a situation from a different perspective. The meaning of the experience becomes more fully developed because the student questions the reasons for doing something by identifying the conflicting values and beliefs. The learner is finding points of relevance in the learning not just by reappraising knowledge but by selectively attending to why, what for, and for whom. This is an open and critical mind in an "educative experience".

"It strikes me that learning and discussion, thinking really, never happens

in isolation. One can always make connections, see things in a new way,

extend the discussion, apply the concepts…"

The language from this response captures the value of one‟s experiences in a community of learners. When one is sharing in a group one takes on responsibility to see things in a new way, broaden one‟s perspectives, and affirm the value of adapting to interdependence. The "learning and discussion" in this forum provides a realm to test one‟s thinking with colleagues. This is the language of a student in a transaction of transforming understandings.

"As with any profound change shifting teacher language begins with small

changes; however, teachers may also undergo a more fundamental

transformation of the "heart and mind".

"As teachers we need to examine our stance towards students as learners

and in our role as teachers."

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"In thinking about how I have changed and how my thinking has changed,

I took time to reflect on my own teaching style… I first asked myself the

question, what kind of teacher do I see myself as?"

This student continues on to describe who she is as a person and how that influences who she is as a teacher.

"I am consciously thinking …, I am more aware …, I am noticing…"

"By using language that summarizes students"responses, solicits

students"questions, allows student wait time, promotes each student to

evaluate my comments, asks each student how they "know", and

acknowledges that nobody has a corner on truth and perfection, then there

is a good chance that we"ll al be living in a stronger, more positive

democratic society."

"I was not expecting to learn what I did about myself as a student and a

teacher…"

The language in these reflections is a broader consideration of where one is going and how one presents oneself to students. Reflection takes on an affective dimension of attitudes that look at change from moral, ethical, and democratic perspectives in terms of "a fusion of the intellectual and emotional".(Dewey in Rogers, 2002, p. 858) These attitudes toward learning are less reactive and more responsive to understanding who one is and how that influences how one interacts with students.

"When I first started reading Choice Words by Peter Johnston, I thought it

was going to be another book written by someone who really doesn"t know

what it is like to be in the classroom … I found myself coming away from

the book with many key concepts."

"Now that I have finished reading the book Choice Words I'm feeling

much more confident than I expected to be feeling at this point. I see all of

the things that I have been doing and saying and the things that I have

been almost doing or saying correctly."

"I packed up my book and Thinking Maps® and joined my colleagues on

the journey to change."

"After reading Choice Words there is still a certain amount of trepidation

that looms in the recesses of my mind. However, I believe that trepidation

is there to remind me of my job as an educator and the importance of

providing students with the language, atmosphere and environment vital

to interact with their peers, take responsibility for their learning, and

build strong positive identities."

The language in these reflections establishes or reestablishes beliefs, principles and values on a basis of trust in whom they discovered they are. The students are thinking about the significance of their understandings in relation to personal and practical situations. These are their understandings; the ways of knowing that matter to them. They are making meaning through interactions with another person, another person̊s ideas, and the environment at hand. They are changing, and aspects of their world are changing. While thinking about their own thinking they are learning about life from the meaning constructed through an experience. The skepticism of outside sources has been replaced by a confidence in giving voice to what they know and still need to know. Graduate students felt

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that Johnston used examples from classrooms making his ideas relevant and authentic. As a result their interpretations of Johnston‟s work were constructed from a personal view of the world rather than a researcher‟s conceptualization. Students engaged in a metacognitive process of careful examination not a point of view. The fusion of the passion of a learner and objective knowledge are present in this language.

These written reflections relate personal and professional experiences as a resource for growth. Experiences with learning constructed from relevant problematic situations allows the students to set the boundaries for what they attend to as learners. They identify and name conflicting ideas and decide on a direction for change. In a sense they are observing their own thinking processes. The language in their reflections is established in what they know and believe leading them to "not teach in a fashion that is "transmissionary" but to put students in the "driver‟s seat" as one student wrote.

Summary Sample A Post Course Written Reflections

These written reflections provide a means for continuity and growth as the teacher in the role of graduate student thinks about relationships between what happens within an experience and how one transacts with what is learned in that experience. This activity characterizes growth in learning and growth in the learner. Learning is about both practical and theoretical ideas. There are indications of a real struggle with issues. Some students acknowledged that they came to the situation with a resistive stance, yet they reconsidered their stance and turned situations into learning experiences. The language in their written reflections captures the thoughts, relationships, and appreciative aspects of learners and thinkers.

Their writing is an examination of their knowledge, attitudes, and understandings. The students in this graduate course have moved beyond looking for answers from outside sources to understanding and interpreting through interactions with others and within themselves. The situated community is a testing ground for trying out their thoughts. As members of a group they have taken on the responsibility to engage in a thinking process that draws on multiple perspectives and multiple possibilities. Understandings evolved from thinking about their own thinking rather than learning the application of technical treatments.

These reflective writings give insights into the ways in which these graduate students engage in social interactions as well as how they confront the constraints of institutional structures. They are rich and complex accounts of understandings in the social, moral, and ethical aspects of teaching. There is more discussion of fundamental issues than techniques. The process of metacognition is evident from their reflections on learning about thinking, learning to think, and learning by thinking. In their descriptions reflection relates to growth, ways of knowing, and ways of constructing meaning.

The students are not simply reappraising knowledge, they are selectively drawing from personal and professional experiences to interpret and construct new understandings. Old ideas, habits of actions and routines are transforming as the teacher as learner thoughtfully confronts complexities in her transactions with self, others, and the situated environment.

The Use of Thinking Maps®

Use of the maps with students and use of the maps by the teacher educator. The analysis of the Thinking Maps® is twofold, the maps that were used with Sample A

students and the maps that were being developed by me, the teacher educator, to use in the course. Analyzing the maps used by Sample A students to write their reflections on the text readings, a pattern weaving through the maps was the amount of text on the maps that was simply phrases or terms rewritten from the book rather than interpretations by the reader, in particular through the first three to four chapter readings. After having had an opportunity to test their ideas through class discussions in a community of learners and to see multiple interpretations of the same text through the variations in the maps chosen to represent the interrelationships of the known with the new information, their written reflections took on a more interpretive nature with more complex perspectives and transformations emerging. Coming to terms with their own suppositions, biases, and judgments in relation to new understandings from the text and new perspectives from interactions with their colleagues, new meanings emerged that enhanced their thinking. This was evident in accounts of their experiences in the classroom describing the affects of word choice on student learning, and accounts of how student interactions with the teacher took on new meanings. Writing about qualities needed to live in a democratic society, moving beyond life in the classroom, creating an environment that nurtures, and developing a strong sense of agency are moral and ethical issues that bear on educational practices as they affect student learning.

Initially they framed their maps by drawing a rectangular frame around the map, but neglected to insert any text within the *Frame of Reference*. The lack of attention to this piece generated some thinking about how we had to move beyond simply using the maps to organize the information from the text readings. Realizing this was the metacognitive element of working with the maps, I asked them to step back from their maps and consider these questions:

What is influencing how you are thinking? What experiences and beliefs are influencing how you are seeing this information? Where are your sources? How are you approaching this problem? If this is what you know, what is unknown to you? (Hyerle in Costa and Kallick, 2008, p. 165)

Initially they simply answered the questions at a literal level – personal experiences, classroom experiences and observations of colleagues, collaborations with colleagues/discussions, text readings/course work, and training in the use of specific programs. With more attention to the frame of reference as a tool to make one"s metacognition public, new thoughts and attitudes emerged in the form of questions and reflective language. Here are some examples taken from various frames of reference on the graduate students" maps:

- *"We only have kids for a short period of time will what we say have an impact beyond our class or even beyond fifth grade?"*
- *Language and careful wording are so important."*
- *"Yikes! Did I really say that?"*
- *"How can we encourage everyone to think about what we say?"*
- *"Realizing we don"t have all the same connections students often have better questions than we do."*
- *You never stop learning. I learn something new almost everyday."*
- *"Can I see myself in you?*
- *"What do these students need from me?"*
- *"What does it mean to live?"*
- *"What image of humanity is inherent in a teacher"s view of human learning and inquiry?"*
- *"What is the responsibility of the teacher to humanity?"*

Upon reading and analyzing the map structures and the accompanying frames of reference, I wondered what other questions could be asked in these frames to more adequately represent their culture and biographies. In consideration of the changes in the cognitive meaning of their learning experiences evident in the language within the frame, I moved into the next phase of this investigation – in what ways can I reconstruct the use of the frame of reference with adult learners to guide the development of the teacher as a metacognitive agent? This aspect of mapping revealed a new pathway to meaningful learning. So I decided to critically re-examine the personal maps I had constructed to outline, describe, and define course expectations for clarity, reconstruction of language, and new insights and relationships.

Changes in Thinking

New perspectives on a frame of reference. Re-examining the early models of the maps used as examples by this researcher, it is evident they are simple descriptions and definitions or literal comparisons and categorizations of ideas. The process of experimenting with the maps involved many experiences rethinking and revising how to apply them in a graduate course of study to foster reflective thought. Each encounter with the maps over three semesters of using them generated more meaningful perspectives on their possibilities. Initially during class meetings we collectively created maps following discussions and readings. As a result of mixed reactions to the use of the maps, in particular with Sample B, the group who did not have any training with the maps, I made a decision as a researcher to use them with this group as a way to visually represent and explain the course requirements. With Sample A, the group receiving training in the use of the maps,

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we continued to practice using them together and thinking about what we needed to do to make the ideas taken off the maps more thoughtful and reflective.

Believing that if students saw a visual representation of the teacher educator"s thoughts, the next idea was to use the structures of the maps as examples to explain and define the course requirements. The purpose then became to use the maps as a guide for students as they moved through a process of thinking about their own thinking and attending to changes in their own meaning perspectives. Unsolicited feedback from students indicated it was *"helpful to see the big picture"*, as well as to see a comparison of the various types of writing required. However, upon further analysis of their written reflections, students" responses focused on simply answering the essential questions in the frame of reference: What is influencing how you are thinking? What experiences and beliefs are influencing how you are seeing this information? Where are your sources? How are you approaching this problem? If this is what you know, what is unknown to you?

For the most part, students used each question in the frame as the heading for the next idea in their writing – a formulaic written response. What was missing was the transaction between the learner and what was learned. Even the samples used as models to demonstrate the context of the maps were not focused on learning, thinking, and metacognition.

Each term presented new challenges in the pursuit of developing metacognitive agents. After critically examining the questions guiding the course of study more changes occurred. In order to develop as a metacognitve agent, one needs to actively experience a journey of learning; one needs to think about how a given situation "talks to you"; and one needs to be consciously aware that in the process of learning and growing perspectives and

experiences take on new meanings. This was evident in the questions within the *frame of reference* submitted from Sample A. Drawing on this new perspective it became evident this concept required a transaction of the learners with new learning experiences.

Asking students to synthesize their responses to the readings in a written reflection focused them on content and amassing new knowledge. On the other hand, describing how one interprets new information or sees new perspectives based on personal and professional histories uncovers a process of thinking about who one is, how one learns, and how one changes when one encounters new meaning perspectives. The differences among the various kinds of writing, a response to the text readings, a synthesis of their journal entries, and a reflection on a process of inquiry, were not clear.

A metacognitive agent attends to the relevance of prior knowledge in a transaction with new learning. A metacognitive agent considers how that knowledge influences interpretations and transforms learning, leading to continuity and growth. A metacognitive agent engaged in research analyzes, judges, and critiques how he or she approaches a problem, why that problem is important, and how the assumptions from one"s background influence one"s stance. A teacher in the role of a metacognitive agent is consciously aware of how a learner evolves. With this in mind a new question surfaces, what are more effective ways to help graduate students get inside their heads and think aloud?

In the introduction to Thinking Maps Hyerle (2007) refers to the *frame of reference* as an addition to any map that allows students to think about their thinking and visually represent what influenced their thinking (p. 20). Drawing on this concept, a different model of the research paper with a frame of reference taking on a more significant purpose as a

temporary structure for fostering the development of the metacognitive agent was conceived.

Thinking of research not as a way of simply finding out what someone else studied and uncovered, rather as an interpretation influenced by the assumptions, points of view, and judgments one brings to an experience, a student's personal and professional history has a more significant place in a thinking process.

Mindful of the need to enhance the depth of reflection in the final papers and the notion that the solution to a problem or dilemma is uncertain; from the perspective of a researcher I redesigned the essential questions guiding the construction of the research paper in a way that would help students see through the habitual routines and patterns through which they were accustomed to interpreting this kind of experience. Rather than write about information they gathered through their research, I designed questions for students to consider that would allow them to describe the lens through which they look in the pursuit of interpreting new information and constructing meaning; questions that would help them find their point of view, their principles, their beliefs and values in a journey of learning where previous ways of knowing are modified or altered as a result of realizing new perspectives. Thinking about the development of the metacognitive agent meant the graduate course Research in Reading and Writing needed new direction. Using a frame of reference as the focal point, essential questions shifted to thinking about oneself as a thinker and learner. How does one approach a puzzling situation? What influences how one interprets multiple perspectives? In what ways does one change in a journey?

Post Course Questionnaire Sample B Participants

Analysis of language after a redesign of frame of reference questions. For graduate students in Sample B the course of study was Research in Reading and Writing, a core course in the Reading and Writing Specialist program of studies. The final project was to inquire into how to redefine a dilemma they were experiencing in their classroom life from a different perspective. They were given a template and a Thinking Map® that outlined essential questions to guide their inquiry. (Appendix A) These supports provided more specific guidance as a result of examining and rethinking experiences with Sample A and redesigning the frame of reference.. In comparison to the written responses to the post course survey questions from Sample A, the language is more diverse and rich ranging in clarity, critical perspective, and self examination. The responses spoke to many different aspects of metacognition, and the value of particular ways of thinking and learning referred more to experiences than tasks.

In what ways do you reflect on your learning in your graduate courses of study?
Overall the responses to ways of engaging in reflection on learning are that thinking is purpose driven and self-regulated. *"By thinking about new knowledge and looking to see how it connects to what I am doing …"* suggests that one‟s thinking is purposeful and mindful ascribing meaning and significance to what one does. *"Call upon content of earlier classes"* and *"…think about how to apply old knowledge to new"* are thoughts that indicate an assimilation taking pace between new experiences and acquired knowledge. *"Every day life …"* implies reflection on experience or "learning the world" as Lucy Sprague Mitchell describes in courses of study on learning to teach and Bank Street College of Education (2002, Grinberg, p. 1432). Dewey refers to this as "integrating the

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content of schooling with activities of life". In response to this question teachers wrote more about connections than change. They referred to the ways in which the research paper *"forced me to reflect on my own learning"* and how *"... being a student I identify with my students"*. Their responses included interactions taking place between who they are as individuals and aspects of their world. Their ways of knowing addressed Dewey"s concepts of "open-mindedness, responsibility, and whole-heartedness". *"... incorporating [new ideas] with what I already know"* ascribes particular meaning and significance to the new.

Thinking on personal time addressed conscious awareness of one"s thinking; and the social aspects of learning were addressed through interactions at both personal and professional levels. Through these interactions, whether with family members, colleagues, or friends, they wrote about how they reanalyze in light of new information. *"Make connections and bridge from one class to the next ..."* implies a process of unfolding experiences in which what came before leads into what comes next and an occurrence of integrations of previous held positions with new materials. *"When I hear/read new information I incorporate what I already know – what fits, what doesn"t, and why?"*

What in your experiences as a learner influences how you approach new learning? These responses refer to many conditions that give their experiences, both old and new, meaning. The responses suggests that the teachers are constructing portrayals of their own learning. *"Build upon my current knowledge base", "Come in with more foundation of understanding", "I keep an open mind…"* refers to what matters and what is significant in setting the foundation for continuity and growth. Their practitioner knowledge forms the foundation for understanding the new at a more reflective level.

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Several responses reflect Dewey‟s concept that "we think and reason by thinking and reasoning". They bring into consciousness personal experiences and learning preferences, and the value of practical knowledge as a foundation for interpreting the new.

"I need to take it slow and make sure I have time to reflect."

"I approach new learning with enthusiasm and curiosity."

"I always feel elated to solve a problem or learn something new."

"I was shy and spent time alone so that experience led to my approach…"

"The way I compare myself to my classmates, I may feel a certain level of comfort or discomfort" suggests a pattern of growth reflective of Dewey‟s equilibrium and disequilibrium leading to the restoration of equilibrium. Intrinsic desires and purposes determine what is attended to and show the "humanness" of reflective thought; the reference to personal experiences with learning form a frame of reference for understanding the self, the world, teaching, and learning.

What fosters reflective thought? These responses bring consciousness to a level of critical examination. Reflective thought is fostered by seeing possibilities in uncertainties. Just as in the Sample A group time issues indicate awareness that reflection is a slow process – one needs to be able to dwell on ideas and dwell in the thinking process. As in Sample socialization fosters a collective effort for looking at multiple alternatives in dealing with educational dilemmas. Engaging in a variety of ways of interpreting an experience with colleagues enables one to think beyond one‟s own limited perspective. *"Conversation – new ideas come up when you can talk about it … " "When other people reflect, it stirs up my own reflection."*

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"If something is particularly moving or influential to me, I stop to wonder why (or if I am struggling)". This response implies a move beyond the unsubstantiated opinion to a consideration of other possibilities.

Bringing consciousness to the level of examining one‟s own thinking was implied through several different responses, and gives insight into whom one is.

"*Writing – having to write focuses reflection – it makes you organize your thoughts and examine them."*

"Looking over what you've done and wanting to improve."

The "hurdles in life …" foster reflective thought because they "reposition a seemingly negative event" (Larrivee, 2000, p. 299) leading the learner to learn or think differently.

What transforms professional learning? The responses to this question indicate teaching practices remain open to further investigation. What is made evident in the thinking is transactions and transitions.

"putting learning into action … this sounds great but does it

  work?"

"my knowledge and experience change how I think and learn…"

 "The difference between now and when I was an undergrad, now I want

to learn and gain experience, extending past the required assignments."

These responses imply the learner sees the same world from a different perspective. Open-mindedness and whole-heartedness are evident in these written expressions: *"learning in different ways", open to new ideas"*, and *"willingness to try new things"*. Transformation takes place when one is willing to *"critique your own work and look more closely at your*

weaknesses and find ways to improve". Transformation of professional learning occurs when one uses knowledge and experience *"not mandated but because it was a natural fit for you"*.

Once again, practice, feedback, and discussions were ways to take an active, reflective stance. Engaging in conversations with others helps them "to see the nature of forces that cause them to operate they way they do and …move beyond intellectualizing the issues to concrete action for change" (Smyth, 1989, p. 6). Transforming professional learning includes the support of others who are experiencing dilemmas, questions, growth, and a vast array of knowledge that makes up people"s understandings. From these responses transforming professional learning includes socially constructed knowledge. They are not just doing what ought to be done or relying on verbal summaries of someone else"s interpretations. Their responses are more focused on a process that allows for questioning the taken-for-granted.

In what ways have you engaged in reflective thought in your graduate courses of study? Engaging in reflective thought involves some form of critiquing and analysis.

> *" I think about how I can use what I know … imagine ways to show my kids."*
>
> *"I try new things with my students … I keep records of what works/doesn"t work."*
>
> *"Talk to others … practice something I learned in class in the workplace and then reflect on whether or not it worked. Ask why."*

They acknowledge select experiences connected to subsequent experiences or consequences. They are thinking about conditions in the environment and experiences that are conducive to change.

The engagements in reflective thought addressed personal experiences in school and a conscious awareness of values and beliefs both personal and professional conducive to thinking about one"s own thinking. *"I think back to my own experiences in school. I also watch children and see and try to understand what they"rethinking based on what I"ve learned."* The teachers as graduate students also wrote about continuity and transactions between the learner and what is learned.

"It is wonderful how the different courses seem to mesh. When one course builds on another."

"Continue to think about what I learned and how that changed my beliefs or behaviors."

"... reflect on what I knew before the course and what I know after and think about how my teaching has changed."

They honor their experiences yet accept change as a necessity of the process.

Personal and professional experiences along with the intersection of practical experiences and scholarly knowledge give meaning and significance to metacognition. Self-examination, adjustment, and thinking about one"s own thinking and learning are evident in these responses. They are moving beyond the technical to the moral and ethical dimensions of thought.

What do teachers need to support growth in learning? The language in these responses has shifted from connecting growth to being skillful and amassing knowledge to

attitudes and perceptions – *"empathy, desire to learn more, ability to observe analytical and critical thinking, inspire students through our own passion to want to know more, grow from knowledge"*. Time and support from administrators was mentioned frequently –

> *"support from administration to try new things and know that it is OK to fail sometimes, pick up and try again"*.
>
> *"...open, not always directed, control/choice in how they try things out in the classroom." "Respect the individual, try to keep things fresh and engaging."*
>
> *"...flexibility within structure. Opportunities for teacher research, reading and reflecting."*

Experimentation and reconstructing experiences are seen as opportunities for growth in learning, and accountability gets in the way of change. They are moving beyond a reliance on outside sources for the answers to their dilemmas.

Post Course Written Reflections Sample B after a Frame of Reference Redesign

Language analysis of written reflections in final research papers. The research for the final paper covered a variety of literacy topics dealing with very specific issues and trends surrounding these topics. An examination and analysis of their papers reveals teachers who see themselves as researchers and transformed learners.

> *"My journey as a teacher researcher began when I realized it was my abandoned principles that eventually led to a painful teaching existence."*

Feeling stifled and constrained by the habits and routines of their institutional environments and situations at hand, these students invested in this intellectual activity to face a dilemma about which they were passionate. Challenged by administrative directives

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and district initiatives requiring them to use programs, methods, or techniques conflicting with principles, values and beliefs, these conflicts guided their process of thinking. *"My morals are being challenged."* The struggle within their environments to connect principles that they valued and ideas that they wanted to hold on to created an ambivalent attitude toward prescriptive reforms. *"My colleagues and I are confused but remain open-minded …"* or *"This constant changing of what we are teaching and why we are teaching it led me to a state of constant frustration."* The discomfort of being in this position forced them to reexamine their assumptions and practices. They wrote about the notion of *"trying to buy-in"* fighting against the belief in *"doing what is truly right for the students"*. As a result of acting on and processing new information with new eyes, they discovered the growth path where possibilities exist and a truth emerges. A truth that then unlocks more possibilities by generating continuity.

In an effort to remedy problems, they neglected to think about understanding them. Initially students undertook their research as a search for answers, more knowledge to enhance habits and routines, or tools for a toolbox of techniques and methods. *"Although the outcome of the study was not what I had hoped it to be, there are many rewarding by products …"* However, along the way, instead of taking the given path they opened their minds to new ideas. With open minds they unveiled multiple ways of learning how to construct new meanings.

> *"I honestly started this project with expected outcomes that I would find a*
>
> *way to comment on students" papers, I never in my wildest dreams*
>
> *expected to shift my paradigm of writing instruction."*

"What started out as a goal for me, turned out to be a learning experience

that will benefit my students."

In a search for answers they discovered they had more questions. The new questions helped

them understand that what they were really struggling with was not knowing what they

thought they knew.

At first students thought their research would be complete when the answers

revealed themselves. What became evident is that questions propelled the learner forward.

The end became another beginning.

"While I began my research looking for answers on how to teach… I

found that in the end it was not the answers I needed. …I needed a better

understanding of my students and how to interpret the information they

give me. I needed to know what I did not know to know what I am

searching for."

The questions were the thinking aloud that gave insights into the metacognitive dimension

of reflection. Questions generated more possibilities and new meaning perspectives. Some

questions addressed better understanding of theory and others put theory into practice. One

teacher said, *"I have a hard time letting go of the notion of not teaching grammar as a*

separate entity … I wasn"t taughtthat way and I wasn"t taughtto teach that way." This

conscious awareness of the filters that influenced what she believed and how she

interpreted her research led to this new understanding, *"While researching … I came up*

with a few answers and even more questions."

This critical analysis and self-examination of their thinking revealed another aspect of the metacognitive agent – what in one‟s personal and professional history influences how one sees different aspects of his world?

> *"The biggest focus of the writing assessment has been on me… I realize through this process, this stems from my special education training and feeling the need to control all aspects of feedback because I was under the impression that this is the best way for students to learn."*

Their written accounts describe a critical analysis of one‟s wisdom of experience and ways of knowing to understand what influenced one‟s interpretation of an experience – in this case a puzzling situation. This genuine conscious awareness of what influences what they attend to and what is important established the foundation for their inquiry and the path they followed in pursuit of transacting with their learning. *"While I initially set out to understand how to best meet the needs of one specific student, I discovered a change in my thinking that went much further."* Looking into their personal and professional histories enabled them to transform their experiences. *"I understand I may have to make an ideological shift once I delve into this… but I‟mopen to a new way of looking at all this."*

When students wrote about their firmly held beliefs from a more critical and judgmental perspective they saw how these were getting in the way of making change. They experienced disequilibrium and cognitive dissonance. One student used the analogy of the sea to describe her disequilibrium - at times calm and serene and at other times wild and untamed. When it was calm she felt safe and in control, but when the sea was in control there was sense of discomfort and volatility.

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Initially she interpreted this sense of discomfort as a conflict that prevented her from doing rather than seeing another way. *"After reading all the research for this paper, I realized that I have left out a key component of the program."* Seeing her world from a different perspective she understood her experiences with new eyes. What she initially interpreted as hurdles, she saw as possibilities – *"What I will do differently …"* Discarding old beliefs students wrote about change as necessary and important dimension of reflection. What they initially interpreted as something that couldn't be done; with a new meaning perspective they saw possibilities for change or modification. They recognized their challenges as opportunities for new learning experiences. Their thinking connected personal and professional histories with new knowledge from the research into a synthesis that transformed the learner and the learned. *"I was actually being the teacher I dislike … and then had the nerve to wonder why my students" writing was so poor."*

 Describing an active process of judging the meaning and values of one's experiences and critically examining the influences that filtered what one understands or doesn't understand, students reframed ideas and challenged beliefs, values and assumptions. Incorporating personal and professional experiences with researchers" findings, they planned new intellectual activities supported by theories and principles. Rather than simply making change or writing about change, they placed more significance on what change meant to them. Their personal and professional histories revealed the various ways they look into their minds.

> *"I think the best part of my research was realizing that this is truly one of the ways I learn and make meaning for myself… I better understand myself as a student and I hope this will transform me as an educator."*

The process of thinking about their own thinking and articulating who they are as thinkers and learners helped them bridge the gap in their understandings. They wrote about what was important about this topic from the perspective of what they learned about themselves.

> *"The more I reflect the more I connect the dots in my mind, rearrange my knowledge and generate more questions yet to be answered."*
>
> *"I think it"s an educated soul"s mind to constantly search for information and patterns and to strive to make sense of it all through one"s prior knowledge and experience."*
>
> *"As I look back and reflect on my previous understanding ..., I can say without a doubt that I was very close-minded. I refused to see journaling as valuable, because I did not understand why I was asked to do them. I have also realized that as a learner I can have negative biases towards learning experiences when I do not fully understand why I am asked to complete them. With this new understanding gained, I must now help my students understand the value of ... because like me, the students will not fully benefit ... unless they fully understand the purpose of ..."*

This internal examination of their thinking and learning gave them insights into how a teacher as a learner imagines possibilities which leads to depth of understanding from new perspectives on familiar experiences. *"Learning involves making connections. It takes time, reflection, questioning, and opportunities to interact with others."*

Summary Analysis of Written Reflections from Sample B Participants

The language in these research papers describes a critical examination of how a learner experiences learning. Carefully and persistently students described continuity and growth beyond the boundaries of the topic they selected for their research. Posing problems from a puzzling situation important to them led to an integration of many social, ethical, personal and academic transactions between the learner and the learning. Written reflections revealed a generative process in which one puzzling situation posed another problem to understand. Using what they learned from one experience evolved into a synthesis of metacognitive experiences, connecting the new learning with knowledge of self and accumulated experiences. *"Personally all facets of this class have reminded me and reinforced for me the very human and personal natures of both reading and writing …"* Personal, ethical, and moral aspects of change distinguished the technical thinker from the metacognitive thinker. Rather than simply making change they placed more significance on understanding relevant ideas. *"We need to enable all students to have access … to learning experiences that broaden their horizons and open their eyes to the world around them."*

Appreciative aspects of learning were not about academics or the technical aspects of teaching. Personal and professional biographies acknowledged the rhythm of learning within an active process of restoring equilibrium. Attending to their thinking as they processed new information led to revisions in their guiding research questions. These revised questions signaled a transition from a technical point of view to a more metacognitive position. *"Because this research was so pertinent to me as a professional, I feel somehow a little more whole for having completed it."* Topics that mattered to them

helped them engage in a metacognitive process. *"It is… my hope that teachers will once again be trusted to be the experts. Until that day comes, I will remain teaching out on a limb."*

Their papers hold the language of metacognitive thinkers; agents who describe a journey of learning as they think aloud through a process of transformation. In the process of working through a dilemma they constructed new understandings of who they are as thinkers and learners, what is important to them and why, and what influences what they attend to and how they see their experiences. Metacognitive thinking overshadows the technical aspects of teaching.

Awareness of their personal and professional histories, helped them develop new meaning perspectives. *"I didn"t feel that my own training and experience covered enough territory to validate my decision … so I went strictly for using one research-based model handed to us. I felt safe in that moment."* However, in the process of thinking about the path they chose they noticed how the tone of learning in the classroom, feelings and attitudes of students, lack of motivation, and environments *"void of enthusiasm"* conflicted with principles, values and beliefs. *"The excitement and joy of writing with purpose was gone and along with it , my purpose for teaching."*

What started as a search for answers ended in finding meaning in who they are, why they do what they do, and the appreciative aspects of teaching. Transactions with their learning as they confronted disequilibrium and cognitive dissonance revealed a passion in their voice. The knowledge base they brought to their experiences was merely one aspect of learning. As metacognitve agents they imagined more.

Analysis of Language from Online Chat Room Discussion

Sample B graduate students also engaged in an online Chat Room discussion to a commentary by Thomas Newkirk, *Stress, Control and the Deprofessionalizing* of *Teaching*, published online October 16, 2009 at Education Week. Newkirk comments on the notion that when teachers lose control of decision making through the power of complex educational systems and programs it deprofessionalizes teaching. The discussion is a contribution of many experiences reflecting how graduate students attended to their own meaning making process. They give insights into the diverse perspectives and interpretations of this commentary. The transcript captures the power of social interactions in presenting multiple perspectives and interpretations on a topic.

The chat conversation focused on the teachers" lack of control over who they are, ethical and moral beliefs regarding teaching, conflicts with principles and values, and the ambivalence in confronting multiple reforms and directives. During this social encounter many questions impelled them to make sense of who they are, and to find the reasons for why they do what they do, and the meaning in the conflicting ideas they confront.

> *"...why would we need everything to be provided and scripted?"*
> *"I think ... teachers have always felt they lacked the control they needed*
> *to create the best learning environment." "... one size cannot possibly fit*
> *all."*

As outside sources continue to direct what they ought to do, they confront cognitive dissonance through the act of questioning the lack of trust in the wisdom of experience and empowering teachers.

> *"...teacher wisdom is a valuable asset that receives no recognition."*

> *"I agree ...when you say teachers are our most valuable resources and*
>
> *their most valuable resource is their experience."*

Their stories about the frustrations of working with discontented colleagues describe the conflicts within their own belief systems and how they are mindful of how who one is and what one does shapes the learning experience.

> *"... to sit and watch her „give up" as I was learning about best practices*
>
> *and working so hard to get to a point where I could teach."*
>
> *"...sometimes it is hard to get past the mindset of others about the value of*
>
> *what you do with your students."*

The conversation also addressed restricted freedoms when teachers are given the opportunity to select programs and create their own lessons, yet parameters restrain their teaching options.

> *"Teachers at my school have been given...new programs. They wanted to*
>
> *look at everything and figure out how they want to use them in their*
>
> *classrooms ... They like the freedom that they have been given to create*
>
> *lessons ... the principal and the curriculum director don"t wantto give*
>
> *them the time."*

Collaboratively they lend support to their colleagues" dilemmas and perplexing situations within their working in environments.

> *"Do you think a school building gets an air of stress from the way the*
>
> *administration handles pressure from above?"*
>
> *"Excitement is contagious, but so is misery."*

The culture of the institutional environment played a key role in this conversation – how

teachers were seen in their roles and how leaders set the tone of the environment within which they work.

"… schools don't care how the teacher makes it work, just that it does and quickly."

"Rushing to cram so much in is what defeats us because it doesn't stick."

"Without the excitement, creativity, and passion a teacher brings, the classroom becomes an institution rather than a positive learning environment."

This conversation is less technical and more emotional and personal. The students shared many perspectives on puzzling and perplexing situations through questioning as well as advocating. They brought forth both the personal and appreciative aspects that influence who they are and the lenses through which they look as they confront disequilibrium.

"Maybe I'm playing the devil's advocate here …"

"I ask [series of questions] because I sense that …"

Their thinking attended to beliefs, social, emotional, and ethical, about many aspects of teaching in addition to the wisdom of experience.

"...empowering teachers to be the best they could be and students would reap the benefits."

"When I plan a unit, I have a full understanding of why I am developing this … I know the emotions that are in my units …so, how do I put authentic emotion into someone else's lessons."

"No emotions in the ready-made plans of basal programs…"

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"There"s onecomment I don"t think I"ve ever heard from a teacher ... that

they are bored. Teaching is definitely not boring!"

The transcript from the chat room discussion captures various aspects of social

interactions and the appreciative aspects of learning from each other. The thinking

embedded in the language of this exchange reveals many attributes of a metacognitive

agent. Teachers confronted cognitive dissonance with their colleagues in pursuit of trying

to make sense of the perplexing situations they face in their institutional environments. In

this social interaction graduate students are building collective wisdom. Their language

unveils the rhythm of learning.

Results

What characteristics distinguish a metacognitive agent? We teacher educators

have a commitment to help teachers become more metacognitive – to understand who

they are as learners and thinkers. We have an obligation to give voice back to the

silenced. The development of the metacognitive agent should be at the core of teacher

education programs. In a paper that formed Program 7 of „The Great Educators" First

Series broadcast on May 9, 1994 Dewey states, "We learn to think and reason by

thinking and reasoning, by tackling real problems which arise in our experience."

(Flanagan, 1994)

Figure 2 distinguishes the metacognitive agent. This chart is the result of an

exploration of multiple perspectives and reflective thought. It evolved from an analysis of

the language in graduate students" responses to a pre and post course questionnaire,

written reflections in their research papers, and a chat discussion transcript. The criteria

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for this chart are supported from well-established studies on the nature of reflective thinking, transformative learning, and adult learners.

Figure 2 provides a visual presentation of a meaning making process. It is a conceptual framework to analyze the various aspects of teacher thought in order to guide graduate students through a metacognitively reflective process of meaning making. Drawing on an analysis and interpretation of teacher language this chart is based on the theoretical perspectives of a variety of theorists who have undertaken similar investigations. The language describes how teachers acting as metacognitive agents negotiate through a meaning making process and captures theoretical concepts of what to examine when developing metacognitive agency. It is intended to be a tool for analyzing teacher language when reflecting, and it is a reference defining various dimensions of reflective thought.

In order for reflection to be more than a generic slogan in teacher education programs, we teacher educators need to have a better understanding of what it means to help students think about their own thinking – who is the metacognitive thinker, and how does one know when a student is thinking with metacognition. Exploring how professional developers may benefit from understanding and using transformative learning, Cranton and King (2003) say that "the heart of transformative learning is about critically questioning and reflecting on what we do, how it works, and why we believe what we do is important."

Attending to their own thinking teachers can learn to enhance their personal and professional effectiveness. Figure 2 captures an analysis of various perspectives of

teacher thought and provides a descriptive visual tool for analyzing teacher language, presenting characteristics that distinguish the teacher as a metacognitive agent.

Teachers enter graduate studies with basic orientations reflecting a complex interaction of what they believe to be true, to be valuable, and to be real as well as different points of view, perspectives, standpoints, and outlooks. The descriptors in Figure 2 are not intended to be right answers, or a checklist of behaviors; rather they capture student educator thoughts about conditions which give an experience a meaning and foster change in old perspectives. Represented in Figure 2 are various dimensions of reflective thought as captured in the language of teachers" thinking. When a teacher says…, what are the indicators in that language that he or she is thinking as a metacognitive agent.

From an analysis of data in this study criteria emerged distinguishing the technical thinker and the metacognitive thinker. Using the language of teachers the researcher was able to reveal metacognitive thinking in order to move beyond technical thinking or objective, scientific knowledge. How do students of education examine their practices critically, explain new experiences, or acquire alternative ways of understanding what they do? What is the language of thought of the teacher acting as a metacognitive agent? How do we transform students of education to metacognitive agents? Within the dimensions of metacognitive thinking represented in Figure 2 is the language underlying the development of metacognitive agency.

The researcher chose not to use the term non-reflective in this comparison of response to survey questions and written reflections because teachers as students are reflective by nature, although some reflection tends to focus on a more technical level of

thinking rather than a metacognitive level. "It is more important to make teachers thoughtful and alert students of education than it is to help them get immediate proficiency" (Dewey, 1933 in Taggart and Wilson, 1998, p. 37). From this perspective the researcher was able to reveal several dimensions of reflective thinking.

The analysis of this data is an interpretive approach concerned with clarifying meanings, assumptions, judgments, and perceptions. As opposed to the analytic sciences, this explanation and interpretive approach seeks to provide understandings of the ways in which teachers as graduate students socially construct knowledge leading to transformative thinking not answers, certainty, or order. The instrument is designed to examine how graduate students perceive reflective thinking, "In problem-posing education, men develop their power to perceive critically *the way they exist* in the world *with which* and *in which* they find themselves; they come to see the world not as static reality, but as reality in process, in transformation." (Friere, 1970, pp. 70-71 in Van Manen, 1977, p. 221)

The language differentiating the metacognitive agent can be used to analyze thinking connected to experiences rather than tasks. Graduate students of education assimilate new experiences in ways that make sense to them, and they have reasons for what they are thinking. The language in Figure 2 shows how personal and professional experiences frame the wisdom of experience and shape the way one interprets and responds to situations; all crucial to a metacognitive stance.

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Figure 2 Characteristics of a metacognitive agent

What characteristics distinguish a metacognitive agent?		
	Technical Thinking (TT) - thinking about practice	**Metacognitive Thinking (MT) – thinking about one's own thinking**
Transformation	• Learning is based on new ideas, new ways, and new information rather than a construction of meaning. • Teaching and learning preferences shape the way one teaches and can impede possibilities of things being otherwise. • Without analysis or critical examination learning is transmitted as the "book" says and one's effectiveness as a teacher depends on this. • One changes one's world rather than tries to understand it.	• In light of new information and new understandings one reconsiders what one does, why one does it, and who one is. • One establishes and reestablishes beliefs, principles and values. • The skepticism of outside sources is replaced by confidence in giving voice to what one knows. • A transaction takes place between the learner and the learning. • Thinking is related to the implications of one's actions on the lives of students. • Aspects of one's world change – new meaning perspectives come to light.
Language	• One's language is an uncritical interpretation of the beliefs, values, and purposes of others. • Responses or written reflections are verbal summaries of someone else's thinking. • One dimensional thoughts describe acquisition of knowledge about "how to" do a practice or finding the right answers. • Language is "peppered" with references to absolute knowledge.	• The learner uses language that judges, critiques, and analyzes the meaning and value of interpretations. • Ethical, moral, and democratic issues are evident .in the language of reflection. • The learner uses language that acknowledges the value of experiences in a community of learners. • The learner considers a broader and more ethical perspective of who he or she is and how he or she presents oneself to students. • The learner's language captures personal thoughts, connections, and attitudes.

Figure 2 (continued)	**Technical Thinking (TT) - thinking about practice**	**Metacognitive Thinking (MT) – thinking about one's own thinking**
Appreciative Aspects	• One gets caught up in the culture of the institution – a "run with the herd" mentality. • One feels stifled and constrained and sees only one way of doing something. • In the face of conflicts from mandates or directives, one does what one *ought* to do • Conflicting situations are stressful as a result one gets caught up in "misery". • Social interactions acknowledge academic concerns, and colleagues are seen as resources with answers for doing the job right.	• The teacher as a learner advocates for students. • One considers the social, moral, and ethical aspects of teaching. • One confronts cognitive dissonance by finding ways to restore equilibrium. • One sees perplexing situations as opportunities for growth. • One is mindful of the filters that influence meaning perspectives. • The learner imagines what could be. • Through social interactions one builds collective wisdom. • One values problem posing over problem solving. • The reflective thinker thinks about equitable conditions for learning.
Concept of the reflective thinker	• Reflection is linked to the notion of becoming better at tasks; or reiterations of existing paradigms. • Reflection is a simple reappraisal of knowledge. • Routines and habitual ways of learning reduce the complexity of self-awareness and self-examination. • Success underscores interaction, continuity, and growth. • Thinking is concrete, impersonal, academic and prescriptive. • Disequilibrium means abandoning principles and values	• Developing a sense of agency involves a pursuit of meaning making. • Thinking is an internal examination of a process. • One thoughtfully reconstructs experiences and then sees one's world from a different aspect. • In disequilibrium one questions the reasons for doing something by identifying conflicting values and beliefs. • One affirms the value of adapting to interdependence. • The reflective thinker is a learner in a transaction of transforming understandings. • One has trust and confidence in one's own experiences. • Using new meaning perspectives, one finds new meaning in an old experience.

Figure 2 (continued)	**Technical Thinking (TT) - thinking about practice**	**Metacognitive Thinking (MT) – thinking about one's own thinking**
Ways of knowing	- The learner believes learning takes place under certain academic conditions and is based on the imposition of others interpretations. - Ways of knowing are situated in the traditions of the community of learners and the environment of the institution in which they work. - The learner draws on an article or text to say what a teacher should do in pursuit of the truth or the facts. - Ways of knowing are connected to concerns of classroom management and control, acquiring new knowledge, the pursuit of finding answers, and problem solving as if there is simply one right way of getting the job done. - Various perspectives are seen as equally right or equally wrong. - Ways of knowing relate to better and more efficient methods	- Cognitive dissonance is the rhythm of learning . - Ways of knowing live in the meaning and value of experiences. - Self-awareness is a way of seeing new possibilities drawn on insights and experiences in interaction with others - One frames who one is by knowing what to do and when to do it and why. - One understands learning experiences come from hearing multiple perspectives. - Learning is characterized by "open-mindedness, wholeheartedness, and responsibility". - One frames and reframes the personal and professional influences that filter interpretations. - Interpretations relate to a more active, persistent and careful exploration of personal and professional beliefs, values , and principles.
Figure 2 Characteristics of a metacognitive agent		

Chapter V

Summary and Discussion

At a time when more attention than ever is focused on boosting the "ailing" teaching profession with substantial and often contentious initiatives for professional development, now is the time to seriously consider recreating teacher education programs. One consideration is to advance the notion of the development of the teacher as a metacognitive agent. Linda Valli describing teacher reflection in the United States writes,

> We cannot take for granted that prospective teachers will become
>
> reflective practitioners with experience. There are too many experienced
>
> teachers who have not become expert at their craft, who do not carefully
>
> think about their work or try to constantly improve. (Valli, 1997, p. 72)

Ultimately it is an understanding of the teacher as a learner that really matters in the development of metacognitive agency. To restrict teaching to pre-determined ends by reflecting about technical skills or to follow scripts, distorts the venture of getting tangled in the complexity of reflection. Historically, teacher preparation programs have taken a reductive stance diminishing the reflective process to a simple cliché. As Dewey warns we don't want to sacrifice the power to go on growing for "technocratic rationality". (in Gore, 1987, p. 33)

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Reflection as an ambiguous concept neglects to pinpoint the dimensions of thought that address the complexity of the thinking going on in the learner‟s mind. Generic approaches to understanding reflection simply help teachers amass a repertoire of skills to apply in a relatively unvaried manner. Teachers are never fully prepared for the demands of change, but through guided action they can be strengthened to confront change as they come to see the relationship of each learning experience to subsequent experiences. Investigations like this study provide a possible framework for future learning.

Homogenized learning experiences limit the multiple perspectives and interpretations that demonstrate what it means to be a critical and thoughtful learner. The power of reflection is realized in its complexity. The position of my study acknowledges the valuable aspects of reflection live in the interconnected relationships among the learner, the learning, and the thinking that influences the lenses through which learners choose to interpret their experiences. This research was guided by three main questions:

- In what ways do graduate students reveal themselves as metacognitive thinkers?
- What are the "needs and capacities" of learners to become metacognitive agents?
- What is the deeper, more transformative side of being a metacognitive agent?

These questions link the concept of reflection to a metacognitive perspective.

The purposes of this study were:

- To investigate the development of the teacher as a metacognitive agent.

- To narrow the concept of reflective thought through an analysis of teacher language in order to uncover the metacognitive dimensions of a reflective process.

- To find a temporary structure to foster reflective thinking through guided action by making visible those personal, social, and professional filters that influence how a learner transacts with the dynamics of learning to bring new perspectives to an experience.

Included in this study is a self-analysis of the researcher as a teacher educator exploring a transformative process with teachers-as-students. In addition as a researcher, I included modifications to my graduate courses in which metacognition became the reflective nature of learning and thinking. In the early stages of this investigation the questions that guided the "metacognitive frame" came from the Thinking Maps® program. Upon further reflection into adult learning, the value of the structure of a frame of reference became more significant. As a result the questions designed to frame a metacognitive process were modified to guide the learner through a transaction with learning experiences and ultimately the construction of new meaning perspectives. "To make meaning means to make sense of an experience; we make an interpretation of it. When we subsequently use this interpretation to guide decision making or action, then making meaning becomes learning"(Mezirow, 1990, p. 1).

This research reconceptualizes reflective thinking and its relevance to the transformative dimensions of thoughtful and intentional learning. To reflect is not to consume ideas from others, but to live and learn in experiences. It is a process of constructing meaning from multiple perspectives and through multiple ways of knowing.

Rather than reproduce ideas from outside sources or dominant groups the claims in this research are grass-root, coming directly from the language of teachers thinking aloud – sharing how they learn and how they think.

Teacher Educator Insights

Drawing on the notion of "teach to facilitate" from Paulo Friere (1996), the self-study included in this investigation provided a means to examine my role as a teacher educator in helping learners interpret, recreate, imagine, and reconsider learning experiences. Attending to my own learning process, I described how I found my way through purposeful actions to help graduate students find their voices as learners and thinkers. Reflecting on my own thinking, critically analyzing and judging the design of my courses of study was a pivotal phase in validating the claim of the role of the teacher educator as one of teaching to facilitate reflective stances. The data shows that even a veteran teacher's interpretation can fall into technical thinking with unguided action, but with teaching to facilitate one's thinking can take on a more metacognitive stance. The research demonstrates that teaching to facilitate the process of reflection makes transparent the metacognitive dimension it entails. "The store of one's wisdom is the result of the extent of one's reflection" (Rodgers, 2002, p. 853).

This self-study was warranted by a need to understand reflection from new perspectives as well as to understand the consequences of changing an approach to teaching. Living these experiences in learning and transacting with the learning tested my thinking about reflection. Coming to the realization that the process of learning manifests itself in the thinking of the learner, helped me explain to students how the text was simply the source for storing information, while the learning resulted from their transactions with

new information in a process of meaning making both socially and individually. As learners and metacognitive thinkers they were not simply acquiring new knowledge they were learning how to understand and manipulate multiple perspectives. Their interactions with colleagues in the conscious construction of meaning revealed levels of comfort and confidence in the social aspects of learning. Talking about dialogue as a formative process of learning and knowing, Paulo Freire says, "The educator who dares to teach has to stimulate learners to live a critically conscious presence in the pedagogical and historical process." (1996, p. 202)

Each modification of a question was tested by the student who asked, "So, what does this… mean?" or "Can you clarify …?" This need for clarification obligated me to ask myself, "What *was* the intent of this revision or modification?" The questions in the frame of reference designed to teach to facilitate metacognitive thinking bridged a way into the learner's mind to find out how one puts things together for himself or herself. Paulo Freire renouncing the task of teaching under the guise of facilitating says, "People cannot transform a given situation through unguided action." (1996, p. 342)

The self-study aspect of this research is evidence that the journey to the development of the metacognitive agent is lived by many pathways and as an active participant in a process of growth and continuity the learner must find his or her own pathways. The insights present a stark contrast to the mandates, directives, and accountability measures typical of current teaching environments. As a teacher educator I often felt trapped between the traditional expectations of teacher education programs and the contrasting experiences fundamental to the development of the metacognitive agent. In

Peripheral Visions Mary Catherine Bateson says, "It is only from a sense of continuing truths that we can draw the courage for change…" (1994, p. 79).

The Voice of the Metacognitive Agent

The language to facilitate a metacognitive stance from written reflections, responses to the open-ended questions, and the chat discussion revealed the diversity of lenses through which students view their experiences. When the focus of the course work shifted attention to the learner and the learner's transactions with learning, graduate students found their voices. Contrasting the technical thinker and the metacognitive thinker revealed the various patterns of thinking evident in the metacognitive agent and the vast array of pathways learners took to attain understandings, dismissing the notion that simply any experience is educative. The intertwined dimensions of metacognitive thinking were evident in the chart distinguishing the metacognitive agent (Figure 2) – transformation, language, appreciative aspects, concept of the reflective thinker, and ways of knowing – and yet every facet contributed unique qualities to the rhythm of learning. From this evidence one can say that the metacognitive agent clearly perceives meanings, connections and relationships in experiences that give them value.

The analysis of teacher language was based on the knowledge and awareness of the learner, a self-analysis of the teacher educator, reflection, and the context in which it is being used in graduate learning experiences, as well as the connections and relationships within the interactions among all of these. Using the criteria distinguishing the technical thinker and the metacognitive thinker, the development of the teacher as a metacognitve agent becomes a more deliberate and purposeful act. Barbara Larrivee (2000) describes the

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"critically reflective" teacher as one who can move beyond a knowledge base of discrete skills and through a process of internalization where skills become new strategies. "They develop the necessary sense of self-efficacy to create personal solutions to problems." (p. 294)

What emerges in the language that represents the thinking of the learner is that reflection is more than just a requirement of a course or a cliché about learning. The language that characterizes the metacognitive learner captures a richer and more complex side of reflection. "Dewey reminds us that reflection is a complex, rigorous, intellectual and emotional enterprise that takes time to do well" (Rodgers, 2002, p. 844). Going back to the roots of reflection in the work of John Dewey, Carol Rodgers (2002) clarifies Dewey's notion of experience as linked by two elements, interaction and continuity. There is an interaction between oneself and whatever constitutes the environment at hand, and continuity is the capacity within any experience to inform subsequent experiences. In this research interaction and continuity led to change in thinking and learning.

> The function of reflection is to make meaning: to formulate the "relationships and continuities" among the elements of an experience, between that experience and other experiences, between that experience and the knowledge that one carries, and between that knowledge and the knowledge produced by thinkers other than oneself. (Rodgers, 2002, p. 848)

The analysis of the language in teachers" thinking defined the metacognitive aspect of reflection and made the reflective process visible – it is a view of teacher knowledge. Without getting consumed in a rigid conceptualization of reflection or in the technical development of the teacher, teacher education programs need to teach to facilitate reflection, not simply assign it.

Thinking Maps®

The purpose of Thinking Maps® in this study was to entertain the use of temporary structures to foster the development of reflective thinking. They were a resource in which to experiment with a way to enable students to proceed toward a process of self-sustaining reflection. The most effective use of the maps in this study was discovering the power in the *frame of reference*. Blending Hyerle‟s interpretation and application of the frame of reference with Schön‟s concept of frame analysis as a way of defining a situation and Mezirow‟s frame as a meaning perspective, the *frame of reference* from the Thinking Maps® program became a way into the metacognitive dimension of reflection for the learner. By framing their thinking in experiences students made visible those personal and professional filters that determine what they attend to and value, and those that determine how they judge, interpret, or analyze a situation at hand. The frames defined their worlds. Framing their thinking presented an opportunity to carefully examine situational factors and conditions.

During class meetings we used the maps to extract information from the physical surroundings (the text, articles, and responses to the readings) but framing new knowledge with personal and professional experiences captured learners‟ transactions with the learning. The maps provided a temporary means to regulate and adapt the environment to create a worthwhile educative experience.

On one hand framing their thinking helped students construct portrayals of their own thinking; yet on the other hand, for some students particularly those who were new to the mapping experience, they preferred to find their own structure to do this. The maps were not mandatory; they were presented as a possible choice. As a teacher educator, I used

the maps to compare and contrast different types of writing, to map out a flow of ideas in a process of writing a reflective piece on a problematic situation, and then to define and describe course requirements.

Unlike journaling, or story-telling, or autobiographical writings, the Thinking Maps® provided visible structures of how a learning process can build and change. Through my own personal use of the maps I was able to see dimensions of reflective thought – from the trivial to the significant to the potentially profound. The maps presented a way to teach to facilitate a reflective process, but in no way were they intended to interfere with the notion of becoming a metacognitive agent as a way of being. "Unless teachers engage in critical reflection and ongoing discovery they stay trapped in unexamined judgments, interpretations, assumptions, and expectations." (Larrivee, 2000, p. 294)

The use of the Thinking Maps® program was a way of making visible the relevance of the knowledge within oneself. Mary Catherine Bateson, in her book *Peripheral Visions* (1994), brings creative perspectives to re-thinking the educational process. Through discovering the connection and relationships already present within, one experiences "learning as coming home – learning to learn, knowing what you know, cognition recognized, knowledge acknowledged" (p. 206). This is Michael Polanyi"s personal or tacit knowledge. Tim Ray (2008) exploring the significance of Polanyi"s original concept of tacit knowledge explains, "Polanyi developed tacit knowing from the proposition that we can know more than we can tell"(p. 247). He goes on to state, "The tacit dimension that „we cannot tell" is fundamental to making „what we can tell"

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meaningful" (p. 248). This is what was hidden within the language of the teachers"

reflections and responses.

Conclusions

The development of the teacher as a metacognitive agent does not happen in one

course, nor will it necessarily be sustained after one course. However, the data presented in

this study indicated that calling attention to one"s own personal repertoire of thoughts,

actions, connections, relationships and appreciative systems can influence how one lives in

those experiences and makes them real. The journey of this investigation began with

observations of graduate students and traversed a landscape of learning experiences where

every act of reflection presented unique situations for the learner; experiences that spoke to

each other and were linked by interpretations, interactions, histories, beliefs, transactions,

and growth.

This research is neither comprehensive nor conclusive. It is an investigation beyond

what has already been interpreted. It is a contribution to a more defined and cultivated

notion of reflection and expands the parameters around reflective practice and its potential

function in developing more thoughtful teachers. This study describes and defines the

various pathways to the development of the metacognitve agent revealing a way to imagine

further exploration into learning, thinking and knowing. The art of reflection is more than

simply a practice. The place of reflection in teacher education programs is an inherent

dimension of becoming a learner and a thinker.

The odyssey into the development of the teacher as a metacognitive agent brings

many insights to the forefront of teacher education – a reconceptualization of reflection,

modification of course requirements, new perspectives on teacher knowledge, and new

dimensions to courses of study . The results of this research are shaped by the language and words of teachers. They crystallize metacognition into a recognizable form that others may apply and adapt to their own using their own insights. By focusing on the metacognitive aspects of learning rather than the technical aspects of practice, this research presents evidence that the development of the teacher as a metacognitive agent is possible in a teacher education program.

The field of contemporary education needs the voice of the teacher, not as a technician, but as a thoughtful learner who recognizes that each encounter with learning generates meaning for successive encounters. The experiences of teachers as graduate students as they think and learn take on different meanings for each of them. They represent many ways of knowing. Along the path to developing metacognitive agency one encounters multiple filtering systems – experiences, beliefs, assumptions, appreciative aspects, and personal values and beliefs. When a learner comes into their unique way of knowing through a variety of transacted learning experiences, she or he has begun to develop a capacity to make the necessary transformations required for living a life of learning.

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Appendix A

A Flow Chart of a Process of Inquiry

| **Assumptions**
Something in my teaching needs attention. | → | **Research Purpose**
Perspective Transformation | → | **The Reframing Lens**
An initial step in learning through the inquiry process is figuring out the questions. |

| Reflect on and confront an uncomfortable or puzzling situation you are experiencing. | This is what I know about this topic and this is based on … | What are the reasons this situation is troublesome?

What are my perceptions of this situation and what needs to change? | How and why have I come to perceive, understand, and feel about the situation at hand?

Pose a problem. | **The Primary Research Question**
What about this topic is important and relevant to making it more meaningful? | **Sub-questions**
What other questions evolve that will help me understand, make sense of, or modify my assumptions? |

| → | **Research**
Metacognition | → | **Transformation**
What intellectual activity will result from this inquiry? | → | **Reflection and Analysis**
Describe the learning experience |

| What am I learning and how is that transforming my thinking about this topic?

What principles are worth holding onto, and what needs to change?

How am I going to address this dilemma? | As I inquire into this topic, what am I attending to and what is influencing how I think and learn?

How am I reading this research?

When did my thinking change? | What have I learned from this inquiry and in what ways do I intend to experiment with some of the ideas? What will I try?

What changes or modifications in my teaching will occur as a result of this experience? | What are the implications of these new perspectives on my learning, student learning, and the social context in which I experienced this dilemma?

What is the significance of my interpretations, and what aspects of my learning and teaching experiences have changed as a result of this process? |

If this is what I have learned, what more do I need to learn?

Through what lens did I look upon the "world" before this experience, and through what lens do I look upon the "world" as a result of this experience?

How did I approach this dilemma?

What are the points of view, beliefs, values and assumptions that structured the way I interpreted, and subsequently made sense of this experience?

In what ways am I thinking about my own thinking?

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Appendix B

Interview Questions

(Pre and Post Course Work)

In what ways do you reflect on your learning in your graduate courses of study?

What in your experiences as a learner influences how you approach new learning?

What fosters reflective thought?

What transform professional learning?

In what ways have you engaged in reflective thought in your graduate courses of study?

What do teachers need to support growth in learning?

Appendix C
Research Proposal Approval

FranklinPierce
U N I V E R S I T Y

College of Graduate and Professional Studies
Proposal Cover Page

Principal Investigator(s) [PI]:

Eleanor Papazoglou_____   Adjunct Faculty, College of Graduate Studies
                                                Plymouth State University
                                                Literacy Consultant,
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                                                University of New Hampshire

Phone No.: H: (603)485-5530 Cell # (603)496-6488   Email:epapa48@yahoo.com

Academic Department: _____Doctor of Arts__ **Home Campus:**
_____Concord_____

PROPOSAL TITLE: _ **The Influence of Thinking Maps® on the Way Teachers Think When**

         Learning About Literacy

RESEARCH QUESTION/S:

In what ways do the thinking patterns inherent in Thinking Maps® language effect the way graduate
    students reflect upon literacy knowledge?
In what ways are the thinking skills underlying the Thinking Maps® evident in graduate students' written
    reflections on their learning?
How can Thinking Maps® provide the supportive conditions to visually frame graduate students' reflective
    thoughts on the meaning of their experiences in relation to their course of study and their practices in
    the classroom?
How can combining the principles of Thinking Maps® and reflective thought transform graduate students
    from student to reflective practitioners?

Is there outstanding funding for the proposed research? If so please indicate the source: NO

NOTE: This proposal approval will expire one year from date listed below. Students must apply for an
extension two months prior to the expiration date.

For Office Use Only: Exempt: _____ Expedited ___X____ Full_____

              Name of Reviewers:_____Dr. Martin Green /Dr. Josh
Cleland_____

  Dr. Deborah Jameson   4-20-09   Approved ___X_____ Not Approved _____
        Chair-Signature   Date