Professional Thinking in Occupational Therapy Education:

Behaviors Indicative of Entry-Level Professional Thinking

A Dissertation submitted

by

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to

College of Saint Mary

We hereby certify that this Dissertation, submitted by Mary E. Smith, conforms to acceptable standards and fully fulfills the Dissertation requirements for the degree of Doctor of Education from College of Saint Mary

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Dedication Page

I would like to dedicate this dissertation to everyone who has had an impact on my professional life. My educators, colleagues, past patients, past and current students, and family have all played a role in the process that developed into my passion and interest in how occupational therapists think and how those involved in occupational therapy education can prepare entry-level students to think in the environment of healthcare today. All of you whom I have had the pleasure of crossing paths with on my professional and personal journey have influenced me and have played a role in who I am today, thank you.

Second, to my parents, who have been my constant cheerleaders and support system through all of my time as a student as well as throughout my professional career. Thank you does not seem to do justice to how I feel about everything you have done for me. This is for you mom and dad, I love you. Finally but not least importantly, I would like to dedicate my dissertation to my husband, Bob, and daughter, Haley. Your support and patience with me during this long process did not go unnoticed. I am forever grateful and indebted to you for the love, support, and understanding you both continue to give me.

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Table of Contents

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List of Tables

List of Figures

Abstract

The purpose of this qualitative study was to explore the behaviors indicative of professional thinking in entry-level occupational therapists and the teaching methodologies used to facilitate professional thinking during education as described by a sample of experienced occupational therapy educators. The researcher used The Model of Professional Thinking as a theoretical framework for the study (Bannigan & Moores, 2009). The Model of Professional Thinking describes professional thinking as an integration of evidence-based practice and reflective thinking. The researcher completed semi-structured interviews and reflective journaling with the seven occupational therapists currently teaching in entry-level occupational therapy programs. Thematic analysis discovered four overarching themes. Qualitative findings indicated describing professional thinking remains ambiguous; understanding professional thinking evolves with time; active learning-based educational methods promote professional thinking in occupational therapy students; and there are specific behaviors that indicate professional thinking and specific behaviors that do not indicate professional thinking. Thematic findings lead to the development The Smith Model of Professional Thinking. Recommendations for future research include an inquiry into the role of EBP in occupational therapy education and professional thinking; a study of educational methods used to promote professional thinking in entry-level occupational therapy students; and the development of a tool to assist with measuring professional thinking and changes in professional thinking in entry-level occupational therapy students.

Professional Thinking in Occupational Therapy Education: Behaviors Indicative of Entry-Level Professional Thinking

CHAPTER 1: INTRODUCTION

Purpose of the Study

Advances in medicine are a driving force of occupational therapy education stipulating that educational programs prepare students to practice in a dynamic and evolving environment. The medical complexity of patients, along with demands for quality, efficient care are putting an increased emphasis on occupational therapy education to better prepare students to practice in healthcare settings today (Bannigan & Moores, 2009; Coker, 2010; Herge et al., 2013; Plack & Santasier, 2004). A vital component of this preparation is ensuring occupational therapy professionals participate in higher-order thinking. Various language exists describing higher-order thinking, but for the purpose of this study, this author will utilize the term professional thinking. Professional thinking involves integrating evidence-based practice and reflective practice into the decision-making process of the occupational therapist (Bannigan & Moores, 2009).

Occupational therapists use professional thinking during decision-making concerning a patient's care. According to Bannigan and Moores (2009), professional thinking transpires when an event occurs while an occupational therapist is working with a patient. The occupational therapist analyzes the event, seeks information, reviews previous experience and formulates initial ideas about the event. The professional thinker reviews the literature on best practice and considers past experience during similar events. The occupational therapist additionally reflects on the contextual issues of the patient (physical, social, cultural, and environmental factors) along with the patient's wants and needs. The occupational therapist uses the information

collected to makes a decision about how to respond to the event. A consistent understanding of professional thinking warrants an exploration into the concept. The purpose of this qualitative study was to explore the behaviors indicative of professional thinking in entry-level occupational therapists and the teaching methodologies used to facilitate professional thinking during education as described by a sample of experienced occupational therapy educators.

Background

Occupational therapy professionals work in an evolving environment driven by complex patients, high productivity standards, and third party payer demands. These drivers of healthcare require that occupational therapists make quick decisions during complex situations (Bannigan & Moores, 2009; Mann, Gordon, & MacLeod, 2009). The quick decisions made during complex situations may include responding to a change in patient's physical status. These decisions could involve choosing the appropriate intervention to complete based upon a patient's diagnosis and clinical presentation. The occupational therapist could face a medical emergency during which the appropriate response to the situation might impact the well-being of the patient. A wrong or inappropriate response could have harmful circumstances. The complexities of patients require occupational therapy education to better prepare students with specific job-related skills including professional thinking (Koenig, Johnson, Morano, & Ducette, 2002; Mann et al., 2009). While the complexities of patients are increasing so are the demands for occupational therapy professionals to complete designated work in an efficient or productive amount of time.

High productivity standards demand occupational therapy professionals see more patients in less time; but many of the patients seen are medically complex (Bannigan & Moores, 2009). The medical complexity of patients requires more time with each patient; however, the facility administration expects the occupational therapist to care for more patients in a day. Thus, the

productivity demands on occupational therapists and the medical complexity of the patients treated by occupational therapy professionals are both increasing. Consequently, occupational therapy professionals must be prepared to make decisions in a short amount of time about complex situations (Coker, 2010; Velde, Wittman, & Vos, 2006). Likewise, occupational therapists are mobilizing critically ill patients sooner than ever before, requiring the occupational therapist to monitor a patient's medical status while moving a patient with multiple lines and limited mobility. This type of complex intervention requires the occupational therapy professional multi-task, prioritize, and make important, potentially life- altering decisions in a short amount of time. Productivity standards and increasing complex patients both require that occupational therapists be sufficiently prepared to practice in a dynamic, changing, healthcare environment.

Third party payers and healthcare facility administrators drive productivity standards. The productivity demands from third party payers and administrators and the increasing complexity of patients suggest the necessity for occupational therapy educators to prepare students with the skills necessary for entry-level practice. Increases in productivity requirements are not allowing occupational therapists the indulgence of time with decision-making and problem solving as expectations are for high percentages of patient contact time (Plack & Santasier, 2004). These lofty productivity standards reinforce the importance for occupational therapy education to prepare students during didactic instruction to move into the clinical component of the curriculum and to entry-level practice. Productivity standards also do not provide the clinical instructors of occupational therapy students the luxury of substantial time to teach clinical skills (Casares, Bradley, Jaffe, & Lee, 2003). Instead, healthcare facilities expect prepared students ready to work with patients and that the student uses higher-order thinking

while working with patients. Consequently, an essential skill of an entry-level occupational therapy professional is efficient and effective participation in higher-order thinking. Still, there is a lack of consistency with the terminology used to describe higher-order thinking which creates a challenge to identify behaviors in students that indicate this type of thinking.

Terminology used by occupational therapists and educators to describe higher-order thinking varies. For instance, clinical reasoning, professional reasoning, critical thinking, and professional thinking are all concepts found in the literature describing higher-order thinking of the occupational therapy professional (Bannigan & Moores, 2009; Bartlett & Cox, 2002; Coker, 2010; Parnham, 1987; Schell & Schell, 2008). Definitions of these terms contain similar attributes including the ability to make decisions, the ability to analyze information, and the ability to participate in a cognitive process (Bannigan & Moores, 2009; Bartlett, & Cox, 2002; Coker, 2010; Parnham, 1987; Schell, & Schell, 2008). Multiple concepts with similar attributes cause a lack of clarity for occupational therapy educators, students, and professionals as to what behaviors describe higher-order thinking. This lack of clarity does not allow for consensus among occupational therapy professionals when describing higher-order thinking and when identifying behaviors indicative of high-order thinking. In order to understand higher-order thinking of the occupational therapy professional two things must occur. First, there must be consensus regarding the concept used to describe this type of higher-order thinking. Secondly, one must identify the behaviors that are indicative of higher-order thinking.

This study used professional thinking as coined by Bannigan and Moores (2009) to describe higher-order thinking. Bannigan and Moores (2009) created The Model of Professional Thinking for occupational therapy professionals. The model describes professional thinking as a combination of reflective practice and evidence-based practice (EBP). Reflective practice

involves thinking about a specific situation, while considering theory, previous learning, and situational contextual factors during decision-making (Schön, 1987; Kinsella, 2001). EBP integrates the best available research along with wants and needs of the patient and past experience of the healthcare professional (Bannigan & Moores, 2009). Occupational therapy education often presents these two components of professional thinking, reflective practice and EBP, as separate entities (Bannigan & Moores, 2009). Due to similarities of these two concepts, it is argued that evidence-based practice and reflective practice should be taught as a collective whole known as professional thinking (Bannigan & Moores, 2009). A brief analysis of EBP and reflective practice supports this argument.

EBP considers a patient's wants and needs, the scientific evidence, and expertise of the occupational therapist (Bannigan & Moores, 2009). EBP ponders not only the available, current, and relevant research, but also the needs of the client and the expertise of the professional. More than just research is involved with EBP and the occupational therapist's ability to make decisions based upon multiple factors is imperative. The process of making decisions using an EBP approach requires reflection to assist with the decision-making process.

Reflective practice involves both reflective thinking and self-directed learning (Dunn & Musolino, 2011). The skill of reflective practice requires an occupational therapist to assess the outcome of a situation while making continual improvements in practice (Plack & Santasier, 2004). According to Bannigan and Moores (2009), reflective practice consists of feeling unsettled in one's thoughts followed by an analysis of the feelings and previous knowledge, which leads to a new perspective. Reflective practitioners use knowledge from past clinical experiences along with scientific evidence to draw conclusion and make decisions. In order to accomplish professional thinking, a healthcare professional must utilize EBP and reflective

practice simultaneously.

Bannigan and Moores (2009) developed The Model of Professional Thinking to guide occupational therapy curricular development. During the development of the model, Bannigan and Moores disputed the common practice of teaching evidence-based practice and reflective practice as separate entities in occupational therapy education. The dispute that these two entities are not distinct from one another but related lead to the development of The Model of Professional Thinking. The Model of Professional Thinking developed by Bannigan, and Moores (2009) provides a dynamic explanation of the interaction of evidence-based practice and reflective practice during clinical decision-making of the occupational therapy professional.

Bannigan and Moores (2009) incorporated three stages of reflection "the what, so what, and now what" into The Model of Professional Thinking (p. 345). The initial stage, the what, involves a description of an event or an occurrence requiring attention. The second stage of the model is the so what and incorporates EBP. During the so what stage of The Model of Professional Thinking, the healthcare professional participates in EBP and critically analyzes an event, seeking and reviewing knowledge of the event and sharing initial ideas regarding the event (Bannigan & Moores, 2009). The final stage, now what, consists of a decision, which warrants further research, a change in practice, affirms current practice, or provides a new perspective (Bannigan, & Moores, 2009). Throughout the decision-making process of The Model of Professional Thinking, the healthcare professional considers contextual influence on professional thinking including "practice, professional, organizational, sociocultural, and political/economic contexts" (Bannigan, & Moores, 2009, p. 345). Establishing a model describing higher-order thinking of occupational therapist is the first step to ensure consistency during occupational therapy education; however, instructional methodology influencing the

development of these skills is another essential component of the process. This study explored three instructional pedagogies, experiential learning, problem-based learning, and clinical simulation.

Confirming entry-level occupational therapists are competent professional thinkers involves creating learning environments during occupational therapy education that foster professional thinking (Koenig et al., 2002; Randolph, 2002). One educational method found in the literature promoting higher-order thinking is experiential learning. Previous research found that experiential learning opportunities provided within a designated course are effective at improving clinical reasoning skills and critical thinking in occupational therapy students (Coker, 2010; Knecht-Sabres, 2010). Experiential learning offered occupational therapy students the opportunity to apply didactic content during hands on context. This instructional method presents students with an opportunity to complete higher-order thinking with the guidance of a healthcare educator. Another instructional method is problem-based learning (PBL).

The literature had inconsistent findings regarding improved clinical reasoning in occupational therapy students during PBL instruction (McCarron & D'Amico, 2002; Scaffa & Wooster, 2004). PBL is a common educational method that uses a case scenario format to instill skills of higher-order thinking in healthcare students. Healthcare students' perceptions of PBL are generally favorable for using this educational method during healthcare education (Schaber, 2005; McNulty, Crowe, & VanLeit, 2004). Educators and research tout PBL as an educational method to promote higher-order thinking but comment that results are mixed in relation to efficacy. The final instructional method addressed in this study is clinical simulation.

Clinical simulation provides healthcare students the opportunity to link theory to clinical practice during a fabricated patient scenario (Haidar, 2009). Bethea, Castillo, and Harvison

(2014) found many educational programs in occupational therapy use some form of clinical simulation during didactic portion of the educational program to promote higher-order thinking. Clinical simulation as an instructional method allows for active learning and opportunities to promote higher-order thinking in health professions students; however, how educators conduct the clinical simulation varies greatly (Bethea et al., 2014; Burke & Mancuso, 2012). The literature describes clinical simulation as anything from clinical scenarios presented virtually through video to human actors portraying case scenarios to standardized computerized mannequins (Burke & Mancuso, 2012). Overall, findings indicated mixed results regarding the effectiveness of various teaching methods to promote higher-order thinking, experiential learning, PBL, and clinical simulation, warranting a need for further research in order to allow for generalization of the results (Coker, 2010; McCarron & D'Amico, 2002; Scaffa & Wooster, 2004).

Much of the reviewed literature indicated a need for more research regarding higher-order thinking including a need for a consistent method to measure changes in higher-order thinking. One reason for the inconsistent results after instituting specific teaching methodologies is the lack of a formal and valid assessment to measure higher-order thinking (McCarron & D'Amico, 2002). Healthcare education has yet to identify or create an objective tool to assess higher-order thinking specific to the healthcare. Without an objective assessment, there is no way to measure a change in these behaviors or to demonstrate improvements in students' higher-order or professional thinking. Prior to measuring professional thinking or formulating objective statements describing professional thinking, one must describe the behaviors that comprise professional thinking. Currently, the literature does not provide this information. The focus of this research study will be to identify behaviors indicative of professional thinking.

Research Question and Sub Questions:

The overarching research question along with the sub questions were:

How did a multi-state sample of experienced occupational therapy educators describe the behaviors indicative of professional thinking in entry-level occupational therapists?

1. How did occupational therapy educators describe professional thinking?
2. How did occupational therapy educators develop a personal understanding of the behaviors that comprise professional thinking?
3. What teaching methodologies did experienced occupational therapy educators use when facilitating the behaviors of professional thinking?

Operational Definitions

This research study used the following operational definitions.

Professional thinking: Professional thinking was an integration of evidence-based practice and reflective practice (Bannigan & Moores, 2009).

Experienced occupational therapy educator: The experienced occupational therapy educator included faculty who teach either didactic or clinical course work to students in an accredited occupational therapy program in the multi-state sample of this study. The experienced occupational therapy educator must have had at least 5 years of experience and a rank of assistant professor or higher.

Entry-level practitioner: For the purposes of this study, an entry-level practitioner was a new graduate of an accredited occupational therapy program who successfully completed all didactic and clinical coursework. This practitioner has less than one year of experience.

Occupational therapy student: Current enrollment in an accredited occupational therapy program was a necessary attribute of an occupational therapy student in this study. The occupational

therapy student was enrolled in a an entry level Master of Occupational Therapy Program (MOT), an entry level Master of Science in Occupational Therapy Program (MSOT), or an entry level Doctoral of Occupational Therapy Program (OTD).

Behaviors: A behavior was a characteristic or an attribute of professional thinking. A behavior was a trait or mannerism that described a concept, in this case professional thinking.

Teaching methodologies: Teaching methodologies were educational strategies used in healthcare education to promote professional thinking. A teaching methodology was the theory or framework that guided the design of learning opportunities.

Assumptions/ Limitations/Delimitations

This study made several assumptions. First, the researcher assumed that those who participate in this study answered the questions honestly. Second, the researcher assumed that occupational therapy educators were able to identify behaviors that are indicative of professional thinking and that themes of professional thinking behaviors emerged. A final assumption of this researcher was that occupational therapy education included the components of professional thinking, reflective practice, and evidence-based practice, within the program's curricula.

Limitations of this study included the method of recruitment. The researcher sought participants from collegial recommendations, which could potentially have limited the diversity of respondents. A second limitation of the recruitment of participants was the risk that the potential participants might not respond or agree to participate in the study. The sample for this study is only 6-10 participants. Potentially this could have limited the depth or quality of descriptions of professional thinking. A final limitation was the semi-structured interview format, which could have caused digression by the participants and limited the quality of data collected.

Delimitations of this study included those qualified to participate in the study must be currently instructing entry-level occupational therapy students. Participants must also have had at least five years of teaching experience and hold a rank of assistant professor or higher. This study eliminated those who educate entry- level occupational therapists in OTA programs. A final delimitation was that this study strictly sought to identify descriptions of behaviors indicative of professional thinking and was not looking to define professional thinking.

Conclusion

In summary, the necessity for proficient professional thinking as an entry-level occupational therapist is evident with the demands of healthcare today (Koenig et al., 2002; Mann et al., 2009). Productivity standards and the complexity of those requiring healthcare professionals' services are both increasing (Plack & Santasier, 2004). Because of these demands, healthcare education must judiciously prepare students to be competent, entry- level practitioners (Bannigan & Moores, 2009; Coker, 2010). Skills, including professional thinking, developed during didactic education impact an occupational therapists' success in the healthcare environment (Bannigan & Moores, 2009).

The literature does not clearly define how occupational therapists think. Numerous definitions and terminology exist describing higher-order thinking (Bannigan & Moores, 2009). The inconsistencies labeling higher-order thinking limit the capacity to identify a list of behaviors indicative of professional thinking. These inconsistences continue to limit research and outcome related studies regarding how healthcare professionals think. Finally, studies on common educational pedagogies, experiential learning, PBL, and clinical simulation, used during healthcare education to instill higher-order thinking or professional thinking have mixed results regarding the effectiveness. The mixed results may be indicative of the lack of consistency in

terminology describing higher-order thinking and lack of common attributes identified describing higher-order thinking. Therefore, the first steps in the process of describing how an occupational therapy professional thinks was to identify a consistent name for this thinking, identify the behaviors indicative of professional thinking, and teaching methods used to instill professional thinking.

Chapter 2: Review of Literature

Introduction

Healthcare is complex and fast paced. Advances in medicine are allowing people to live longer; however, often people are living longer with multiple, complex health conditions. These issues, along with demands of the client and family, third party payers, and healthcare administrators, require safe, efficient, effective healthcare as the standard; placing increased pressure on those providing care to individuals in the healthcare system (Plack & Santasier, 2004). Healthcare professionals not only need to provide efficient, cost effective care, but also must make quick decisions regarding patient care (Plack & Santasier, 2004; Vogel, Geelhoed, Grice, & Murphy, 2009). Judicious decision-making and higher-order thinking are essential skills of healthcare professionals.

Ensuring healthcare professionals are prepared to practice in the current healthcare environment necessitates educational programs are appropriately preparing students (Mann et al., 2009; Vogel, et al., 2009). An emphasis on higher-order thinking is an essential component of healthcare education (Brudvig, Dirkes, Dutta, & Rane, 2013). The following review of literature describes terminology used by healthcare professionals and educators to describe higher-order thinking. Included in this review of literature is a discussion regarding the terminology specific to this study, professional thinking, and its concepts of evidence-based practice and reflective practice. Finally, this review of literature explores several educational methods used to promote higher- order thinking in healthcare education.

Higher-Order Thinking

Interest about how people think and make decisions is not a new notion in educational research. Higher-order thinking has long been a topic of interest for healthcare educator.

According to the Revised Bloom's Taxonomy, higher-order thinking moves beyond basic comprehension and knowledge to levels of analysis, creation, and evaluation (Dunfree, Rindflesch, Driscoll, Hollman, & Plack, 2008). The Revised Bloom's Taxonomy is a hierarchical system that describes six categories of thinking (Krathwohl, 2002). This hierarchical system is a two dimensional framework ranking knowledge and cognitive processes to assist educators with teaching students (Krathwohl, 2002).

Healthcare educators often use The Revised Bloom's Taxonomy to guide course design and to quantify course objectives; ensuring instructional methodology meets the educational standards of the program. The revision of the original Bloom's Taxonomy provides educators the opportunity to create specific learning objectives, instructional methods that match the learning objectives and assessment measures that measure learning aligning these three educational components (Su & Osisek, 2011). The intent of the Revised Bloom's Taxonomy was "to broaden the classification of educational objectives to explicitly include those aimed at promoting knowledge transfer", a necessary component of higher-order thinking (Su & Osisek, 2011, p. 322). While the Revised Bloom's Taxonomy is one method used by educators to design learning objectives, instructional methods, and assessment measures, it is merely one of many concepts and frameworks used to explain higher-order thinking. Critical thinking is one concept frequently found in the literature describing higher- order thinking.

Critical thinking

According to Paul and Elder (2006) and Facione and Facione (2008), there are two levels of thinking. First order thinking is spontaneous, reactive, and not reflective. Prejudicial beliefs influence first order thinking which contains both truth and error (Paul & Elder, 2006). Second order thinking involves reflection and assessment in which an individual is reflective, deliberate,

and analyzes the information provided (Paul & Elder, 2006; Facione & Facione, 2008). Paul and Elder (2006) and Facione and Facione (2008) both designated this type of thinking as critical thinking. Additionally second order thinking is similar to higher-order thinking as described in The Revised Bloom's Taxonomy. The Revised Bloom's Taxonomy employs such verbs as analyze, evaluate, and create in the highest levels of thinking. These verbs are also present in the description of second order thinking. Interestingly, Krathwohl (2002) mentioned that both critical thinking and problem solving were considered during the revision of Bloom's Taxonomy but the specific meaning and intention of these terms varied amongst educators and therefore where not included in the revision.

The educational literature of the healthcare professions includes numerous articles on critical thinking. Facione and Facione (2008) described critical thinking in relation to clinical judgment as "critical thinking is the process we use to make a judgment about what to believe and what to do about the symptoms our patient is presenting for diagnosis and treatment" (p. 2). Linda Elder and Richard Paul have substantial publications regarding critical thinking. According to Paul and Elder (2006) critical thinking is a "mode of thinking…the thinker skillfully analyzes, assesses, and reconstructs a problem, content, or a subject" (p. xix). Critical thinking is purposeful, systematic, habitual, and follows the intellectual standards of thinking (Paul & Elder, 2006). Brookfield (2012) did not equate critical thinking to being creative, logical, having the ability to problem solve, obtaining a college degree, or to an individual's Intelligence Quotient (IQ). Critical thinking involved taking informed action when attempting to identify assumptions, questioning the assumptions, and acknowledging different points of view (Brookfield, 2012). The healthcare professions of nursing, occupational therapy and physical

therapy all have published literature regarding critical thinking in both students and practitioners. The following section reviews select studies on critical thinking and the healthcare professional.

Bartlett and Cox (2002) measured change in critical thinking of second year physical therapy students. This quantitative study utilized two discipline neutral critical thinking assessments, the California Critical Thinking Disposition Inventory (CCTDI) and the California Critical Thinking Skills Test (CCTST), to assess critical thinking three times over one year in order to identify any changes in critical thinking abilities (Bartlett & Cox, 2002). Findings indicated significant changes in critical thinking abilities of second year physical therapy students over a year; however, the results lacked generalizability due to sample size (Bartlett & Cox, 2002). Bartlett and Cox (2002) commented the results warranted asking whether the critical thinking assessment scores could assist faculty with clinical placements of students. Other studies also used the CCTST to measure change in critical thinking in occupational therapy students.

Velde, Wittman, and Vos (2006) used the CCTST to measured changes in critical thinking in students who participated in a course, which employed Guided Reciprocal Peer Questioning (GRPQ) during classroom instruction. In contrast to Bartlett and Cox (2002), Velde et al. (2006) did not find a significant change in critical thinking abilities based upon the use of a specific educational methodology. However, one possible explanation provided was the duration of time between measuring scores. One study measured change over the year and another over a semester. In a later study, Coker (2010) utilized the CCTST along with another assessment measure and did document a significant change in critical thinking scores after using a specific educational method over a one-week period.

Coker (2010) sought to discover if a one-week experiential learning program, could lead to a change in critical thinking and clinical reasoning scores in occupational therapy students. This study measured change in critical thinking using the Self-Assessment of Clinical Reflection and Reasoning (SACRR) and the CCTST. Study participants completed the SACRR and CCTST before and after participating in a weeklong experiential learning program. Findings showed overall statistically significant improvements on the SACRR in 22 of the 25 categories and statistical improvement on the CCTST in 3 of the 5 subscales (Coker, 2010). Results did support experiential learning as an effective method to promote critical thinking in students; however, Coker (2010) does not consider the results generalizable due to the size of the study. These findings warrant further research. Occupational and physical therapy are not the only healthcare professions interested in improving critical thinking skills of students. Nursing education has also sought to identify educational methodologies that promote critical thinking.

Forneris and Peden-McAlpine (2007) completed a qualitative case study on the impact a reflective contextual learning intervention (CLI) on novice nurses' critical thinking during the first six months of practice. The researchers collected qualitative data at intervals during the six-month period and included components of the reflective contextual learning intervention, reflective journaling, individual interviews, and facilitated group discussions (Forneris & Peden-McAlpine, 2007). Thematic analysis of the data demonstrated three overarching themes. According to Forneris and Peden-McAlpine (2007) the initial theme was the notation of anxiety and the power and influence of experienced nurses on the novice nurses; the second theme involved a transition from sequential thinking to contextual thinking; and the third and final theme mentioned an emergence of intentional critical thinking. In the discussion, the authors remarked that preceptor coaching assisted the novice nurse to move to contextual thinking and

the CLI allowed the novice nurse to move "beyond the application of knowledge to thinking that identified the individual contextual elements…" (Forneris & McAlpine, 2007, p. 418). The researchers commented that participants perceived both dialogue and reflective practicums were as effective educational strategies; however, the authors questioned the influence of nursing culture as factor influencing the training of novice nurses in the hospital setting (Forneris & McAlpine, 2007). Research regarding critical thinking not only explored changes in thinking with a specific educational methodology or during a specific year of a curriculum but also explored changes in critical thinking throughout a didactic curriculum.

Vogel et al. (2009) sought to identify changes in critical thinking skills in occupational therapy and physical therapy students through an entire curriculum. In contrast to the previously discussed studies, the researchers for this study administered the Watson-Glaser Critical Thinking Appraisal (WGCTA) Short Form, to both groups of students at the beginning of the curriculum and twenty months later toward the end of the curriculum. Results demonstrated a significant improvement in critical thinking scores in occupational therapy students; however, results were not significant with the physical therapy students (Vogel et al., 2009). The researchers commented that the introduction of critical thinking occurred early in the occupational therapy curriculum and at the end of the physical therapy curriculum, possibly lending to this difference in significance (Vogel et al., 2009). The literature not only contains research on changes in critical thinking scores measured at the beginning and the end of a didactic curriculum but also contains research on the differences in critical thinking based upon pre-program preparation or between cohort levels of a specific curriculum.

Lederer (2007) pursued differences in critical thinking scores among three levels of occupational therapy students in one program of study. This study assessed differences in

critical thinking scores in the occupational therapy students using the CCTDI. Significant differences in CCTDI scores between members of the three levels of students and differences between those with and those without a previous bachelor's degree were examined (Lederer, 2007). Findings indicated statistical significant differences between those with previous bachelor's degree compared to those without a previous degree; however, findings were not statistically different between the three levels of students in the occupational therapy program (Lederer, 2007). The authors attributed the lack of statistical significance among the different levels of occupational therapy students to a possible high disposition for critical thinking among those enrolled in the occupational therapy program (Lederer, 2007). In recent years, Brudvig et al. (2013) added to the literature with a systematic review of studies on critical thinking skills in healthcare students.

The review sought to understand if critical thinking skills changed due to participation in health professions education. The inclusion criteria for the systematic review included:

> empirically designed studies published through March 2011; studies performed in countries where English is the primary language; studies performed on professional (entry-level) students from nursing, physical therapy, occupational therapy, dentistry, medicine, pharmacy, and dietetics; studies using the CCTST and WGCTA as the outcome measure; and studies using the defined health care professional curriculum as the intervention. (Brudvig et al., 2013, p. 13)

Findings based upon the inclusion criteria indicated eighteen studies on critical thinking with ten studies involving nursing, five physical and occupational therapy, and the other three studies from pharmacy and medicine (Brudvig et al., 2013). Results of the systematic review indicated mixed findings regarding improvement in or change in critical thinking in the eighteen studies.

The authors reported the systematic analysis indicated a need for additional high quality studies on the acquisition of critical thinking skills in health professions education and a need to explore development of a tool that specifically measures critical thinking acquisition (Brudvig et al., 2013). Brudvig et al. (2013) postulated that perhaps the primary assessments used to assess critical thinking skills, the CCTST and the WGCTA, are not sensitive enough to changes in critical thinking.

Table: 2.1

Critical Thinking Literature Review Summary

Literature	**Type of Publication**	**Health Profession**	**Results**
Bartlett & Cox (2002)	Quantitative	PT	Findings indicated significant changes in PT students critical thinking abilities over 1 year
Brookfield (2012)	Textbook publication		
Paul & Elder (2006)	Textbook publication		
Brudvig et al. (2013)	Systematic review	Multiple	Results indicated mixed findings of changes in critical thinking when comparing the 18 studies reviewed.
Coker (2010)	Quantitative	OT	Findings indicated significant changes in OT critical thinking scores after a 1 week experiential opportunity
Facione & Facione (2008)	Textbook publication	Nursing	
Forneris and Peden-McAlpine (2007)	Qualitative	Nursing	Thematic findings included perceptions of an emergence of intentional critical thinking during the first 6 months of nursing practice
Lederer (2007)	Quantitative	OT	Results were significant for differences in critical thinking found between OT students with and those without a previous bachelor's degree but insignificant among the 3 levels of OT students
Velde et al. (2006)	Quantitative	OT	Findings were insignificant for changes in OT students' critical thinking over one semester
Vogel (2009)	Quantitative	OT & PT	Results were significant for improvements in OT critical thinking scores over a curriculum & insignificant changes in PT critical thinking over a curriculum

Note: Table 2.1 provides a summary of the literature reviewed on critical thinking. Included in the chart is the citation, discipline or disciplines studied, the type of publication, and a summary of findings if applicable.

In summary, the aforementioned studies have mixed results. Please refer to table 2.1 for a summary of the literature on critical thinking reviewed by the researcher. In some instances, a

positive change occurred in critical thinking scores, especially when the study assessed changes in critical thinking scores over a longer period. Bartlett and Cox (2002) and Vogel et al., (2009) both mentioned significant changes in critical thinking scores when there was a longer length of time between administrations of the assessments. Vogel et al. (2009) mentioned that physical therapy students in that study did not have a significant change in critical thinking scores; however, hypothesized that the insignificant results may be because the physical therapy curriculum introduced critical thinking later in the curriculum. Lederer (2010) studied changes in critical thinking between cohort levels of occupational therapy students and difference between critical thinking scores of those occupational therapy students with a previous bachelor's degree versus those without. Results were significantly different between those with a previous bachelor's degree versus those without; however, there was not statistical significance between cohort levels. Lederer (2007) to hypothesize that individuals enrolled in occupational therapy program may have a higher disposition toward critical thinking. Not only does research seek changes in critical thinking throughout curriculums but research also sought changes in critical thinking based upon the use of specific educational pedagogies.

Velde et al., (2006) did not note significant changes in critical thinking scores using the CCTST after students participated in GRPQ during class instruction over a semester. In contrast, Coker (2010) did find significant changes in critical thinking scores after students participated in a one-week experiential learning activity. The extent of literature on critical thinking in healthcare education demonstrates the importance of this topic. However, the research available on higher- order thinking expands beyond critical thinking in healthcare professionals to another concept, clinical reasoning. According to Vogel et al., (2009) critical thinking is a "basic

component of clinical reasoning" (p. 152). The following is a discussion of the literature regarding the concept clinical reasoning.

Clinical reasoning

Some educators use the concepts of clinical reasoning and critical thinking interchangeably. Over twenty years ago, Mattingly & Fleming (1994) responded to an identified need to describe how occupational therapists think when working with clients and completed an ethnographic qualitative study for the American Occupational Therapy Association (AOTA). Through the ethnographic qualitative study, Mattingly and Fleming (1994) developed a "conception of clinical reasoning that concerns not only how therapists think when treating clients but also what therapists think about their practice as practice" (p. 4). Other's published in occupational therapy literature on clinical reasoning are Schell and Schell (2008) who described both clinical reasoning and professional reasoning as thinking that guides practice and frames what occupational therapists do and how occupational therapists make decisions.

As clinical reasoning has evolved, so has the depth and complexity of the concept. Clinical reasoning has subtypes, which further describe the various processes used to make decisions and to think about a situation or a topic (Mattingly & Fleming, 1994; Schell & Schell, 2008). Clinical or professional reasoning in occupational therapy practice has grown to include eight subtypes of reasoning: scientific reasoning, diagnostic reasoning, procedural reasoning, narrative reasoning, pragmatic reasoning, ethical reasoning, interactive reasoning, and conditional reasoning (Schell & Schell, 2008). The literature not only provided a description of clinical reasoning but also emphasized the importance of including clinical reasoning in healthcare education. The subsequent section provides a review of the literature on clinical reasoning in healthcare education.

A common theme in the literature was an interest in identifying pedagogical strategies that improve clinical reasoning skills in healthcare students (Coker, 2010; Kuiper, 2013; Scaffa, & Smith, 2004). In a systematic review of literature on educational strategies that promote clinical reasoning, Rochmawati and Weichula (2010) described clinical reasoning as a vital skill used by competent healthcare professionals. Inclusion criteria of the systematic review included Randomized Control Trials (RTC's) without blinding, quasi-experimental studies, and systematic reviews (Rochmawati & Weichula, 2010). Educational interventions searched in the systematic review by Rochmawati and Weichula (2010) included "problem-based learning (PBL), integrative curriculum, reflection in written or articulated form, problem solving, clinical seminars, clinical tutorials, concept mapping, and other innovated methods" (p. 25). The researchers primarily sought quantitative designs with an emphasis on those using the CCTST, CCTDI, or the Diagnostic Thinking Inventory (DTI) to measure changes in clinical reasoning (Rochmawati & Weichula, 2010). Results of the systematic review were meager with problem-based learning having the largest amount of research (Rochmawati & Wiechula, 2010). The sparse results from this systematic review indicated a need for further research on this topic, including exploratory studies (Rochmawati & Wiechula, 2010). The following study by Coker (2010) sought changes in both critical thinking and clinical reasoning.

Coker (2010) completed research with occupational therapy students seeking change in critical thinking and clinical reasoning after participation in a weeklong experiential learning activity. The study used both the CCTST and the SACRR to measure changes in critical thinking and clinical reasoning respectively in occupational therapy students. In a quasi-experimental one group non- randomized pre and posttest design, Coker (2010) assessed both critical thinking and clinical reasoning skills of 25 occupational therapy students before and after

the week- long experiential learning activity. Findings of the SACRR measuring clinical reasoning demonstrated statistically significant improvements in 22 of the 26 categories on the assessment. Coker (2010) remarked the findings of this study supported the use of experiential learning opportunities to enhance clinical reasoning abilities. Another study also sought the impact of experiential learning on clinical reasoning and generated favorable results.

Knecht-Sabres (2010) completed a study on the impact of experiential learning on clinical reasoning abilities of occupational therapy students. This pilot study was a mixed methods design completed with eleven occupational therapy students. Forms of data collection included a researcher created questionnaire, reflective journaling, and focus groups. Overall, findings indicated after participating in the experiential learning opportunity, students reported improved self-confidence; improved ability to develop therapeutic relationships; improved student ability to complete occupation-based interventions; enhanced appreciation of the person, environment, and occupation; and improved clinical reasoning skills (Knecht-Sabres, 2010). While Knecht-Sabres (2010) mentioned the benefits of experiential learning opportunities to promote professional skills such as clinical reasoning, the authors warn of barriers using this type of educational methodology, which include resources such as time, affiliation with a facility, or healthcare institution.

Nursing research also pursued the impact of educational methodology on clinical reasoning skills. In a quasi-experimental study, Kautz, Kuiper, Pesut, Knight-Brown, and Daneker (2005) wanted to know the impact of the Self- Regulated Learning (SRL) theory and the Outcome Present State Test (OPT) had on clinical reasoning abilities and changes in clinical reasoning abilities of nursing students. A sample of 23 junior baccalaureate-nursing students participated in the study. Data analysis indicated student participants had an increased number

of higher-order thinking statements than the other groups in the study (Kautz et al., 2005). Kautz et al. (2005) commented that students made significant improvements with the skills self-monitoring, self-observation, self-judgment, and metacognitive self-evaluation when using behavioral self-monitoring. Further investigation into the use of the OPT and SRL to improve clinical reasoning is recommended (Kautz et al., 2005). Methodology to promote clinical reasoning in healthcare students is not the only area researched in regards to clinical reasoning. Occupational therapy educators have conducted research on the development of clinical reasoning during level II fieldwork.

In occupational therapy education, educators describe level two fieldwork as the time when students improve on clinical reasoning skills. Sladyk and Sheckley (2000) explored changes in clinical reasoning during level II fieldwork, the impact of participation in activities that promote clinical reasoning, and compared the number of clinical reasoning activities a student participated in to the student's clinical reasoning scores. A sample of seventy occupational therapy students completed a demographic survey and The Clinical Reasoning Case Analysis Test (CRCAT) prior to level II fieldwork and at the completion of level II fieldwork (Sladyk & Sheckley, 2000). Results of the comparison of pretest and posttest CRCAT scores indicated "extremely large improvement in clinical reasoning skills" in 49 students or 70% of the sample (Sladyk & Sheckley, 2000, p. 16). The analysis of the clinical reasoning activities to promote clinical reasoning had mixed results regarding the effectiveness of the activities on clinical reasoning. Similar to Sladyk and Sheckley (2000), Scaffa and Smith (2004) also carried out research exploring the impact of level II fieldwork on clinical reasoning skills of occupational therapy students.

Scaffa and Smith (2004) completed a quasi-experimental pretest/ post-test design of forty-eight occupational therapy students on level II fieldwork to investigate whether or not clinical reasoning improved with level II fieldwork. In order to measure change in clinical reasoning, the students took the Self-Assessment of Clinical Reflection and Reasoning (SACRR) prior to beginning level II fieldwork and after completing the two twelve week fieldwork rotations (Scaffa & Smith, 2004). Findings indicated significant improvement in 13 of the 26 items on the SACRR and the change of the overall score between the SACRR pretest and posttest was significant. Scaffa and Smith (2004) concluded that level II fieldwork does influence clinical reasoning scores in occupational therapy students (Scaffa & Smith, 2004).

Similar to fieldwork in occupational therapy, international immersion opportunities may occur during didactic education. The literature discussed the impact of international placements for occupational therapy students and the impact it had on cultural competency, leadership, and clinical reasoning skills. Mu et al., (2010) described two international outreach programs which occupational therapy students had the opportunity to participate. The researchers collected qualitative data in the form of written reflections and team debriefing notes from both experiences (Mu et al., 2010). Analysis of the qualitative data indicated that both cultural immersion and experiential learning opportunities had a considerable impact on the students' confidence with clinical reasoning, cultural competence, and leadership.

Table 2.2

Clinical Reasoning Literature Review Summary

Literature	**Type of Publication**	**Health Profession**	**Results**
Coker (2010)	Quantitative	OT	Findings indicated a statistical improvement in clinical reasoning on 22 of the 26 items tested.
Kautz et al. (2005)	Quantitative		Quantitative results indicated the nursing students in the study had increased number of higher-order thinking statements than those not in the group receiving the intervention.
Knecht-Sabres (2010)	Mixed methods	OT	Quantitative and qualitative findings indicated improved self-confidence, improved intervention implementation and understanding of the OT process.
Mattingly & Fleming (1994)	Textbook Publication	OT	
Mu et al. (2010)	Qualitative	Multi	Qualitative results indicated that student's confidence with clinical reasoning, culture confidence and leadership all improved after an immersive experiential opportunity.
Rochmawati & Weichula (2010)	Systematic Review	Multi	This systemic review included research studies involving educational methods to improve clinical reasoning. Results indicated that research on this topic is sparse and more is needed.
Scaffa & Smith (2004)	Quantitative	OT	Quantitative results indicated overall improvements of pre and post- test scores in regards to clinical reasoning.
Schell & Schell (2008)	Textbook publication	OT	
Sladyk & Scheckley (2000)	Quantitative	OT	Quantitative results indicated a large improvement in clinical reasoning scores in 70% of the sampled students.

Note: Table 2.2 provides a summary of the literature reviewed on clinical reasoning. Included in the chart is the citation, discipline or disciplines studied, the type of publication, and a summary of findings if applicable.

In conclusion, healthcare professionals use clinical reasoning to guide clinical decision-making (Rochmawati & Wiechula, 2010). Please see table 2.2 for a summary of the literature on

clinical reasoning reviewed by the researcher. The reviewed studies sought to identify the impact of educational methodology, level II fieldwork, and international immersion opportunities on clinical reasoning. Coker (2010) and Knecht-Sabres (2010) investigated the influence of experiential learning opportunities on clinical reasoning and both recorded positive results; however, the sample size and other factors lead to the lack of generalizability of the results. . Nursing education also investigated educational method to promote clinical reasoning. Kautz et al., (2005) found that the Self- Regulated Learning (SRL) theory and the Outcome Present State Test (OPT) Model for Clinical Reasoning both had a positive impact on nursing student clinical reasoning skills as shown through qualitative analysis. Finally, in a systematic review, Rochmawati & Weichula (2010) sought to identify educational pedagogies that promote clinical reasoning and found few results; remarking the majority of research found involved the educational method of PBL. The final topic found in the review of literature was in regards to the impact of level II fieldwork and international immersion on clinical reasoning.

Scaffa and Smith (2004) and Sladyk and Sheckley (2000) both investigated the impact of level II fieldwork on occupational therapy students' education. The reviewed studies presented mixed results; however, both studies concluded that level II fieldwork does have a positive impact on clinical reasoning. Finally, Mu at al., (2010) researched the impact international immersion experiences during occupational therapy education had on professional skills, including clinical reasoning. Qualitative data analysis reported a positive impact on students' clinical reasoning. The results of the previously reviewed studies are overall positive; however, the inability to generalize many of findings and lack of high-level research on the topic of clinical reasoning in healthcare education is a legitimate problem. Clinical reasoning has similar attributes to critical thinking and at times, educators use these concepts interchangeably to

describe higher-order thinking in healthcare education. Both critical thinking and clinical reasoning are popular terms describing higher-order thinking but other similar concepts are in the literature. The Model of Professional Thinking includes one of these concepts, reflective practice.

Reflective practice

According to Schön (1987), professional practitioners share a common body of knowledge that guides their day-to-day jobs. However, professional practitioners frequently face situations in which the common body of knowledge provided through education does not fit the present situation. Schön (1987) described a term, professional artistry, to refer to a behavior or competence practitioners sometimes display in unique, uncertain, and conflicted situations in practice. Schön spoke of "reflection- in action" during which a practitioner seamlessly responds to a unique situation, which does not fit with the knowledge gained from training. The practitioner must act as a researcher, solve the problem, or modify the intervention, to meet the unforeseen situation (Schön, 1987). Reflection is thinking critically about a given situation in which the practitioner questions a perspective body of knowledge. According to Schön (1987), this process may then lead to identifying other ways to frame a problem or understand a situation. Schön considers reflective practice as an essential quality of a competent professional. While Donald Schön's work on reflection is significant, others also contributed to the literature on reflective practice, including Jennifer Moon.

Moon (2005) described reflective practice as a concept that is not precise and has inconsistencies within and across professions. Reflective practice is a mental process, a state of mind, intuition and emotion, an orientation to problem solving, a set of skills and abilities, a critical way of looking back (Moon, 2005). Moon defined learning as two domains, surface

learning, and deep learning. According to Moon (2005), surface learning involves memorization of facts, compartmentalization of course material, and a general separation from the integration of course material. Deep learning involves relating ideas, an active interest, and assimilation of new material (Moon, 2005). Surface learning is not reflective practice while deep learning involves reflective practice. Both Schön and Moon described reflective practice in similar manners. Moon compared reflective practice to deep learning, the ability to assimilate new information, while Schön discussed reflection as the process of reframing thinking to view something in another manner. Both scholars encouraged thinking to solve problems. While both Schön and Moon contributed to the body of literature on reflective practice, others have added to the discussion on reflective practice as well. Kinsella (2001) offered a description of reflective practice along with a list of the ten actions of a reflective practitioner.

According to Kinsella (2001), there is a link between reflection and action. During this link, therapists learn from experience, consider previously obtained knowledge, explore options, and consider contextual issues when making clinical decisions. The following is a summary of the ten actions of a reflective practitioner according to Kinsella (2001). A reflective practitioner consciously or subconsciously learns through experience, reflects on practice, the meaning of practice, and understanding other ways of knowing. A reflective practitioner develops self-knowledge, continually examines contextual issues, and reflects on ideologies on one's work environment. Finally, a reflective practitioner considers assumptions, identifies an individual theory on practice, frequently compares the adopted theory of practice to actual practice, and provides action or intervention that is "informed by reflection" (Kinsella, 2001). Reflective practice as described by Schön (1987); Moon (2005); and Kinsella (2001) involves deeper thinking, critical thinking, and is ongoing.

Reflective practice is an essential skill of healthcare professionals; however, numerous definitions of reflective practice cause ambiguity when attempting to identify a distinct definition of reflective practice (Bannigan & Moores, 2009). Kinsella (2009) described reflective practice as a simple process, yet broad and complex. Bannigan and Moores (2009) explained reflective practice as beginning with feeling uncomfortable in one's thoughts followed by analysis of those feelings, and consequently leading to a new perspective. According to Dunn and Musolino (2011), reflective practice included two concepts, "reflective thinking and self-directed learning" (p. 128). The review of literature provided multiple descriptions of reflective practice and an array of research on reflective practice in healthcare practice and education. The following explores some of the research related to reflective practice in the healthcare education.

Plack et al. (2008) and Duggan (2005) examined the use of reflection to improve clinical practice in healthcare professionals. Plack, et al (2008) described the clinical environment as fast-paced; allowing little time for students to have the opportunity to reflect on and learn from experiences immediately following the experience. The nature of clinical settings and the pace of work allowed for little time for a clinical instructor of physical therapy students to guide students on reflection in action. In order to address this barrier, the educators initiated a web-based discussion board to facilitate reflection and higher- order thinking. Results from the mixed method study indicated using web-based discussion boards during clinical rotations for physical therapy students allowed for reflection-on-action initially, but also offered the opportunity for reflection-for-action as students discussed modifications to intervention sessions based upon the results of a prior intervention session (Plack et al., 2008). Findings concluded a web-based discussion board during a clinical rotation might be an effective method to link classroom content and clinical experiences, while providing opportunities for reflection in the fast-paced

clinical setting. While promoting reflection during the clinical portion of educational programs is important, it is also important to continue with reflective practice as a clinician. Duggan (2005) sought information on practicing healthcare professionals and reflection.

Duggan (2005) completed a qualitative study seeking to discover whether providing education on reflection to practicing occupational therapists would improve the use of client-centered interventions with clients. Participants of the study took part in seven group sessions. A facilitator guided the group sessions using the Professional Identify Reflection Tool (PIRT) (Duggan, 2005). Qualitative findings of this study indicated that education on the concept of reflection along with enacting reflective practice might lead to opportunities for change. Reflective practice offered the opportunity to discover a need for change and provided practitioners the power to make the change. While results did not denote an actual change in therapist behavior, thematic analysis demonstrated better understanding of using reflective practice to improve client-centered practice. In another study, Lowe, Rappolt, Jaglal, and Macdonald (2007) also sought qualitative data on the impact of a short course on the skills of reflection of a practicing occupational therapist.

Lowe at al. (2007) pursued the role of reflection on the ability to learn material taught during a short practice course (Lowe et al., 2007). Results from thematic analysis of qualitative interviews favored improvement in reflective practice during the short practice course. Lowe et al. indicated short courses, which promote reflection, had better outcomes of reflection from attending practitioners. Findings also indicated that those therapists who used reflection tended to value reflection, have awareness, motivation, and an ability to reflect. Lowe et al. (2007) stated “healthcare professionals use reflection to translate complex learning into their practices, evaluate practice and learning needs, enhance understanding of new learning, and implement and

monitor practice changes" (p. 147). These findings supported the integration of reflection in to educational courses both during initial education and in continuing education. While the literature touts reflection as an important skill in both clinical education and continuing education of healthcare professionals, it is important to initiate reflection early on in education, during the didactic portion of health professions education.

Plack and Santasier (2004) described a case study-based learning model intended to integrate reflective practice throughout a physical therapy curriculum. This model promoted critical thinking skills, the integration of prior course material, and the development of professional behavior in physical therapy students before the first clinical rotation. The primary purpose of the case study modules was to improve critical thinking through reflective practice. Through a weeklong case study unit, the students utilized various active learning techniques to promote reflective practice in the classroom before exposure to the clinical environment. Plack and Santasier (2004) found this model was effective and promoted reflective practice and improved the integration of course material, critical thinking, and professional values. The analysis of course assignments integrated through the week demonstrated the effectiveness of this model. Plack and Santasier (2004) remarked using this pedagogical model emphasized the impact that reflection can have on critical thinking, integration of learned content, and instilling professional values in physical therapy students. Dunn and Musolino (2011) were also interested in reflective thinking in the didactic portion of healthcare education.

Dunn and Musolino (2011) pursued an understanding of how reflective thinking (RT) developed in master of occupational therapy (MOT) and doctorate in physical therapy (DPT) students. Developing instructional methodologies and courses that promote reflective practice in the healthcare students was also an interest. In order to identify methods to measure changes in

reflective thinking, Dunn and Musolino (2011) first determined the reliability and stability of two assessments that measure reflective thinking: The Questionnaire for Reflective Thinking (QRT) and the Revised Study Process Questionnaire (RSPQ). Findings of the study indicated stability for the QRT and RSPQ (Dunn & Musolino, 2011). Dunn and Musolino (2011) stated that both assessments offered utility for examining both approaches to learning and changes in RT in entry-level DPT and MOT students.

The authors further concluded that the results of the QRT for both MOT and DPT students presented a lower report of habitual action; meaning students are moving away from memorization and more to application and thinking. However, Dunn and Musolino (2011) preceded to state findings of "significantly lower reports of critical reflection skills" which is the highest level of reflective abilities according to the QRT (p. 134). These findings support a need for more opportunities for healthcare students to apply learning in clinical education situations. Dunn and Musolino also expressed a need for continued study of reflective practice using both quantitative and qualitative methods in order to further understand reflection during didactic, clinical, and continuing education.

Table 2.3

Reflective Practice Literature Review Summary

Literature	**Type of Publication**	**Health Profession**	**Results**
Bannigan & Moores (2009)	Publication	OT	Bannigan and Moores (2009) developed the Model of Professional Thinking to demonstrate how to integrate evidence-based practice and reflective practice into occupational therapy curricula.
Duggan (2005)	Qualitative	OT	This qualitative study sought to know if providing education on reflection to practicing occupational therapists would improve the use of client-centered interventions. Findings indicated the education on reflective practice and enacting reflective practice might lead to a change and increased use of client-centered interventions.
Dunn & Musolino (2009)	Quantitative	OT & PT	This quantitative study assessed the reliability and stability of the QRT and RSPQ, two measures created to measure changes in reflective thinking in physical and occupational therapy students.
Kinsella (2001)	Publication	OT	Kinsella (2001) described the ten actions of a reflective practitioner.
Lowe et al. (2007)	Qualitative	Multiple disciplines	This qualitative study investigated the impact of a short course on reflective practice with working professionals. Findings indicated education on reflection is favorable and those using reflection see the value of reflection.
Moon (2005)	Textbook publication		
Plack et al. (2008)	Mixed methods	PT	Results indicated using web-based discussion boards during clinical rotations of physical therapy students provided the students a link between classroom content and clinical content, allowing the physical therapy students to participate in reflective practice.
Plack & Santsier (2004)	Qualitative	PT	Findings indicated that using an integrative case study during physical therapy education while incorporating experiential practice improved students'

			critical thinking, ability to integrate content and professional values.
Schön (1987)	Textbook publication	Multiple Disciplines	

Note: Table 2.3 provides a summary of the literature reviewed on reflective practice. Included in the chart is the citation, discipline or disciplines studied, the type of publication and a summary of findings if applicable.

In conclusion, the literature indicated the importance of reflection in both health professions education and practice. Please refer to table 2.3 for a summary of the literature on reflective practice reviewed by the researcher. Constraints of the healthcare system today do not allow healthcare professionals the extra time to stop and reflect; therefore enforcing the need for healthcare professionals that are capable of efficient and timely reflection. Plack, et al. (2008) described a need to assist students during physical therapy clinical education with reflection. The initiation of a web-based discussion board during clinical education allowed physical therapy students the opportunity to integrate classroom learning to new clinical learning and draw conclusions through reflection during the discussion boards. Students are not the only ones benefiting from education on reflection as indicated by Dugan (2005). Providing healthcare professionals opportunities to discover a need for change, and the power to make the change improved reflective practice (Dugan, 2005). Lowe et al. (2007) concurred with Dugan (2005) stating that practicing therapists who attended short courses that promote reflection demonstrated improved reflective practice skills. These findings all highlight the importance of including opportunities for reflection during any educational experiences.

Reflection during didactic education is important as well. Plack and Santasier (2004) employed a case study-based learning model to integrate reflective practice throughout a physical therapy curriculum. Benefits of this educational model included improved integration of course material, critical thinking, and professional values. In another study, Dunn and

Musolino (2011) identified the stability of two assessments that measured change in reflective practice in physical and occupational therapy students. Dunn and Musolino (2011) mentioned from the assessment results that the occupational and physical therapy students were moving away from habitual reflection but still limited in critical reflection abilities. The authors of this study further emphasize the need for more applied experiences during the education of occupational and physical therapists in order to provide students opportunities to further understand both meaning and practice.

Healthcare education seeks methods to promote reflection in healthcare professionals and students. Schön (1987) views reflection as an essential competency in professional practice. The ability to think and reflect over unforeseen situations and make appropriate decisions regarding the situation is crucial to practice. Plack and Santasier (2004) concur, highlighting the importance of reflection in professional practice; describing reflection as requiring thinking on one's feet, assessing outcomes, and including continuous improvement in practice. While many agree that reflective practice is an essential quality of a competent healthcare professional, others argue that evidence-based practice is indicative of best practice in healthcare. Evidence-based practice is another concept mentioned in the literature related to higher-order thinking and professional practice in healthcare.

Evidence-based practice

Evidence-based practice (EBP) is sometimes misconstrued (Bannigan & Moores, 2009; Law & MacDermid, 2014). A primary misconception of EBP is that it merely involves research. In contrast, EPB is a multifaceted process. According to Bannigan and Moores (2009), evidence-based practice involves exploring the "best available, current, valid, and relevant evidence" during clinical decision-making while considering "the client's values, therapist's

expertise, and available resources" (p. 344). Bennett and Bennett (2001) agree describing EBP as the synthesis of clinical expertise, patient preference, and evidence obtained from a systematic research review. EBP requires clinical experience along with a review of available research regarding the topic of interest. According to Law and MacDermid (2014), experienced practitioners have the skills and background necessary to implement the findings of the evidence; however, proficient EBP is an expected entry-level practice skill and healthcare education must emphasize EBP in its curriculum. The following section reviews the literature on EBP including common processes and models for EBP, research regarding EBP in healthcare professions, and EBP with healthcare practitioners.

The growing emphasis on EBP by healthcare constituents has led to the designation of several models describing the process. These models are very similar and described below. The overarching components of the EBP with these models include:

- identification of a problem;
- evaluation and synthesis of the literature;
- integration of the evidence in the literature with clinical expertise and client preferences;
- evaluation of the process and the outcomes;
- dissemination of the findings (Bennett & Bennett, 2001; Lin, Murphy, & Robinson, 2010; Thomas & McLuskey, 2014).

Tickle-Degnen (2000) provided a similar description and explained EBP as a toolbox to assist the occupational therapy practitioner with clinical reasoning. Tickle-Degnen (2000), explained steps to integrate research into practice as follows:

- write a clinical question;
- gather current evidence that may assist with answering the question;

- evaluate the evidence and determine the best evidence to address the question;
- discuss the findings with colleagues and clients while determining the best evaluation and intervention methods;
- evaluate the decided evaluation and intervention as it proceeds and modify to meet the individual needs of the client;

The processes described by Bennett and Bennett, (2001); Lin et al. (2010); Thomas and McLuskey (2014); Tickle-Degnen (2000) are nearly identical, demonstrating that overall the EBP process is universally understood. Understanding the process of EBP is the first step toward using EBP; however, it is also pertinent to understand how the different models rank rigor and levels of research.

Traditional research is rooted upon a single hierarchical model that places levels of research in order of rigor (most to least rigorous). In response to constraints with conducting many of the rigorous types of research documented in the traditional hierarchical model, Tomlin and Borgetto (2011) developed an inclusive research pyramid model. This model included qualitative research (not typically found in the traditional models) and recognized the difficulty of completing Blind Randomized Clinical Trial Studies (RTC's) in occupational therapy research.

Tomlin and Borgetto (2011) constructed the model as a triangle, splitting the triangle into three equal areas for the three overarching categories, experimental research, outcome research, and qualitative research. The creators of the model organized each section using a hierarchical format from least to most rigorous for each research methodology (Tomlin & Borgetto, 2011). Tomlin and Borgetto (2011) designed this model to allow for equal importance of each category of research: experimental, outcome research, and qualitative research; indicating inclusion of all types of evidence provides the best balance to EBP for occupational therapists. Interestingly,

Tomlin and Borgetto (2011) suggested the Pyramid Model of EBP closely aligns with clinical reasoning as defined by Mattingly and Fleming (1994) and aligned procedural reasoning to experimental research, interactive reasoning to qualitative research, and conditional reasoning to outcome research. This assimilation of clinical reasoning and EBP provided further evidence toward the interwoven nature of these concepts. The literature provided a sound discussion regarding process and models for EBP. When considering content for healthcare education, specifically curriculum, accreditation standards are of great importance to healthcare programs. The accreditation standards for occupational therapy demonstrate the importance of EBP in the education of occupational therapists.

The national accrediting body occupational therapy clearly supports including EBP in healthcare curriculum. The Accreditation Council for Occupational Therapy Education (ACOTE) (2011), states that entry-level occupational therapy practitioners must be able to "use scholarly literature to make evidence-based decisions" (p. 30). The inclusion of EBP by the accrediting body for occupational therapy education provides further support that EBP is an essential component of clinical decision-making occupational therapists. This finding reinforces the need for EBP in occupational therapy education. One method found in the literature used by educational programs to instill EBP skills in healthcare students involved threading EBP throughout a curricular design.

An occupational therapy program incorporated EBP into the curriculum design. Cohn, Coster, and Kramer (2014) described the design of an occupational therapy curriculum, which incorporated specific educational strategies throughout the curriculum to develop students' EBP skills and reasoning abilities. The program threaded EBP courses throughout the OT curriculum. In this curriculum, program faculty expected students take ownership of learning during the EBP

courses (Cohn, et al., 2014). The program's faculty expected that students then used the skills learned from the EBP courses throughout other courses in the curriculum. Prior to beginning level II fieldwork, students completed exit surveys which indicated the students who learned about EBP felt comfortable with the process and with integrating the EBP process into level II fieldwork experiences (Cohn, et al., 2014). Survey results also indicated some resistance to the educational method used to teach the EBP process. Important, however, is the survey results demonstrated the positive impact the curriculum design had on student perceptions of EBP competence. Curriculum design is one way to incorporate EBP into health professions education. Other programs have collaborated with library staff to improve student information literacy and EBP.

Information literacy and collaboration with library staff are two key components found in the literature on EBP in healthcare education. Boruff and Thomas (2011) studied the effectiveness an early introduction to information literacy and EBP during the education of occupational and physical therapy students. Students participated in a two part educational portion of a course during which student's received a 90 minute introductory lecture by the librarian followed by a library-based workshop in which students were provided the opportunity for hands on experience of reading a clinical scenario, identifying a PICO question, and completing a library search based upon identified concepts (Boruff & Thomas, 2011). Findings indicated overall success of the educational program with 101/104 students receiving 8/10 or higher on the assignment. Boruff and Thomas (2011) remarked on the importance of a collaborative relationship between the librarian and faculty to facilitate EBP; however, added constraints of this method included the amount of time required. In a more recent study, Vogel

(2012) also addressed a collaborative educational effort with the librarians to instill EBP skills in occupational therapy students.

Vogel (2012) sought information regarding the effectiveness of a course that introduced EBP during the first didactic semester of an entry-level master in occupational therapy program. During the course, students participated in three learning activities that guided students through the EBP. The course included an instructional segment from library staff on conducting literature searches. The three learning activities introduced students to EBP, patient/population, comparison, outcome (PICO) questions, strategies for successful electronic searches, creating a clinical question in the PICO format, identifying pertinent research and answering the clinical question (Vogel, 2012). Both students and librarians completed questionnaires to assist with evaluating the learning activities.

Feedback from the students and librarians was generally positive regarding the EBP learning activities. Vogel (2012) discussed the importance of time in relation to improving students' skills with EBP and importance ensuring student awareness regarding the realities of EBP in clinical practice. Vogel (2012) believed healthcare education should expose students to critically appraised topics (CATS) and critically appraised papers (CAPs) and other avenues to find summaries of high-level research. Both studies incorporating collaboration with the library staff demonstrated a positive influence on student knowledge of EBP and the skills necessary to complete EBP. The research supports threading EBP through a curriculum as well student and library staff collaboration. Other research also described intentional placement of EBP in individual courses.

Historically, occupational therapy programs structured research methods courses to teach methodology behind completing research. Traditional research methods courses in occupational

therapy did not convey the importance of research methods with clinical occupational therapy practice; leaving the students disengaged with research (Tickle-Degnen, 2000). In response to this concern, Tickle-Degnen taught a revised course in which students were required to obtain evidence based on clinical questions that typically arise during practice. This course revision allowed the students to develop an understanding of the relationship between research and clinical practice. Consequently, integrating EBP into didactic coursework is essential in preparation for clinical practice.

Another study investigated EBP in a seminar course prior to level II fieldwork in occupational therapy education. Stube and Jedlicka (2007) sought qualitative data from students regarding the impact of an EBP model used during level two fieldwork on occupational therapy students' understanding of EBP. Data analysis from the focus groups indicated five main themes: student perceptions of EBP, EBP is invisible in the clinical environment, barriers to EBP and solutions to address the barriers; the relationship of fieldwork and student understanding of EBP; and the contribution academic learning makes to the student understanding of EBP (Stube & Jedlicka, 2007). Stube and Jedlicka (2007) noted students considered EBP best practice and the students learned best through actively using EBP; the student and fieldwork educator relationship provided an opportunity to learn and share about EBP for both parties, and the clinical environment presented barriers and challenges regarding EBP. In summary, Stube and Jedlicka recommend that the development of a relationship with the level II fieldwork student and the clinical supervisor is a good method to foster EBP in the clinical environment. Several studies investigated EBP during the clinical or practice portion of health professions education.

Everson (2013) used a quasi-experimental research design to study changes in occupational therapy student perceptions of confidence in using research to make decisions

during level II fieldwork. The study grouped the students based upon the assigned level II fieldwork placement. Small groups of 5-7 students completed a problem-based case study assignment using both clinical reasoning skills and using evidence to support decisions made for the groups case study (Everson, 2013). Pre and post-test scores from the survey indicated significant changes in perceptions of confidence after participating the problem-based case studies. Findings supported the use of a problem-based assignment to improve student confidence when integrating EBP into clinical decision-making (Everson, 2013).

An earlier study, Sabus (2008) examined the impact of an EBP student project and presentation during a physical therapy clinical internship. The primary variables studied were evidence-based competency and evidence based clinical behavior (Sabus, 2008). Participants in the study included physical therapists, a subset of clinical instructors, and physical therapy students completing the clinical rotation. Results provided significant improvement in EBP competency scores in all three groups: practicing physical therapists, clinical instructors, and students. However, Sabus stated evidence- based clinical behavior did not demonstrate a significant change for any of the studied groups; perhaps indicating that a change in evidence-based clinical behavior requires a longer period. Recommendations included improvement of the matching process for clinical instructors and students matching the clinical instructor with specific strengths in EBP to a student that may not be strong in those areas (Sabus, 2008). In particular, a subsequent study addressed student understanding of EBP both after a didactic course on EBP had and again after a level II fieldwork rotation.

Crabtree, Justiss, and Swinehart (2012) studied the impact of an EBP course on entry-level masters of science occupational therapy students and the retention of EBP skills after

participation in an 8-week fieldwork experience. Using the Adapted Fresno Test (AFT), Crabtree et al., (2012) sought pre and posttest scores of the occupational therapy students. Findings indicated a significant change between the pre and post-test scores after completion of the course but then indicated a significant decline in scores between the posttest and follow up post fieldwork scores (Crabtree et al., 2012). The authors attributed the lack of student retention of the EBP skills to several factors including ineffective strategies provided to students to retain information learned in the course and a dissimilar environment in the classroom compared to the clinic. The authors also attributed factors including the inability for students to use the skills during fieldwork, and a lack of opportunity to use the skills on fieldwork. Finally, the authors commented the tool used to measure EBP might have impacted the students' ability to retain EBP skills. Based upon the results of the study, Crabtree et al., (2012) recommended that an entry-level EBP course included an opportunity for students to apply EBP skills through role-playing and offer connecting with practicing therapists in the community. Crabtree et al. discussed barriers for EBP including time and resources. The literature addresses both of these barriers. Salls, Dolhi, Silverman, and Hansen (2009) first mentioned the barrier of time with EBP in healthcare.

In an exploratory study, Salls et al. (2009) asked occupational therapists about their beliefs and knowledge regarding EBP. Findings indicated favorable attitudes toward EBP; 50 % of respondents reported learning about EBP during didactic education; but only 12% reported frequently completing electronic database searches on a monthly basis (Salls, et al., 2009). The barrier cited most frequently to using EBP in the clinic was insufficient time (Salls et al., 2009). In other studies, healthcare practitioners also cited constraints to EBP including organizational barriers, time, availability of resources, and lack of understanding on how to complete the EBP

process (Lin, et al., 2010; Vogel, 2012). Another study sought to bridge a gap between healthcare education and practice with EBP.

In an effort to bridge the gap between education, healthcare practitioners, and EBP, Scott, Atlenburger, and Kean (2011) created a partnership between a hospital and an educational institution. The purpose of the partnership between an academic institution and a rehabilitation hospital involved facilitation of evidence-based clinical decision-making (EBCD). The two institutions created the partnership with the intention of bridging (EBCD) from the didactic portion of the occupational and physical therapy curriculums to the clinical piece of the program. Scott et al. (2011) stated students were confused regarding EBCD as students did not see this practice occur in the clinical setting. The research findings indicated satisfaction and perceived value of the partnership and findings indicated this collaborative projects assisted students to better understand EBCD and develop the ability to link EBCD to clinical practice (Scott et al., 2011). Scott et al. suggests that to understand the benefit of this educational model one must see the carryover from student participants in this study to their own clinical practice. The findings in the literature emphasized the importance of EBP during health professions education and clinical practice. More recently, a study sought information from current occupational therapy education programs regarding the presence of EBP in the curriculum.

DeAngelis, DiMarco, & Toth-Cohen (2013) completed a survey of fifty-eight occupational therapy educators seeking information on how occupational therapy programs taught and integrated EBP into entry-level programs. Eighty-five percent of the programs indicated EBP as a curricular thread and 90% of the programs instruct research proposal development (DeAngelis et al., 2013). However, findings indicated only 50% of the programs had a specific course related to EBP (DeAngelis et al., 2013). Over 96% of programs indicated

incorporation of EBP into clinical intervention courses; however, only 60 % of level 1 fieldwork and 67% of level II fieldwork courses incorporated EBP (DeAngelis et al., 2013). DeAngelis et al., (2013) affirm the survey results indicate improvements in occupational therapy education related to EBP but recommended further research seeking details including specifics of how occupational therapy education programs incorporate EBP into specific courses and the long - term impact of students' using EBP in clinical practice.

Table 2.4

Evidence-Based Practice Literature Review Summary

Literature	**Type of Publication**	**Health Profession**	**Results**
Bannigan & Moores (2009)	Article	OT	Bannigan and Moores (2009) developed the Model of Professional Thinking to demonstrate how to integrate evidence-based practice and reflective practice into occupational therapy curricula.
Bennet & Bennet (2001)	Article	OT	This article provides a description of EBP and the application of EBP to occupational therapy practice.
Boruff & Thomas (2011)	Quantitative	OT and PT	This study sought the impact of early introduction to information literacy and EBP in OT and PT curricula. Findings indicated overall success of this program with students scoring 8/10 or higher on post assessment.
Cohn et al. (2014)	Qualitative	OT	This study discussed the integration of evidence-based practice into the curricular design of an occupational therapy program. Student perceptions of EBP competence were positive after participating in the curriculum.
Crabtree et al. (2012)	Quantitative	OT	This study investigated the impact of a course on EBP and the retention of EBP skills after participation in an 8-week fieldwork. Findings indicated significant change with pre and post course results but also indicated a significant decline between the end of the course and the 8-week fieldwork.
DeAngelis et al. (2013)	Quantitative	OT	This study involved a survey of 58 OT programs seeking information on how OT programs teach EBP. Findings

			indicated OT curricula threads EBP throughout didactic preparation but EBP is less prevalent in level one and two fieldwork.
Everson (2013)	Quantitative	OT	This study investigated the impact of using problem-based case studies during level two fieldwork to demonstrate clinical reasoning and EBP skills. Survey results indicated significant changes in student perceptions of confidence when integrating EBP into clinical decision-making.
Law & MacDermid (2014)	Textbook	OT	
Lin et al. (2010)	Article	OT	This article provides a review of the steps of EBP and provides occupational therapists recommendations to overcome common barriers to using EBP.
Sabus (2008)	Quantitative	PT	This article examined the impact of an EBP student project and presentation. Findings were significant on pre and post EBP competency scores but not on the pre and post EBP behavior scores of physical therapists, clinical instructors and physical therapy students.
Salls et al. (2009)	Quantitative	OT	This study explored occupational therapists beliefs and knowledge regarding EBP. Only 12% of practicing OT's completed electronic database searches monthly citing time as a major barrier.
Scott et al. (2011)	Qualitative	OT	This qualitative study explored a partnership between an academic institution, and a rehabilitation hospital to facilitate evidence-based practice clinical decision - making (EBCD). Analysis indicated perceptions that this is a valuable partnership and

			assisted with providing the link between EBVCD and clinical practice.
Stube & Jedlicka (2007)	Qualitative	OT	This study investigated the impact of an EBP model during level two fieldwork. Findings indicated this to be challenging within the current clinical environment but also provided an opportunity to learn and share for both the educator and the fieldwork student.
Thomas & McLuskey (2014)	Textbook	OT	
Tickle & Degnen (2000)	Article	OT	This article described a revised occupational therapy research course that required students to obtain evidence on clinical questions that typically arise in practice.
Tomlin & Borgetto (2011)	Article	OT	This article describes an occupational therapy research model, which equally divides types of research into 3 overarching categories, experimental research, outcome research and qualitative research. These authors created this revised research model to meet the needs of research in occupational therapy practice.
Vogel (2012)	Quantitative	OT	This study investigated the impact of a course introducing EBP during the first semester of OT education. Librarian and student feedback supported this type of learning activity to introduce students early to EBP during OT education.

Note: Table 2.4 provides a summary of the literature reviewed on EBP. Included in the chart is the citation, discipline or disciplines studied, the type of publication, and a summary of findings if applicable.

In summary, the review of literature on EBP supports notion that healthcare education programs are teaching EBP. Please refer to table 2.4 for a summary of the literature on

evidence-based practice reviewed by the researcher. The literature also notes the importance of EBP to practicing healthcare professionals. The literature described evidence-based practice as a multi- step process involving the identification of a problem, researching the literature, forming a decision based upon the clinician's experience, the research, and the client's needs, evaluating outcomes, and disseminating the information (Bennett, & Bennett, 2001; Lin et al., 2010; Thomas, & McLuskey, 2014). Bannigan and Moores (2009) affirmed that EBP incorporates the best, most pertinent research, the occupational therapists experience, and considers the client's values and resources. The accreditation standards for occupational therapy as set by ACOTE also affirm the importance of EBP in occupational therapy curricula and necessitate the need for EBP in educational programs and practice.

The literature provided a variety of methods to promote EBP in students and clinicians. Cohn et al. (2014) found improved confidence in occupational therapy students' EBP skills after completing a curriculum that threaded EBP throughout the courses. Both Tickle-Degnen (2000) and Stube and Jedlicka (2007) reported improved student understanding EBP and the role of EBP in healthcare after participating in courses that promoted EBP. Collaboration with other educational constituents, specifically librarians, had positive results. Boruff and Thomas (2011) and Vogel (2012) found collaboration with the library staff on EBP improved student' assignment scores and student understanding of the EBP process. The placement of EBP in didactic coursework was positively received but other research seeks input regarding EBP during clinical rotations.

Everson (2013); Sabus (2008); and Crabtree et al. (2012) all examined EBP during clinical rotations of healthcare students. Everson (2013) remarked student confidence in EBP skills increased after participating in problem-based case study assignments while on fieldwork.

During physical therapy clinical internships, Sabus (2008) documented improved EBP competency scores in physical therapy students and supervising clinicians after a student' EBP project and presentation. Crabtree et al. (2012) completed a complex study that investigated improvement in EBP skills after participation in didactic course and again after a fieldwork rotation. Findings indicated improvements in student EBP skills after completion of the course, but the researcher found a decline in EBP skills after fieldwork. Crabtree et al. (2012) concluded the decline in EBP skills after fieldwork as caused by the lack of EBP found in healthcare practice. Crabtree et al. (2012) confirmed information in previous articles by Salls et al. (2009) and Scott et al. (2011) who cited barriers to EBP in clinical practice as time, lack of resources, and little presence of EBP with current practicing clinicians.

Finally, DeAngelis et al. (2013) affirmed that occupational therapy curriculums are teaching EBP and recognize the importance of EBP to clinical practice; however, the long term outcomes of EBP for the students in these programs is unknown. Evidence-based practice is necessary entity of professional competence for entry-level healthcare professionals. With a better understanding of attributes of professional thinking, reflective practice, and evidence-based practice, this review of literature will now turn to explain the theoretical framework, Professional Thinking, which is the basis for this research study.

Professional thinking (theoretical framework)

Professional thinking is another concept used to describe higher-order thinking. The literature on professional thinking spans several decades; however, it has not been widely adopted by healthcare professionals and healthcare education programs. Parham (1987) wrote to occupational therapy professionals encouraging occupational therapists to move toward professionalism commenting that professional thinking "involves being able to clearly and

critically analyze the reasons for the decisions and actions we take" (p. 555). In this paper, Parham (1987) described threats to the profession of occupational therapy due to an overemphasis on technical skills, called for an increase in reflective therapists, and discussed the importance of including theory in reflective practice. Parham (1987) warned occupational therapists against becoming grounded in technical proficiency instead of considering contextual implications and the impact an intervention might have on an individual client. Emphasis should be on a conceptual process or problem setting in order to frame the problem and identify topics needing to be addressed (Parham, 1987). Reflecting on a problem allows for consideration of context when making decisions and bases the individual's decisions upon all of the gathered information (Parham, 1987).

Parham (1987) emphasized both theory and conceptual frameworks as tools that assist the occupational therapy practitioner during consideration of a problem and discussed the role of both theory and conceptual frameworks during decision- making and problem solving. Parham (1987) concluded offering occupational therapist suggestions to assist with movement toward professionalism including but not limited to "critiquing your own clinical thinking" "be a research consumer and contributor" and "be open to different points of view" (p. 560). Decades after Parham (1987), Blair and Robertson (2005) emphasized the importance of considering both evidence-based practice and reflective practice when defining best or good practice in occupational therapy.

Blair and Robertson (2005) sought an understanding of what occupational therapists consider best practice in occupational therapy. The authors discussed the hard and soft complexities of practice. Blair and Robertson (2005) emphasized the following: evidence-based practice and its correlation with best practice because of changes in the healthcare climate, the

importance of reflection during practice including the consideration of context, the art of occupational therapy practice, and the importance of reflexive practice. Blair and Robertson (2005) contended that each of these concepts, evidence-based practice, reflective practice, and reflexive practice, are imperative components of good practice and should not be considered as competing but should be considered "potential sources of knowledge that have their place in certain situations" (p. 275). Similar to Blair and Robertson (2005), Bannigan and Moores (2009) stated the components of good practice, evidence-based practice and reflective practice should not be mutually exclusive; however, there is a tendency to have these concepts taught as separate entities in occupational therapy education programs. Bannigan and Moores believe that reflective practice and evidence -based practice are parallel concepts and should taught and used in unison. These notions lead to the development of The Model of Professional Thinking.

Bannigan and Moores (2009) developed this model based upon the terminology, which they believed encompassed professional thinking. According to Bannigan and Moores (2009), professional thinking aligns directly with clinical reasoning; however, professional thinking, is a more inclusive concept due to the variety of practice settings that occupational therapists may work. As previously, stated Bannigan and Moores described professional thinking as an integration of evidence-based practice and reflective thinking. Both evidence-based practice and reflection are concepts used by occupational therapists when making decisions regarding clients; however, occupational therapy educational programs often teach these two concepts as separate entities. In the paper outlining the conceptual Model of Professional Thinking, Bannigan and Moores propose occupational therapy education teaches these two components of professional practice in unison due to their complimentary nature. "Integrating evidence-based practice and

reflective practice in making decisions," allows the decisions made to be based upon "current, valid, and relevant evidence" (Bannigan & Moores, 2009, p. 344).

Bannigan and Moores (2009) based the reflective component of the Model of Professional Thinking is based upon the work of Atkins and Murphy (1993) but furthered simplified into three stages labeled "What?" "So what?" and "Now what? (as cited in Akhurst, 2005). The concept of evidence-based practice is located in the "So what?" or the second stage of reflection. Another key component of The Model of Professional Thinking includes the occupational therapist's consideration of the context and how the workplace influences an professional thinking (Bannigan & Moores, 2009). Both internal and external factors including professional, sociocultural, organizational, and political/economic all impact professional thinking. The Model of Professional Thinking recognizes that challenges associated with the work place can arise during practice and the occupational therapist must consider these challenges during professional thinking. The diagram depicting the Model of Professional Thinking created by Bannigan and Moores is below (Figure 2.1) along with a written description to provide a complete understanding of The Model of Professional Thinking.

Figure 2.1 The Model of Professional Thinking

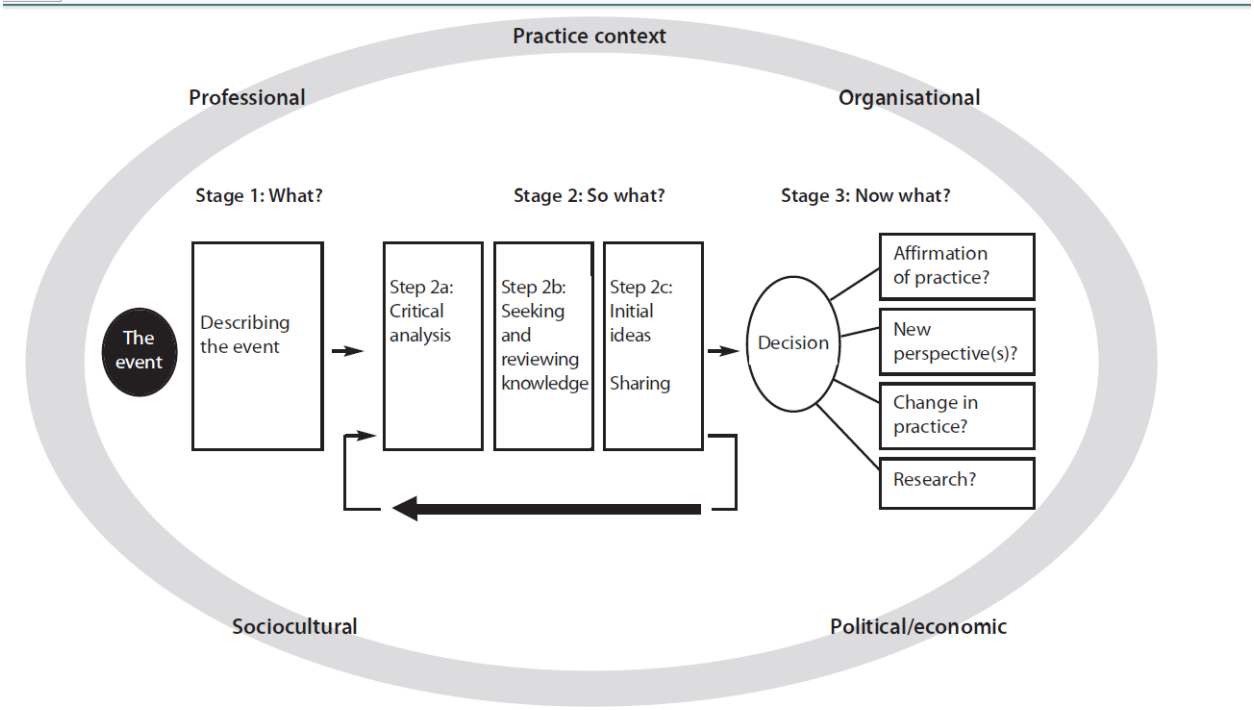

Figure 2.1 explains the Model of Professional Thinking from "A Model of Professional Thinking: Integrating Reflective Practice and Evidence Based Practice," by K. Bannigan and A. Moores, (2009), *The Canadian Journal of Occupational Therapy, 76*(5), p. 345. Copyright (2009) by Copyright Clearance Center. Reprinted with permission.

Professional thinking initiates with an event or an experience that leaves an individual with unsettled feelings or thoughts (Bannigan & Moores, 2009). Many situations that a therapist encounters throughout the day can qualify as an event: one example of an event would be a question from a client or a caregiver that challenges an intervention session or a therapist's actions. Following acknowledgement of an event, the therapist enters stage one (what?) when the event is merely described. Stage one is purely descriptive and during this stage, the therapist should document the event, providing a factual description of the event, avoiding both bias and misconception in this documentation. During stage one, the therapist may need to identify personal thoughts and feelings regarding the event to avoid undue negativity toward the event

and focus on capturing positive thoughts. Once stage one is complete, the therapist moves to the second stage (so what?), which is lengthy and involves three sub stages.

Stage 2 is the analytical phase of professional thinking (Bannigan and Moores, 2009). During stage two "critical analysis of the event, seeking and reviewing knowledge, and initial ideas and sharing" occurs (Bannigan & Moores, 2009, p. 346). The first sub stage, critical analysis of the event, involves the therapist personally questioning the event. At this stage, the therapist is seeking past knowledge and experience related to the described event. After seeking personal knowledge, the therapist progresses to the second sub stage.

The second sub stage, seeking and reviewing knowledge, involves evidence-based practice. During this sub stage, the therapist seeks out alternative sources of knowledge and pursues evidence in the literature to support or refute the situation or event (Bannigan & Moores, 2009). Once the review of evidence is complete, the third sub stage, initial ideas and sharing, transpires. This sub stage involves the therapist drawing initial conclusions based upon both the previous knowledge identified in the first sub stage and the evidence identified during the second sub stage. A challenge during the third sub stage is ensuring that a client's values, beliefs, and contextual components along with acknowledgement of the available resources at the practice setting while considering the evidence. A final imperative piece to the third sub stage is sharing ideas during which the therapist seeks out input for others in order to ensure there is external feedback in the process.

The third and final stage of the model of professional thinking, stage three (now what?) is the decision making stage when the professional draws conclusions (Bannigan & Moores, 2009). According to stage three, the decision will take one of four directions. The decision may affirm the occupational therapists current practice, the therapist may gain a new perspective(s), the

therapist may change practice, or a decision to conduct research may ensue. The final stage of the model, the decision, may be based upon research; however, there may not be research to guide the decision making process and the therapist will use past clinical experience and expertise to guide the decision

In conclusion, The Model of Professional Thinking offers opportunities in healthcare education and practice to further describe and take part in the decision making process of professional thinking. This model explicitly blends two important concepts frequently taught separately during healthcare education in order to ground both important components of practice together. The Model of Professional Thinking ensures healthcare students are prepared to think, research, make decisions, and practice in a complex and dynamic health care environment of today.

As described in the previous sections, healthcare education seeks to instill the skills of higher-order thinking and for the purpose of this study, professional thinking, in students. How educators instill these skills is another important component of the process. Research on specific educational pedagogies that promote higher-order thinking is available in the health professions education literature. Following is a discussion of three prominent educational pedagogies used to promote higher-order thinking in the literature, experiential learning, problem-based learning, and clinical simulation.

Educational Methods

Approaches to promote professional thinking during healthcare education include instructional methods that instill the concepts of professional thinking: reflective practice, and evidence-based practice. As mentioned in the literature on professional thinking, one way to improve the use of evidence-based practice in healthcare is to instruct evidence-based practice as

a necessary skill for healthcare practice. Ensuring students learn how to complete EBP includes active participation in EBP. Similarly, fostering reflective practice in healthcare education requires teachers provide the students learning opportunities that support higher levels of The Revised Bloom's Taxonomy: analysis, creation, and evaluation. In order to warrant that healthcare students are appropriately prepared to practice using evidence-based practice and reflective practice, healthcare educators must use educational methods that promotes these concepts.

For the purpose of this study, educational methods used to promote professional thinking during healthcare education, are limited to experiential learning, problem-based learning, and clinical simulation. These three educational methods are some of the most frequently instituted and researched methodologies among healthcare education programs.

Experiential Learning

Experiential learning links theory to practical experience by allowing students to find connections between what is learned in the classroom and what occurs in the healthcare setting (Benson & Hansen, 2007; Coker, 2010). Coker (2010) suggested that experiential learning allows for application of learned material and may be the best way to foster clinical reasoning skills in students. Experiential learning opportunities to enhance clinical reasoning and professional development continue to be an educational method at the forefront of many health professions educational programs.

Knecht-Sabres (2010) completed a mixed methods pilot study on experiential learning with eleven occupational therapy students. The eleven research participants implemented occupational therapy evaluation and intervention with community dwelling older adults. Participants and occupational therapy faculty met prior to and after every interaction the student

had with the older community dwelling adult (Knecht-Sabres, 2010). Data collection included a pre-test and post-test Likert questionnaire developed by the researcher and qualitative focus groups and journal entries (Knecht-Sabres, 2010). Results of the data analysis indicated statistically significant changes in the pre and post-test scores for 18 of the 20 quantitative questions. Qualitative results of students' perceptions displayed an increased self-confidence, an improved confidence in therapeutic relationship development, improved clinical reasoning skills, along with several other areas after the experiential learning opportunities (Knecht-Sabres, 2010). Knecht-Sabres noted experiential learning is an effective method that improves "understanding and application of course material; improves personal and professional attributes and skills needed to be an effective clinician; and improves clinical reasoning skills" (p. 329). Experiential learning in occupational therapy education is a common method as demonstrated through other research.

Subsequently, Coker (2010) suggested that an experiential learning strategy allows students to link didactic information to an actual practice environment. According to Coker (2010), active learning strategies incorporated through application in the clinical environment may be the best way to improve critical thinking. A quasi-experimental study sampling 25 Master of Occupational Therapy students investigated the impact a one-week day camp with children with hemiplegic cerebral palsy had on the OT students' clinical reasoning and critical thinking (Coker, 2010). Coker (2010) assessed experiential learning outcomes using the Self-Assessment of Critical Reflection, and Reasoning (SACRR) and California Critical Thinking Skills Test (CCTST) in a pre-test and posttest examination. Findings found statistically significant improvements in the majority of the subsets of both tools indicating that in this instance, experiential learning did have a positive impact on critical thinking skills of

occupational therapy students (Coker, 2010). Qualitative findings by Benson and Hansen (2007), which indicated student perceptions of an experiential learning opportunity as overall positive experience, reinforce Coker's findings.

Benson and Hansen (2007) researched student perceptions of an experiential learning opportunity embedded in an occupational therapy course. This course met two times a week. The first meeting consisted of traditional lecture and the second meeting was in the community during which students had the opportunity to work with clients currently receiving OT services (Benson & Hansen, 2007). The researchers collected multiple points of data including field notes and observations, questionnaires, and reflective journals. Benson and Hansen (2007) explained that during data analysis themes emerged on the topics of emotional connection, acquisition of content knowledge, professional growth and development, clinical reasoning skills, and the culture of disability (Benson & Hansen, 2007). In summary, the findings indicated that the "living lab" provided students the opportunity to link current didactic learning to a real situation, providing a link to classroom learning allowing for improvement in clinical reasoning skills (Benson & Hansen, 2007). A study involving international immersion also documented similar findings regarding the impact of experiential learning opportunities during health professions education.

Mu et al., (2010) studied the impact of an inter-professional immersion opportunity on health professions education students 'preparedness for practice. International immersion experiences in China and the Dominican Republic both offered occupational therapy and other health professions education students the opportunity to work with patients and partake in an experiential learning opportunity. Both of these immersion opportunities had a small sample size of 10 students (4 OT, 4 PT, 2 nursing) participating in the China immersion experience and five

occupational therapy students in the Dominican Republic (Mu et al., 2010). Data analysis of reflective journals and focus group debriefing sessions indicated that both cultural immersion opportunities and experiential learning opportunities had a positive impact of students' professional competence including clinical reasoning, cultural competence, and international leadership (Mu et al., 2010). The positive impact of experiential learning opportunities is stated by Mu et al., (2010); however, the authors mention that both a longitudinal study and a mixed methods study would further strength the results of this study. As shown in the inter-professional study completed by Mu et al., (2010) experiential learning is not only prevalent in occupational therapy education but is also touted as an important educational concept in the other health professions education.

O'Neil, Rubertone, and Villanueva (2007) described a model used at one institution to promote the integration of community "experiential learning opportunities and service-learning activities" (p. 66). The program split the experiential learning opportunities into three parts and threaded throughout the doctoral of physical therapy program (O'Neil et al., 2007). This scaffolded design began with an introduction to the experience and case- based scenarios. Next student's and client interacted and the experience concluded through an integration of the experience in which the students participated in service learning, interacted with community members, and completed a final project for the site (O'Neil et al., 2007). O'Neil et al. (2007) noted formal assessment of outcomes on this model is necessary to provide evidence of the effectiveness of this model. A similar study on experiential learning opportunities occurred with first year physical therapy students.

Weddle and Sellheim (2011) described a model of "integrated clinical education (ICE)" initiated during the first year of physical therapy education and continued through the majority of

the program" (p. 68). The researchers obtained feedback on this model of integrated clinical education through surveys completed by students, clinical faculty, and core faculty (Weddle & Sellheim, 2011). Student feedback on the surveys indicated a high rate of satisfaction, an improved perception on linking didactic coursework to clinical work, and improved confidence prior to major clinical rotations in year three (Weddle, & Sellheim, 2011). Clinical faculty reported high levels of personal and professional satisfaction after participating in the ICE model and core faculty expressed ICE improved student confidence and supported student ability to integrate didactic and clinical information (Weddle & Sellheim, 2011). The authors listed barriers to the ICE model as cost constraints, administrative constraints, and potential relinquishing of clinical partnerships due to various reasons (Weddle & Sellheim, 2011).

Finally, Plack and Santasier (2004) describe a model created to facilitate critical thinking through a case study and experiential opportunity. The designers of this course considered all of the previously taught material in the curriculum. The course instructors provided the students with a written case study followed by a video case study and concluded the experience with the treatment of a real patient (Plack & Santasier, 2004). Plack and Santasier (2004) found evidence of integration of previous coursework in student assignments completed during the course. Themes emerged in student reflective summaries which included 'critical thinking, integration, and professional values" (Plack & Santasier, 2004, p. 10). Plack and Santasier (2004) note that further study would benefit this model to provide information regarding the impact of reflection on student learning.

Table 2.5

Experiential Learning Literature Review Summary

Literature	**Type of Publication**	**Health Profession**	**Results**
Benson & Hansen (2007)	Qualitative	OT	Students perceived that participating in a 'living lab" provided the opportunity to link didactic education to clinical practice; indicated an improved emotional connection, provided professional development, and improved clinical reasoning.
Coker (2010)	Quantitative	OT	Participating in a one week experiential opportunity improved student's critical thinking and clinical reasoning in the majority of areas assessed.
Knecht-Sabres (2010)	Mixed methods	OT	Evaluating and completing interventions on community dwelling older adults improved occupational therapy students' self-confidence, improved confidence in developing therapeutic relationships, and improved clinical reasoning.
Mu et al. (2010)	Qualitative	Multi	This study investigated the impact of an international immersion opportunity for OT, PT, and nursing improved students. The study results indicated positive perceptions of professional competence including clinical reasoning cultural competence and international leadership.
O'Neil et al. (2007)	Publication	PT	This article describes integrating experiential learning throughout a physical therapy curriculum. Findings indicated these opportunities improve professional development and personal growth in the physical therapy students.
Plack & Santasier (2004)	Qualitative	PT	A case study with an experiential component positively impacted student perceptions of improved critical thinking, integration or information and professional values.
Weddle & Sellheim (2011)	Qualitative	PT	Using a model of integrated clinical education (ICE) through a physical therapy education program improved ability to link didactic education to clinical work and improved students' self - confidence.

Note: Table 2.5 provides a summary of the literature reviewed on experiential learning. Included in the chart is the citation, discipline or disciplines studied, the type of publication, and a summary of findings if applicable.

In conclusion, both physical and occupational therapy have published research on experiential learning as an educational method. Please refer to table 2.5 for a summary of the literature reviewed on experiential learning by the researcher. Knecht-Sabres (2010) and Coker (2010) found experiential learning has a positive impact on occupational therapy students' clinical reasoning abilities. In a qualitative, study Benson and Hansen (2007) stated that students had perceptions of improved clinical reasoning after participation in a "living lab" scenario. While Mu et al., (2010) describe the impact of international immersion experiences on occupational therapy students. The qualitative data collected supports international immersion opportunities as a method to improve professional skills in occupational therapy students including clinical reasoning; however, the researchers could not generalize the results. Mu et al., (2010) commented it would be beneficial to study long -term impact of international immersion experiences with a longitudinal study and increased rigor of the investigation with a mixed method approach.

Research completed on experiential learning in physical therapy education varied from changes in thinking after experiential learning across a curriculum, changes in thinking within one level of a program, and changes in thinking within one course. Both Weddle and Sellheim (2011) and Plack and Santasier (2004) found didactic education is supported and reinforced with experiential opportunities. Weddle and Sellheim (2011) observed integrating experiential clinical opportunities early in a physical therapy education proved beneficial to physical therapy students as demonstrated through their perceptions. In concurrence, Plack and Santasier (2004) learned through thematic analysis that a model to facilitate critical thinking with a case study experience was positive method to facilitate the reflective process. Finally O'Neil et al (2007) stated threading experiential opportunities throughout a physical therapy curriculum had positive

impact on physical therapy students educational preparedness provided the students opportunities to improve both critical thinking and problem-solving skills during the experiential opportunities.

The results of all studies are positive; however, majority of studies involved qualitative data collection and the results lacked of generalizability due to sampling size. The results of the review of literature on experiential learning warrant the need for further research on the impact of experiential learning on professional thinking. While experiential learning is a popular educational method, it does have constraints including time, cost, and resources. An alternative educational method found in health professions education is problem-based learning. With problem-based learning, the student holds an active role in learning through a case study methodology.

Problem-based Learning

Problem-based learning (PBL) is an educational method that uses case study methodology; allowing faculty to build lessons based upon students' understanding of previous coursework. Case-based instruction allows for integration of previously learned material into current coursework. Students must apply previous learning to a current situation, solve problems, and therefore learn the skills necessary to solve problems (Schaber, 2005; Scaffa & Wooster, 2004). An active method of learning, PBL, places the responsibility of learning on the students (Royeen, 1994; McCarron & D'Amico, 2002). Promotion and development of cognitive and non-cognitive professional skills is the primary focus of PBL (McNulty et al., 2004). Development of higher-order thinking abilities is a common goal of educators instituting PBL as an instructional methodology (McCarron & D'Amico, 2002; Royeen, 1995; Scaffa & Wooster, 2004). This educational strategy, PBL, has been the focus of both curriculum

development and individual course development. Royeen (1995) discussed using PBL as a model during the design of an occupational therapy curriculum.

Royeen (1995) identified a need to design an occupational therapy curriculum with a "foundation in clinical reasoning and clinical reflection" (p. 338). PBL was the educational method used to structure an occupational therapy curriculum that fosters both clinical reasoning and clinical reflection. In a paper describing the curriculum, Royeen (1995) discussed rationale for a PBL curriculum, emphasizing the importance of providing a foundation of clinical reasoning and clinical reflection to occupational therapy students. The paper described the curricular design and included a description of the conceptual model of the institution's occupational therapy program, an overview of the program, description of the curriculum, and methods of assessment and the role of research in the program (Royeen, 1995). While Royeen (1995) described curricular development based upon PBL, other studies described using PBL to structure individual courses.

Scaffa & Wooster (2004) examined the effects of an intensive 5 week 30 hour course structured using PBL. This course directly preceded occupational therapy level II fieldwork rotations. Forty-eight occupational therapy students participated in a pre-test and post-test format using with Self-Assessment of Clinical Reflection and Reasoning (SACRR). Findings of the study indicated a significant improvement in the overall clinical reasoning score of the students, specifically in 11 of the 26 total subcategories (40 %) (Scaffa &Wooster, 2004). The results of this research indicated PBL is an educational method that can have a positive impact on clinical reasoning in students' preparing for level II fieldwork and practice (Scaffa & Wooster, 2004).

Another occupational therapy program also sought the effectiveness of a PBL approach to facilitate clinical reasoning skills in a specific course. McCarron and D'Amico (2002) integrated PBL into a course in the fifth semester of an occupational therapy curriculum in which students were asked to use PBL tutorials during the laboratory portion of the course (McCarron & D'Amico, 2002). This quantitative study included 22 participants in a weekend-based occupational therapy education program. Statistical analysis of the results of this study did not indicate PBL is an effective educational method to facilitate clinical reasoning. The authors cited limitations of this study: a researcher- developed tool, the length of time between the pre-test and post-test, and a small sample size as potential influences on the results. McCarron and D'Amico (2002) commented that it is most important that educators continue to use educational methods that encourages students to participate in complex thinking. While there is some discrepancy in the quantitative studies reviewed, qualitative results of PBL as an educational method promoting clinical reasoning are positive.

Schaber (2005) conducted a qualitative study investigating PBL in an occupational therapy group dynamics course. The primary goal of the course was to facilitate effective student functioning in an interdisciplinary team situation. Two focus groups with four students in each group provided information regarding knowledge learned in-group process during the course (Schaber, 2005). Thematic analysis of the transcribed focus groups indicated students reported increased understanding of personal communication style and the impact that communication style has on group process. Students reported learning empowerment to facilitate change if the group was moving off task and students reported benefitting from giving and receiving feedback that was constructive in nature yet done in a safe environment (Schaber, 2005). Schaber (2005) reported the findings support the use of an applied component in didactic

courses that duplicates or approaches that of a professional practice setting (Schaber, 2005). These findings also indicated that the structure of education, which includes didactic training followed by clinical training, allows students to embrace and learn the deeper meaning of content through reflection during clinical training (Schaber, 2005). McNulty et al. (2004) concurred with Schaber (2005) stating a PBL curriculum can prepare students to "develop cognitive and non-cognitive behaviors that students must successfully perform during fieldwork rotations" (p. 80).

In a paper describing a PBL evaluation process, McNulty et al. (2004) described a PBL methodology assisting with the development of "professional reflection skills" in occupational therapy students (p. 72). The study assessed student participation in PBL through completion of the "Student Self-Assessment of PBL Participation"; an assessment founded on the three core competencies of the program" (McNulty et al., 2004, p. 74).

While completing the assessment, students identified strengths and weaknesses based upon behaviors indicative of the program's core competencies. Students then wrote measurable objectives for professional growth, and received faculty feedback on personal growth through the program (McNulty et al., 2004). Students also completed an evaluation on the faculty facilitator for the PBL experience. The final component of this process was a specific designated time after each PBL session for student and faculty self-reflection on the PBL process recently completed. The faculty served as a role model to the students when completing their own personal reflection (McNulty et al., 2004). This format of PBL and assessment of PBL is explained as time consuming and tedious; however, McNulty et al., (2004) note that this PBL format both develops and assesses cognitive and non-cognitive behaviors through professional reflection, thus enhancing clinical reasoning skills necessary for clinical practice. While the previously

discussed studies have all focused specifically on occupational therapy education, other disciplines also use PBL as an educational method.

Research in the field of nursing addressed PBL as an educational method in clinical education. Wong et al. (2008) sought information regarding the interaction that occurs between the student and the facilitator using a PBL scenario during a clinical simulation. This study was the second part of a multi-part study. A third year nursing participated in the PBL clinical scenario along with a faculty member and the actor for the scenario. The researchers videotaped the interaction and completed transcription. Analysis of the transcription provided outcomes including "patient-focused care, student-directed learning, inductive learning, and translation of theoretical knowledge into practical information" (Wong et al., 2008, p. 511). Based upon analysis of the of the transcribed PBL scenario the researchers developed "a model for adopting problem-based learning in a simulated clinical context" (Wong et al., 2008, p. 512). The efficacy of the model and more research in the true clinical environment will determine the effects of PBL in a non-simulated scenario (Wong et al., 2008).

Table 2.6

Problem-Based Learning Literature Review Summary

Literature	**Type of Publication**	**Health Profession**	**Results**
McCarron & D'Amico (2002)	Quantitative	OT	Findings were insignificant regarding the impact a PBL approach to facilitate clinical reasoning in a weekend-based occupational therapy education program.
McNulty et al. (2004)	Publication	OT	This article describes a PBL process used in occupational therapy education to promote and assess both cognitive and non-cognitive behaviors: professional growth, reflection, and improved clinical reasoning.
Royeen (1995)	Publication	OT	This article described the development of an occupational therapy curriculum structured using PBL.
Scaffa & Wooster (2004)	Quantitative	OT	Findings demonstrated significance in 40% of the areas assessed. Therefore, indicating an intensive five-week course using PBL prepared occupational therapy students clinical reasoning prior to level two fieldwork in 40% of the assessed categories.
Schaber (2005)	Qualitative	OT	Thematic analysis indicated student perceptions of using a PBL approach in a group dynamics course improved student understanding of personal communication style and the impact communication style can have on group dynamics.
Wong et al. (2008)	Qualitative	Nursing	Thematic analysis supported using PBL method in clinical education to promote patient-focused care, student-directed –learning, inductive learning and translation of theory to practice.

Note: Table 2.6 provides a summary of the literature reviewed on problem-based learning. Included in the chart is the citation, discipline or disciplines studied, the type of publication, and a summary of findings if applicable.

In conclusion, PBL is an educational strategy used in healthcare education, which provides both a foundation for both curriculum development and as well as individual course development. Please refer to table 2.6 for a summary of the literature on problem-based learning reviewed by the researcher. Findings from the majority of studies reviewed note a positive result

of using PBL. While Royeen (1995) provided a description of the process to develop an occupational therapy curriculum based upon PBL, other studies embraced PBL as a specific method used within individual courses in a curriculum. Research specifically on the use PBL as an educational method is mostly positive; however not completely.

Two quantitative studies produced mixed results. McCarron & D'Amico (2002) did not find a significant change in occupational therapy student clinical reasoning after participating in a course structured around PBL; in contrast, Scaffa and Wooster (2004) did note an overall change in clinical reasoning in occupational therapy students after a course structured with PBL. The researchers contributed reasons for discrepancy between these two studies as potentially related to sample size or length of the course.

Qualitative studies reviewed found students perceived PBL as a positive educational method. McNulty et al., (2004) and Wong et al., (2008) both mentioned positive student perceptions of courses structured using PBL approach. In conclusion, the research reviewed supports PBL; however, there is a need for future research regarding the impact PBL has on higher-order thinking such as clinical reasoning and reflective practice. PBL and experiential learning are both touted educational pedagogies to promote higher- order thinking in healthcare education; however, the educational method of clinical simulation is another popular strategy used to promote both skill mastery and professional thinking.

Clinical Simulation

Clinical simulation is an educational method initially prevalent in medical and nursing education; however, the use of clinical simulation during the education of other healthcare professions is increasing (Shoemaker, Riemersma, & Perkins, 2009). Simulation is an active form of learning that allows students to integrate theory and clinical practice skills (Haidar,

2009). Both medical and nursing curriculums use clinical simulation to foster critical thinking and decision-making skills in students (Herge et al., 2013). The literature described simulation as highly variable with learning activities ranging from using human actors on up to the using high-fidelity computerized mannequins. Methods of simulation vary from "standardized patient simulation, computerized software simulation, virtual immersive-reality simulation, simulated training equipment, and human patient simulation" (Bethea at al., 2014, p. s33). Validation of the effectiveness of clinical simulation in health professions education has led to assorted research studies and articles.

A descriptive research study sought information from occupational therapy and occupational therapy assistant education programs on simulated learning experiences in OT curriculum. Bethea, et al., (2014) asked United States occupational therapy program directors to complete a 23-question survey on the use of simulation in educational programs. Findings indicated that 71% of the programs reported using some form of simulation; 75% of the programs stated using human actors or students as patients and 69% of programs indicated using video cases for patients (Bethea et al., 2014). Results suggested the primary reasons for using clinical simulation was to promote the "development of clinical reasoning, problem solving, and decision-making, intervention, and treatment planning, client assessment, communication, client interaction and therapeutic use of self" (Bethea at al., 2014, S34).

Survey results demonstrated both benefits and challenges of simulation. Challenges included time, scheduling, and expenses. Benefits of clinical simulation included the promotion of clinical reasoning and problem solving, the provision of an authentic situation to students, the provision of a safe environment to practice skills, and the immediate opportunity for feedback to the student on performance (Bethea et al., 2014). Based on the results of the survey, the authors

recommended further research clinical simulation in occupational therapy education. Bethea at al., (2014) also called for the differentiation between the types of simulation used and the effectiveness of each method, the determination of the overall value of clinical simulation in occupational therapy education, and the development of an occupational therapy position on the use of clinical simulation in education. Frequently, occupational therapy educators situate clinical simulation during didactic preparation within specific courses.

Velde, Lane, and Clay (2009) described using simulated learning experiences during an occupational therapy intervention course. Qualitative findings indicated occupational therapy student reported positive experiences from the simulation including the ability to integrate previous learning into practice (Velde et al., 2009). Students provided recommendations for course improvement that involved offering this type of experience earlier in the curriculum, and providing more face to face versus written feedback throughout the curriculum (Velde, et al., 2009). Survey results from the study confirmed students preferred live simulated cases when compared to methods of lecture, student presentations, role-play, class discussion, papers and video cases (Velde et al., 2009). While Velde et al. (2009) studied the influence of clinical simulation on an occupational therapy interventions course, Herge et al., (2013) sought the impact of clinical simulation on an evaluation in occupational therapy course.

Herge et al., (2013) explained the process of integrating clinical simulation into a course on the evaluation process of occupational therapy. For this study, the clinical simulation component of the course was non-graded; however, faculty provided feedback to the students. Herge et al., (2013) used the "Student Self-Rating of Evaluation Subskills during the SP Encounter" to understand the impact clinical simulation had on student learning (Herge et al., 2013, p. 232). Results from the ratings of performance were positive, with feelings of

satisfaction mentioned during the debriefing session, and from the standardized patient (SP) questionnaire. The post-simulation video analysis provided students an objective opportunity to watch individual performance and this provided students with a greater self-awareness (Herge et al., 2013). Due to limitations of this study and lack of research on clinical simulation in occupational therapy education, the researchers recommended further research. Clinical simulation is becoming a preferred method for active learning in many health professions education programs; but clinical simulation is frequently the ideal teaching method in complex or high-risk instances such as caring for clients in an intensive care unit.

Two particular studies investigated the impact of clinical simulation on physical therapy students in preparation for complex practice situations. Shoemaker et al. (2009) described the integration of high fidelity human simulation (HFHS) during didactic education of physical therapy students. The HFHS scenario simulated an ICU environment in which the students had to respond appropriately to normal, impaired, and emergent vital sign issues during mock physical therapy treatment sessions. Due to the complexity of patients and fragility of medical status, the HFHS provides students the opportunity to respond to changes in patient medical status in a safe environment that will not harm another (Shoemaker, et al., 2009). Students completed this simulation as part of a laboratory class session. Unfortunately, the authors did not complete formal measurement of the students' performance; however; the students did provide informal feedback and positive responses immediately following the simulation. The students stated appreciation for the opportunity to practice in a simulated environment that was realistic in nature (Shoemaker et al., 2009). Another study on the use of HFHS during physical therapy education did collect formal data.

Ohtake, Lazarus, Schillo, and Rosen (2013) examined the use of a high fidelity mannequin to measure physical therapy students' level of confidence and satisfaction learning about practice in a complex area of practice, the intensive care unit (ICU). Participants in the ICU simulation included a cohort of first year entry- level doctorate of physical therapy students (Ohtake et al., 2013). This quasi-experimental study sample consisted of 43 physical therapy students. Data collected included a confidence survey completed by the participants both before and after the simulation activity (Ohtake et al., 2013). Findings included an overall positive response in high fidelity ICU simulation with reports of the integration of learned course content (Ohtake et al., 2013). Conclusions of the study were positive noting significant increases in physical therapy students' confidence in "technical, behavioral, and cognitive performance measures" (Ohtake et al., 2013, p. 224). Integration of didactic content with clinical practice is evident after clinical simulation experiences. While simulation can be a component of a specific course, educators may use simulation in summative manner to assess a healthcare students' preparedness for clinical rotations, specifically level II fieldwork in occupational therapy.

Giles, Carson, Breland, Coker-Bolt, & Bowman (2014) discussed the role of simulation and reflective video analysis during assessment of occupational therapy students' preparedness for level II fieldwork after the didactic portion of the curriculum. In this occupational therapy program, students complete a comprehensive practical examination (CPE) prior to level II fieldwork. The final comprehensive examination graded students on "evaluation, treatment, documentation, safety, judgment, and overall flow" (Giles et al., 2014, p. S 60). This study used simulated patient encounters and reflective video analysis during this process. Effectiveness of this CPE was measure through both quantitative and qualitative feedback from student participants. Student reception to the clinical simulation prior to level II fieldwork was over

positive. Giles et al., (2014) remarked that after a review of student comments that the CPE provided a good mechanism to bridge students from didactic to clinical education, allowed students to transform from student to clinician, and demonstrated a need to incorporate simulated encounters and reflective opportunities throughout didactic education. Giles et al. (2014) mentioned this type of comprehensive practical examination and the use of clinical simulation warrants further research. While both occupational therapy and physical therapy education is using clinical simulation as an educational method; this strategy has roots in nursing education.

Elfrink, Kirkpatrick, Nininger, and Schubert (2010) studied human patient simulation's capacity to provide nursing students with opportunities to practice patient care in a safe setting along with allowing for opportunities to correct practice and reflect. The researchers were interested in differences in pre and post-simulation knowledge, retention of knowledge, and how the findings can inform instructional practices of simulation (Elfrink, et al., 2010). The authors of the simulation activities linked specific activities to questions and provided these questions to participants before and after the simulation activity. Overall finding indicated "strong evidence that there was improvement in knowledge during the simulation" (Elfrink et al., 2010, p. 100). The authors noted mixed results regarding retention of learned information. Elfrink et al., (2010) expressed a need for further research regarding the best type of simulation and the effectiveness of different types of simulation. Though simulation is a popular educational method for a single healthcare discipline, interdisciplinary education is now using clinical simulation to prepare students for interdisciplinary interactions.

An emphasis on interdisciplinary education is at the forefront of many health care education accreditation standards. Williams, Brown, Scholes, French, and Archer (2010), considered the interdisciplinary clinical DVD simulations for nursing, paramedics, occupational

therapy, and physiotherapy students to be both educational and clinically relevant to students in all programs. The investigators used a mix methods approach to explore the impact of digital videodisk (DVD) on the students' learning (Williams et al., 2010). The intent of this study was to explore the possibility of replacing clinical placement with digital video simulation. The sampling for this study included 394 students (97 paramedic, 19 occupational therapy, 87 physiotherapy, and 191 nursing).

Quantitative data was collected from four self-report scales titled "Sustained Attention/ Mental Effort Scale, Learner Satisfaction Scale, Information Processing Quality Scale, and Clinical Experience/Relevance Scale"(Williams et al., 2010, p. 6). Physiotherapy students reported the lowest scores in each of the four self-report scales, while occupational therapy students reported the highest scores on the Learning Satisfaction Scale, Information Processing Quality Scale, and Clinical Experience /Relevance Scale. Nursing and paramedic students scored the highest on the Sustained Attention/Mental Effort Scale (Williams et al., 2010). Qualitative findings from the study indicated students' perception of the DVD simulations as useful methods to supplement and reinforce learning but not to replace clinical placement (Williams et al., 2010). Another inter-professional study on clinical simulation included two healthcare disciplines: occupational and physical therapy.

Shoemaker et al., (2011) completed a qualitative research study on an inter-professional simulation. Sixty-four occupational therapy and physical therapy students took part in the simulation. Transcription and coding of group debriefing sessions uncovered themes on the topics of range of motion measurement, patient centered care, role delineation and teamwork Shoemaker et al., (2011). Shoemaker et al., (2011) explained that simulation is touted as a well-liked and valuable method by students; however, simulation can require logistical constraints

such as time and increased resources; both that provide challenges to faculty members choosing to use simulation as an educational method.

Table 2.7

Clinical Simulation Literature Review Summary

Literature	**Type of Publication**	**Health Profession**	**Results**
Bethea et al. (2014)	Quantitative	OT	Findings of this study indicated 71% of the OT programs in the United States reported using some form of clinical simulation during didactic education but the type of simulation used is variable.
Elfrink et al. (2013)	Qualitative	Nursing	This study sought the impact of using clinical simulation to provide student nurses a safe opportunity to practice, correct practice, and reflect. Findings indicated strong evidence of improvements in nursing student knowledge using clinical simulation; however, retention of learning provided mixed results.
Giles et al. (2014)	Mixed methods	OT	Study sought the impact of a comprehensive practical examination using clinical simulation prior to occupational therapy participation in level two fieldwork. Student perceptions and overall findings to this experience were positive.
Herge et al. (2013)	Mixed methods	OT	Integrating a non-graded clinical simulation into an OT evaluation course provided students a positive opportunity to learn through analysis of performance.
Ohtake et al. (2013)	Quantitative	PT	This study examined the impact of using high fidelity mannequin's during physical therapy didactic education. Findings indicated significant improvements in PT students' confidence after the experience.
Shoemaker et al. (2009)	Article	PT	Integrating high fidelity human simulation into didactic physical therapy education provided students a safe opportunity to practice during complex scenarios. Formal thematic analysis did

			not occur but student feedback was positive regarding the opportunity.
Shoemaker et al. (2011)	Qualitative	OT & PT	Interdisciplinary clinical simulation found positive student perceptions on the topics of role delineation, client-centered care and teamwork.
Velde et al. (2009)	Qualitative	OT	Thematic analysis indicated OT students reported positive experiences with clinical simulation, which included the ability to integrate previous learning into practice.
Williams et al. (2010)	Quantitative	Multi-disciplinary	This mixed methods study sought the impact of video simulation on a multi-disciplinary group of healthcare students. The research found mixed quantitative results and the qualitative findings indicated students' found the video simulations helpful but did not want them to replace clinical placement.

Note: Table 2.7 provides a summary of the literature reviewed on clinical simulation. Included in the chart is the citation, discipline or disciplines studied, the type of publication, and a summary of findings if applicable.

In conclusion, clinical simulation is another educational method established in healthcare education. Please refer to table 2.7 for a summary of the literature on clinical simulation reviewed by the researcher. Educators promote clinical simulation as a mechanism to provide healthcare students a safe environment to practice and demonstrate application of learned skills and clinical reasoning. Initially medical and nursing education primarily used clinical simulation; but the amount of research regarding clinical simulation in healthcare is now beyond just medicine and nursing.

The overall findings of the reviewed research and articles was encouraging. Both Velde et al. (2009) and Herge et al. (2013) reported positive results after using clinical simulation during specific didactic occupational therapy courses. However, both studies discussed a need for further research secondary to type of study completed and the lack of generalizability. Interest in the prevalence of clinical simulation in occupational therapy education led Bethea et

al., (2014) to investigate the number of occupational therapy programs using some form of clinical simulation in didactic coursework. Responses to this study indicated that clinical simulation is a common instructional method; however, the specific type of clinical simulation used was not identified warranting further research on the subject (Bethea et al., 2014). The recent research in occupational therapy education regarding clinical simulation is indicative of its rise in importance in occupational therapy education as a method to prepare students for clinical practice. Physical therapy education is also showing increased interest in clinical simulation as found in the two studies that use clinical simulation for an ICU experience.

In physical therapy education, Ohtake et al. (2013) and Shoemaker (2009) studied the use of HFHS with physical therapy students in the ICU practice setting. The use of clinical simulation in a high stakes practice area provided a safe environment for the physical therapy students to learn and respond to complex cases and situations. Student responses to the clinical simulation were positive. While educators often embed clinical simulation within specific courses, Giles et al. (2014) studied clinical simulation as a summative assessment at the end of a didactic program.

Giles et al. (2014) studied clinical simulation as a summative assessment of occupational therapy student preparedness for level II fieldwork. Qualitative data indicated students reported a positive experience with this type of summative simulation prior to level II fieldwork; however, these findings warrant further research on the topic. Interdisciplinary education has used clinical simulation. Both Shoemaker et al. (2011) and Williams et al. (2010) affirm healthcare students responded positively to clinical simulation. However, the vast differences in types of clinical simulations can influence both the efficacy of this method and the feasibility to use this method in healthcare education.

The literature supports clinical simulation as a preferred method of instruction for healthcare education; however, high fidelity simulation is costly and the effectiveness of a simulation experience is often reliant on the skillful design of the experience and who designed the experience (Shoemaker et al., 2009). Clinical simulation does vary in complexity, cost, and design, therefore allowing for variance in how educators use it as an educational tool. Nevertheless, simulation does provide a safe environment for students to practice skills pertinent for entry-level practice including decision-making and professional thinking.

Conclusion

In conclusion, higher-order thinking and for the purposes of this study, professional thinking, is an imperative skill for the healthcare professional. Due to a complex and changing environment within the healthcare system, entry-level healthcare professionals must be prepared to make complex decisions in a quick and efficient manner. Terminology in the literature used to describe higher-order thinking included critical thinking, clinical reasoning, and professional thinking. Paul and Elder (2006) and Facione and Facione (2008) both published on the topic of critical thinking. Both groups see critical thinking as a process used to make decision in which judgement and reflection assist in this process. Another published author on critical thinking, Brookfield (2012), described critical thinking in a different context discussing critical thinking as a time to question assumptions and take time to clarify before making uniformed judgements. An interest in critical thinking in healthcare education and practice lead to research on the topic.

Most critical thinking studies reviewed presented a lack of generalizability secondary to sample size. There was also conflicting evidence on the effectiveness of specific educational pedagogies on healthcare students' ability to participate in critical thinking. Some of the research examined changes in critical thinking during specific courses, portions of a curriculum,

or an entire curriculum. Interestingly, results of one study found significant changes in critical thinking scores for occupational therapy students and not physical therapy students. Another study found changes in critical thinking abilities for occupational therapy students with a previous degree compared to those without a previous degree. Overall, the research identified a need to understand how healthcare professionals think, but did not provide a solid foundation of how the thinking occurs or is fostered. Another concept, similar to critical thinking, is clinical reasoning.

Clinical reasoning and critical thinking are interchangeable with comparable attributes. In an ethnographic qualitative study, Mattingly and Fleming (1994), first addressed clinical reasoning in occupational therapy practice when they sought to identify how occupational therapists think. Schell and Schell (2008) are other scholars published on clinical reasoning in occupational therapy. In their writing, Schell and Schell (2008) argue that professional reasoning should replace clinical reasoning as the preferred terminology due to the range of practice settings in occupational therapy. Mattingly and Fleming and Schell and Schell both described clinical reasoning as how thinking occurs and decisions are made when occupational therapists work with clients. Research on clinical reasoning and on how to promote clinical reasoning in both healthcare education and practice stemmed from health professionals' interest in the subject.

Several studies sought the impact of specific educational pedagogies had on clinical reasoning. Experiential learning, problem-based learning, SRL, and OPT all positively impacted clinical reasoning in health professions students. Other studies found specific educational activities completed during level II fieldwork positively affected the clinical reasoning abilities of the occupational therapy students while another study found some significant changes in

clinical reasoning solely based on the level II experience of occupational therapy students. Finally, Rochamawati and Weichula (2010) remarked in a systematic review of literature a need for more research on clinical reasoning and the impact of educational pedagogies on clinical reasoning. As with critical thinking, generalizability of these studies is low. The review of literature discussed all of the components of professional thinking: reflective practice and evidence-based practice. Reflective practice is another concept common to healthcare practice.

Schön (1987), a scholar of reflective practice, used the terminology, professional artistry, to describe behavior or competence displayed when someone placed in a unique or unforeseen situation. Schön spoke of reflection occurring when a practitioner responds to a new situation and solves the problem or modifies an intervention based-upon the reflection process and not knowledge learned previously. More recently, Jennifer Moon wrote regarding reflection. Moon (2005) describes learning as superficial or deep learning. Deep learning involved relating ideas, an active interest, and assimilation of new material. Moon mirrored Schön when describing reflective practice as assimilating new information when presented with a new situation or problem. Schön offered discussion on forming new opinions or thoughts based upon the presented situation and the reflective practice. Research on reflective practice investigated changes in reflective practice during the didactic and clinical portion of healthcare education and during clinical practice.

Plack and Santasier (2004) investigated how a specific method, a case-based learning module, improved reflective practice in physical therapy students during the didactic portion of education. Analysis of assignments completed for the course did find that this pedagogical method influenced reflective practice and improved critical thinking skills in physical therapy students in preparation for clinical rotations. In another study, Dunn and Musolino (2011)

validated the utility of two assessments that measure reflective practice and affirmed a need for an intentional presence of reflective practice during both didactic and clinical education. During the clinical portion of physical therapy education, Plack et al. (2008) sought to discover the impact of web-based discussions on case-based scenarios on physical therapy students' ability to complete reflective practice while on a fast-paced clinical rotation. Other studies reviewed sought qualitative data regarding the impact of continuing education on reflective practice for practicing healthcare professionals. Duggan (2005) and Lowe et al. (2007) sought qualitative results that presented improvements of reflective practice. Qualitative findings for both studies indicated overall support for the integration of reflective practice into continuing education of healthcare professionals. The literature supported a need for the opportunity to perform reflective practice in didactic, clinical, and continuing education and indicated a clear link between reflective practice, critical thinking, and clinical reasoning. The second component of The Model of Professional Thinking is evidence-based practice. Evidence-based practice incorporates components of all of the previously discussed concepts, critical thinking, clinical reasoning, and reflective practice.

The literature provided a clear description of the steps required to complete EBP healthcare practice. Tomlin and Borgetto (2013) also provided an alternative to the traditional hierarchical model of EBP and described a pyramid model design that includes qualitative research and recognizes the presence of barriers to completing RTC's in healthcare research. The accrediting body of occupational therapy also supports EBP in occupational therapy education. One occupational therapy program described successfully threading EBP throughout the curriculum design. The program intentionally embedded EBP assignments and content throughout the curriculum. Other research investigated the effectiveness of a collaborative

relationship with the library staff when educating students on EBP. While other studies sought information on EBP in courses in different parts of curriculum including prior to during clinical practice. The research supported a variety of methods to instill EBP skills in healthcare students. In order to ensure students are fully participating in professional thinking as described in this research study, incorporation of and understanding of EBP is essential. Research regarding EBP in healthcare education provided the following findings: a positive impact of a collaboration effort with library staff, the intentional threading of EBP throughout a curriculum, and the intentional placement of EBP in didactic courses before and during the clinical education component of a curriculum. The review of literature verified the isolation of reflective practice and evidence-based practice; consequently, reinforcing the argument for The Model of Professional Thinking by Bannigan and Moores.

Bannigan and Moores created The Model of Professional Thinking to address the isolation of the two concepts specifically in occupational therapy education. The model proposed that occupational therapy education should teach reflective practice and evidence-based practice in unison instead of in isolation of each other. The Model of Professional Thinking describes the decision-making process used in occupational therapy when a new or unique situation is occurs. This process integrates reflection and evidence-based practice. The model consists of three stages, the what, so what, and now what. The first stage, what, is the recognizing a problem or identifying feelings of discomfort or uncertainty. During the second stage, evidence-based practice transpires and the practitioner considers the literature, past experience of the practitioner, and the needs and wants of the client. Finally, the third stage involves decision-making regarding the situation and the occupational therapist affirms practice, changes practice, or recommends further research. The Model of Professional Thinking

demonstrates seamless integration of its two major concepts reflective practice and evidence-based practice. Both decision-making and the mechanics of how a person thinks is a vital quality of a healthcare professional and should education should reinforce this information prior to entry- level practice.

Educators of entry-level healthcare professionals strive to include components of professional thinking and higher-order thinking in their pedagogical choices. The educational pedagogies commonly used in healthcare education included experiential learning, problem-based learning, and clinical simulation. The studies reviewed on experiential learning indicated the educational method had a positive impact on student learning during healthcare education. The type of study and size of sample; however, did not allow for generalizability of the results. Other studies sought the impact of the educational method, problem-based learning, on healthcare education. Results from the studies on problem-based learning varied in significance and again indicated that generalizability was limited due to the type and size of the studies reviewed. However, the positive results do warrant further investigation into the impact of PBL on higher- order thinking and professional thinking. The final educational method researched is clinical simulation. Clinical simulation continues to grow as a popular pedagogical agent in health professions education. Results were positive in multiple studies in several disciplines, nursing, physical therapy, and occupational therapy; but, again, lacked generalizability. Both quantitative and qualitative data showed the positive impact of clinical simulation on the healthcare students.

While there are many methods to instill professional thinking in the healthcare student, there is little agreement on what is the best method of instruction. The Model of Professional Thinking offers a unique opportunity for healthcare educators to address two major components

of professional competence in healthcare practice, evidence-based practice, and reflective practice, within a curriculum or even a single course. In order to truly understand The Model of Professional Thinking, and use this model in healthcare education, it is imperative that a better understanding of behaviors indicative of professional thinking are identified.

Chapter III: Methods and Procedures

Professional thinking is an essential behavior of occupational therapists. Healthcare practice continues to advance, requiring that occupational therapists care for individuals who are acutely sick and have complex medical histories. Educational research must identify the behaviors indicative of professional thinking in order to instruct occupational therapy students to be proficient in professional thinking. The following chapter presents the methods and procedures used in this research study to identify behaviors indicative of professional thinking in entry-level occupational therapists. The preceding sections discuss the type of research design, the participants, the sample, the setting, and the methods of data collection and data analysis.

Research Design

The research design for this study was a phenomenological qualitative design. A qualitative research design is appropriate when the variables are unknown and there is little information on the subject (Leedy & Ormond, 2013). Professional thinking, as defined in this study, has minimal research in the literature. There is ambiguity in terminology defining the behaviors that constitute professional thinking and the concepts that describe higher-order thinking. In order to describe professional thinking, one must first seek to identify the behaviors indicative of professional thinking from experts in occupational therapy education.

A qualitative research design does not allow for simplification of a topic but seeks to identify the complexity and multiple layers of a topic or phenomena (Leedy & Ormond, 2013). This study sought to identify the behaviors that are indicative of professional thinking in entry-level occupational therapy professionals. In order to obtain an accurate description of the behaviors of professional thinking in entry-level occupational therapy professionals, this researcher completed in-depth data collection with occupational therapy educators regarding

professional thinking.

Phenomenological design.

Phenomenology is deeply rooted in philosophy and in the social sciences (Creswell, 2013). According to Creswell (2013), a phenomenological qualitative study seeks to identify how individuals describe or explain a specific concept or phenomenon. Phenomenological research seeks to identify lived experiences of individuals (Creswell, 2013). Specifically, transcendental phenomenological research focuses on the participants' descriptions of experiences and less on the interpretation of the researcher (Creswell, 2013). This research study sought to describe what behaviors are indicative of professional thinking as described by current healthcare educators. A transcendental phenomenological approach requires the researcher to put aside personal experience or beliefs regarding the topic of study and focus on the lived meaning described by the research participants (Creswell, 2013).

Study participants partook in a semi-structured interview. Coding of the interview data allowed for the identification of themes. This study included multiple methods of data collection in order to ensure triangulation and provide validity to the findings (Creswell, 2013; Creswell, 2014).

Participants/Sampling

Participants of this study included seven experienced occupational therapy educators who actively instruct students in entry-level occupational therapy programs. Active instruction involves faculty currently teaching in entry-level occupational therapy programs. Participation in this research study was strictly voluntary. Sampling for this phenomenological qualitative study involved recruitment of a purposive selected sample of experienced occupational therapy educators (Creswell, 2014). Purposive sampling in qualitative research allowed the researcher to

identify a set of criteria that qualified individuals to participate in the study (Merriam, 2009).

This style of sampling allowed a researcher to identify "information-rich cases" from which the researcher can gain a significant amount of information on the research topic (Merriam, 2009, p. 77). There are various types of purposive sampling. This research study initially used convenience purposive sampling. Convenience purposive sampling allowed the researcher to identify study participants through convenience based upon location, availability, and time (Merriam, 2009). The researcher then sought names and contact information of potential participants who met the inclusion criteria through recommendations from colleagues involved in occupational therapy education. The researcher contacted potential participants via e-mail (see Appendix B). Those participants who responded indicated a willingness to participate and provided virtual consent to participate in this study.

Purposive snowball sampling occurred once the initial convenience sampling transpired. Using purposive snowball sampling, the researcher interviewed the initial key participants identified through convenience sampling. The researcher then asked those initial participants for referrals of other potential study participants who met the inclusion criteria (Merriam, 2009). This type of sampling allowed the researcher a method to seek out other participants that met the inclusion criteria and grow the number of participants that could provide information-rich data (Merriam, 2009).

A sample size of seven participants contributed to the study, an appropriate sample size for a qualitative phenomenological study (Creswell, 2014). In order to achieve saturation, this study required a minimum of five participants. Creswell (2014) notes that a researcher attains saturation "when gathering fresh data no longer sparks new insights or reveals new properties" no further research participants were necessary (p. 189). The researcher determined saturation

after the seventh participant. Of the sample obtained, all but one participant held a rank of associate professor or professor, and all were actively instructing entry-level occupational therapy students. Out of the seven participants, four were currently practicing occupational therapy clinically; two were no longer in clinical practice but were serving as consultants; and the final participant was no longer practicing but had practiced in the last year. Please refer to Table 1.1 for all of the demographic characteristics of this study's sample.

Table: 3.1
Participant demographic data

RP	Years as OT	Highest Degree Earned	Years in Education	Faculty Rank	Type of Institution	Subjects Taught	Degree Offered	Number of Students per Cohort	Location of by State
1	21-30	PhD	20-25	Professor	Private	MH, R	MOT/ OTD	21-35	IA
2	21-30	OTD	5-10	Associate Professor	Private	CP, ADM	MOT/OTD	10-20/ 51-70	IN
3	11-20	OTD	5-10	Associate Professor	Private	PR, N	MOT/OTD	36-50	IL
4	21-30	PhD	11-16	Associate Professor	Private	NR, POL	MOT	51-70	MO
5	21-30	OTD	11-16	Assistant Professor	Private	P, FW	OTD	36-50	OR
6	>30	PhD	5-10	Associate Professor	Public	P, FW	MSOT	51-70	KY
7	>30	PhD	20-25	Professor	Public	P, R	MSOT	51-70	KY

Note. RP = Research Participant; MH = mental health; R = research; CP = community practice; ADM = administration; PR = physical rehabilitation; N = neuroscience; NR = neurorehabilitation; POL = policy; P = pediatrics; FW = fieldwork; IA = Iowa; IN = Indiana; IL = Illinois; MO = Missouri; OR = Oregon; KY = Kentucky

Inclusion criteria.

Those contacted to participate in this study were from a sample of accredited universities for occupational therapy education. Participants in the study were limited to those with at least five years of teaching experience and who held a rank of assistant professor or higher. Those

who partook in this study were actively instructing entry-level occupational therapy students. All study participants were still involved in occupational therapy practice, consulting or had recently discontinued practice. Finally, all participants had access to a computer with a webcam and to the virtual meeting platform, Web-Ex.

Description of setting

Qualitative research is best when completed in a natural setting (Creswell, 2014). For the purpose of this study, the researcher completed semi-structured interviews via the virtual platform, WebEx. Recruitment of participants occurred using two types of purposive sampling, convenience sampling and snowball sampling. Initially, recruitment occurred using convenience sampling with the researcher obtaining contacts from colleagues. Once the initial convenience sampling was completed, the researcher used snowball sampling by asking those interviewed for the contact information of individuals who fit the participant qualifications and might be interested in participating in this study. Due to these two types of purposive sampling, specifying a geographical region or area from which the participants originate was not possible. To avoid limiting participants secondary to the location of the participant, the interviews did not occur in person.

Because of an increased availability of virtual technology, the researcher requested the interviewees participated in the semi-structured interview through the virtual platform of WebEx. According to Creswell (2013), online data collection provides a method for the researcher to include research participants who are not close in proximity to complete face-to-face interviews. The semi-structured interview included video and audio recorded through WebEx. Interviewing through WebEx provided both audio of the interview data for thematic analysis and video for field notes by the researcher watching the recorded interview.

Data collection instrumentation

All qualitative interviews contain demographic data collection (Merriam, 2009). Prior to beginning the semi-structured interview, the researcher collected demographic information from each participant through a brief descriptive questionnaire (see Appendix C). For this study, the researcher collected demographic data before the beginning of the interview in order to assess for inclusion and exclusion criteria. The researcher administered the questionnaire at the beginning of the semi-structured WebEx interview. The questionnaire also provided the researcher descriptions of the participants of the research study.

The primary data-gathering tool for this phenomenological qualitative research study was a semi-structured interview (see Appendix D). The semi-structured interview allowed the researcher to ask both specific, pre-determined questions along with less structured questions developed based upon the interviewee's responses (Merriam, 2009). Questions for this study were open-ended allowing for the collection of descriptive qualitative data (Merriam, 2009). A semi-structured interview allowed the researcher the freedom "to respond to the situation at hand" in order to allow for potential exploration of a new topic discovered from the interview (Merriam, 2009, p. 90). The premise of phenomenology in which questions seek to find the lived meanings of individuals' experiences with professional thinking is the basis for the interview structure (see Appendix D) (Merriam, 2009).

After completion of the semi-structured interview, the researcher asked the participants to complete an electronic journaling activity for 20 to 30 minutes (see Appendix E). Participants completed this journaling activity and submitted an electronic copy of the journaling assignment to the investigator. This journaling activity assisted with triangulation of the interview results

and provided an opportunity for a more in-depth look into the topic of professional thinking (Merriam, 2009). Documents such as journal entries of research participants provides in-depth information on the research topic and may provide clarification and a more thorough understanding of answers provided during the semi-structured interview (Merriam, 2009).

Finally, the researcher took field notes to identify any pertinent information that would not show with the transcription data. The field notes described the setting and provided the opportunity for the researcher to record observations of behaviors exhibited by the interviewee. Field notes should be highly descriptive allowing the reader to visualize the environment and the interviewee during the interview (Merriam, 2009). Recorded field notes also allowed for a reflective component in which the researcher/observer is able to make speculations and interpretations of what is occurring during the interview (Merriam, 2009).

Data collection procedures

Participation in this study was voluntary. The researcher initially recruited participants through convenience sampling. The researcher sought names and contact information of potential participants who meet the inclusion criteria through recommendations from colleagues involved in occupational therapy education. Next, the researcher sent a recruitment e-mail to the potential participants identified through recommendations from colleagues (see Appendix B). Once the participants responded and returned the consent to participate via e-mail (see Appendix B), the researcher contacted the participant to set up a date and time to complete the semi-structured WebEx interview. The researcher requested the participant set aside 60 to 90 minutes to complete the interview and journaling activity. The researcher then contacted each participant during the designated time via WebEx to conduct the interview. The researcher obtained verbal

consent to participate in the semi-structured interview before the beginning the interview as written consent was already obtained (see Appendix F).

The researcher recorded the semi-structured interview using WebEx for later transcription. Low-bandwidth and lost internet connection interrupted several of the interviews. In order to continue the interview, the researcher contacted the participants and resumed the interview via conference call. The researcher continued to use WebEx to provide an audio recording of the interview.

Avoiding researcher bias is an important component of phenomenological qualitative research. In order to seek the experiences of the educators as their personal experiences and beliefs, the researcher used bracketing. Bracketing allowed the researcher the opportunity to become aware of the researcher's personal beliefs on a topic with the intention of discovering the actual experiences of the participants (Merriam, 2009). The bracketing consisted of a set of five statements the researched reviewed before and during the semi-structured interviews.

Once in the interview process began, the researcher located the online transcription company of Rev.com from a collegial recommendation. The researcher paid this outside entity to transcribe the interview transcripts. Once the transcription was complete, the researcher uploaded the transcriptions to NVivo for storage. The researcher completed the semi-structured interviews using an audiovisual component, which allowed the opportunity to take field notes and make observations during the interview as well as it decreased the risk of error that can occur from manually recording the interviewee responses (Merriam, 2009). The semi-structured interview addressed each of the research questions, providing in in-depth study of occupational therapy educators' perceptions of what are behaviors indicative of professional thinking (see Appendix D). The researcher employed probing questions to follow up on any question in order

to clarify information and to seek further information regarding the participants' response (Merriam, 2009). Throughout the interview, the researcher recorded field notes to the side of the interview question form for additional information (see Appendix D).

The final piece of data collection included a reflective journaling, which was completed by each participant at the conclusion of the interview (see Appendix E). Qualitative research considers a reflective journal as a primary source of data collection as the research participants have direct experience with professional thinking (Merriam, 2009). Before ending the interview, the researcher asked the research participant to take 20-30 minutes to complete the journaling activity and return the reflective journal electronically via e-mail within 72 hours. The researcher provided the participant with the journaling document through e-mail. The researcher then instructed the participant to follow the instructions of the journal document and submit the completed document via e-mail within 72 hours. Two of the seven participants returned their reflective journal outside of the 72-hour window. The inclusion of a reflective journal provided the researcher with another method of triangulation and a deeper understanding of professional thinking (Merriam, 2009).

Data Quality Measures

Validation and credibility of research findings is an important component of the qualitative research process (Creswell, 2013). This research study contains multiple methods of validation. First, the study incorporated triangulation. Triangulation includes multiple methods of data collection (Creswell, 2013). This study gathered transcribed semi-structured interviews, observations taken through field notes, reflective journaling, and descriptive statistics of the study participants. Secondly, the study included member checking during which the researcher provided 71% of the interviewees with the initial analysis of the interview transcriptions to

determine if the interpretations were feasible and accurate. Fifty-seven percent of the total sample responded to the member check, four of the five solicited. Another important component used to ensure the accuracy and quality of this phenomenological research study was bracketing. Prior to each interview, the researcher completed bracketing to remove any potential prejudicial beliefs about the topic and allow the participants to share personal experiences and beliefs (Merriam, 2009). Bracketing for this study involved reviewing a set document of statements with the purpose of removing any potential bias from the interview prior to and during the interview. Finally, the researcher spent an adequate amount of time in data collection to allow for saturation and the researcher will use an audit trail to provide feedback regarding the study, compatibility of findings, and analysis of the thematic findings (Creswell, 2013; Merriam, 2009). Triangulation was one method used to demonstrate quality measures during qualitative research; however, another method employed was an audit trail.

An audit trail provided the opportunity for investigation into how the researcher obtained the results of the study (Merriam, 2009). The doctoral committee chair completed the audit trail. This quality measure provided a detailed account of the study's procedures and account for the researcher's decision-making process (Merriam, 2009).

Ethical Considerations

Ethical considerations are an essential piece of a research study (Creswell, 2014). In order to ensure the protection of the participants, the researcher included the following components in this study. First, the researcher obtained approval for conducting research from the Institutional Review Board (IRB) of College of Saint Mary (see Appendix G). Second, the researcher sent an email to all potential participants before conducting any piece of the research study to obtain consent of the potential participants (see Appendix F). The consent email

included informing the participant of their right to withdraw from the study at any (see Appendix F). Along with the electronic consent form, the potential participants received a document outlining their rights as a research participant (See Appendix E). The researcher also obtained verbal consent to participate in the study prior to beginning the demographic survey.

Transcription of the interviews occurred and any printed-paper copies of the transcribed interviews and the reflective journal were securely stored and locked in a file cabinet in a private locked office. Since protection of the participants is foremost for any research study, the researcher secured the data provided by the participants and ensured confidentiality since protection or participants is foremost for any research study (Creswell, 2014). In order to provide confidentiality to the participants, the researcher labeled the transcribed interview data and reflective journal with a number as the only identifier of that participant. Second, all the data stored in NVivo and was password protected and any data stored on a computer was password protected. Any other written materials and documents were stored in a locked file cabinet in a locked, private office.

In conclusion, in order to describe behaviors indicative of professional thinking in entry-level occupational therapists, this researcher completed a transcendental phenomenological qualitative study. Participants for this study included seven current occupational therapy educators. This researcher initially recruited participants using purposive convenience sampling which will then lead to purposive snowball sampling. Data collected involved multiple forms including semi-structured interviews completed via WebEx, reflective journals, descriptive statistics, and field notes. The computer platform NVivo assisted with the organization of the data. Multiple data collection methods and member checking allowed for triangulation of the

research results in order to improve the reliability and validity of the study. The completed audit trail also ensured the quality of the research procedures.

Chapter 4: Results

Introduction

The purpose of this transcendental phenomenological qualitative study was to explore the behaviors indicative of professional thinking in entry-level occupational therapists and the teaching methodologies used to facilitate professional thinking during education as described by a sample of experienced occupational therapy educators. This study exclusively sought answers to the following research questions.

How did a multi-state sample of experienced occupational therapy educators describe the behaviors indicative of professional thinking in entry-level occupational therapists?

1. How did occupational therapy educators describe professional thinking?
2. How did occupational therapy educators develop a personal understanding of the behaviors that comprise professional thinking?
3. What teaching methodologies did experienced occupational therapy educators use when facilitating the behaviors of professional thinking?

The following section includes a detailed description of the data analysis employed by the researcher followed by descriptions of the identified themes related to each of the study's research questions.

Data Analysis

Methods

The previous chapter discussed the procedures employed by this researcher for data analysis. Qualitative research requires that data analysis begin as soon as the researcher starts collecting data and continues throughout the data collection procedure until the process identifies themes and the analysis is complete (Merriam, 2009). The data analysis procedure for this

research study involved a comprehensive review of the data numerous times to initiate identification of categories and codes within the data that eventually lead to the construction of themes. The following provides a detailed description of the data analysis involving each form of data collected: demographic questionnaire, semi-structured interview, reflective journal, and field notes.

Data analysis for this qualitative research study was a lengthy and rigorous multi-step process (Creswell, 2013). The first step in the analysis of the semi-structured interviews was to contract an online third party for transcription of the recorded interviews. Once the researcher received the transcribed interviews, the researcher loaded the transcriptions into the storage and data analysis program, NVivo. NVivo provided a secure means to organize the large quantity of qualitative data collected in the study (Creswell, 2013). The researcher also obtained paper copies of the transcriptions to assist with data analysis. Once the researcher obtained the transcriptions, the researcher began the task of reading and re-reading printed copies of the interview transcriptions. During this phase of data analysis, the researcher identified and organized significant statements in the interview transcription while taking written notes in the margins of the printed transcriptions (Creswell, 2013). The researcher searched the transcriptions for significant statements and "clusters of meaning" in order to later develop themes or "textural descriptions" (Creswell, 2013, p. 82). The following provides more detail to the thematic analysis.

The researcher initially read over the entirety of each transcript to identify similar terminology and phrases used by the various participants. During review of the transcribed interviews, the researcher took copious notes, identifying similar words and phrases. Next, the researcher reviewed each of the interview question for all seven of the interviews and identified

similar categories and terminology used when asking those specific questions. Again, the researcher took notes and marked notations by significant words and phrases. Thereafter a review of each of the sub research questions in relation to each individual interview provided another set of information. Throughout this process, the researcher continued to make notations and draw inferences. The researcher continued with data analysis for several weeks after the final interview was complete. The data analysis process involved reviewing both printed copies of the transcriptions as well as a review of the transcriptions using the electronic version stored on NVivo. The researcher used NVivo to confirm the findings the researcher noted through manual transcription.

One of the final steps in the initial data analysis process involved the researcher identifying a preliminary set of 6-7 themes. At that time, the researcher contacted five of the seven research participants via e-mail and provided them with the initial thematic analysis of 6-7 themes. Four of the five contacted participants responded to the member check; validating the researcher's analysis and interpretation of the data. During further examination of the research data, the researcher broadened, the descriptions of the themes based upon further analysis and narrowed the number of themes down to four. The researcher also identified subthemes within the four major themes. After thematic identification, the researcher revisited the reflective journals completed by the seven participants. The reflective journals provided an additional method of triangulation to ensure accurate interpretation of the data. The reflective journals supported the thematic finds of the researcher. The researcher also took field notes during the interviews. The field notes did not provide any information that would hinder the interpretation and the thematic analysis of the results. One of the final steps during data analysis involved a review of the demographic data collected on the research participants and the thematic analysis.

The researcher did not note any discrepancies between the thematic analysis and the demographic data for the seven research participants. The ensuing section will introduce the reader to the results of the thematic analysis.

Results

The researcher constructed this qualitative study using a transcendental phenomenological approach to explore perceptions of occupational therapy faculty educating entry-level occupational therapy students. This study's theoretical framework is professional thinking. Bannigan and Moores (2009) described professional thinking as an integration of evidence-based practice and reflective practice. Data collected during this study was comprised of demographic information, semi-structured interview transcription, field notes, and a reflective journal. During an extensive examination of the data, the following four primary themes as well as sub-themes emerged related to the study's research questions.

Research Question 1: Theme 1: Describing Professional Thinking Remains Ambiguous

The study's first sub-question sought to identify how experienced occupational therapy faculty describe professional thinking. The first theme identified during data analysis addresses this question. At the beginning of the interview, the researcher provided the participants with a definition of professional thinking as described by Bannigan and Moores (2009). Both the semi-structured interview and the reflective journal solicited the descriptions and opinions of the interviewees regarding professional thinking and entry-level occupational therapy practice.

Several of those interviewed described professional thinking as clinical reasoning and used either clinical reasoning or reasoning when describing professional thinking. Some of the interviewees focused on reflection as a component of professional thinking and discussed the importance of reflection when describing professional thinking. Other participants mentioned

students being "thoughtful" during interactions with clients or when participating in a class as an important component of professional thinking. Several participants used three concepts, clinical reasoning, critical thinking, and reflective or thoughtful practice, when describing professional thinking. However, the researcher found the true indication of the importance of this topic as well as the ambiguity of the topic in some direct quotes from the participants.

Subtheme 1: Clinical reasoning

When asked to describe professional thinking three of the seven participants mentioned clinical reasoning and two other participants regularly used reasoning when discussing professional thinking throughout the interview. Research participant (RP) 1 stated, "You said professional thinking, I think about it as clinical reasoning". RP2 commented that professional thinking is the "ability to reason clinically with a client". Both RP1 and RP2 elaborated on clinical reasoning naming specific types of clinical reasoning; narrative reasoning, interactive reasoning, conditional reasoning and pragmatic reasoning. RP5 renamed professional thinking to clinical reasoning stating that "professional" indicates professionalism and the definition provided for professional thinking describes professional clinical reasoning. This participant's response indicated the significance of using one specific term versus another to describe a concept; therefore, revealing how individuals can interpret the same concept differently based upon the individual's perception or understanding of the attributes used to describe that concept.

Furthermore, while RP4 did not specifically use clinical reasoning to describe professional thinking during the initial portion of the interview, the concept did surface later in the interview. While discussing specific educational methodology used to promote professional thinking, RP4 cited clinical reasoning to describe the type of thinking promoted by the educational methods used during RP4's classroom instruction. According to RP4, clinical

reasoning "can only be taught through modeling or maybe modeling and in-depth discussion". Finally, it is important to note that two other participants specifically used reasoning to describe the process occupational therapist use to make decisions. Both RP5 and RP7 essentially used reasoning or professional reasoning to describe the primary concept of this study, professional thinking. While clinical reasoning clearly emerged as a subtheme for this research question, the concept reflection emerged as a subtheme during several of the interviews as well.

Subtheme 2: Reflection

Similar to clinical reasoning, a number of research participants also mentioned reflection when describing and discussing professional thinking. After naming clinical reasoning as an attribute of professional thinking, RP1 mentioned reflection and commented that reflection on action and reflection in action is the process in which a therapist reflects on something that is occurring or already occurred. RP2 described reflection during professional thinking as application of the evidence to a client or situation and reflection involved looking back and reviewing the situation to determine if the provided intervention was effective or worked. Another participant, RP6, commented that an ability to reflect indicates professional thinking. When asked to describe professional thinking RP4 labeled EBP as the science of OT and reflection as the art of OT. Finally, RP5 indicated the significance of reflection when RP5 explained what students needed to achieve in order to be successful at entry-level practice; "they need to be active, dynamic, reflective thinker, regardless of the situation". RP5's statement reinforced the importance of reflection in entry-level occupational therapy practice.

In conclusion, the researcher did provide participants with the attribute, reflection, at the beginning of the study when defining professional thinking. Nevertheless, a significant number of the participants did mention reflection or a stem of reflection during the interview when the

participants described professional thinking, discussed professional thinking, named behaviors indicative of professional thinking or indicated educational methods to promote professional thinking. The third subtheme that emerged was critical thinking.

Subtheme 3: Critical thinking

Only two of the seven research participants mentioned critical thinking when asked to describe professional thinking; however, this author believed that critical thinking is significant enough to be a subtheme. RP6 used critical thinking, clinical reasoning, and professional thinking throughout the interview. According to RP6, students that think on their own and do not provide rote answers are thinking critically. When RP6 described critical thinking, RP6 commented that critical thinking "is really the crux of our profession and it is a non-visual skill and it requires such depth of knowledge and pulling resources from all over in your head". Additionally, RP7 provided an interesting take on critical thinking.

RP7 believed that one must have critical thinking in order to move to professional thinking. "Critical thinking is the first two steps of reasoning. You've got to know the knowledge, and if you don't have the knowledge that basic 'what is it?' to then take and begin to apply it, that's the thinking part." RP7 went on, commented that the reasoning is "when do I use it", and coined this portion of the process EBP. RP7 provided an interesting perspective to this topic by interweaving the various describe attributes of professional thinking, reasoning ,critical thinking as well as EBP into an overarching description of professional thinking. While the thematic analysis clearly found three primary subthemes, the rest of the interview data supported ambiguity regarding the topic.

RP1 described professional thinking as clinical reasoning and reflection but elaborated beyond that description, "Professional thinking is what an occupational therapist does on an

everyday basis, all the time when interacting with clients, when interacting with coworkers, when interacting with an interdisciplinary team". Professional thinking regardless of the attributes used to describe the concept is "what occupational therapists do every day". RP6 substantiated the previous statement. "I think it's the process in which occupational therapists plan, implement, and reevaluate their clinical process". This participant described what occupational therapists "do". Professional thinking is a necessary element for occupational therapy practice. Interestingly, RP3 described professional thinking using attributes similar to those used by Bannigan and Moores (2009).

RP3 commented that professional thinking is "a combination of what I tend to call better evidence. Being able to think actively, it's dynamic, interactive, it's not a passive type of thing". Using the term "better evidence", RP3 described evidence-based practice; meaning the clinician considers research, past experiences, and the needs of that specific client when using professional thinking. The description of professional thinking, application of attributes such as "dynamic", and "interactive" depicted the variability and ambiguity of the topic. Subsequently, the next participant's description of professional thinking further reiterated the complexity of this concept.

According to RP5, professional thinking is "the ability to take multiple sources of information being both experiential resources, theoretical resources, personal resources slash information, and put it together to understand the complexity of a client's situation and to understand more fully their needs and how you might meet their needs." Thus, this description solidified the unique nature of the professional thinking and reinforced the difficulty in describing professional thinking because of the unique nature of the concept. In closing, RP4 described professional thinking as considering "all client factors including context and

developing an intervention plan that is most appropriate for that individual patient". This participant discussed the importance of considering individual client factors including context, which further solidified the ambiguity of the topic as context is individualized, based upon each individual and situation.

In conclusion, the initial sub-question asked participants to describe professional thinking, leading to the identification of three sub-themes; however, the overall analysis of the data reinforced the ambiguity of this concept. Both clinical reasoning, reflection, and critical thinking presented in several interview transcriptions. All seven of the participants discussed at least one if not both of these terms as attributes to professional thinking. Other, less congruent descriptions of professional thinking involved the simplistic description of "it's what OT's do"; professional thinking is the process the occupational therapists go through with clients. Lastly, additional participants discussed the complexity of the concept, indicating the professional thinking involved the integration of multiple pieces of information whether this involved contextual client factors, or experiential, theoretical and personal resources. Please refer to Figure 4.2. The Ambiguous Nature of Professional Thinking.

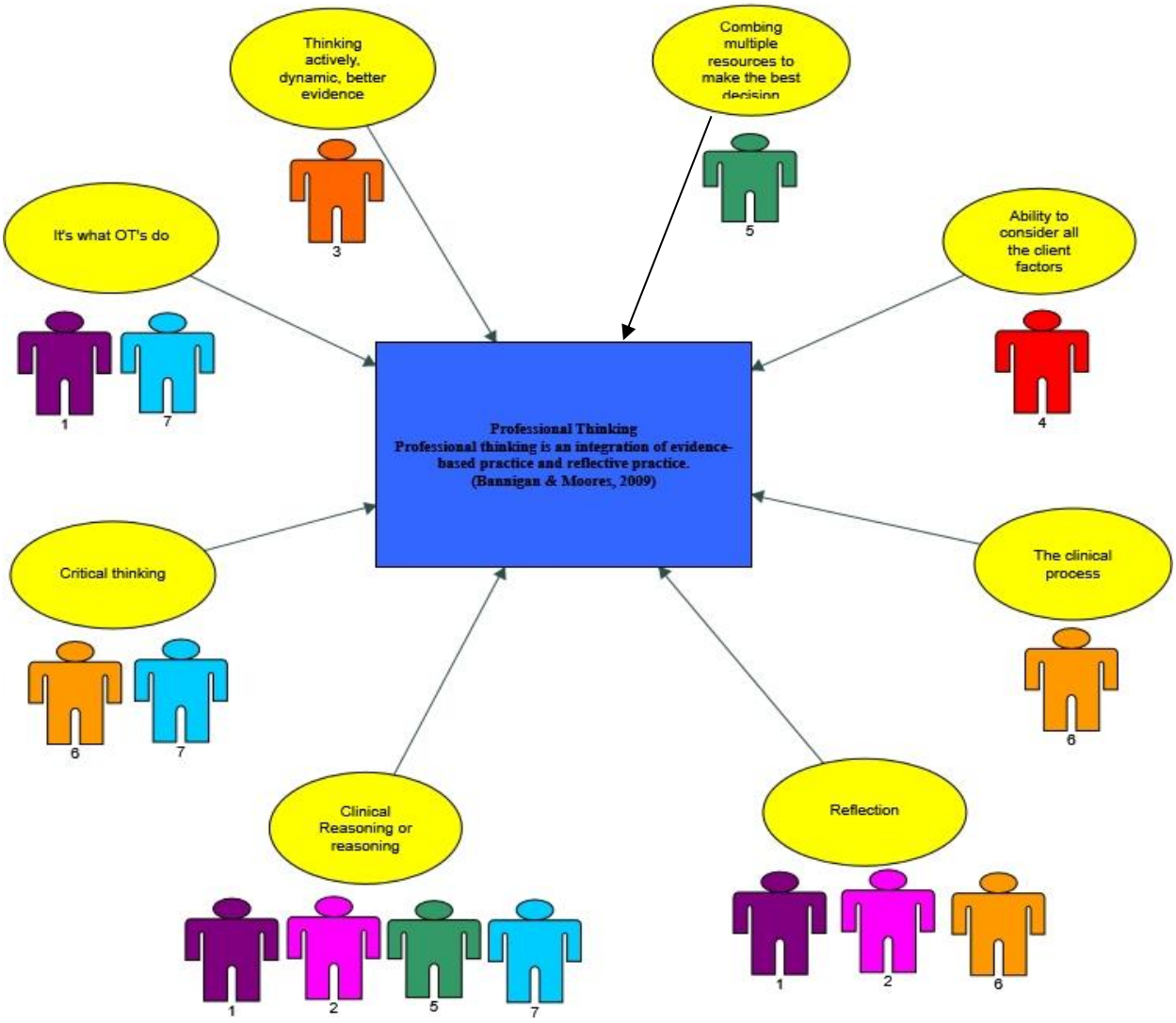

Figure 4.2: The Ambiguous Nature of Professional Thinking

Research Question 2: Theme 2: Occupational Therapy Faculty's Understanding of Professional Thinking is Transformational

After the researcher obtained each participant's description of professional thinking based upon the definition provided by Bannigan and Moores (2009), the interview queried the participants concerning the following topics. First, the researcher asked how the participant's understanding of professional thinking formed. Second, what factors during the participant's involvement in occupational therapy education influenced personal understanding of

professional thinking. Third, how did the participant's understanding of professional thinking change over time while involved with entry-level occupational therapy education? Analysis of answers for these three questions lead to this second theme related to the second sub-research question; how did occupational therapy educators develop a personal understanding of the behaviors that comprise professional thinking? Thematic analysis determined three sub-themes; exposure to clinical experience, higher education, and involvement in academia, all influenced occupational therapy faculty's' understanding of professional thinking. The first subtheme is exposure to clinical experience.

Subtheme 1: Exposure to clinical experience.

The majority of the research participants indicated that exposure to clinical experience shaped personal understanding of professional thinking. Specifically, RP3 described the understanding of professional thinking as "evolving over time". RP3 described understanding of the concept of professional thinking before knowing the concept. Meaning, that initially RP3 had an understanding of professional thinking; however, a complete knowing of the concept required further learning about the concept to allow for total comprehension of professional thinking. RP1 supported the statement of RP3 and cited experience as a practitioner as a contributing factor to an improved understanding of professional thinking as well as described the development of understanding as a process. RP4 related the understanding of professional thinking back to occupational therapy education and stated that participating in craft-based courses promoted creative thinking. Continuing, RP4 stated the craft courses "taught me to realize that there are many ways to approach a problem". Secondly, RP4 also attributed an improved understanding of professional thinking to exposure to other occupational therapists in the clinic. "I got so frustrated with what I was seeing with this just lack of thoughtfulness or

creativity or whatever, that I decided I needed to go teach them how to do it differently". In concurrence with this theme, RP5 also provided insight into the influence of experience on the understanding of professional thinking.

RP5 indicated that both self-reflection and analyzing personal experience as a contributing factors to understanding professional thinking. Experience over time and experience in different contexts provoked a different view about professional thinking. When asked about forming an understanding of professional thinking RP6 commented, "It's what's required as a clinician to be a clinician, but then I don't think I really respected it until I went and started teaching". RP6's comments indicated that professional thinking is a required skill of a clinician but alluded that it is not really "discussed" in the clinical environment, just expected. While the majority of research participants cited experience, for some of the participants the impact of higher education influenced the understanding of professional thinking; therefore contributing to an evolving understanding of the concept.

Subtheme 2: Exposure to additional education.

Exposure to additional education was a second subtheme that emerged during data analysis. Typically, entry-level occupational therapy education does not properly prepare an occupational therapist for the role of educator; therefore, it is common practice for occupational therapists interested in academia to seek a further degree. Four of the seven research participants indicated that participation in higher or further education aided personal understanding of professional thinking. RP1 indicated that participating in a master of occupational therapy degree program provided the formal terminology of clinical reasoning, which emerged with exposure to Mattingly's book on clinical reasoning. Furthermore, during a doctoral program, RP1 studied the work of Schön and reflection. Similarly, RP2 also cited that higher education,

master of health science contributed to an improved understanding of professional thinking. RP3 indicated that education provided "formality" to professional thinking "it gave me the words, helped me to understand what I think I thought I knew". All three of these research participants mentioned that further education provided a formality or language to what they had been doing in clinical practice. While formal education certainly contributed to a better understanding of professional thinking, continuing education and participation in the scholarship of teaching and learning also contributed to one participants understanding of professional thinking.

RP7 cited professional development and a personal pursuit to understand method as a contributing factor to understanding of professional thinking. "When I was hired…you were told you had expertise and everybody could teach. I don't think that anymore. I think people need support. I think we need to think about how to sequence content. We need to understand Bloom's Taxonomy." RP7's participation in continuing education, involvement in higher education, and participation in the scholarship of teaching and learning impacted and transformed RP7's understanding or professional thinking. While both clinical experience and participation in higher education are both contributing factors to the transformation of understanding of professional thinking, exposure to academia was another subtheme found during data analysis.

Subtheme 3: Exposure to academia.

A final subtheme found during data analysis was exposure to academia. Involvement in the education of entry-level occupational therapy students also influenced the participants' interpretation of professional thinking. When discussing professional thinking, RP6 commented, "I don't think I really respected it until I started teaching". When asked about how an understanding of professional thinking changed with participation in education RP3 stated,

"Education provided the formality to it. It gave me the words, helped me understand what I think I thought I knew". This participant further stated that there was not necessarily a change in understanding but the interpretation of professional thinking became solidified and grounded. A majority of participants specifically mentioned that involvement in teaching and instructing students likewise improved personal understanding of professional thinking. RP6 commented on the difficulty of teaching in a classroom compared to teaching while clinically practicing. "In the clinic you can really push students. You can demand their very best and they have to respond quickly. In the classroom you can't do the same." The transition from providing education in a clinical environment to the classroom environment proved challenging for this participant. This change forced the participant to see the importance of in context learning in the classroom, thus providing students the opportunity to work with clients during class but with the "safety" of the instructor's presence. Other participants also provided insight into how understanding of professional thinking evolved as an educator.

Particularly, RP5 commented, that teaching students how to think professionally forced a better understanding and conceptualization of professional thinking. Another participant commented that as an occupational therapy educator it was important to continue to refine and improve an understanding of professional thinking in order to be more explicit and clear with the process when educating students. Thus, asserting that an understanding of professional thinking and its attributes did evolve over time.

In conclusion, the second theme described a transformation that occurs with entry-level occupational therapy faculty's understanding of professional thinking. Several participants explained an understanding of professional thinking as a "process". Analysis of the interview data indicated that those educating entry-level occupational therapy students developed an

understanding of professional thinking over time. Many of the participants indicated that both clinical experience as well as experience as an educator influenced understanding. Finally, several of the participants remarked not fully understanding the concept of professional thinking until the participant obtained a higher degree beyond the entry-level occupational therapy degree. The following section provides a description of a third theme that emerged in relation to the third and final research sub-question.

Research question 3: Theme 3: Active Learning is the Preferred Educational Method to Promote Professional Thinking

The third theme, which emerged aligned with the final sub- research question of the study. The researcher inquired about teaching methodology used by the participants to elicit professional thinking in occupational therapy students. Overwhelmingly, the consensus among the participants embraced active learning as an overarching teaching methodology of choice. Active learning was an overarching term that described many different educational methods. Data analysis revealed two educational methods, case –based learning and experiential learning, as sub-themes of this overarching theme. The ensuing section discusses both subthemes as well as other types of active learning strategies discussed by the research participants.

Subtheme 1: Case-based instruction.

The first subtheme discussed is case-based instruction. Case-based instruction involves providing students with a case scenario and assisting the students to work through the occupational therapy process for that case scenario. RP1 indicated providing students with a case study is a preferred educational method used during course instruction. "I call it a metered case study. I'll give them a little bit and I'll say what questions do you have? What do you know? What does this case tell you?" With cased-based instruction, RP1 incorporated specific

questioning for the case study to guide student thinking. As the process continued, RP1 provided more information to the students and continued to question the students allowing the students to recognize if more information changes the thinking or the path of thinking. RP4 concurred with RP1 and used case examples throughout lectures. Both participants incorporated questioning to guide students through thinking about a specific case example. RP6 also cited case- based instruction as an educational method frequently used.

According to RP6, students are provided, paper, video, or in person cases during instruction. When asked why RP6 prefers case-based instruction RP6 stated, "I see them being able to answer my questions after they gain some confidence". Featuring several different case scenarios in small groups is another type of case-based instruction RP6 uses in the classroom. During this format, the course instructor assigned one of the case scenarios to a student group. Each group then presented and guided classmates through the case scenario. The students helped each other with the process of reasoning through the case studies. With case-based instruction, RP6 commented, "I see changes in their behavior". "I see them not relying on black and white and taking risks". While the previously discussed participants cited using case-based instruction as an instructional method, another participant mentioned using this methodology during formal assessment. RP5 used case scenarios specifically for assessment purposes. "I assess their thinking based on a number of complexities that they interpret, primarily in case studies". The case scenarios used in assessment require the students to identify problems, prioritize problems and design interventions. In conclusion, four of the seven participants, over 50%, cited case-based instruction as a preferred educational method used during instruction. Another active learning educational method, experiential learning, was also popular among the research participants. The following section describes the subtheme, experiential learning.

Subtheme 2: Experiential learning

Experiential learning provides students with opportunities to interact with real clients or patients and begin using skills learned within the classroom. RP4 offered a course in the semester before the occupational therapy students go to level II fieldwork. A major assignment and assessment component of this course required each student to evaluate a client, including treatment planning and documentation of the evaluation of this client with a new neurological diagnosis. RP4 rationalized this experiential component, "it's my belief that doing an evaluation and being able to write it up for payment, for reimbursement, is the entry-level skill". This assignment was an indication to RP4 of the student's readiness for level II fieldwork. Students had only two times to pass the assignment prior to course failure, which indicated the high stakes nature of this assessment. While elaborating on this assignment, RP4 described a student who failed the assignment the first round of the assignment and subsequently completed instructor lead remediation and redid the assignment,. This student returned to speak with RP4 after level II fieldwork citing "my instructor told me I had the best clinical reasoning ever". The student continued that because of that assignment "I now understand reasoning. Now I can express myself". This student's comments provided RP4 the evidence that is assignment did positively impact this student's ability to think professionally. RP1 also touted experiential learning as a preferred educational method.

RP1 provided students the opportunity to go into the community for class. This community-based experience occurred throughout a specific course. RP1 cited this specific experience required students to adapt tasks, environments and materials, which was subsequently really challenging for the students. This community-based experience was "allowing them the opportunity to try to problem solve and trouble shoot". Experiential learning such as this

community-based experience provided the students the opportunity to think and solve problems in the moment with real clients. This experience allowed students to feel uncomfortable and struggle but with the safety of an instructor nearby. Finally, another research participant spoke directly about a preference for experiential learning with students compared to in the classroom learning.

When asked about professional thinking with students RP6 commented "I see most learning when I'm out in the clinic with them." RP6 believed that providing students experiential opportunities allowed for the greatest learning opportunities and growth in students. RP6 also remarked that an emphasis on experiential opportunities prior to level II fieldwork is an essential component to instruction and bringing clients into the classroom is another way to provide students with experiential learning. While experiential learning and case-based instruction were the most specific educational methods mentioned during the interviews, other participants provided specific techniques used to promote professional thinking within the classroom.

Overwhelmingly, all seven participants mentioned active learning or a component of active learning during the interview. While not everyone cited case-based instruction or experiential learning, several participants discussed specific techniques used during class instruction that are active learning and positively impact student learning. Both RP1 and RP5 described "questioning" students as a method used during instruction. RP5 described providing students with an in class assignment and then asking the students to explain why the instructor would ask them to do that specific task. What was the instructor's reason for asking the students to complete that activity? RP1 described showing movie clips during class and asking prescriptive questions after the movie clip to encourage deeper and less superficial thinking.

Lastly, RP4 incorporated "clinical questions" into lectures at the beginning of class. These questions provided the framework for a class discussion toward the end of class where students answered the questions and applied the covered material to the clinical environment. While "questioning" of students was mentioned by several participants as well as discussed during case-based instruction, other participants mentioned role modeling as a method used during instruction.

RP4, RP5, and RP6 all cited role modeling as a technique used during instruction to instill professional thinking within the students. RP6 stated, "I try to constantly share how a therapist would think"; therefore, modeling the thinking process that an occupational therapist exercises during practice. RP5 described explicitly modeling any behaviors or expectations required of the students. Furthermore, when asked about role modeling RP5 commented "the intention of me modeling is to promote it within them, and the intention of me stopping and asking them to immediately reflect back on why am I doing what I'm doing is therefore promoting their reasoning to understand". Finally, PR4 succinctly stated, "I think clinical reasoning can only be taught through modeling and through in-depth discussion". These three participants clearly articulated the importance in role modeling during entry-level occupational therapy education. Questioning and role modeling both presented during over 50% of the interviews; however, a few other comments were worth noting.

RP2 provided insight into the importance of active learning when discussing the passive learning strategy of lecture and commented that lecture does not provide students an avenue to process information and no opportunity to reason through information. RP3 remarked that there was more than one way or method to use during instruction. When asked to describe personal approach to educational methodology, RP3 described the personal approach as one that is

transformational and dynamic, therefore, reiterated that educational methodology can change and evolve. RP7 concurred with RP3 remarking that depending on the group of students one method of active learning may work better than another strategy with that group; therefore, active learning strategies used but not limited to include think, pair, share; and role playing. While there were some differences between participant responses the overwhelming analysis of this question supported the use of active learning to promote professional thinking in entry-level occupational therapy students.

In conclusion, data analysis of the semi-structured interviews provided thematic evidence that active learning strategies are preferred educational methodologies used during the instruction of entry-level occupational therapy students. Both case-based instruction and experiential learning opportunities were subthemes. The majority of research participants cited case-based instruction as a method used during classroom instruction and one participant specifically mentioned this method as a choice for assessment of student learning. Case-based instruction provided opportunities within the class environment for student reflection, and for student recognition that more than one answer can be correct. One research participant specifically described using both written and oral case-based scenarios for assessment of student learning. Using case-based assessments provided the instructor the opportunity to assess student's ability to think, reason, and prioritize based upon the provided information in the case scenario. Experiential learning was the second sub-theme cited in this section.

Several research participants cited experiential opportunities as a preferred educational method. The opportunity for students to interact with real clients allowed for deeper learning that could not occur within the classroom. Experiential learning provided students hands on opportunities with clients. Often, these experiences caused the student to feel uncomfortable or

unsure; however, experiential learning allowed students to solve problems and make decisions in safe environment. Experiential learning opportunities provided students the closest opportunity to participate in clinical occupational therapy practice outside of level II fieldwork.

Other findings during data analysis indicated that many of the research participants incorporated both questioning and modeling into instructional methodology. A few other participants suggested that using one specific method is not "best" practice and the active learning method of choice varied depending on the situation, content, and personality of the cohort being taught. The preceding three themes and subthemes were related to this study's three-research sub-questions. The final theme addressed the overarching research question of the study. This research question sought to identify behaviors indicative of professional thinking. The following is the fourth and final theme identified during thematic analysis and addresses these findings.

Primary research question: Theme 4: Students exhibit specific behaviors when using professional thinking

The primary purpose of this study was to identify behaviors that entry-level occupational therapists exhibit that indicate professional thinking. Analysis of the research data lead the researcher to identify the fourth and final theme. This final theme addressed the primary research question for the study: How did a multi-state sample of experienced occupational therapy educators describe the behaviors indicative of professional thinking in entry-level occupational therapists? The researcher divided the ensuing discussion into two subthemes. The following section describes the behaviors indicative of professional thinking as identified by the research participants followed by a discussion on behaviors not indicative of professional thinking as identified by the research participants. Please refer to Table 2 for an outline of both

behaviors indicative of professional thinking and those not indicative of professional thinking.

Table 4.2
Describing Behaviors of Professional Thinking

Behaviors Indicating Professional Thinking	**Behaviors NOT Indicating Professional Thinking**
Questioning	Concrete thinking
Reflection	Rote memorization
Processing & applying information	Focus on points/grades

Note: Table 4.2 provides a comparison of the behaviors that indicate professional thinking and those behaviors that do not indicate professional thinking.

The subsequent section describes the initial subtheme that discussed behaviors indicative of professional thinking according to the results of this study. Please refer to Figure 4.3 for a visual providing the behaviors indicative of professional thinking as described by the research participants.

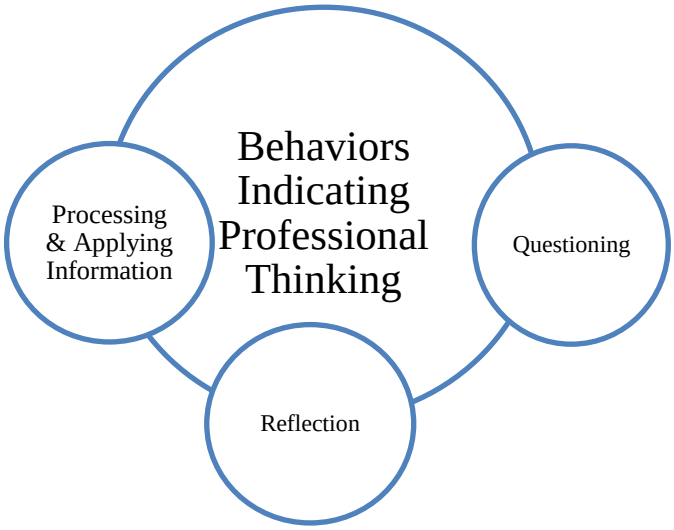

Figure 4.3: Behaviors Indicating Professional Thinking in Occupational Therapy Students

Subtheme 1: Behaviors indicative of professional thinking.

Questioning was a behavior that four of the seven research participants indicated when asked to identify behaviors indicative of professional thinking. The questioning occurred during class or during interactions with faculty. RP1 commented, “You can see them leaning in, they’re

making eye contact" and asking questions about why something was or why did something happen. RP 4 indicated that students who have a desire to learn and students not focused on the objective grade for an assessment or the course are thinking professionally. These students seek to understand the content, not to better a grade by convincing a faculty member to give points back on an exam or assignment.

RP3 described expectations provided to students on the first day of class; "you have to be an active learner, and you've got to pre-read…You have to ask questions, you have to own this". Pre-class preparation, included reading and questioning the material, was an essential component to successfully completion of courses taught by RP3. Those behaviors prepared students for success in the coursework. RP3 commented that each student's method of preparation was individualized but the end- result is the same. RP7 also described professional thinking as those students that think and question. As substantiated, questioning was one behavior indicative of professional thinking; however, another behavior also emerged, reflection.

Reflection or self-reflection emerged as another behavior indicative of professional thinking. Four of the seven participants specifically mentioned reflection or the ability to self-reflect as a behavior indicative of professional thinking. RP2 described using reflection throughout the curriculum and commented that students who are able to reflect on client interactions, specific assignments, or interactions with others are thinking professionally. RP1 explained that entry-level therapists must function by "thinking on your feet, thinking in the moment". Providing a specific student example, RP1 described the student as "thoughtful, she thinks about things and reflects on things". Students who were not concrete but thoughtful and introspective during class or during experiential opportunities were demonstrating reflection, a behavior of a professional thinker. While RP1 and RP2 both provided insight into reflection as

behavior of professional thinking, other participants also mentioned reflection during the semi-structured interview.

RP3 remarked that students who are active, dynamic, reflective thinkers, regardless of the situation, are exhibiting behaviors indicative of professional thinking. Likewise, RP6 also mentioned self-reflection as an important behavior of professional thinking. RP6 described students who anticipate, know what to do in the moment, initiate interactions, and self-reflect as professional thinkers. Both RP3 and RP6 indicated that active participation during class is an important component of this behavior and professional thinking. A final behavior that emerged with thematic analysis is the ability to both process and apply information.

During the semi-structured interviews, five of the seven research participants mentioned either applying or processing information as behaviors indicative of professional thinking. RP2 described classroom engagement in which students are required to both process information and apply learned information during a structured learning activity. Another participant, RP4, explained that students who engage in class through questioning and inquiry regarding how to apply learned information are professionally thinking. Finally, RP7 mentioned that when students are able to apply information; that signals professional thinking. While these three participants all mentioned application of information, three participants also commented that an ability to process information indicates professional thinking.

RP6 discussed knowing students are learning as "they process the information and they know what to do with it in the moment". Another participant, RP5, mentioned the importance of speed in regards to thinking about or processing information. "Did they have to have hours of preparation in order to make sure that they pulled all their pieces together, and then that gives me an idea of how much the student is processing and how fast their processing it in order to make

good judgements of client interaction". While an ability to think about or process information is important, the amount of time it takes to process information was an important component as well. Lastly, RP2 also reiterated the importance of processing or thinking about information. While questioning, self-reflection, applying, and processing information all emerged as well defined behaviors describing professional thinking, several other comments and references made during the interviews were worth noting.

RP1 commented that non-verbal behavior including leaning in and making eye contact indicated of professional thinking. Engagement during class, which includes questioning, that indicated students were making links, and were considering more than one factor indicated professional thinking. RP5 discussed the ability to prioritize information, "when an individual has the ability to listen for the critical pieces of information and not get distracted by extraneous communication", as an important component of professional thinking. Interestingly, RP2 mentioned that students who exhibit professional behaviors, appropriate interactions with faculty, other students, and clients are professional thinkers. Applying the evidence in the literature to specific client scenarios was another behavior of professional thinking according to RP2. Finally, as noted earlier, RP4 described a focus on learning content versus points or grades as important but also, emphasized that a student's ability to handle the stress of the occupational therapy program without anxiety, a student who was organized and systematic was a professional thinker.

In summary, several attributes emerged when describing behaviors indicative of professional thinking: questioning, and reflection, processing and applying information. Students seeking answers to questions such as why something is the way it is or why something happened were thinking professionally. Preparation for class and "owning" learning indicated

professional thinking. Students who think about things either during or after a client interaction or scenario were reflecting or thinking professionally. Having the ability to prioritize and identify important versus extraneous pieces of information describes professional thinking. Interestingly, the attribute of questioning is a component of reflection and requires the individual to question in the moment or after an event has occurred. In conclusion, the results of the thematic analysis clearly identified several behaviors that indicate professional thinking. The subsequent section contains a discussion of the second subtheme that emerged during thematic analysis, behaviors that do not indicate professional thinking. Please refer to Figure 4.4 for a visual providing the behaviors not indicative of professional thinking as described by the research participants.

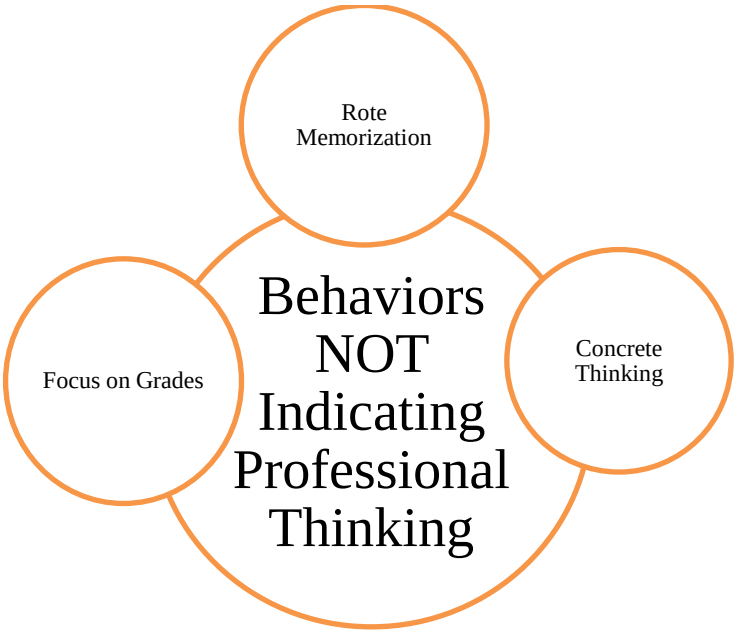

Figure 4.4 Behaviors Not Indicating Professional Thinking in Occupational Therapy Students

Subtheme 2: Behaviors not indicative of professional thinking.

While certain themes emerged indicating behaviors that describe professional thinking, other themes emerged describing behaviors not indicative of professional thinking. Three specific behaviors emerged during the thematic analysis of the interviews concerning behaviors not indicative of professional thinking. These themes included, concrete thinking, rote memorization, and a focus on grades and points. Following is an explanation of concrete thinking.

A primary theme describing behaviors that were not indicative of professional thinking was concrete thinking. RP5 described concrete thinking as a problematic and a common characteristic seen in students struggling to develop professional thinking. Describing this behavior as a "very literal interpretation or translation of the information one is either hearing or seeing". A second participant, RP2 explained that students who have difficulty applying learning to real scenarios are concrete thinkers. RP7 commented that students who knows everything out of the book but when provided a situation that is not protocol based "they freeze". These students are not able to think about situations only regurgitate information. While concrete thinking was a behavior not indicative of professional thinking, another behavior, rote memorization also emerged.

Comparable to the previous discussion regarding students only knowing everything out of the book both RP4 and RP6 described rote memorization of material as a behavior not indicative of professional thinking. Rote memorization involved students learning material at a superficial level and not learning the material at a level of application. Rote memorization allowed for regurgitation of facts, not professional thinking. RP2 commented that students that memorize information and do not "take information in" were not able to reason through

information. Learning to these students was purely memorization and superficial. RP4 remarked that students who were good at rote memorization and wanted to be told what to know struggled with professional thinking behavior of application. Similar to concrete thinking and rote memorization several research participants mentioned a closed mindset as a behavior that is not indicative of professional thinking.

RP7 commented that students with a closed mindset were motivated by points and "checking things off the list" not learning and integrating. RP4 concurred citing "I think it's a super high level of anxiety, and again, a focus on points versus content". RP3 described changes in behaviors in occupational therapy students that reinforces RP4's comment regarding anxiety. According to RP3 students, exhibiting professional thinking became "gustier" and were not afraid to make mistakes; reiterating RP4's comment that high levels of anxiety was not a behavior indicative of professional thinking. Actually, students exhibiting low anxiety or low stress levels was indicative of professional thinking.

In conclusion, during data analysis, specific behaviors emerged that describe behaviors not indicative of professional thinking. These behaviors included concrete thinking, rote memorization, and a focus on the grade not learning. According to some of the research participants, concrete thinking was problematic when teaching students in an entry-level occupational therapy program. Concrete thinking did not allow for reasoning or application of information but was definitive and recognized one answer or one way of doing something. Concrete thinking did not allow for creativity or abstract thinking. While concrete thinking was problematic, rote memorization posed problems with professional thinking as well.

One participant commented that students who memorize content, freeze when put on the spot or given a situation that does not have an answer in a textbook. These students were not

able to think "on the go" and think professionally. Rote memorization did not allow for deep learning. A third and final behavior emerged during the thematic analysis, focusing on grades or points given and not learning to learn. Two participants commented that students who argued and sought points back on an exam or assignment were not seeking to learn from an error or mistake but were seeking an improvement in personal grades. These students were not asking questions to clarify reasoning and rationale but the objective grade was the motivation. In summary, behaviors that indicated professional thinking were important to recognize in entry-level occupational therapy students but just as important was distinguishing those behaviors that were not indicative of professional thinking. Behaviors that were not indicative of professional thinking impeded the development of professional thinking in students.

Results Summary

In conclusion, the purpose of this transcendental phenomenological study was to describe the behaviors indicative of professional thinking in entry-level occupational therapists. This researcher founded this study upon one overarching researching question and three sub-questions. Data collected during this study was comprised of demographic information, semi-structured interview transcription, field notes, and a reflective journal. During examination of the data, the following four primary themes as well as sub-themes emerged related to the study's research questions. The first theme identified answered the first sub-research question and indicated that describing professional thinking remains ambiguous.

While thematic analysis did indicate some similarities in participant responses, the overarching theme was that there is still inconsistencies in terminology used to describe professional thinking. The three sub-themes found during thematic analysis were clinical reasoning, reflection, and critical thinking. These attributes where mentioned by at least two of

the seven participants. While thematic analysis indicated that both reflection, critical thinking, and clinical reasoning were important attributes of professional thinking, other comments were simplistic, as professional thinking is what occupational therapists do; professional thinking was the process that clinicians use every day.

During continued analysis a second theme emerged that answered the second sub research question. This theme indicated that faculty's understanding of professional thinking is transformational. Thematic analysis suggested that experience both as a clinician and as an educator both attributed to the participants understanding of professional thinking. Higher education and further education also contributed to the progressive understanding of professional thinking in occupational therapy. According to the thematic analysis occupational therapists and in the case of this research specifically occupational therapists involved in entry-level education experienced a transformation of personal understanding of what professional thinking entails. The third theme of this study addressed the third sub-research question. This theme identified educational methods commonly used by occupational therapy faculty to elicit professional thinking in students.

During thematic analysis, the primary findings indicated that active learning strategies are the preferred educational methods of occupational therapy faculty. Within theme three, there were two sub-themes or types of active learning, case based instruction and experiential learning. When asked about preferred educational methods, all participants described active learning as the overarching preferential method. The majority of the participants further explained that using either case–based instruction or experiential learning opportunities is the best way to promote and teach professional thinking to occupational therapy students. Several participants commented that using one particular active learning strategy is not possible as the type of

educational method used varies based upon the personality of the group in the classroom. The overall premise of these findings was that active learning, learning that models behaviors that were professional thinking, best instilled professional thinking in students.

The fourth and final theme identified is in relation to the overarching research questions; what were behaviors indicative of professional thinking. During thematic analysis two sub-themes emerged, one described behaviors indicative of professional thinking and the second described behaviors not indicative of professional thinking. Consensus among many of the participants was that behaviors such as questioning, reflection, processing and applying information all indicate professional thinking. Students seeking to learn, students asking questions, thinking during or after situations and reflecting were thinking professionally. Students that were able to apply information learned to a different yet similar situation were thinking professionally. These behaviors indicated professional thinking. While there were definitive, behaviors indicative of professional thinking there were also behaviors that were not indicative of professional thinking.

A few behaviors emerged during thematic analysis of behaviors not indicative of professional thinking. Some participants described both concrete thinking and rote memorization as behaviors not indicative professional thinking. These behaviors did not allow for thinking and application of information but instead focused on one and only one answer. Students who focused on memorizing information were not able to apply information to similar scenarios or situations if the answer was not directly in a book or a lecture. A final behavior cited by participants described student's motivation for grades or points and not learning of material as a behavior that is not indicative of professional thinking. Students exhibited these behaviors were not concerned with learning why an answer is wrong but were motivated by an

improved score or grade. Thematic analysis clearly indicated specific behaviors that were both indicative of professional thinking and others that were not indicative of professional thinking.

Chapter 5: Conclusion, Discussion and Summary

The environment of healthcare today requires occupational therapists to make many decisions on a daily basis. This decision-making process requires higher-order thinking. Historically, terminology used to describe higher-order thinking has been inconsistent and variable. This study specifically used professional thinking to describe higher-order thinking. Professional thinking involves integrating evidence-based practice and reflective practice into the decision-making process of the occupational therapist (Bannigan & Moores, 2009). The purpose of this qualitative study was to explore the behaviors indicative of professional thinking in entry-level occupational therapists and the teaching methodologies used to facilitate professional thinking during education as described by a sample of experienced occupational therapy educators. The following chapter relates the thematic findings and related research questions to the literature reviewed. The researcher introduces The Smith Model of Professional Thinking. Furthermore, the chapter reviews implications to occupational therapy education and practice, limitations of the study, and recommendations for future research.

Research Sub- Question 1: How do occupational therapy educators describe professional thinking?

The first research sub-question asked the research participants to explain how occupational therapy educators describe professional thinking. While thematic analysis noted several similarities in describing professional thinking, overall describing professional thinking remained ambiguous. However, three subthemes, clinical reasoning, reflection, and critical thinking, emerged. Several participants chose to describe professional thinking using either clinical reasoning or reasoning. The literature reinforced the popularity of the concept clinical reasoning in healthcare education and specifically occupational therapy education. First, two

groups of experts, known in occupational therapy education regarding clinical reasoning, are Mattingly and Fleming and Schell and Schell. Both Mattingly and Fleming (1994) and Schell and Schell (2008) have published books on clinical reasoning. Several interview participants cited these publications as influential on personal understanding of clinical reasoning. These publications likely influenced the use of clinical reasoning to describe this type of thinking. The review of literature uncovered several studies that sought information regarding changes in clinical reasoning in students, hence reinforcing the commonality of the concept clinical reasoning in occupational therapy education. Coker (2010) and Knecht-Sabres (2010) studied the impact of experiential learning opportunities on clinical reasoning skills of occupational therapy students and Scaffa and Smith (2004) and Sladyk and Sheckly (2000) investigated the influence of level two fieldwork on clinical reasoning. These studies all reinforced the commonality of clinical reasoning as a concept in occupational therapy education and practice. The influence of the concept, clinical reasoning, on occupational therapy education wass clear when comparing the thematic analysis to the review of literature; however, this also holds true with the second sub-theme, reflection.

The review of literature also addressed reflection, an attribute of professional thinking according to Bannigan and Moores (2009). During the review of literature, the researcher discussed the work of Donald Schön. Schön described reflection as a behavior or a competence required of practitioners. Schön explained reflection as a practitioner's ability to respond to a unique or new situation, not learned about during schooling. The participants who identified reflection as a component of professional thinking provided descriptions of this attribute similar to that as described in the literature by Schön (1987). Some mentioned Schön specifically. The literature reviewed prior to this study indicated a belief that reflection was an essential behavior

of healthcare providers. Literature reviewed in nursing, occupational, and physical therapy all reinforced this fact. However, it was worthy to note that the research reviewed on reflection was primarily qualitative and only one study sought to validate a new assessment to measure changes in reflective practice during occupational and physical therapy education (Dunn & Musolino, 2011).

While only two participants mentioned critical thinking during the interview process, the review of literature did discuss critical thinking. Specifically, the literature review mentioned two groups of authors with publications on critical thinking. In these publications, the authors discussed first and second order thinking. Both Paul and Elder (2006) and Facione and Facione (2008) described second order thinking as reflective, deliberate and involving analyzation of information. Several research participants mentioned both reflection and analysis as attributes of professional thinking. The literature on critical thinking discussed both of these attributes when describing critical thinking. One study reviewed incorporated both critical thinking and clinical reasoning (Coker, 2010). As mentioned, only two of the seven participants mentioned critical thinking during the semi-structured interview, which reinforced the ambiguity of the topic of professional thinking as these participants also mentioned clinical reasoning and reflection during the interview.

Although several subthemes that described professional thinking emerged during data analysis, the review of the literature reinforced the ambiguous nature of the topic. The majority of the studies reviewed that cited attributes used to describe professional thinking were not within the last five years. The researcher found minimal new research on any of the attributes or on the concept used for this study, professional thinking. Is it worth asking why this topic was not more frequently researched in healthcare education? Why was this topic, professional

thinking, and its attributes not getting more attention? The subsequent section will review research question number two and the literature reviewed.

Research Sub-Question 2: How did occupational therapy educators develop a personal understanding of the behaviors that comprise professional thinking?

The second sub-question of this study inquired how faculty instructing entry-level occupational therapy students developed an understanding of professional thinking. The literature described various attributes of professional thinking but did not specifically address this research question. However, many of the studies reviewed included some of the attributes used by the research participants to describe professional thinking. These attributes included clinical reasoning, critical thinking, and reflection. Even though the literature did not directly investigate how understanding of professional thinking evolved over time the researcher inferred an understanding of this transformation within the reviewed literature. Findings in the literature indicated that there was a significant change over time in professional thinking or its described attributes in programs offering both entry-level occupational therapy and physical therapy education. Experiential opportunities whether embedded within a course, or a curriculum, such as the required level II fieldwork, did have a tendency to positively influence or change clinical reasoning, reflection, or critical thinking in students (Bartlett & Cox, 2002; Coker, 2010; Knecht-Sabres, 2010; Lederer, 2007; Scaffa & Smith, 2004; Sladyk & Sheckley, 2000; Velde et al., 2006; Vogel et al., 2009). Qualitative research reviewed also reinforced a perception of this change in professional thinking and its described attributes as cited by students.

As noted, qualitative studies also reinforced the consensus of the research participants that an understanding of professional thinking did transform or change over time with experience and exposure. Overall, student perceptions were that changes in clinical reasoning occurred with

experiential learning opportunities (Benson & Hansen, 2007; Mu et al., 2010; Weddle & Sellheim, 2011). Some of the qualitative studies described changes in perceptions of clinical reasoning or critical thinking abilities over a short period. Other studies indicated that allowing more time for growth and learning would increase perceptions of clinical reasoning. These interpretations of the literature reinforced the participants' beliefs that both experience as well as further education and participation in the realm of education allowed this understanding to grow and change.

In one particular study, Fornesis and Peden- McAlpine (2007) completed a qualitative study focused on changes found in nurses during the first six months of practice, therefore after the completion of nursing education. This study found qualitative themes that showed a change in new nurses during first 6 months of practice. These themes included a shift in thinking from sequential to contextual as well as the emergence of intentional critical thinking, therefore providing support to the second theme of this study that professional thinking and its attributes change with experience and time in clinical practice. While the review of literature did not directly support this question, the literature does support the idea that an understanding of how occupational therapists think, specifically professional thinking, did transform over time. This transformation occured secondary to increased clinical experience, participation in further education, both higher education or continuing education, and potentially when clinicians moved from clinical practice to education. Meanwhile, the third and final sub research question queried participants about teaching methods used to facilitate professional thinking.

Research Sub-Question 3: What teaching methodologies do experienced occupational therapy educators use when facilitating the behaviors of professional thinking?

As stated, the third research sub-question sought to understand what educational methods faculty prefer to use when instructing in entry-level occupational therapy programs. The predominant theme that emerged from data analysis indicated active learning was the preferred educational method of choice. Two specific components of active learning, experiential learning, and problem-based or case-based instruction emerged. Interestingly the third form of active learning reviewed in the literature, clinical simulation, did not emerged during data collection.

First, this section discusses experiential learning as an educational method. The consensus of the literature reviewed for this study revealed that including experiential learning opportunities in healthcare education had a positive impact on student's professional thinking from both a quantitative as well as a qualitative perspective. One of the biggest hindrances cited within the literature reviewed was either sample size or lack of generalizability of the results. The literature as well as the responses of three of the seven research participants touted the importance of experiential learning opportunities during healthcare education instruction (Benson & Hansen, 2007; Coker, 2010; Knecht-Sabres, 2010; Mu et al., 2010; O'Neil et al., 2007; Plack & Santasier, 2004; Weddle & Sellheim, 2011). Interestingly, while not all of the research participants specifically mentioned experiential learning as an educational method; several others described the importance of role modeling during instruction. Others mentioned using questioning during instruction to promote student professional thinking. Experiential learning opportunities allowed faculty to incorporate both of these strategies during an experience, and hence questioning and role modeling were both components of this educational

method. Not only is questioning and role modeling a component of experiential learning but it is also a component of problem-based learning.

Problem-based learning or case-based instruction emerged as a second sub-theme in the findings. Three of the seven research participants mentioned case-based instruction or problem-based learning as an educational method used during instruction. The review of literature strongly reinforced this fact; however, the research on case-based instruction is old, sometimes older than ten years old. The studies reviewed in the literature indicated that healthcare education was incorporating problem based learning or case-based instruction into educational programs as a method to promote clinical reasoning and critical thinking (McCarron & D'Amico, 2002; McNulty et al., 2004; Scaffa & Wooster, 2004; Schaber, 2005; Wong et al., 2008). Results of the research overall supported using problem-based learning or case-based instruction as an educational method as did several of the research participants. Interestingly, occupational therapy educators still used this educational method but the research on the effectiveness of problem-based learning is extremely dated. While, entry-level occupational therapy education was clearly using both experiential learning and case-based instruction, healthcare education would benefit from more research on this topic due to the age and size of many of the research studies. Finally, the review of literature covered clinical simulation; however, none of the participants mentioned clinical simulation specifically as an educational method of choice.

Clinical simulation is not a new educational method found in healthcare education but it is newer in the realm of occupational therapy education. Both medical and nursing curriculums use clinical simulation to foster critical thinking and decision-making in students (Herge et al., 2013). Clinical simulation is a form of active learning that provides students a safe, often

standardized scenario, to simulate interaction with patients. These safe patient scenarios may be on a video or as a paper case study but can also be with computerized mannequins or paid standardized patients (Bethea et al., 2014). Because of the broad nature of this term as well as the newness of this educational method to occupational therapy education, this researcher discerns that likely programs are using forms of clinical simulation but many of the educators do not use the concept clinical simulation to describe personal educational methods. Bethea et al., (2014) found that 71% of occupational therapy program directors reported using some sort of simulation therefore signaling that occupational therapy education is likely using clinical simulation more than the results of this study indicate. However, the survey also indicated that occupational therapy programs are using a broad range of types of clinical simulation therefore possibly contributing to the lack of this concept emerging during thematic analysis.

The broad nature of clinical simulation lends itself to being similar to problem-based or case-based instruction in addition clinical simulation is essentially a different way to describe experiential learning. Clinical simulation is really an expanded, standardized version of experiential learning. This researcher will argue that both clinical simulation and experiential learning opportunities are valuable components occupational therapy education. Experiential learning provides non-standardized interactions and makes available opportunities for students to work with real clients or patients. In contrast, clinical simulation involves providing students with standardized clients or patients in order to instruct on a specific skill or assess specific abilities based upon a standardized scenario.

In conclusion, the literature and research participants both supported active learning as the overarching preferred educational method for instruction in entry-level occupational therapy programs. Participants mentioned both experiential learning and problem-based learning or

case-based instruction as preferred educational methods to use during occupational therapy education. Other participants reinforced these methods stating preferences of using components of these methods including questioning and role modeling. The research regarding experiential learning and problem-based learning is dated. Therefore, there is a need for more research regarding effective educational methods to promote professional thinking in occupational therapy education and healthcare education as a whole. The final piece of this section discusses the findings of the primary research question in relation to the literature.

Primary Research Question: How does a multi-state sample of experienced occupational therapy educators describe the behaviors indicative of professional thinking in entry-level occupational therapists?

The overarching research question for this study sought to identify behaviors that indicate professional thinking. Analysis of the data uncovered both behaviors indicative and those not indicative of professional thinking. One behavior indicative of professional thinking uncovered during thematic analysis was reflection. The review of literature described beliefs about reflection from two noted authors of reflection, Donald Schön and Jennifer Moon. Schön spoke of "reflection- in action" during which a practitioner seamlessly responds to a unique situation, which does not fit with the knowledge gained from training. The practitioner must act as a researcher, solve the problem, or modify the intervention, to meet the unforeseen situation (Schön, 1987). Reflection is thinking critically about a given situation in which the practitioner questions a perspective body of knowledge. According to Schön (1987), this process may then lead to identifying other ways to frame a problem or understand a situation. Schön described reflection-using terminology similar to the behaviors indicative of professional thinking, questioning and processing information, as described by the research participants. The opposite

of Schön's description of reflection mirrors behaviors not indicative of professional thinking, including concrete thinking and rote memorization. Another expert on reflection is Jennifer Moon (2005).

Moon (2005) wrote about reflection and described two types of learning, surface learning and deep learning. Reflection is indicative of deep learning and is therefore a behavior or higher-order thinking. According to Moon (2005), surface learning is comprised of memorization of facts, compartmentalization of course material and a separation from integrating material. Interestingly, Moon's description of surface learning is indicative of the behaviors not indicating professional thinking as found in the thematic analysis. On the contrary, Moon's description of deep learning included components of the behaviors indicative of professional thinking in the study, namely reflection, and assimilation of new information. A number of participants mentioned reflection as a behavior indicating professional thinking as well questioning and processing information, both of which are components of assimilation of new information. While Moon (2005) discussed both surface learning and deep learning, Paul and Elder (2006) and Facione and Facione (2008) described first and second order thinking.

According to Paul and Elder (2006) and Facione and Facione (2008) first order thinking is not reflective and contains both truth and error, therefore describing a behavior not indicating professional thinking, concrete thinking. Second order thinking involves deliberate, reflective behavior, which involves analyzing information before making a decision or coming to a conclusion. Both Paul and Elder (2006) and Facione and Facione (2008) termed second order thinking as critical thinking describing a process that involves analyzing information and making the best decisions based upon that process. Second order thinking according to Paul and Elder (2006) and Facione and Facione (2008) is professional thinking and includes the behaviors of

professional thinking as described by this research study, reflection, questioning, processing, and applying information.

The previous discussion primarily reviewed authors found in the literature on the topics of reflection and critical thinking. While many of the studies examined during the review of literature included one of these concepts in the research, the studies did not specifically mention behaviors indicative or not indicative of professional thinking; however many of these studies did discuss works completed by Facione and Facione, Moon, Paul and Elder, and Schön.

In conclusion, as noted in the prior discussion, the review of literature and thematic analysis are consistent and similar. The need for newer research on this topic is evident. The literature reviewed supported terminology used to describe professional thinking as well as its ambiguity. The literature also supported educational methods typically used to instill professional thinking in entry-level occupational therapy students; however, the research was dated. Finally, the literature provided reinforcement to the described behaviors both indicative and not indicative of professional thinking by the research participants. Once again, much of these works were dated or not research focused.

Interpretation

Analysis of the data and completion of this phenomenological qualitative research study, lead this researcher to create The Smith Model of Professional Thinking. Bannigan and Moores (2009) initially created the Model of Professional Thinking, which is a clear graphic explaining the process of professional thinking, incorporating EBP and reflective practice, and all of the subcomponents of those attributes. During the data analysis and interpretation, it became apparent to the researcher that while research participants are using pieces of the model to describe professional thinking, faculty in the United States did not interpret the concept in the

same way as Bannigan and Moores (2009). Interestingly, the attribute, EBP was largely missing during the interview and reflective journal analysis. Two of the seven participants mentioned EBP or a component of EBP one time each. The significance of this finding was even more apparent considering the researcher provided the definition of professional thinking according to Bannigan and Moores. Therefore, data analysis lead the researcher to the development of The Smith Model of Professional Thinking.

The Smith Model of Professional Thinking includes the attributes provided by the research participants when describing professional thinking, teaching methods used to promote professional thinking and lastly both behaviors that indicate professional thinking and those that do not indicate professional thinking. This model provides clarification of the ambiguous nature of the topic while providing an opportunity for the consumer to see the identified attributes. The Smith Model of Professional Thinking provides an indication of educational methods that promote professional thinking and the behaviors indicative of professional thinking. Another important component of this figure is the inclusion of the behaviors that are indicative and not indicative of professional thinking. Expanding understanding of the behaviors indicative and not indicative of professional thinking will assist those involved in occupational therapy education. This expanded understanding will ensure that programs are instructing studies in a manner to promote the behaviors that indicate professional thinking and deter those that are not indicative of professional thinking. Please see Figure 5.5 for a visual of The Smith Model of Professional Thinking.

The Smith Model of Professional Thinking

Figure 5.5: The Smith Model of Professional Thinking describes the thematic findings regarding the ambiguous nature of professional thinking as well as the findings describing behaviors indicative of professional thinking and those behaviors not indicative of professional thinking. Active learning strategies that facilitate behaviors indicative of professional thinking are included in the model.

Implications and Recommendations for Occupational Therapy Education

Since professional thinking and describing professional thinking remains ambiguous so does any mechanism to develop a tool to assess professional thinking in entry-level occupational therapy students or to assess for any changes in professional thinking. In order to consider a formal outcome measure for professional thinking, it is necessary to identify behaviors of professional thinking as well as those behaviors that do not indicate professional thinking. Qualitative results indicated a consensus of the importance of professional thinking or its described attributes. Because professional thinking is an essential entry-level skill for occupational therapists, it is imperative that educators promote professional thinking during formal didactic and clinical education. Expectations of health care settings today does not allow for on the job training on professional thinking. Nor does the complexity of patients seen by occupational therapists allow for inconsistency, uncertainty, or inaccuracy with professional thinking.

Improving the preparation of students to think professionally begins with education. Occupational therapy faculty must be using educational methods that are active such as experiential learning, problem-based learning, and clinical simulation when instructing students to think professionally. The current problem remains that professional thinking or its similar attributes are necessary to entry-level occupational therapy practice; however, because of the ambiguity of its description, the inability to obtain an objective measurement of professional thinking or changes in professional thinking in occupational therapy education remains. In order to better prepare entry-level occupational therapists to successfully practice in healthcare today, the ambiguity of professional thinking must transform to that of understanding.

Limitations of Study

The researcher identified several limitations of this study. One limitation of this study is the method of recruitment. The researcher initially sought participants from collegial recommendations, which limited the diversity of the initial members of the sample; however, after the initial sampling the researcher used snowball sampling and sought recommendations for other participants from the interview participants. While the researcher instituted snowball sampling to improve the sample of the study, there is also a limitation to this sampling measure. This type of sampling is potentially limiting secondary to the fact the research participants might have recommended other potential participants based upon or experience or interest in the topic of this study, therefore potentially biasing the results.

Likewise, the sample size of seven participants could have limited the depth or quality of descriptions of professional thinking. However, it is important to note that the researcher did achieve saturation at seven research participants. Another limitation is the semi-structured interview format, which could cause digression by the participants and limit the quality of data collected. The interviewer incorporated bracketing; however, review of the transcription did find occasional use of potentially biasing language such as "good" after a research participant response. The final limitation noted is the virtual recording platform WebEx and wireless internet. The researcher completed several interviews in which WebEx stopped working due to bandwidth and the researcher then had to call the research participant and complete the interview over the phone, therefore limiting the amount of video available for analysis as well as interrupting the flow of the semi-structured interview. Although this study contains some limitations, the findings of the study did concur with the literature reviewed on this topic. Despite limitations to a research study, it is still imperative to contemplate the possibility and need for future research on the studied topic.

Future Research

The literature provided information on professional thinking and its described attributes; however, the understanding of professional thinking remains ambiguous. The research participants all mentioned similar yet varying attributes when describing profession thinking reinforcing the ambiguity of the topic. Occupational therapy faculty indicated a desire to promote professional thinking in students in order to prepare the students for fieldwork and entry-level practice. Therefore indicating an understanding that the pace of healthcare settings today does not allow time for clinical instruction on professional thinking as the students and entry-level occupational therapists must be prepared to think professionally right away.

Because of the ambiguity of this topic, further research would improve understanding of professional thinking. Occupational therapy educators, students, and practitioners understanding of professional thinking will improve with further descriptions of behaviors that indicate and those that do not indicate professional thinking. A better understanding of these behaviors might lend itself to the development of an assessment tool that could measure professional thinking.

It is worthwhile to comment that professional thinking is a skill necessary for competent entry-level occupational therapy practice. Therefore, those educating entry-level occupational therapy practitioners must ensure that entry-level occupational therapy programs are using educational methods to reinforce and model the behaviors that indicate professional thinking. This study found perceptions amongst a sample of educators that professional thinking changes with education, exposure, and experience. The research also supports the belief that thinking changes during education and in practice; however, it is worthy to note that these are only perceptions. An improved understanding of the concept of professional thinking and its related attributes is essential; hence, occupational therapy education needs further research on the topic.

One of the most concerning issues emerging is the age of the research on educational methods that occupational therapy educators are still using to instruct entry-level occupational therapy students. The thematic analysis clearly indicated a belief in active learning strategies to promote higher-order thinking or clinical reasoning but there is not any new or significant research completed in the last 5 years or more to solidify this belief. The lack of new research on the topic, also further reinforces the problem that occupational therapy educators have in creating feasible ways to assess changes in professional thinking throughout a program and even into entry-level practice. While entry-level occupational therapy programs have summative assessments including successful completion of level two fieldwork and successfully passing the National Board Certification in Occupational Therapy (NBCOT) exam to demonstrate competence and preparation for entry-level practice, it would seem helpful to have a method to measure professional thinking and changes in professional thinking throughout didactic education. This type of assessment would provide faculty with formative feedback about student's progress and ability to think professionally and therefore allow the faculty to better prepare the entry-level occupational therapy students to practice in the healthcare environment of today. Although the previous mentioned information offers recommendations for future research, this researcher also identified a few specific recommendations for future research with this particular to this study.

A larger sample size might assist with diversifying the results on this topic. A quantitative or mixed methods study using both the attributes of professional thinking as well as the behaviors describing and not describing professional thinking would be beneficial. It is imperative that entry-level occupational therapy educators are using educational methods that promote professional thinking and contribute to a change in student behaviors that indicate

professional thinking. Ultimately, this researcher recommends that future research lead to the development of an assessment to measure a change in professional thinking during and after occupational therapy education. Identifying an objective method to assess changes in professional thinking may improve outcomes for students enrolled in entry-level occupation therapy programs, faculty teaching in these programs, and most of all outcomes for those receiving occupational therapy services.

Another component to address in future research is the role of EBP in professional thinking. According to Bannigan and Moores (2009), EBP has an integral role in the process; however, this particular concept was absent in almost every interview even though EBP was provided at the beginning of each interview within the definition of professional thinking. EBP is a component of occupational therapy practice that is increasingly important to third party payers, healthcare institutions, and consumers of healthcare; therefore demonstrating its place in occupational therapy practice and education. Interestingly, when examining EBP, its description does contain similar attributes used to describe professional thinking such as reflection and decision-making. This examination of EBP demonstrates that occupational therapy educators and practitioners are both using EBP but not necessarily using the specific terminology to describe it. As noted in the review of literature, the definition of EBP is comprised of many facets, including research, past experiences of the clinician, and the wants and needs of the client. This definition mirrors much how the research participants of the study described professional thinking. Exploring the role of EBP in relation to The Smith Model of Professional Thinking will further solidify findings on this topic.

In summary, this researcher believes the results of this study warrant the need for future research on this topic. Investigating further into the four themes found during data analysis

would assist in furthering the understanding of professional thinking and entry-level occupational therapy. Delving into educational methods that promote professional thinking would substantiate the use of active learning during the education of entry-level occupational therapists. Identifying and creating a method to measure professional thinking and changes in professional thinking in entry-level occupational therapy students would reinforce significance of this behavior in competent entry-level occupational therapy practitioners.

Conclusion

In conclusion, professional thinking is an essential behavior of an occupational therapist. The environment of healthcare today requires that entry-level occupational therapy programs prepare entry-level occupational therapy practitioners with the abilities necessary to provide skilled care to often medically complex clients. Through the literature and thematic analysis, it became clear that occupational therapy educators recognize the significance of providing students active learning opportunities to promote professional thinking during didactic preparation. Still, the profession of occupational therapy remains uncertain about how to describe the type of thinking necessary to be a competent prepared entry-level occupational therapist. Because of this ambiguity in describing how occupational therapists, think there is inability to assess thinking or changes in thinking.

The literature reinforces the qualitative data collected from the research participants, terminology such as clinical reasoning, critical thinking, and reflection are all important components of professional thinking and these concepts are often included when educating entry-level occupational therapists. Educating students using techniques of questioning and role modeling will better prepare students to think professionally. Occupational therapy education and healthcare education recognize the importance of these concepts that describe professional

thinking and recognize the necessity to enforce these concepts during didactic education in order to prepare for entry-level practice. Yet, there is still an ambiguous nature among educators as to what concepts explain professional thinking. Because of the ambiguous nature of the concept of professional thinking or its similar attributes of clinical reasoning, critical thinking or reflective practice, the ability to be objectively identify or measure behaviors indicative of professional thinking remains difficult. This inability to objectify behaviors indicative of professional thinking therefore is making it impossible to measure professional thinking or changes in professional thinking.

Occupational therapy faculty are using active learning including experiential and case-based learning to instill professional thinking and its attributes in students. The literature supports these methods yet is dated and at times difficult to generalize. In reality, entry-level occupational therapy programs are educating students using active learning strategies. Ultimately, most students are successfully completing level two fieldwork and passing the NBCOT exam. Those are both outcome measures for entry-level occupational therapy didactic education; however, summative outcome measures that occur at the end of a program. What if a tool could objectify the behaviors or type of thinking that is expected of an entry-level occupational therapist? Would that potentially improve outcomes, would that not better prepare occupational therapists to practice in the healthcare environment of today? Would that not provide educators and students formative objective feedback throughout a program? This feedback might indicate a student that is struggling to meet criteria required for entry-level practice consequently, allowing opportunities to remediate students or advise students on these shortcomings with professional thinking.

Advances in medicine are a driving force of occupational therapy education: stipulating that educational programs prepare students to practice in a dynamic and evolving environment. Occupational therapy education must continue to strive to better prepare students for entry-level practice, to prepare students for the complex clients and scenarios of healthcare today, and to prepare students to be competent occupational therapy practitioners.

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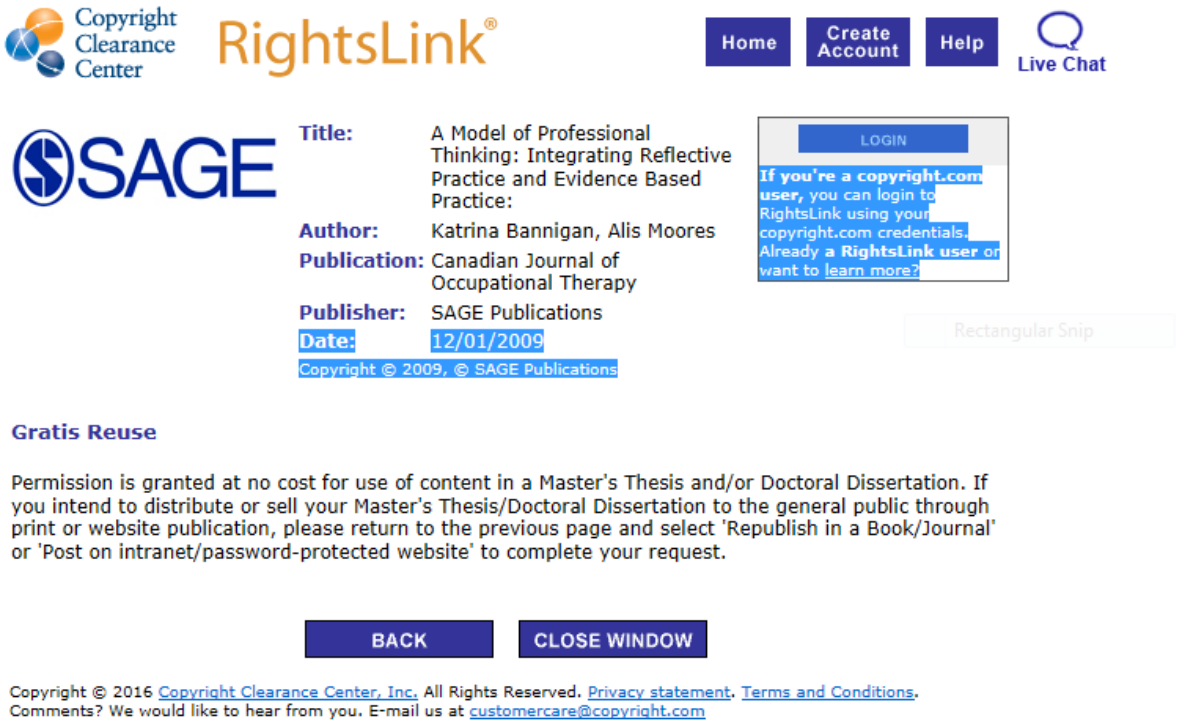
Appendix A: Permission to Use the Model of Professional Thinking



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Author: Katrina Bannigan, Alis Moores
Publication: Canadian Journal of Occupational Therapy
Publisher: SAGE Publications
Date: 12/01/2009
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Appendix B: Email Requesting Participation

Dear_____

I am contacting you regarding an opportunity to participate in an education-based research study titled "Professional Thinking in Occupational Therapy Education: Behaviors Indicative of Entry-Level Professional Thinking". Because of your involvement in academia for occupational therapists, this researcher invites you to participate in a research study seeking to identify behaviors indicative of professional thinking in entry- level healthcare professionals.

This research study **is founded** upon The Model of Professional Thinking created by Bannigan and Moores (2009). This researcher is seeking to identify what are the behaviors occupational therapy educators believe are indicative of professional thinking in entry-level practitioners. The literature has yet to identify these behaviors. Research must first identify the behaviors that comprise professional thinking in order to characterize professional thinking in entry-level occupational therapists.

If you choose to participate in the study, the researcher asks that you will participate in a total time of 60 -90 minutes. First, you will complete an interview on the online meeting platform of WebEx with the primary researcher of this study. WebEx is a free online meeting service that allows for virtual meetings. Second, the researcher will ask you to complete a journaling activity for 20 to 30 minutes after the interview. Your participation is strictly voluntary.

Your participation is highly valued and important for the improved understanding of professional thinking in occupational therapy education. I sincerely hope you will choose to participate; however, your engagement is completely voluntary. To notify the researcher that you are willing to participate or to ask further questions regarding the study, please contact, Mary E. Smith at mesmith@csm.edu . If you choose to participate, please complete and return the attached consent form. Upon receipt, the researcher will contact you to schedule the WebEx interview. Thank you for your consideration regarding participating in this study.

Sincerely,

Mary E. Smith, Ed.D (c), MOT, OTR/L
Doctoral of Education Candidate
College of Saint Mary

Appendix C: Participant Demographic Survey

Complete the demographic survey at the beginning of the interview

1. How many years have you been an occupational therapist?

   1-10 years 11-20 years 21-30 years more than 30 years

2. What type of institution do you work for?

   Private Public

3. What is your highest earned degree? _____?

4. How many years have you been in occupational therapy education?

   Less than 5 5-10 11-16 20-25 26 or more

5. What is your rank at your school?

   Instructor Assistant Professor Associate Professor Professor

6. What is the primary subject that you teach at your institution?

   _____

7. Are you actively instructing students at your institution?

   Yes No

8. How many students are in your program cohorts?

   10-20 21-35 36-50 51-70 71 or more

9. What type of degree(s) do the occupational therapy students you instruct receive at your institution? Choose all that apply.

   MOT MSOT OTD

Appendix D: Semi-Structured Interview Protocol Form

Interview Protocol: Behaviors Indicative of Professional Thinking

Time of interview:

Date:

Place:

Researcher:

Interviewee:

Position of Interviewee:

Initial Questions:

1. To begin with, thank you for agree to participate in this research study. I received your written consent to participate in this research study after the initial contact via e-mail; however, can I get a verbal confirmation of consent to participate in the interview, member check, and reflective journaling piece of this research study?
2. Thank you. Now, I will proceed with the demographic survey for this study. Please stop the interview at any time if you need clarification or break in the interview process.

Interview Questions:

3. I am going to provide you with the definition of professional thinking used in this research study. According to Bannigan and Moores (2009), professional thinking is an integration of evidence-based practice and reflective practice.
    a. In your own words, describe professional thinking.
    b. Probing questions to clarify statements and to allow for further elaboration
4. How you did, you form your understanding of professional thinking? Please describe.

5. What factors in your role as an educator influenced your understanding of professional thinking?
6. How has your understanding of professional thinking changed through your career in healthcare education?
7. Describe behaviors that you see which indicate professional thinking in your students.
8. Describe behaviors that you see that are not indicative of professional thinking.
9. How to you incorporate educational pedagogies into your courses that promote professional thinking?
10. What specific educational pedagogies do you use to promote professional thinking in students?
    a. Why do you use these educational pedagogies?
    b. How do these educational pedagogies help?
11. What methods do you use to assess professional thinking in your students?
12. Do you believe that you see a change in professional thinking in your students throughout the curriculum?
    a. Why do you believe that you see a change?
    b. Describe how you see the change.
13. Is there anything else that you would like to share about the topics discussed during the interview?
14. Thank you for participating in this research study. I am going to provide you with instructions regarding completion of a reflective journal. You will have 20-30 minutes to complete this reflective journal prior to submitting it through WebEx. I want to assure you that your responses will be confidential.

Appendix E: Journaling Activity

You just completed the interview regarding professional thinking. Please take 20-30 minutes and complete a journaling activity over professional thinking. In your own words, why do you feel professional thinking is an important topic to explore in occupational therapy education? Second, what do you feel truly indicates an individual's ability to think as a professional and at an entry-level of competence?

Appendix F: Online Informed Consent

Date:

Title of the Study: **PROFESSIONAL THINKING IN HEALTHCARE EDUCATION:**

BEHAVIORS INDICATIVE OF ENTRY-LEVEL PROFESSIONAL THINKING

IRB # CSM 1615

Dear Occupational Therapy Educator,

You are invited to take part in a research study because you are actively educating entry-level occupational therapy students. The purpose of this study is to describe behaviors indicative of professional thinking in entry-level occupational therapists. This researcher is conducting this research study as part of the requirements of a Doctorate in Education program at College of Saint Mary.

You may receive no direct benefit from participating in this study, but the information gained may helpful to identify behaviors indicative of professional thinking in entry-level occupational therapists.

Should you decide to participate, the researcher is asking you to participate in an interview and journal activity via WebEx for approximately 60 to 90 minutes. WebEx is a free online meeting platform that allows for virtual interviewing. After the interview, you will complete a journaling activity. Your participation is strictly voluntary. Furthermore, your response or decision not to respond will not affect your relationship with College of Saint Mary or any other entity. Please note, the researcher will use your responses for research purposes only and will be strictly confidential. No one at College of Saint Mary will ever associate your individual responses with your name or email address. The researcher may publish the information from this study in journals and presented at professional meetings.

Your e-mail response indicating willingness to participate in this study indicates your consent to participate in the study. You may withdraw at any time by ending the interview. This study does not cost you in any way, except the time spent completing the interview and the post interview reflective journal. There is no compensation or known risk associated with participation.

Please read *The Rights of Research Participants* below. If you have questions about your rights as a research participant, you may contact the College of Saint Mary Institutional Review Board, 7000 Mercy Road, Omaha, NE 68144 (402-399-2400).

Thank you sincerely for considering participation in this important research study. If you have comments, problems or questions about the survey, please contact the researcher(s).

If you are 19 years of age or older and agree to participate in the semi-structured interview please respond to this email stating your consent along with several days of the week and times in which you would be able to participate in a 60-90 minute WebEx interview and journaling activity. The primary researcher will contact you via e-mail to set up a specific date and time.

Sincerely,

Primary Investigator
Mary E. Smith Ed.D(c), MOT, OTR/L
Email: mesmith@csm.edu
402-399-2661

Secondary Investigator
Kristin Haas, OTD, OTR/L
Khaas@csm.edu
402-384-5281

COLLEGE OF SAINT MARY

THE RIGHTS OF RESEARCH PARTICIPANTS*

AS A RESEARCH PARTICIPANT AT COLLEGE OF SAINT MARY YOU HAVE THE RIGHT:

1. TO BE TOLD EVERYTHING YOU NEED TO KNOW ABOUT THE RESEARCH BEFORE YOU ARE ASKED TO DECIDE WHETHER OR NOT TO TAKE PART IN THE RESEARCH STUDY. The research will be explained to you in a way that assures you understand enough to decide whether or not to take part.

2. TO FREELY DECIDE WHETHER OR NOT TO TAKE PART IN THE RESEARCH.

3. TO DECIDE NOT TO BE IN THE RESEARCH, OR TO STOP PARTICIPATING IN THE RESEARCH AT ANY TIME. This will not affect your relationship with the investigator or College of Saint Mary.

4. TO ASK QUESTIONS ABOUT THE RESEARCH AT ANY TIME. The investigator will answer your questions honestly and completely.

5. TO KNOW THAT YOUR SAFETY AND WELFARE WILL ALWAYS COME FIRST. The investigator will display the highest possible degree of skill and care throughout this research. Any risks or discomforts will be minimized as much as possible.

6. TO PRIVACY AND CONFIDENTIALITY. The investigator will treat information about you carefully and will respect your privacy.

7. TO KEEP ALL THE LEGAL RIGHTS THAT YOU HAVE NOW. You are not giving up any of your legal rights by taking part in this research study.

8. TO BE TREATED WITH DIGNITY AND RESPECT AT ALL TIMES.

THE INSTITUTIONAL REVIEW BOARD IS RESPONSIBLE FOR ASSURING THAT YOUR RIGHTS AND WELFARE ARE PROTECTED. IF YOU HAVE ANY QUESTIONS ABOUT YOUR RIGHTS, CONTACT THE INSTITUTIONAL REVIEW BOARD CHAIR AT (402) 399-2400. ***ADAPTED FROM THE UNIVERSITY OF NEBRASKA MEDICAL CENTER, IRB WITH PERMISSION.**

Appendix G: Institutional Review Board Approval Letters

December 16, 2016

Dear Ms. Smith,

Congratulations! The Institutional Review Board at College of Saint Mary has granted approval of your study titled *Professional Thinking in Occupational Therapy Education: Behaviors Indicative of Professional Thinking*

Your CSM research approval number is **CSM 1615**. It is important that you include this research number on all correspondence regarding your study. Approval for your study is effective through January 31, 2018. If your research extends beyond that date, please submit a "Change of Protocol/Extension" form which can be found in Appendix B at the end of the College of Saint Mary Application Guidelines posted on the IRB Community site.

Please submit a closing the study form (Appendix C of the IRB Guidebook) when you have completed your study.

Good luck with your research! If you have any questions or I can assist in any way, please feel free to contact me.

Sincerely,

Vicky Morgan

Dr. Vicky Morgan
Director of Teaching and Learning Center
Chair, Institutional Review Board * irb@csm.edu

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