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Nurse Educators Fostering Critical Thinking in First-Year Students in an Associate Degree Nursing Program

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Abstract

Nurse educators are required to prepare students with the CT skills to solve complex problems, make sound clinical judgments, and decisions in nursing practice. This study explored the strategies used by nurse educators to foster critical thinking in nursing education for first-year nursing students in a community college. The research questions of this study were aligned with Bloom's revised taxonomy, based on the work of Anderson et al. (2001) and Krathwohl (2002), who focused on the learner's cognitive processes that transfer knowledge to a higher level of thinking. The selected method was a qualitative methodology with a phenomenological design. The themes that emerged from the nurse educators' responses related to the students' ability to gather information, assimilate information, and apply it to the patient's situation to problem-solve for solutions. All the nurse educators agreed that the habits of mind (HOM) and critical thinking were important concepts needed for problem-solving. The HOM—confidence, flexibility, intuition, and reflection—were stated as most important and inquisitiveness, perseverance, and open-mindedness were least important. Debriefing clinical experiences, the use of guided questions, small group discussions, case studies, and the knowledge of concepts were the strategies most commonly used in the classroom, skills lab, and clinical. Further, in the skills lab, hands-on demonstration of skills was used to foster critical thinking.

Keywords: critical-thinking, CT skills, CT abilities, problem-solving, clinical judgment, clinical-decision making, higher-order thinking, nursing strategies, creative thinking, nursing process, habits of mind, Bloom's revised taxonomy

Dedication

This dissertation is dedicated to my late mother, Rosa Lean Warren, who encouraged me to strive for excellence and to finish.

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Chapter 1: Introduction

Introduction to the Problem

In 2019, the nursing profession is rapidly changing in a complex healthcare environment. As a result, it is expected that nurses take on a more complex leadership role to promote positive patient outcomes (Chan, 2013; Josephsen, 2014). Nurses care for acute and chronically ill patients and have major roles in health promotion and illness prevention (Crouch, 2015). It is imperative that nurses have the most current knowledge regarding best practices, and the necessary skills to provide safe and effective care (Crouch, 2015; Josephsen, 2014; Sommers, 2018).

Critical thinking is an essential skill needed in nursing practice where decisions are made daily that affect patient survival (Crouch, 2015). Critical thinking has been referred to as an important 21st-century skill and is needed for the advancement of medical technology (Crouch, 2015; Schulz & FitzPatrick, 2016; Shaw, 2014; Sommers, 2018). In addition, nurses need ingenuity and critical thinking (CT) skills to make sound clinical judgments and decisions to provide safe nursing care on a continual basis (Crouch, 2015; Jones, 2013; Josephsen, 2014; Kaddoura, 2013). For this reason, there has been a continual emphasis on CT as a competency at the beginning and at all levels of nursing education, since these skills are developed through experience and practice (Chan, 2013; Kaddoura, 2013; Maneval, Filburn, Deringer; & Lum, 2011; Schulz & FitzPatrick, 2016).

Some educational experts believe CT is the main outcome of higher education (Abrami et al., 2015; Crouch, 2015; Schulz & FitzPatrick, 2016; Tajvidi, Ghiyasvandian, & Salsali, 2014). Phrases such as deep thinking, higher order thinking, creative thinking, complex thinking, and metacognitive thinking are used interchangeably with CT in the literature (Schulz & FitzPatrick,

2016). Furthermore, educational institutions are required to prepare students with CT skills that will enable them to make sound clinical judgments, solve problems, and make appropriate decisions in nursing practice (Josephsen, 2014; Schultz & FitzPatrick, 2016; Yildirim & Ozkahraman, 2011). Students who have CT skills generally have a broader view that leads to advanced thought patterns that formulate breakthroughs in creativity that open the door to CT abilities (Marques, 2012; Schulz & FitzPatrick, 2016). Nurses need the ability to use multiple ways of thinking to develop CT abilities that promote continued learning and innovation (Abrami et al., 2015; Josephsen, 2014; Newton & Moore, 2013). For this reason, nursing education has moved from a traditional-approach based on a specific nursing theory to a curriculum-based approach based on meeting patient standards developed by national accrediting agencies (Crouch, 2015; Josephsen, 2014).

Nursing education programs are now using national accrediting agency curricula and nursing practice competencies that were developed in 2008 (American Association of Colleges of Nurses (AACN), 2008), such as professionalism, professional values, and baccalaureate-generalist standards to organize and develop their curriculum (Crouch, 2015; Josephsen 2014). Also, the National League for Nursing (NLN) Commission for Nurse Education Accreditation (CNEA) has developed standards for the development of nursing professionals to foster quality nursing education and higher education (National League for Nursing, 2016). Therefore, nurse educators are mandated to ensure nursing graduates develop CT skills that include analysis, clinical-reasoning, clinical decision-making, and independent-judgment that are necessary for nursing practice (Crouch, 2015; Schulz & FitzPatrick, 2016). In addition, nursing students will be able to take on more leadership roles that impact patient outcomes, nursing advocacy, and evidenced-based practice (Andreou, Papastavrou, & Merkouris, 2014; Josephsen 2014).

Nurse educators also need to engage in learning environments that create student engagement into reflection and evaluation of complex situations (Jones, 2013; Josephsen, 2014; Stevens, 2015). Creative thinking involves analysis, synthesis, and evaluation and possessing these skills promotes CT (Jones, 2013). Active-learning strategies that can be effective in teaching CT skills in nursing education are case studies, simulations, performance assessments, and problem-based learning techniques (Abrami et al., 2015; Benjamin et al., 2015; Bristol, Hagler, McMillian-Bohler, Wermers, Hatch, & Oermann, 2019; Jones, 2013; Shin et al., 2015; Stevens, 2015; Tedesco-Schneck, 2013). Interactive pedagogies foster accountability and stimulate intellectual discourse between the teacher and the student (Benjamin et al., 2015; Tedesco-Schneck, 2013). Passive-learning techniques, such as traditional lecture and presentations, multiple-choice, and short-answer tests, have proven to have negative effects in terms of developing critical thinking cognitive processes (Benjamin et al., 2015; Fahlberg et al., 2014; Shin et al., 2015; Tedesco-Schneck, 2013).

Background, Context, and History

Background. One of the most widely documented definitions of critical thinking came from the American Philosophical Association (APA) Delphi Report of 1990 (Facione, 1990), which described critical thinking in terms of cognitive skills and affective dispositions:

> Critical thinking is purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanations of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgement is based. CT is essential as a tool of inquiry. . .. The ideal critical thinker is habitually inquisitive, well-informed, trustful of reason, open-minded, flexible, fair-minded in evaluation, honest in facing personal biases, prudent in making judgments, willing to

> reconsider, clear about issues, orderly in complex matters, diligent in seeking relevant information, results, reasonable in the selection of criteria, focused in inquiry, and persistent in seeking results which are as precise as the subject and the circumstances of inquiry permit. (Facione, 2015, p. 26)

Facione's (2006) definition of CT described the ideal critical thinker as one who incorporated expansive thinking that included problem-solving and reflection. In a systematic review of literature conducted by Abrami et al. (2015), nurse educators perceived CT as resolute and independent judgment, which aligned with the Delphi Report of 1990.

Like Facione (2006), Paul (1992) cited a definition of CT that included cognitive characteristics. Paul (1992) argued "CT is self-disciplined, self-directed thinking that exemplifies the perfections of thinking appropriate to a particular mode of thought" (p. 10). Critical thinking has also been referred to as constructive thinking that includes intuition, emotion, and imagination (Thayer-Bacon, 2000). Thayer-Bacon (2000) further maintained that CT is more of a social interaction than skill. CT was further expanded as a means of inquiry and a reflective interactive reasoning process of making a judgment about what to believe or do (Facione, 2015). These definitions from Facione (1990, 2006, 2015), Paul (1992), and Thayer-Bacon (2000) were all non-nursing definitions. A nursing definition of CT is necessary to include components that encompass patient outcomes. Chan's (2013) definition supports this notion.

Chan (2013) described components of CT as a process that included analysis, evaluation, and inference, and then expanded CT to include the ability to collect and search for information, use investigative-inquiry, and problem-solve. Chan's study also found nurse educators regarded students as critical thinkers when they can use critical reflection and anticipate problems before they arise and know what to do when problems arise. Tajvidi, Ghiyasvandian, and Salsali (2014)

argued CT was an acquired ability that is individual and situational. Ricco (2015) agreed with Chan (2013) that students need to engage in transformative thinking that is reflective and includes analysis, evaluation, and inference. In addition, the findings of Abrami et al. (2015) meta-analysis of studies postulated critical thinking as resolute, self-directed judgment that results in analysis with explanation, assessment, and interpretation. Facione's (2015) update supported these findings.

It was the late 1980s when the nursing profession began to examine the relationship between CT and clinical practice and how nurse educators evaluated and achieved CT competence in its curriculum (Fero et al., 2009). In 1992, the National League for Nursing (NLN) and in 1998 the American Association of Colleges of Nursing (AACN, 1998) placed an emphasis on the importance of CT in nursing education. In 1999, The National League for Nursing Accrediting Commission (NLNAC) required the concept of critical thinking to be included as one of the core elements of curricula and used as an outcome to evaluate nursing education (Crouch, 2015; Shin, Jung, Shin, & Kim, 2006; Tajvidi et al.; 2014).

Between, 1995 and 1998, research was conducted by Scheffer and Rubenfeld (2000) to define CT for the nursing profession. A consensus statement of CT was achieved from a diverse group of expert nurses that included the HOM and a list of essential skills needed for CT in nursing. The panel of experts "identified 10 HOM of critical thinking in nursing that included: confidence, contextual perspectives, creativity, flexibility, inquisitiveness, intellectual integrity, intuition, open-mindedness, perseverance, and reflection" (Scheffer & Rubenfeld, 2000, p. 352). Scheffer and Rubenfeld also used the Delphi approach to create a nursing consensus statement on critical thinking that provided the affective (habits of mind) and cognitive (skills) aspects of CT in nursing. The statement reads as follows:

> Critical thinking in nursing is an essential component of professional accountability and quality nursing care. Critical thinkers in nursing exhibit these habits of mind: confidence, contextual perspective, creativity, flexibility, inquisitiveness, intellectual integrity, intuition, open-mindedness, perseverance, and reflection. Critical thinkers in nursing practice the cognitive skills of analyzing, applying standards, discriminating, information seeking, logical reasoning, predicting and transforming knowledge. (Scheffer & Rubenfeld, 2000, p. 357)

The consensus statement by Scheffer and Rubenfeld (2000) asserted both HOM and skills are needed for CT in nursing practice. The findings confirmed the importance of the affective and cognitive components when considering CT in nursing and have implications for nurses in practice, research, and education. Although the consensus statement provides some insight into CT in nursing practice, further testing and validation are needed (Raymond-Seniuk & Profetto-McGrath, 2011). Since the year 2000, there has not been an updated or more recent definition of CT accepted by the nursing profession. Because of the importance of CT in nursing education, the National League for Nursing Accrediting Commission, Inc. (2012) required the concept of CT to be included in the curriculum at all levels of nursing education and to be used as an outcome to evaluate nursing education in baccalaureate nursing programs (Crouch, 2015). Yet, without a nursing specific definition of CT, it is difficult to measure educational outcomes (Raymond-Seniuk & Profetto-McGrath, 2011).

Context. The idea of CT is not clearly understood and there are many definitions (Abrami et al., 2015; Schulz & FitzPatrick, 2016); and there is not a universally accepted definition for the nursing profession (Raymond-Seniuk & Profetto-McGrath, 2011; Tajvidi et al., 2014). Researchers tend to define CT based on their own disciplines (Yildirim & Ozkahraman,

2011). Scholars have found CT to be very difficult to measure; consequently, it has been open to an array of interpretations (Abrami et al., 2015; Raymond-Seniuk & Profetto-McGrath, 2011; Schulz & FitzPatrick, 2016; Tajvidi et al., 2014).

Problem solving, clinical decision making, and creative thinking are often used synonymously with the term CT in the nursing literature (Fero et al., 2009; Tajvidi et al., 2014). Problem solving is focused on identification of the problem and finding solutions; whereas, CT probes into the problem and analyzing solutions that are appropriate for the situation (Fero et al., 2009). However, clinical decision-making focuses attention on the clinical aspect of the problem and not the larger components of the problem (Fero et al., 2009). Critical thinking and clinical decision making should align to produce reasoning and solutions (Fero et al., 2009). Creative thinking involves knowledge and imagery and is a necessary element of the skills needed to be an effective critical thinker (Fero et al., 2009; Jones, 2013). Problem solving, clinical decision making, and creative thinking should not be used synonymously with the term CT in the nursing because the definitions are focused on a specific component of critical thinking and not inclusive of the characteristics of CT needed in nursing practice as defined in the literature.

Critical thinking and clinical judgment in nursing have been described as purposeful, logical, creative, outcome focused, and require constant evaluation and reevaluation to improve patient outcomes (Alfaro-Lefevre, 2009). Alfaro-Lefevre's (2009) definition of CT includes the patient, family, and community needs and consist of logic, intuition, and creativity with strategies that encourages the maximum human potential. This definition is comprehensive and contains essential elements that are aligned with the nursing process that uses the problem-solving and scientific method to promote positive patient outcomes. The Alfaro-Lefevre (2009) definition assumes a solid link among critical thinking, nursing judgment, and clinical-reasoning.

Critical thinking has also been emphasized as a cognitive process that fosters the application of prior knowledge into nursing practice (Raymond-Seniuk & Profetto-McGrath, 2011). In addition, critical thinking has been associated with the nursing process as a scientific problem-solving, step-by-step process, which includes assessment, nursing diagnosis, planning, intervention, and evaluation (Jones, 2013, Su & Osisek, 2011). Critical thinking was further described as a multifaceted, multidisciplinary reasoning process that is reliant on insightful thought and imagination (Yildirim & Ozkahraman, 2011). Chan (2013) maintained the components of CT involved a process that included analysis, evaluation, and inference, and further expanded critical thinking to include the ability to collect and search for information, use investigative inquiry, and problem-solve.

History. In the 1970s, nursing moved from a curriculum based on nursing theory as their conceptual framework, such as Orem's self-care deficit theory (Berbiglia, 2011), to a conceptual framework curriculum, based on a holistic view of nursing concepts that included the environment, person, health, and nursing (Josephsen (2014). Nursing theory models were found to be too generalized and led to nursing curricula based on standards and safety models (Josephsen, 2014). Josephsen (2014) suggested nurse educators should use a comprehensive curriculum that supports the development of nursing students who are empowered through metacognitive practices and self-evaluation. Josephsen's stance included the assumption that these skills are vital to the complexity of modern nursing practice, and further purported that nurses would be able to take on a more comprehensive role of leadership that affect patient outcomes.

The American Association of Colleges of Nursing (AACN) mandated nursing education programs base their curriculum on national accrediting agency curricular standards (American

Association of Colleges of Nursing, 2008). The AACN affirmed decision-making requires thought and is purposeful and involves reflective judgments of analysis, interpretation, and evaluation to engage the critical thinker (Josephsen (2014). These standards placed a requirement on nursing programs to include these cognitive skills and show evidence that students develop reflective and CT skills along with clinical experiences for the professional nurse. The AACN standards for nursing education are focused upon professionalism, qualified standards, and baccalaureate-generalist nursing practice competencies. These nursing practice competencies prepare nurses with the skills and knowledge necessary to practice effectively in the complex and changing environment of healthcare using a curriculum based on critical analysis and thoughtful leadership development, which includes patient advocacy (AACN, 2008). Thus, nurses are expected to be providers of care, coordinate and manage care, and belong to professional nursing organizations (AACN, 2017).

Conceptual Framework for the Problem

Bloom's revised taxonomy (Krathwohl et al., 2002), and Costa's (2008) HOM were used as the conceptual framework for this study. Bloom's revised taxonomy and the HOM integrates the ability of students to use knowledge in a variety of situations and aids in meaningful learning to encourage successful problem solving (Krathwohl et al., 2002; Costa, 2008). Research has shown that the HOM contribute to success and achievement and produce peak performers (Hazard, 2013; Heick, 2012; Raymond-Seniuk & Profetto-McGrath, 2011; Costa, 2008).

Bloom's revised taxonomy. Bloom's revised taxonomy (Krathwohl et al., 2002), was used as a conceptual framework for this study. According to Bloom's revised taxonomy, based on the work of Krathwohl et al. (2002), the ability to use knowledge in a variety of situations aids in meaningful learning by using cognitive processes that support successful problem

solving. The revised taxonomy contains three of the original knowledge categories: factual, conceptual, and procedural knowledge. Krathwohl et al. (2002), added a fourth category: metacognitive knowledge. The metacognitive knowledge category referred to knowledge about cognition (Pintrich, 2002). From the knowledge categories, six cognitive processes were represented in a two-dimensional table: knowledge dimension and the cognitive process dimension. The knowledge dimension was placed on the vertical axis of the table and the horizontal axis formed the cognitive process dimension. The cognitive processes were described as remember, understand, apply, analyze, evaluate, and create with objectives associated with each process (Anderson et al., 2001; Krathwohl, 2002). The cognitive processes were arranged to transfer knowledge from simple to complex, with create as the highest level of thinking (Anderson et al., 2001). The agreement among researchers was that students learn better when they are more knowledgeable about their own thinking (Pintrich, 2002). Accordingly, Bloom's revised taxonomy (Anderson et al., 2001; Krathwohl, 2002) can be a pathway to assist nurse educators in devising instructional strategies to guide students to critically think.

Habits of mind. Costa's (2008) HOM was also used as a conceptual framework for this study. The HOM as described by Costa are what intelligent people do when they are challenged with problems. He listed these behaviors as persisting, managing impulsivity, listening with understanding and empathy, thinking flexibly, thinking about thinking (metacognition), striving for accuracy, questioning and posing problems, applying past knowledge to new situations, thinking and communicating with clarity and precision, gathering data through all senses, creating, imagining and innovating, responding with wonderment and awe, taking responsible risks, finding humor, thinking interdependently, remaining open to continuous learning. Raymond-Seniuk and Profetto-McGrath (2011) contended the HOM include confidence,

flexibility, inquisitiveness, intuition, open-mindedness, perseverance, and reflection. In outcomes-based learning environments, the HOM correlate with Bloom's revised taxonomy of cognitive processes of knowledge, and these processes can be integrated to stimulate critical thinking. Heick (2012), contended HOM lead to success or failure in the mastery of given standards. Johnson (2013), stated students who develop HOM diverge from the traditional style of learning and participate more from an active approach.

Costa and Kallick (2008) suggested the HOM provided guidelines for interaction that results in changing practices that lead to problem-solving and a shared vision. Research has shown that the HOM contribute to success and achievement. Costa (2008) also believed those who possess HOM tend to have characteristics of peak performers (Hazard, 2013; Heick, 2012; Raymond-Seniuk & Profetto-McGrath, 2011). Educators must engage in sincere conversations with students about the habits and behaviors that add to college success and assist in cultivating them.

Statement of the Problem

Critical thinking in nursing requires the nurse to use the thinking process to problem solve and use decision-making skills that generate the greatest outcomes for patients. In addition to creativity and knowledge, critical thinkers have HOM that include self-confidence, flexibility, curiosity, insight, broad-mindedness, persistence, and reflection (Raymond-Seniuk & Profetto-McGrath, 2011). Also, CT has been associated with the nursing process as a scientific problem-solving, step-by-step process, which includes assessment, nursing diagnosis, planning, intervention, and evaluation. Too, nurses use the nursing process to plan care for patients, using analysis, synthesis of facts, and evaluation (Jones, 2013). Though the nursing process is effective in providing a guideline for nursing care, it is described as linear and narrowly focused; whereas,

CT is a multifaceted, cognitive process that includes thoughtful reflection (Josephsen, 2014; Yildirim & Ozkahraman, 2011). Many believe that nurses need various ways of thinking to enable the progression of CT skills (American Association of Colleges of Nursing, 2008; Andreou, Chan, 2013; Crouch, 2015; Papastavrou, & Merkouris, 2014). Josephsen (2014) argued metacognition, along with critical reflection is needed in nursing education to engage students in critical thinking. Critical reflection includes the students' ability to connect internally with their biases and assumptions.

Although many educational strategies have been used to improve CT skills in nursing, research has shown many graduate nurses do not have entry-level CT abilities (Beischel & Davis, 2014; Kammer, Schreiner, Kim, & Denial, 2015; Shin, Sok, Hyun, & Kim, 2015). Active-learning strategies that are student-centered, engage students, and do not include lecture have been found to develop CT skills (Fahlberg, Rice, Muehrer, & Brey, 2014; Marques, 2012; Stevens, 2015; Tedesco-Schneck, 2013). Some examples include case studies (Bristol et al., 2019; Grossman, Krom, & O'Connor, 2010), concept mapping and traditional care plans (Maneval et al., 2011), role playing, and simulation (Shin et al., 2015; Stevens, 2015). Other examples of active-learning strategies include empirical learning, supportive learning, and problem-based learning (Kammer, Schreiner, Kim, & Denial, 2015; L'Ecuyer, Pole, & Leander, 2015; Yu, Charlie, Ho, & Wang, 2015). Thus, for this study, what teaching strategies are effective in fostering CT abilities of first-year nursing students of an associate degree nursing (ADN) program.

Purpose of the Study

The purpose of this phenomenological study was to explore the CT strategies used by community college nurse educators to foster CT abilities of first-year ADN students. The lived

experiences of the nurse educators who have learned and used CT strategies in nursing education were investigated. The information derived from the lived experiences of the nurse educators and their interpretations of those experiences provided exploration in a qualitative study using a phenomenological design. At the start of the 20th-century, Husserl (as cited in Ashworth, 2015) began a rigorous study of consciousness and became known as the founder of phenomenology. Husserl asserted that participants see things as they exist in their personal experience of the phenomenon. Husserl further maintained that investigative inquiry begins with experience and through experience human meanings emerge. The results of this study also sought to examine the common threads of critical thinking that are essential to craft a nursing definition of critical thinking and to identify teaching strategies that are effective in developing CT abilities of first-year nursing students.

Research Questions

The research questions of this study were aligned with Bloom's revised taxonomy, based on the work of Anderson et al. (2001) and Krathwohl (2002), and the HOM, based on the work of Costa (2008). The cognitive processes of *remember, understand, apply, analyze, evaluate, and create* promote the transfer of knowledge at a higher level of thinking. The ability to use knowledge in a variety of situations that encompasses meaningful learning builds on the knowledge and cognitive processes that aid in effective problem-solving, which are essential to CT. Costa (2008) described the HOM as "characteristics of what intelligent people do when they are confronted with problems" (p. 15). Students must have the ability to produce knowledge and know how to act on that knowledge when confronted with problems (Costa & Kallick, 2008). The HOM focus attention on the student's ability to intellectually thrive and can be integrated in Bloom's higher categories of thinking; analyzing, evaluating, and creating and lead to the

abilities needed for critical thinking and problem-solving. Furthermore, the research questions of this study were aligned with Bloom's revised taxonomy and the HOM.

Research question 1. What strategies are used by nurse educators to incorporate the lower-order thinking categories of remembering, understanding, and applying to guide students in CT abilities for first-year associate-degree nursing students? Educators are faced with new challenges in education that require students to have CT skills that will prepare them to care for patients with complex health care issues. Students need a quality education to develop the CT skills needed discover new ways to collect information, transform knowledge, and create meaningful learning opportunities. Teachers must ensure students have a knowledge of content to remember, understand, and apply concepts. In addition, teachers are encouraged to explore alternatives of traditional teaching methods of lecture and power point presentations to methods that enable students to ask questions that promote deeper learning, which stimulate creativity and CT (Cassum & Gul, 2017; Gul et al., 2014). Research has suggested that active-learning strategies (ALS) fosters communication, student engagement, creativity, self-directiveness, and critical thinking. Active-learning strategies actively engage the learner in learning opportunities (Shin et al., 2014).

Research question 2. How do nurse educators promote the CT skills of clinical reasoning and clinical judgment in first-year associate-degree nursing students, using the higher-order thinking categories of analyzing, evaluating and creating? Nurse educators are expected to encourage CT skills through a rich educational experience in an enabling environment that promotes student engagement and meaningful learning (Cassum & Gul, 2017; Gul et al., 2014). For students to meet the multifaceted needs of patients with complex conditions and diagnosis, students need to develop complex-reasoning skills (Gul et al., 2014; Peisachovich, Murtha,

Phillips, & Messinger, 2016). Passive learning approaches have been found to deprive students from having rich learning experiences and reduced levels of stimulation. Therefore, the benefits of engaging students in learning by applying approaches to learning that encourage creativity, reflection, and knowledge acquisition during lecture engage students in active learning and CT skills (Cassum & Gul, 2017; Gul et al., 2014; Peisachovich et al., 2016; Tedesco-Schneck, 2013). Some examples of active learning strategies include case studies (Bowles, 2006; Grossman, Krom, & O'Connor, 2010), concept mapping (Cassum & Gul, 2017; Maneval et al., 2011), role playing (Wang, 2017), problem-solving (Wang, 2017), and simulation (Shin et al., 2015; Stevens, 2015). Other examples of active-learning strategies include reflective-practice (McDonald, Straker, Schlumpf, & Plack, 2014), experiential-learning (Kolb & Kolb, 2005; Shin et al., 2015), cooperative-learning (Cassum & Gul, 2017), and problem-based learning (Cassum & Gul, 2017; Hamdan, Kwan, Khan, Ghafar, & Sihes, 2014; Oja, 2011). Wang (2017) emphasized CT as a skill that consists of analyzing, interpreting, synthesizing, and evaluating, which are all regarded as higher-order thinking skills. Wang also indicated that creative thinking involves the ability to create, invent, and generate new ideas or solutions, which promotes a higher level of thinking.

Research question 3. How do nurse educators incorporate HOM (Costa, 2008) in the curricula to determine the CT abilities of first-year associate-degree nursing students to promote student learning for nursing practice? The HOM can be used in elevating a curriculum by promoting a process for interaction in which individuals share meaning. This meaning can result in creating a shared vision of changing the thinking culture of students and the organization. These behaviors foster more thoughtful interactions and the student's capacity for deeper meaning (Costa & Kallick, 2008). "Thinking becomes the focus of the curriculum, instruction,

and assessment" (Costa & Kallick, 2008, p. 44). Students need to be allowed to "uncover" the curriculum by engaging in discussions that can provide opportunities for students to become more self-directed for their learning. Coaching will be required by teachers to promote higher levels of thinking. In addition, successful instruction occurs when subject matter and the HOM merge together with thinking (Costa & Kallick, 2008). These behaviors, along with CT abilities, are important for nursing students to develop, as they are confronted with multifaceted patient conditions and diagnoses encountered in complex health care systems.

Research question 4. What are the common threads of critical thinking established from the nurse educators' responses and experiences, using the six categories of Bloom's revised taxonomy based on the work of Anderson et al. (2001) and Krathwohl (2002): remembering, understanding, applying, analyzing, evaluating, and creating? The revised taxonomy was comprised of knowledge and cognitive processes that were also placed in hierarchy from simple to complex (Anderson et al., 2001; Krathwohl, 2002). The knowledge category was changed to *remember*, and the comprehension category was changed to *understand*. The four remaining categories were higher level thinking categories: *apply*, *analyze*, and *evaluate*, and the synthesis category was renamed *create* (Krathwohl, 2002). In the revision, *create* was considered the highest category. Create required the ability to generate, plan, and produce a revised structure from the evaluation of the previous structure. These categories represent action verbs from simple to complex and progress from a lower level of thinking to a higher level of thinking. The results of the participants' responses sought to determine the strategies used to foster CT and level of thinking used by first-year nursing students.

Rationale, Relevance, Significance of the Study

Critical thinking is relevant to safe, competent nursing practice, and the concern for patient safety has grown worldwide (Fero et al., 2009). New nurses traditionally begin their nursing careers in acute-care settings where unanticipated events may result in death or serious physical or psychological injury (sentinel event) to patients and the nurses need skills to recognize these events (Fero et al., 2009). According to the Joint Commission (2016), this is when a sentinel event occurs. The Institute of Medicine (IOM) aims for the 21st–century healthcare systems to include providing safe, competent care to patients (*The Future of Nursing*, 2010). As care begins to grow more complex in the acute-care setting, nurses must make critical decisions associated with higher-acuity patients. Nurses must also have skills that will enable them to use more sophisticated technology that require skills in analysis and synthesis (*The Future of Nursing*, 2010). The inability of the nurse to prioritize and use effective decision-making skills may delay patient treatment and result in life-threatening consequences (Kaddoura, 2013).

This research was selected to identify strategies used by educators to foster CT in first-year nursing students. A benefit of the research sought to identify the higher-level skills aligned with Bloom's revised taxonomy (Anderson et al., 2001; Krathwohl, 2002) that demonstrate deeper cognitive processes that CT requires. An additional benefit of the research sought to identify the strategies necessary to foster critical thinking in first-year nursing students. Lastly, the research sought to examine the common threads of critical thinking that are essential to craft a nursing definition of critical thinking.

Definition of Terms

Active-Learning strategies (ALS). This term is defined, according to Shin et al. (2014), as a learning strategy that is student-centered and promotes student active engagement through experiential learning. Bowles (2006) stated ALS are student-centered; engage students; encourage critical thinking; and lecture free.

Bloom's revised taxonomy. This term is defined as Bloom's revised taxonomy (Anderson et al., 2001; Krathwohl, 2002), provides a complex perspective on learning and cognition when using action verbs that promote higher levels of cognitive skills in the role of assessment.

Clinical reasoning. This term is defined as a process in which the nurse collects information about the patient's problem or situation, develops and implements a plan of action, evaluates the outcomes, and reflects on the effectiveness of the outcomes (Josephsen, 2014).

CT abilities. This term is defined according to Chan (2013) as the capacity to gather and seek information; question and investigate; problem-solve and apply theory; analysis, evaluation, and inference. It also includes clinical judgement that is results-oriented (Raymond-Seniuk & Profetto-McGrath, 2011).

Habits of mind. This term is defined according to Costa (2008) as what people do when they are challenged with problems.

Higher-Order thinking. This term is defined as a thinking process that use skills such as "analysis, synthesis, comparison, inference, interpretation, assessment, inductive and deductive reasoning" to find answers, make decisions, and solve problems (Budsankom, Sawangboon, Damrononpanit, & Chuensirimongkol, 2015, p. 2639).

Methods. This term is defined as techniques and procedures that guide in collecting and evaluating data ("Qualitative Research Methods," 2016).

Strategy (active-learning strategies). This term is defined in the context of this study as *active-learning strategies* used for instruction.

Assumptions

The assumptions included in this study were based on the premise of the importance of critical thinking in nursing and the ability of nurse educators to foster CT-abilities in first-year nursing students. Another assumption of this study was the educational ideas of the nurse educators will provide insight into the teaching strategies that are effective to foster CT of first-year RN nursing students**.** There is also an assumption that **c**ritical thinking will enable novice nurses to develop advanced abilities to enter nursing practice to make sound clinical judgments in patient care situations. A major assumption of the study included nursing faculty's teaching strategies using Bloom's revised taxonomy (Anderson et al., 2001; Krathwohl, 2002) will provide a conceptual framework for educating nurses in critical thinking. Finally, the development of a definition of CT for the nursing profession may be extrapolated from the nursing faculty's perception of the necessary abilities that fosters critical thinking.

Delimitations

The study was delimited to the responses of the nursing-educator participants of a single 2-year nursing program. Including only responses from participants from one community college nursing program limited my efforts to collect additional data from other potential nurse educators. The second delimitation was the scope of the study focused on the nursing strategies used to foster CT in first-year nursing students and not students of the entire program. Including responses from students in the first-year only may have limited the deepened responses of the

lived experiences of the participants with students at a higher level of nursing school. According to Creswell and Poth (2018), understanding the common experiences of several individuals would invoke a deeper understanding about the phenomenon.

Limitations

The first limitation of the study was the subjectivity of the participants' descriptions of critical thinking strategies may have limited the strength of the study. The participants might have given biased responses to assuage the researcher. So, the researcher informed the participants that data was being gathered of their lived experiences with CT and that there were no right or wrong answers. Furthermore, the participants were assured that their responses were acceptable regardless of what they said.

The second limitation of the study was that it lacked generalizability, because phenomenological research is not generalizable. This study was conducted in one community college in the state of North Carolina. The study involved identifying CT skills and strategies used to foster CT skills in a single ADN nursing program at one community college. The responses by the participants may have been different by others in other community colleges in the state with an ADN nursing program. Consequently, the lack of generalizability was not a core concern for this study.

The third limitation of the study was the time it took to conduct the study. Interviewing and collecting data from the participants was time consuming for me and was limited to the availability of the participants' schedules. I met with the participants when it was convenient for them with some interviews occurring back to back in the same day. The fourth limitation was that I was the only person collecting the data. Thus, the importance of the research was based on the ability of me to collect and analyze the data. Self-reporting may have affected the

reliability of the research based on how the research was collected and reported. Therefore, I used a coding method to collect data to maintain reliability and validity. The fifth limitation of the study was the limited number of participants in one community college and their descriptions of the definition of critical thinking. The responses of additional participants in other community colleges in the state with an ADN nursing program may have enhanced the contributions of this study.

Summary

Critical thinking is necessary in the nursing profession, and nursing students must have the ability to use higher-order thinking skills to provide safe and effective nursing care to patients. One of the greatest challenges that nurse educators encounter is the development of higher order thinking in nursing students at all levels. Active-learning strategies, such as clinical case studies, student-led presentations, simulations, and collaborative-learning projects have proved to be more effective than lecture in teaching nursing students to promote their CT development. Simulation is an effective learning strategy that improves self-confidence and prepares the student for real-life patient experiences. Nurse educators should be effectively trained in simulation for students to have better outcomes. Passive learning techniques, such as traditional lecture and presentations, have proved to have negative effects in terms of developing CT cognitive processes.

It is vital that nurse educators demonstrate the ability to teach CT skills that are aligned with the higher order thinking of Bloom's revised taxonomy, including analysis, synthesis, evaluation, and creating. These processes will lead to the development of reasoning, decision-making, and independent-judgment abilities relevant to the discipline of nursing. Nurse educators must continue to encourage students to ask questions and create dialogues with their

peers and instructors that will enhance engagement and promote CT. Nurse educators must also create a learning environment that is non-threatening, positive, and encouraging that will promote student engagement and use CT strategies to foster CT-abilities in students. Therefore, it is believed that the interaction between students and instructors promote student engagement and contribute to teaching and learning experiences.

Chapter 2: Literature Review

Introduction to the Literature Review

As healthcare systems are rapidly changing, the role of the nurse has expanded significantly to meet complex needs of more critically ill patients. In addition to patient care, nurses take on proactive roles involved in primary prevention such as such as illness prevention of acute-and-chronically ill patients, and secondary prevention such as health promotion and screenings that control disease progression in patients (Crouch, 2015). Nurses must be able to collect pertinent patient data, analyze data, plan and implement safe and effective care, and evaluate the effectiveness of the care to promote positive patient outcomes. For that reason, CT skills are essential for nurses to become safe, competent practitioners where critical decisions are made in life-and-death situations (Chan, 2013; Crouch, 2015).

Nurse educators should introduce students to critical thinking (CT) early in nursing education and teach using strategies that will promote CT skills in nursing practice (Jones, 2013). The focus of nursing education has changed from teaching critical thinking as a concept in curriculum content to a concept in curriculum outcome with the major emphasis on teaching students to think critically (Crouch, 2015). Teaching CT as a concept in curriculum content denotes teaching CT as a separate course in the curriculum; whereas, teaching CT as a concept in curriculum outcome refers to the ability of student to extrapolate ideas and draw conclusions to affect patient outcomes. Likewise, students should be educated in an environment that promotes engagement in critical reflection and evaluation, which are components necessary for critical thinking (Cassum & Gul, 2017; Chan, 2013; Jones, 2013). Consequently, nursing education supports the critical theory pedagogy where students are empowered to use self-reflection and self-evaluation in nursing practice (Jones, 2013; Josephsen, 2014).

Chapter 2 provides an extensive literature review that was completed for this study. This chapter provides a review of methodological issues of the reviewed research in relation to their study findings and the conceptual framework of Bloom's revised taxonomy based on the work of Anderson et al. (2001) and Krathwohl (2002) that aligns with the study. This chapter also contains an analysis of literature, which will focus on the definition of critical thinking, CT skill attainment, and the strategies used by nurse educators to promote critical thinking in nursing education and preparation.

Conceptual Framework

The conceptual framework for this study comprised of Bloom's revised taxonomy (Anderson et al., 2001; Krathwohl, 2002) and the HOM (Costa, 2008). These conceptual processes were used to guide the research in this study. In a conceptual framework, beliefs are formulated to explain, predict, and understand phenomena. Ideas are also used to challenge and broaden existing knowledge to know why the research is appropriate and rigorous. The conceptual framework is also used to inform research and is influential in creating a compelling argument of why the research is meaningful to the study (Antonenko, 2015).

Bloom's taxonomy of learning domains. Bloom's taxonomy of learning domains was originally created in 1956 to promote higher forms of thinking in academic education rather than just memorizing facts (Bloom et al., 1956). The taxonomy focused on the promotion of higher forms of thinking with the creation of the classification of educational objectives and subject knowledge (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956). The original purpose of the taxonomy was to assist with the construction and evaluation of educational learning. The assumptions of Bloom's taxonomy of learning domains provided the framework for developing higher forms of thinking that guide students to think critically (Anderson et al., 2001).

Bloom's original taxonomy consisted of three learning domains or categories: the cognitive domain, the affective domain, and the psychomotor domain (Bloom et al., 1956). The cognitive domain was the first domain, which focused on intellectual capacity or knowledge. The affective domain focused on feelings, emotions, and behavior or attitude (used synonymously with Bloom). The psychomotor domain focused on manual and physical skills. Bloom intended for one's mastery to occur at each level before progressing to the next to develop a higher level of thinking (Anderson et al., 2001). The taxonomy was revised in 2001 to draw attention to the concept of classification rather than educational objectives in the original taxonomy (Anderson et al., 2001; Armstrong, 2010).

In the original objectives of Bloom's taxonomy, six categories of learning were developed and were ordered from simple to complex (Figure 1). They were *knowledge, comprehension, application, analysis*, *synthesis,* and *evaluation* (Bloom et al., 1956). Evaluation was the highest order of thinking in the taxonomy and remains an important skill for critical thinking (Krathwohl, 2002). The knowledge category refers to the student's ability to recall information such as facts, patterns, and step-by-step processes (Adams, 2015; Armstrong, 2010; Krathwohl, 2002). Knowledge can be assessed through short-answer and multiple-choice questions that require retrieval of learned information. For example, asking students to name the five rights of medication administration is based on rote memorization. Simple recall of information and facts are important knowledge concepts in healthcare; however, using simple recall of information does not demonstrate evidence of comprehension, which is the next category of Bloom's taxonomy (Adams, 2015).

Comprehension refers to paraphrasing, classifying, comparing, and contrasting information in one's own words, with other similar items, or explaining a principle to others

(Adams, 2015). An example would be to interpret meaning from a given client healthcare scenario, statement, treatment, or solution to a problem. In addition to remembering, comprehension requires more thinking and reasoning processing. Learning aims that use comprehension will help learners begin to combine knowledge into their present knowledge by which they understand the world (Adams, 2015). Nursing students need to be able to observe client assessment data and derive solutions to problems by interpreting meaning from the information. This information allows students to use these cognitive skills and techniques through application, which is the third category of Bloom's taxonomy. Application requires the learner to apply acquired knowledge based on the data collected to problem-solve situations in a different way (Adams, 2015). For example, nurses use concept maps to connect knowledge in the application of the nursing process to patient situations (Su, & Osisek, 2011).

Analysis is the next category in Bloom's taxonomy that requires a higher level of thinking (Adams, 2015). This category requires the learner to break down information into parts and form relationships that will enable the learner to draw conclusions. Nursing students need to be able to take the data collected, interpret results of tests and diagnostics to form conclusions to promote positive patient outcomes, and then synthesize the information, which is the next category of Bloom's taxonomy, synthesis (Adams, 2015). Synthesis requires the learner to develop and create plans from the information that has been analyzed (Adams, 2015). Nursing students can use evidenced-based research to guide their practice to promote better client outcomes. For example, ambulating patients early postoperatively will decrease their incidence of having respiratory problems like pneumonia.

Finally, the highest category in Bloom's taxonomy is evaluation, which is an important skill in critical thinking. Evaluation requires the learner to assess the effectiveness of concepts,

judgments, and analysis of information (Adams, 2015; Su, & Osisek, 2011). Nursing students use evaluation to examine the efficacy of the care given to patients and revise or modify the plan of care as needed to promote positive patient outcomes. Students must also incorporate the lower level skills in the taxonomy to master the higher-level skills in the taxonomy (Adams, 2015). Students need to have knowledge of the content to use comprehension of the data collected and application to implement the appropriate interventions to client situations and then analyze and synthesize the various components before evaluating their effectiveness (Adams, 2015). Based on the findings of cognitive science, Bloom's taxonomy was later revised, and the cognitive order of the taxonomy was changed (Anderson et al., 2001). For this study, the revised version of Bloom's taxonomy will serve as the framework, based on the work of Anderson et al. (2001) and Krathwohl (2002).

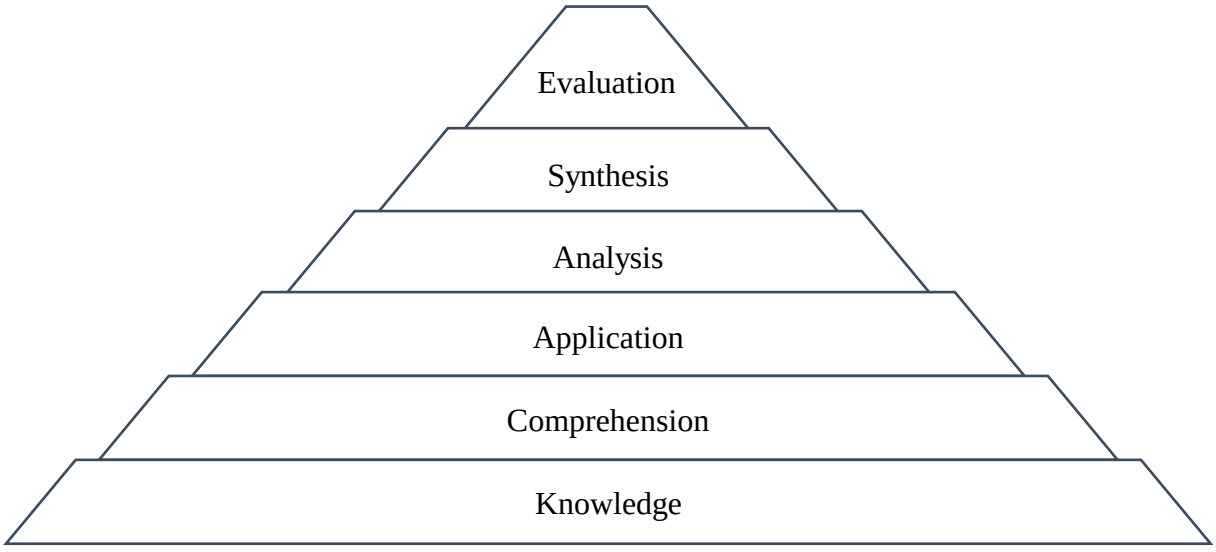


Figure 1. The original taxonomy (Bloom et al., 1956).

Bloom's revised taxonomy based on the work of Anderson et al. (2001) was comprised of knowledge and cognitive processes that were also placed in a hierarchy from simple to

complex (Figure 2). The metacognitive was an added component to the knowledge category in the revised taxonomy. The knowledge category was called *remember* and the comprehension category was called *understand*. The four remaining categories were higher-level thinking categories: *apply, analyze,* and *evaluate,* and the synthesis category was renamed *create* (Anderson et al., 2001; Krathwohl, 2002). In the revision, create was considered the highest category. Create required the ability to generate, plan, and produce a revised structure from the evaluation of the previous structure. For instance, nurses need the ability to use application, analysis, evaluation, and create to develop CT skills to perform as leaders in healthcare today. Furthermore, nurses need to use the lower level thinking categories and the higher-level thinking categories in patient care to solve problems and make sound clinical judgments. As a result, the revised taxonomy was intended to help students learn by promoting knowledge transfer and extending the classification of educational objectives (Anderson et al., 2001; Krathwohl, 2002), whereas, the original taxonomy focused on developing tests for assessing student performance (Su, & Osisek, 2011).

Also, the revised taxonomy included not only attaining knowledge, but also the ability to use knowledge in a variety of situations that encompasses meaningful learning, which builds on the knowledge and cognitive processes that aid in successful problem solving. The cognitive processes of understand, apply, analyze, evaluate, and create promote the transfer of knowledge, which is a higher level of thinking (Anderson et al., 2001; Krathwohl, 2002). Hence, nurse educators can devise instructional strategies to incorporate all six categories of Bloom's taxonomy to guide students to critically think and promote positive patient outcomes (Su & Osisek, 2011; Adams, 2015). Learning activities that require higher levels of cognitive skills

using action verbs leading to deeper learning have proven to be the best in assessing the skills and knowledge taught (Adams, 2015; Krathwohl, 2002).

Bloom's revised taxonomy provided a complex perspective on learning and cognition when using action verbs that promote advanced levels of intellectual skills in the role of assessment. Students can use what they know and understand to apply, analyze, and create solutions and answers to complex problems (Costa, 2008; Krathwohl, 2002)). In addition to creativity and knowledge, critical thinkers have HOM that include self-assurance, flexibility, curiosity, perception, broadmindedness, determination, and reflection (Raymond-Seniuk & Profetto-McGrath, 2011).

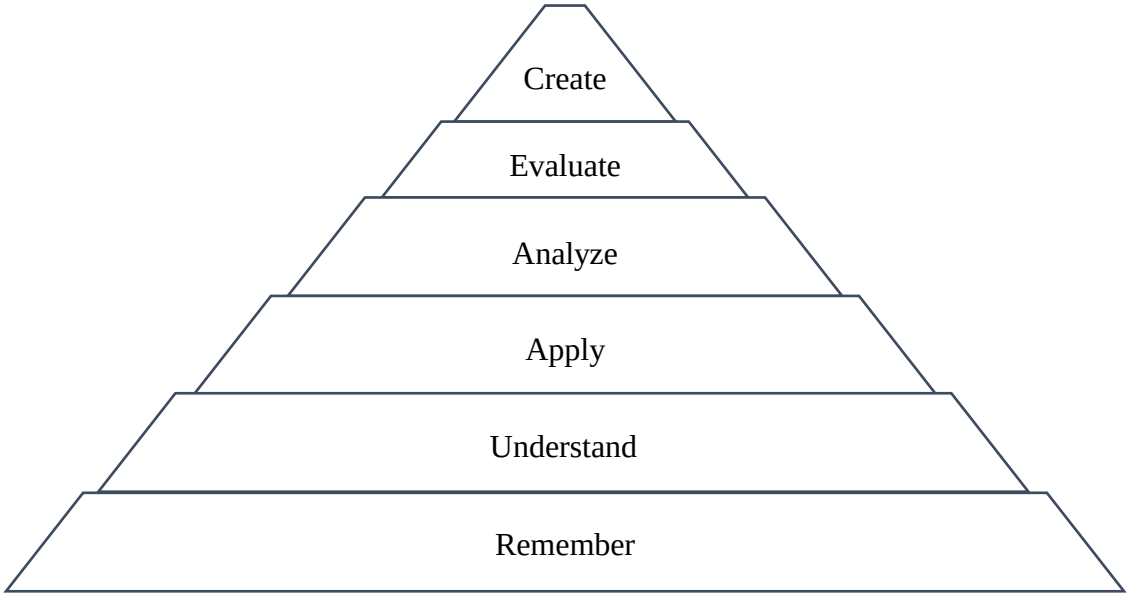


Figure 2. Bloom's revised taxonomy (Krathwohl, 2002).

Habits of mind. Costa (2008) described "Habits of Mind (HOM) as characteristics of what intelligent people do when they are confronted with problems, the resolutions to which they are not immediately apparent" (p. 1). Costa further suggested that HOM lead to productive behaviors and actions. He listed these behaviors as persevering; managing rash behaviors;

listening to understand and with empathy; thinking with deeper meaning, clarity, and reflection; and striving for correctness. In addition, Costa (2008) described HOM as inquisitive; applying prior knowledge to new situations; using all the senses to gather data; constructing; visualizing; transforming; responding with excitement; taking risks; finding humor in difficult situations; and receptive to continuous learning. Costa and Kallick (2008) contended the HOM require an interaction with a group of problem-solvers that builds trust among individuals and facilitate the creation of a shared vision. Having the same vision leads to commitment to behaviors that build a strong learning community. Costa and Kallick (2008) also asserted that if students are treated intelligently, they will become intelligent.

When educators embrace the HOM and incorporate them in the curriculum, thinking becomes the focus of instruction, which Costa and Kallick (2008) stated is a mind shift. When teachers develop a curriculum that focuses on thinking, students will reinforce their aptitude for deeper understanding and more meaningful learning. Students work at a higher level when they develop the HOM and teachers must engage students in higher-level thinking. Likewise, Costa and Kallick (2008) maintained, teachers need to adopt the HOM into the curriculum and use the vocabulary by deliberately structuring questions that require students to reflect on the HOM dispositions and cognitive processes.

In outcomes-based learning environments, the HOM correlate with Bloom's revised taxonomy, and these processes can be integrated to stimulate critical thinking. Heick (2012) contended HOM often lead to educational achievement or could lead to failure when mastering standards if used inappropriately. Heick (2012) further postulated the HOM represents new ways of thinking about how people learn. Johnson (2013) stated students who develop HOM diverge

from the traditional style of learning and participate more from an active approach. Costa (2008) also suggested those who possess HOM tend to be peak performers.

Research has shown that the HOM contribute to success and achievement (Costa, 2008; Hazard, 2013; Heick, 2012; Raymond-Seniuk & Profetto-McGrath, 2011). Costa (2008) suggested the HOM provide guidelines for interaction that result in changing practices that lead to problem-solving and a shared vision. Educators must engage in sincere conversations with students about the habits and behaviors that add to college and work success and assist in cultivating them. The HOM focus attention on the student's ability to intellectually thrive and can be integrated in Bloom's higher categories of thinking (analyzing, evaluating, creating); thus, engendering the abilities needed for critical thinking.

Definitions of critical thinking. Researchers tend to define the concept of critical thinking (CT) based on their own disciplines (Newton & Moore, 2013). Although, there are many definitions of CT in the literature, there is not a universally accepted definition for the nursing profession (Kaddoura, 2013; Newton & Moore, 2013; Raymond-Seniuk, & Profetto-McGrath, 2011; Tajvidi, Ghiyasvandian, & Salsali, 2014). Tajvidi et al. (2014) used the qualitative data collection approach with open-ended questions and an interview guide to analyze and clarify the concept of critical thinking in nursing education. Tajvidi et al. (2014) discovered the importance of and necessity of a definition of CT. Critical thinking was described as an acquired ability that is individual and situational.

Kaddoura's (2013) study discovered that novice nurses defined CT as the nursing process itself. Kaddoura used an exploratory qualitative descriptive design with semistructured interviews to examine the nurses' perceptions of their definition of critical thinking. The participants were a convenience non-probability sample of 16 first-year Bachelor of Science in

Nursing (BSN) graduates hired to work on critical-care units during their first nursing experience. The novice critical-care nurses were all female with an average age of 24.5 years. Most of the participants defined CT like the nursing process that includes assessment, planning, and intervening, while others described critical thinking in harmony with Facione's (2006) definition, which described the ideal critical thinker as one who incorporated expansive thinking that included problem-solving and reflection.

Raymond-Seniuk, and Profetto-McGrath (2011) studied students at various points in their nursing careers. They explored whether CT can be learned in nursing by performing an overview of CT definitions in nursing education and discovered that there are various definitions of CT that are not consistently defined. As nursing is evolving and becoming more complex, one perspective is that nursing is an art and another perspective is that nursing is a science. Raymond-Seniuk and Profetto-McGrath (2011) looked at nursing in terms of basic, applied, or practical science and discovered that practical science uses the same goals of CT to achieve quality patient outcomes. The perspective that nursing is an art focuses on reflection and past experiences to understand problem situations. These perspectives began the discussion of whether CT as a concept can be learned and fostered as an important objective in nursing education. The findings concluded that the goal of CT in nursing education focuses on quality patient care and positive patient outcomes. Furthermore, the study emphasized CT as a cognitive process that fosters the application of prior knowledge into nursing practice

In a systematic review of literature conducted to explore how critical thinking is perceived by nurse educators, Chan (2013) described components of CT as a process that included, analysis, evaluation, and inference and further expanded critical thinking to include the ability to collect and search for information, use investigative inquiry, and problem solve. Chan's

study also found nurse educators regarded students as critical thinkers when they anticipated they can use critical reflection and anticipate problems before they arise and know what to do when problems arise. Critical thinking in nursing requires the nurse to use the thinking process to problem-solve and make decisions that generate the best patient outcomes (Raymond-Seniuk & Profetto-McGrath, 2011). In addition to creativity and knowledge, critical thinkers have HOM that include confidence, flexibility, inquisitiveness, intuition, open-mindedness, perseverance, and reflection (Costa, 2008; Raymond-Seniuk & Profetto-McGrath, 2011). Moreover, Abrami et al (2015) and Facione (2015) maintained CT is resolute, self-directed judgment that results in analysis with explanation, assessment, and interpretation.

Also, CT has been associated with the nursing process as a scientific problem-solving step-by-step process, which includes assessment, nursing diagnosis, planning, intervention, and evaluation. Nurses use the nursing process and creative thought to plan care for patients, using analysis, synthesis of facts, and evaluation (Jones, 2013; Su & Osisek, 2011). Though the nursing process is effective in providing a guideline for nursing care, it is described as linear and narrowly focused; whereas, CT is described as a multifaceted, multidisciplinary reasoning process that is reliant on insightful thought and imagination (Yildirim & Ozkahraman, 2011). Critical thinking and clinical judgment in nursing have been described as purposeful, logical, creative and outcome focused, which require constant evaluation and reevaluation to improve patient outcomes (Alfaro-Lefevre, 2009). This definition is comprehensive and has essential elements that are aligned with the nursing process that uses the problem-solving and scientific method to promote positive patient outcomes. The Alfaro-Lefevre (2009) definition assumes a solid link among critical-thinking, nursing-judgment, and clinical-reasoning. Since nursing students are required to use CT skills in nursing practice to meet the complex demands of today's

healthcare needs, it is plausible that students demonstrate the ability to use clinical reasoning and clinical judgment in patient situations to positively affect patient care and patient outcomes.

Review of Research Literature and Methodological Literature

The review of literature is a critical review of published literature by researchers in the field of study of the current research (Faryadi, 2018). It is a necessary part of the research process as it is related to the findings found in the research and should strengthen the argument about the research (Faryadi, 2018). According to Dr. Neelima Mehta, the review of literature summarizes books, journal articles, and other documents from the past and current position of the information and organizes it into a need for the proposed study (Qais, 2017: p. 34).

Lastly, the published literature should help to outline the purpose of the current research and help to determine if the literature supports the current research (Faryadi, 2018). Thus, the objective of the review of literature will help to discover new knowledge that can be found from the research (Faryadi, 2018).

Some studies have found that there are effective strategies for teaching CT skills at all educational levels and across all disciplines (Abrami et al., 2015; Maneval et al., 2011; Oja, 2011; Shin et al., 2015, Yildirim & Ozkahraman, 2011). Yildirim and Ozkahraman (2011) found a variety of teaching strategies that can support students in increasing CT skills using the nursing process, which focus on assessment of patient data, diagnosis, planning the goals and outcomes, intervening, and evaluation of the effectiveness of the outcomes. These strategies included case studies, decision analysis, high-level thinking skills, debate, and questions. The nursing process is commonly used to provide a pathway to patient care and an evaluation of patient outcomes (Josephsen, 2014; Yildirim & Ozkahraman, 2011).

Shin et al. (2015) examined an active-learning program and its effect on attaining nursing proficiency. The active-learning program incorporated high-fidelity simulation case studies using standardized patients and audio-visual playback, and reflective activities using technology. A descriptive-cross-sectional comparative design was used to compare 147 senior students near graduation and placed in two groups: traditional learning in one group and a group using the active learning strategies. The results suggested the active-learning program helped students to critically think, especially in clinical practice. The students who received simulation and active-learning strategies improved critical-thinking, clinical competence, and clinical judgment. This study supported the positive results of previous studies that examined the effect of active-learning and simulation (Webster & Dibartolo, 2014; Yuan, Williams, & Man, 2014)

Concept mapping has also been used as an effective strategy in improving CT skills. Maneval et al. (2011) conducted a study to determine if concept mapping (CM) was more effective in improving critical thinking than the traditional nursing care plan. Maneval et al. (2011) employed a quasi-experimental design using the NLN critical thinking in clinical nursing practice/PN examination (NLNCT) to measure the students' CT ability to study a class of practical nurse graduates taught with the traditional method using nursing care plans and compared them with graduates who were taught using concept mapping. A Chi square analysis with a two-step process was used to determine the similarity of students demographically and to establish similarity of the TCP group and the CM group. A *t* test was used to determine significance of the exam scores of the TCP group and the CM group. The results found there was no significant difference of the demographics between the two groups. Also, the results found that there was a statistically significance difference in the CT ability of students who were taught

the nursing process with the traditional-care plan method, outscoring the care mapping cohort on the NLNCT exam.

Oja (2011) examined published literature from a systematic review of 6 studies to examine student perceptions for analyzing critical thinking as an outcome, using a problem-based learning (PBL) as an intervention approach. Oja (2011) defined PBL as a student-centered inquiry of instruction that guides students to solve real- world problems through group work and discussion. Five of the six studies examined the effect of PBL on CT skills of undergraduate nurses in the classroom setting and one in the clinical setting. Oja's (2011) research of literature found a relationship between problem-based learning (PBL) and the improvement in critical thinking in pre-licensure nursing students in five of the six studies. Two of the studies suggested PBL improves CT in the clinical setting for beginning nursing students. Concept mapping and the problem-based learning approach yielded the same results, that there is a positive relationship between PBL and CT, as reflected in the literature. However, the author stated there is still a need for stronger study designs and further rigorous testing is needed for prelicensure nursing students in the clinical setting.

Learning styles may also have an impact on the development of critical thinking. Andreou, Papastavrou, and Merkouris. (2014) conducted a literature review of prospective and descriptive correlational studies, using a rating tool of the articles retrieved. Six studies were included in the review. The systematic review researched the connection between learning styles and critical thinking in baccalaureate nursing students. Andreou et al. (2014) found there was a significant relationship between CT development and learning styles and no one learning style was better than another for developing critical thinking. The study concluded that since there is a lack of an accepted CT model, the nature of the relationship between CT and learning styles is

unclear. However, evidence supported that there could be a relationship between learning styles and the elements of CT. Andreou et al. (2014) also noted that further research is needed to fulfill a deeper understanding of learning styles and CT evolution.

While other researchers looked at assessment tools, teaching strategies, and student and teacher perceptions of critical thinking, Josephsen (2014) performed a content analysis of CT in her review of literature to determine the skills needed to fully engage in CT and patient advocacy. Literature was reviewed in relation to the theoretical frameworks for critical thinking that are needed in nursing. Josephsen (2014) further discovered the use of metacognition, constructivism, competency, and critical-theory pedagogies in curricula allow for the development of the essential skills needed for nursing practice. Metacognition includes self-knowledge, self-evaluation, and application of knowledge. Moreover, the author emphasized the use of these metacognitive constructs empowers students to have autonomy and critically think. The capacity to use metacognition practices promotes the constructivist principles in higher education. Constructivism principles are based on the notion that learning occurs as students construct and deconstruct knowledge. Students construct knowledge based on new experiences and deconstruct knowledge based on past self-evaluation. Students learn to connect new knowledge to past experiences and link it to future nursing practice. Students who have this ability are prepared to transfer knowledge in nursing practice with sound clinical judgment and reasoning (Josephsen, 2014).

Josephsen (2014), also emphasized critical theory offered the nursing curriculum a theoretical framework that developed students in critical reflection. Students who are critical thinkers are engaged in the nursing profession that includes ethical activities, advocacy, and health care equity. The author further stressed the importance of the expert nurse having the

ability to reflect on his or her abilities and the resources at hand to make appropriate decisions, thus incorporating the metacognitive in nursing practice. By doing so, the expert nurse is competent to care for complex patients, using clinical reasoning and CT skills. Likewise, the expert nurse uses metacognitive abilities to interpret and evaluate knowledge that is needed for complex problem-solving, which includes sound clinical judgment and critical thinking. Further studies have examined CT analysis of multiple studies to gain a deeper understanding of CT related to instructional growth and CT improvement in student achievement.

Abrami et al. (2015) conducted a meta-analysis of 341 studies that reviewed the impact of instructional growth and improvement of CT skills, dispositions, and student achievement. The review used standardized measures of critical thinking as outcome variables as well as secondary source measures. For example, a measure was conducted to distinguish between critical thinking linked to cognitive skills and affective dispositions and other measured critical thinking using scales such as the Watson-Glaser Critical Thinking Appraisal (WGCTA) created by Watson and Glaser (1980). The results demonstrated that there are effective strategies for teaching CT skills at all educational levels with opportunities for dialogue, exposure of students to situational problems with authentic instruction, and mentorship. Moreover, the researchers found these strategies had a strong positive effect on developing CT skills across all disciplinary areas.

Some educational theorists proclaimed active-learning teaching strategies lead to CT skills (Fahlberg et al., 2014; Marques, 2012; Tedesco-Schneck, 2013). Active learning in the form of interactive teaching/learning techniques have proved to be a better method of learning than lecture, which focuses on recall of information gained from another's thinking. Active learning also enhances the learner's integration of content and concepts (Banfield, Fagan, &

Janes, 2012). Active-learning techniques also promote cognitive processes that lead to higher-level thinking, which leads to higher level of patient care (Fahlberg et al., 2014; Marques, 2012). Some examples of active-learning techniques include case studies, group projects and activities, question-and-answer dialogues between the learners and teachers that probe the student's viewpoint and seek to clarify, explain, and justify. Active-learning strategies also seek to use assessment of higher-order processing and metacognitive knowledge with performance strategies (Jones, 2013). Nurse educators use many of these active-learning strategies to guide students in demonstrating critical thinking in nursing concepts and practice (Fahlberg et al., 2014).

Cassum and Gul (2017) conducted a study on creating enabling environments for student engagement for critical thinking. They asserted a quality education includes CT skills and is enhanced by active learning strategies. Cassum and Gul (2017) further postulated educators need to be creative in presenting strategies that will enable students to be prepared for the emerging changes in healthcare and technology. They maintained educators do not have a full understanding of the meaning of critical thinking and what strategies are used to foster critical thinking in the classroom. The researchers stated that studies have revealed that many educators teach influenced by their own perceptions of what critical thinking is and faculty who teach using active learning strategies demonstrate a better ability to foster critical thinking in student learning. Cassum and Gul (2017) also emphasized teachers need to explore new ways of teaching that will allow students to ask questions and be inquisitive in their thought process.

The study aimed to identify how CT was perceived and practiced among educators in nursing, medicine, and higher education and explored what educational strategies and teaching strategies were used in the classroom to promote CT. Cassum and Gul (2017) used a qualitative descriptive, exploratory design to study faculty from a variety of settings from each of the

disciplines. The study's results revealed an enabling environment encouraged critical thinking. The sub themes that emerged were physical, psychological, and intellectual environments. These environments sought to determine the environments' effectiveness on students' thinking and learning. Cassum and Gul (2017) found that an environment that encouraged students to interact and ask questions with peers and faculty enhanced student engagement and fostered critical thinking. The teaching environments that were strict and quiet had students who were less engaged. Consequently, students who were encouraged to interact, ask questions, and were free to express themselves in teaching environments were more engaged and suitable for promoting CT. Cassum and Gul (2017) further emphasized an environment that was caring, comfortable, and nonthreatening was conducive for reflective thinking, which also promoted critical thinking.

Dickison, Haerling, and Lasater (2017) developed a National Council of State Boards of Nursing-clinical judgment model (NCSBN-CJM) to assist nurse educators teach and measure the ability of nursing students to make sound clinical judgments. The research was designed to "help nurse educators design specific tools for assessing clinical judgment and target specific cognitive operations" (Dickison et al., 2017, p. 72). The study's purpose was to investigate how nurse educators teach and measure clinical judgments with nursing students. Dickison, Haerling, and Lasater (2017) adopted three teaching frameworks for decision-making concepts for pre-licensure students: intuitive-humanistic model (Benner, 1984), dual-processing reasoning theory (Hammond, 1978), and information-processing model (Oppenheimer & Kelso, 2015). These models help by using components of the decision-making process for educators to plan activities for mastery of decision making. Dickison et al. (2017) did not use the nursing process to sanction clinical judgment and reasoning; however, the nursing process includes assessment, nursing diagnosis, planning implementation, and evaluation in its problem-solving technique for guiding

students in professional practice. Dickison et al. (2017) further stated that the nursing process was unsuccessful in incorporating the convolutions of clinical reasoning and the aspects that influenced it and for that reason was not included as a model in the article.

Benner (1984) used the intuitive-humanistic model, which is a theory where the nurse grows in knowledge and skills from novice to expert. The dual-processing reasoning theory (Hammond, 1978) defined clinical judgment as a strategy that lies in a continuum of decision-making intuitive thinking to analytical thinking, depending on the situation. The information-processing model (Oppenheimer & Kelso, 2015), stated decision making should be based on "basic cognitive building blocks" that includes memory, attention, and reasoning and looks at decisions are developed, retrieved, and integrated. This stance implies that nursing judgment is highly correlated with cognition. The results of their study indicated the nurse educators agreed it is difficult to define clinical judgment and which makes it a challenge to teach students to make clinical judgments on behalf of patients. It was also discovered that a valid and reliable method of measuring clinical reasoning is lacking and it makes it difficult to form the development of clinical judgment (Dickison et al., 2017).

And so, the inability to measure the students' capacity to integrate clinical reasoning and clinical judgment in nursing practice remains a challenge for nurse educators (Dickison, Haerling, & Lasater, 2017). Elliott and Oliver (2016) found that faculty who were exposed to professional development improved teacher performance and student learning. Wang (2017) argued that a variety of pedagogical practices should be used in education. Teaching strategies like group discussion, concept mapping, and guided questions are commonly used teaching strategies that are effective in the development of clinical reasoning, clinical judgment, and critical thinking. In a study conducted by Carvalho et al. (2017), the results indicated the nurse

educators have the aptitude to encourage and guide students in the development of clinical reasoning through problem-solving and critical thinking. Carvalho et al. (2017) also emphasized the requirement that nurse educators have the proper training to apply clinical reasoning using various strategies to promote critical thinking. Hence, it is imperative that nurse educators are trained to foster clinical reasoning, clinical judgment, and critical thinking strategies in the curriculum to ensure students are prepared for the demands of complex patients in nursing practice.

Review of Methodological Issues

Of the literature I reviewed regarding the methodological issues related to critical thinking in education, four used the qualitative method to collect data (Crouch, 2015; Kaddoura, 2013; Newton & Moore, 2013; Tajvidi et al., 2014). The qualitative method uses observations, interviews, documents, and audiovisual materials approaches in qualitative research (Creswell, 2013). Two studies researched critical thinking from the quasi-experimental approach, summarizing empirical evidence from a meta-analysis of literature (Abrami et al., 2015; Maneval et al., 2011). Five studies performed literature reviews of studies that related to critical thinking (Andreou et al., 2014; Chan, 2013; Oja, 2011; Raymond-Seniuk & Profetto-McGrath, 2011; Yildirim & Ozkahraman, 2011) by examining strategies of critical thinking, definitions of critical thinking, critical thinking and the nursing process, theoretical frameworks for critical thinking, and a meta-analysis of teaching students to critically think.

The qualitative method of collecting data is research that is focused on the lived experiences of the participants and interpretations are derived from those experiences, which supports the use of interviews in phenomenological research (Creswell, 2014). Phenomenological research describes the lived experiences of the participants, what they have in

common, and how they experience the phenomenon (Creswell, 2014). For this study, the phenomenon is critical thinking and the research is supportive of this methodology. The quasi-experimental approach examines literature as it relates to the phenomenon from a broad perspective where there is no control group or random selection. This type of research design allows researchers to compare groups and is often used when a control group cannot be created (Thyer, 2012). While it is useful in the discussion of the phenomenon, it is not specific to examining the lived experiences of the participants. Literature reviews are important in examining the phenomenon and the research that has been done. It gives the researcher a synopsis of the research done on the phenomenon and can be valuable in examining the research methods and designs as well as the topics of research done related to the phenomenon. For this study, the phenomenological design was best to examine to lived experiences of the participants as it related to the phenomenon, critical thinking.

Chan (2013) explored the concept of critical thinking in a systematic review of 17 studies and explored how critical thinking is perceived in nursing education, using a qualitative methodology. Chan (2013) found multiple perspectives would more effectively capture critical thinking by explaining the concept of critical thinking, the principles of critical thinking, and how critical thinking is learned by students. Although definitions of CT were different, Chan (2013) found commonalities of the components needed in critical thinking in the studies, such as analytical, evaluative, and investigative. The efficacy of teaching strategies was also reviewed, and it was found that the concept of CT in nursing education continues to change. Some of the review studies concluded, in addition to strategies necessary for CT education, the need for barriers to CT should also be explored. Other studies suggested cultural background and attitude of the educators and learners influenced the role of CT in education.

Included in the literature reviews, Andreou et al. (2014) reviewed descriptive studies of the correlation between learning styles and critical thinking in baccalaureate nursing students. Descriptive studies aim at describing the characteristics of the phenomenon and not what has been done with the phenomenon. For example, Andreou et al. (2014) examined the learning styles described as divergers, convergers, accommodators, assimilators, and the concept of critical thinking and discovered there was a significant difference. Andreou et al (2014) asserted most learning styles influence CT and active learning was significant to analytical and inquisitive dispositions.

Josephsen (2014) further reviewed literature in relation to the theoretical frameworks for critical thinking that is needed in nursing. It was discovered that the use of metacognition, constructivism, competency, and critical pedagogies as broad frameworks allows for the development of critical thinking skills that are important in nursing practice. Metacognition is viewed as including self-knowledge, self-evaluation, and applicable knowledge (p. 2). Constructivism is based on the premise that learning occurs as we construct and deconstruct knowledge. Competency is defined as the student's ability develop and cultivate skills or the "know how" of applying those skills to a specific situation. Critical pedagogies refer to the theoretical framework that produce students who are reflexive, aware of their thinking and decision-making processes and includes self-evaluation. Josephsen (2014) maintained these critical pedagogies are important concepts that promote health care equity and leadership in nursing practice. Thus, for this study, the qualitative method with the phenomenological design was used and appropriate to capture the lived experiences of educators in relation to critical thinking and the common teaching strategies used by educators to foster critical thinking abilities in nursing students.

Synthesis of Research Findings

In earlier studies investigating critical thinking and instructional strategies facilitating CT skills, researchers found many strategies that improved critical thinking skills in students. Oja (2011) found that problem-based learning (PBL) improved CT skills when the researcher performed a systematic review of studies using PBL. Banfield, Fagan, and Janes (2012) were successful in inspiring students to solve complex, critical-care problems. They used a team-based learning (TBL) approach, which challenged learners to actively use critical thinking. Yildirim and Ozkahraman (2011) determined that there was no universally accepted definition of critical thinking in nursing; however, there are many definitions of critical thinking in other disciplines (Abrami et al., 2015). Also, Chan (2013) suggested the definition of critical thinking varies; however, the components are the same. Chan (2013) contended the components of critical thinking were the following: gathering and seeking information before decisions could be made; investigation and asking appropriate questions to examine answers for deeper meaning, analysis, and evaluation of information; and inference to synthesize decisions for problem-solving; and application of knowledge as the bigger picture is examined.

Josephsen (2014), concluded that metacognitive skills have been interrelated to clinical reasoning and the development of sound clinical-judgment skills, greater comprehension, and decision-making abilities for student nurses as they transition in practice. Metacognitive skills lead to increased CT abilities. The findings of the study revealed a variety of strategies, such as the nursing process and self- reflective practice can assist students in developing CT skills and may affect students' abilities to apply knowledge. Dickison et al. (2017) did not agree that the nursing process was effective in fostering CT abilities, because they believed the nursing process did not include clinical reasoning and clinical judgment (p. 73). Carvalho et al. (2017) argued

from a different perspective in using the nursing process to foster critical thinking. They believed the nursing process allowed for analyzing nursing interventions and outcomes, because it used an organized systematic process for thinking about patient care, thereby, promoting safe patient care and CT development.

Other researchers, such as (Carvalho, 2017; Maneval et al., 2011, Cassum and Gul, 2017Wang, 2017) found that concept-mapping and the nursing process improved CT skills in nurses. However, students who were taught using the nursing process scored significantly better than those who used concept mapping. In an earlier study, Farrar and Suggs (2010) found computerized patient simulators were the best-practice approach to help students build critical thinking skills. This interactive teaching format enabled the learner mastery of critical thinking skills during the computer case scenarios. Additional researchers found educators who are challenged to empower students to a deeper level of thinking elicit a more reflective response from class discussions and conversations. These interactions lead to active learning and student engagement, which are key components to critical thinking (Andreou et al., 2014; Jones, 2013; Shin et al., 2015; Tedesco-Schneck, 2013; Webster & Dibartolo, 2014; Yuan et al., 2014)

Tajvidi et al. (2014) contended if critical thinking is taught correctly, it will improve the status of nursing, as well as the quality of education. Schulz and Fitzpatrick (2016) agreed with this view and further stated that there is little evidence that critical thinking and higher-order thinking are taught in the schools in Canada. Schulz and Fitzpatrick (2016) also found that teachers were uncertain of what higher-order thinking is and believed they were not prepared to teach or assess it; however, the teachers believed teaching thinking is important and students should be independent thinkers. They stated there should be a conscious effort to teach thinking and that students should be educated and competent in this effort. Thus, research suggest that the

quality of education is dependent upon the efficacy and knowledge of instruction being taught by teachers.

Abrami et al. (2015) demonstrated that there are effective strategies for teaching CT skills at all educational levels with opportunities for dialogue, exposure of students to situational problems and mentoring, and found these strategies had a positive effect on CT skills across all disciplinary areas. Shin, Sok, Hyun, and Kim (2015) also examined active-learning strategies used to help students achieve nursing competency. The researchers found the traditional learning approach with lectures did not yield high performance. Yet, active-learning techniques such as high-fidelity simulation, situation-based case studies, and reflective activities and technology, provided learners with CT skills and abilities. Active-learning techniques demonstrated students attained significantly higher achievements in critical thinking than the traditional-learning approach of lecture-based classes and traditional nursing clinicals of on-the-job training.

From the systematic review of literature of critical thinking, and strategies for teaching critical thinking, the results consistently revealed there are instructional strategies that promote CT abilities in students, but not a clear definition of critical thinking. Furthermore, there is no clear definition of critical thinking for the nursing profession. Few recent studies have been conducted, using the nursing process and clinical reasoning as a concept that leads to the improvement of CT abilities such as, independent judgment with analysis, reasoning, and decision making. For that reason, more studies need to be conducted to foster and evaluate CT skills and abilities in nursing students and to capture the components that make up a clear definition of critical thinking for the nursing profession. Also, nurse educators need professional development competencies that address how they may teach to teach critical thinking to be effective in their teaching practices.

Critique of Previous Research

This section examined the previous research done regarding the concept of critical thinking and how CT is fostered in nursing students to prepare them for the complexities in healthcare and nursing practice. Kaddoura (2013) performed a study that examined the novice nurse as they defined the concept of critical thinking. One of the limitations of Kaddoura's (2013) study was the small sample size of the novice nurse sample. The study did not provide a perception of how other nurses would have defined critical thinking at different levels in the nursing program, which may have hindered the generalization of the findings. Oja (2011) performed a systematic review of six studies to examine student perceptions for analyzing critical thinking, using a problem-based learning approach and presented a few published studies that found a relationship between PBL and the improvement in critical thinking. Oja (2011) discovered PBL is an inquiry-based learning method that guides students to problem-solving through collaborative group work. A limitation of Oja's review of literature was the six articles reviewed, which resulted in a small sample size of nursing students at different levels of education. Consequently, studies need multiple ways to examine the concept of critical thinking and how it is fostered in nursing students.

Chan's (2013), systematic review of 17 studies revealed multiple perspectives of capturing the concept of critical thinking by explaining the concept of CT, the principles of CT, and how CT is learned by students, which revealed an enhanced overview of CT. Some of the studies reviewed by Chan (2013) found other factors that influenced implications for CT such as, the need for barriers to CT should also be explored; cultural background and attitude of the educators and learners; as well as, the student's well-being. It was that educators should be

knowledgeable in teaching CT and skilled in the concept of critical thinking. Hence, a strategy for faculty development should be considered.

A major limitation of Newton and Moore's (2013) research was the use of the Assessment Technologies Institute (ATI) assessment tool to measure critical thinking. It was noted that the ATI resembles other commonly used, non-nursing CT methods (e.g., WGCTA) and thus its comparison to nursing is not known (Newton & Moore, 2013). The exploratory study conducted by Raymond-Seniuk and Profetto-McGrath (2011) revealed the inconsistencies with the definitions of critical thinking and noted that these inconsistencies remain problematic for nursing education. Raymond-Seniuk and Profetto-McGrath (2011) further reported multiple lenses and perspectives are necessary to capture the depth and breadth of the knowledge of nursing (Raymond-Seniuk & Profetto-McGrath, 2011). For this reason, the researchers found it is difficult to operationalize critical thinking in nursing.

The literature reviewed that used the qualitative method to collect data revealed more positive outcomes of the perceptions of what critical thinking is and the strategies that lead to CT abilities in nursing (Crouch, 2015; Tajvidi et al., 2014; Kaddoura, 2013; Newton & Moore, 2013). These authors used observations, interviews, and participant perceptions of critical thinking to collect data. It was also observed in the literature that instructional strategies such as traditional care plans, critical thinking appraisals, and instructional strategies had a significant impact on improving CT ability (Cassum & Gul, 2017; Carvalho, 2017; Dickison et al., 2017; Wang, 2017; Schulz and Fitzpatrick, 2016; Abrami et al., 2015; Crouch, 2015; Maneval et al., 2011).

Summary

The nursing profession is ever changing and as the acuity of patients increases, the role of the nurse in healthcare has taken on a new image of leadership, advocacy, and improved patient outcomes. As the discipline of nursing has evolved, the curricular structure of nursing education programs has placed more importance on meeting curricular content principles developed by national accrediting agencies (Josephsen, 2014). According to the American Association of Colleges of Nurses (AACN, 2008), nursing education programs are using these standards to develop educational curricula. These standards are focused on curricular content such as competence, specialized values, and nurse practice competencies (Josephsen, 2014).

The goal of nursing care is holistic and comprehensive and requires a higher level of thinking to meet patient outcomes. Critical thinking is necessary in the nursing profession and nursing students must be able to use CT skills to provide safe and effective nursing care to clients (Carvalho et al., 2017; Dickison et al., 2017; Crouch, 2015). Nurse educators are required to demonstrate that students are developing CT skills that include independent judgment with analysis, reasoning, and decision-making applicable to the discipline of nursing (Carvalho et al., 2017; Cassum &Gul, 2017; Dickison et al., 2017; Crouch, 2015).

Bloom's revised taxonomy, based on the work of Anderson et al. (2001) and Krathwohl (2002) and HOM, based on the work of Costa (2008) was used as the conceptual framework for this study. In the revised taxonomy, knowledge is the basis of the six cognitive processes, and a separate taxonomy was created to include the types of knowledge used in cognition. They were described as factual, conceptual, procedural, and metacognitive knowledge. The categories were *remember, understand, apply, analyze, evaluate, and create* and move from simple to complex (Krathwohl, 2002). These cognitive processes are essential to problem-solving and applying

clinical reasoning to patient situations. Students also need to employ the HOM to have the skills necessary to problem-solve and critically think. Costa (2008) described HOM as productive behaviors and actions that intellectual people exhibit when they are threatened with problems.

In addition, research has shown the impact of instructional development and enhancement of critical thinking skills (Cassum & Gul, 2017; Fahlberg et al., 2014; Marques, 2012; Tedesco-Schneck, 2013 Wang, 2017). Some educational theorists proclaimed active-learning teaching strategies lead to CT skills for all students (Cassum & Gul, 2017; Fahlberg et al., 2014; Marques, 2012; Tedesco-Schneck, 2013). Active-learning techniques promote learner engagement and cognitive processes that lead to higher thinking (Banfield et al., 2012; Cassum & Gul, 2017; Marques, 2012). For my study, a qualitative study was used to determine the strategies used to assess CT skills in first-year associate-degree nursing students.

Based on this review of literature, a conceptual framework using Bloom's revised taxonomy (Anderson et al., 2001; Krathwohl, 2002), and the active-learning approach was used to address critical thinking in the community-college setting. There was enough reason for conducting an inquiry examining the influence of instructional strategies for critical thinking that would produce significant findings to the profession of nursing. Therefore, an assertion can be made that the literature review has provided support for pursuing a research project to answer the following research questions: What is the nature of critical thinking? How do instructional strategies influence critical thinking? And, how does HOM influence critical thinking regarding student learning and nursing practice?

Chapter 3: Methodology

Introduction

The purpose of this phenomenological study was to explore the CT strategies used by nurse educators to foster the CT abilities of ADN students at a 2-year college. I investigated the lived experiences of the nurse educators who have learned and used CT strategies in nursing education. The information derived from the lived experiences of the nurse educators and their interpretations of those experiences provided exploration in a qualitative study, using a phenomenological design. This study used two conceptual frameworks: Bloom's revised taxonomy, based on the work of Anderson et al. (2001) and Krathwohl (2002), and the HOM, based on the work of Costa (2008).

According to Bloom's revised taxonomy, as revised further by Krathwohl (2002), knowledge can be interpreted in a variety of situations which includes meaningful learning. Meaningful learning builds on knowledge and cognitive processes that aid in successful problem solving. The cognitive processes of remember, understand, apply, analyze, evaluate, and create promote the transfer of knowledge. In the revised taxonomy, the cognitive processes were arranged from simple to complex, with create as the highest level of thinking (Anderson et al., 2001; Krathwohl, 2002). In the revised taxonomy, metacognitive knowledge was added and includes knowledge about one's own cognition and the awareness of one's own thinking. These cognitive processes can be used by teachers to assess knowledge and thinking through action by requiring students to learn through demonstrations that are observed and measured (Pintrich, 2002).

Costa (2008) described "HOM as characteristics of what intelligent people do when they are confronted with problems" (p. 1). He described these behaviors as persevering; managing

rash behaviors; listening to understand and with empathy; thinking with deeper meaning, clarity, and reflection; and striving for correctness; inquisitive; applying prior knowledge to new situations; using all the senses to gather data; constructing, visualizing, transforming; responding with excitement; taking risks; finding humor in difficult situations; and receptive to continuous learning (Costa, 2008). Teachers should have conversations with students about the behaviors, habits, and attitudes that are needed for successful academic performance and practice. Teachers must also be able to cultivate the HOM for academic success and achievement (Hazard, 2013). Costa (2008) further contended the HOM lead to productive behaviors and actions.

This chapter describes the phenomenological research design and issues related to its application, the research questions that are aligned with the conceptual framework of Bloom's revised taxonomy based on the work of Anderson et al. (2001) and Krathwohl (2002), and the HOM based on the work of Costa (2008), along with the purpose and the design of the study. This chapter includes a discussion of the research population and the sampling methods used. After the sampling methods are the methodological specifics of the study that contain the instrumentation of the data collection, the attributes, data analysis procedures, and the limitations and delimitations of the research design are included. Next the validation and the expected findings are provided along with the ethical issues of the study. This chapter concludes with a summary of the methodology used in this study.

Research Questions

The research questions of this study were aligned with Bloom's revised taxonomy and the HOM where meaningful learning occurs and builds on the knowledge, cognitive processes, and behaviors that aid in successful problem-solving. Moreover, nurse educators can use this framework in devising instructional strategies to guide students to critical think in nursing

practice. The significance of the questions of this study were created based the phenomenological approach that prompted individuals who have experienced the phenomenon to describe the meaning of the phenomenon (Ashworth, 2015). In this study, the phenomenon was critical thinking. The study participants were nurse educators who answered the questions to capture their lived experiences with critical thinking as it related to the strategies used to foster critical thinking in first-year nursing students. The central questions in this study were the following:

RQ1. What strategies are used by nurse educators to incorporate the lower-order thinking categories of remembering, understanding, and applying to guide students in CT abilities for first-year associate-degree nursing students?

RQ2. How do nurse educators promote the CT skills of clinical-reasoning and clinical-judgment in first-year associate-degree nursing students using the higher-order thinking categories of analyzing, evaluating and creating?

RQ3. How do nurse educators incorporate HOM in the curricula to determine the CT abilities of first-year associate-degree nursing students to promote student learning for nursing practice?

RQ4. What are the common threads of critical thinking established from the nurse educators' responses and experiences, using the six categories of Bloom's revised taxonomy based on the work of Anderson et al. (2001) and Krathwohl (2002), remembering, understanding, applying, analyzing, evaluating, and creating?

Purpose and Design of the Study

The purpose of this study was to explore the CT abilities and the strategies used by nurse educators to foster critical thinking of first year ADN students in a 2-year college. The results

sought to examine the common threads of critical thinking that are essential to craft a nursing definition of critical thinking. Also, the results sought to examine the strategies used by nurse educators to integrate Bloom's revised taxonomy and the HOM into critical thinking.

The selected method was a qualitative methodology with a phenomenological design. The researcher of the phenomenological design may use a combination of methods to collect data; such as conducting interviews, watching videos, visiting places and events, or reading documents to understand the meaning of the phenomenon to be examined (Creswell, 2013). I used interviews, with notetaking and audiotaping to collect data for this study. This research design was selected because the phenomenological design describes how participants' experience a concept or a phenomenon and the experiences they have in common (Creswell, 2013). Husserl (as cited in Ashworth, 2015) asserted that participants see things as they exist in their personal experience of the phenomenon. Husserl maintained that investigative inquiry begins with experience and through experience human meanings emerge. Thus, the phenomenological design investigates inquiry of the participant's lived experiences of the concept or the phenomenon (Creswell, 2013, Tedesco-Schneck, 2013).

For this study, I collected data by conducting semistructured interviews of the participants. The data were collected from the participants' responses and the essence of the participants' experience was gathered in a summative form to identify the common threads and describe what and how it was experienced. The responses were coded for each question in the same order from the participants and logged into a table for evaluation. I used epoche or bracketing by setting aside my own experiences with the phenomenon of critical thinking to gain a fresh perspective of the phenomenon from the participant's responses. The researcher must set aside one's experiences as much as possible to examine a different perspective of the

phenomenon (Creswell & Poth, 2018). The findings of the study may have provided more understanding of the phenomenon of CT abilities of first year ADN nursing students and the strategies used to foster critical thinking. The phenomenon in this study was the strategies used by nurse educators to foster critical thinking in first-year associate-degree nursing students in a community college.

Research Population and Sampling Method

The study's demographic profile targeted nursing education in the community-college setting. The research population were nurse educators in a 2-year ADN program at a community college. A convenience sample of 20 nurse educators who have previously taught or who were teaching the ADN students at the time of the study were included in the study. A convenience sample was used because it consisted of subjects that were conveniently available to participate in the study (Creswell & Poth, 2018). Of the 20 educators in the nursing program, two were working in the capacity of nursing leadership, with some instructional responsibilities. Of the remaining educators, 15 regularly taught in the ADN program and three in the licensed practical (LPN) nursing program. The total years of nursing experience among all the nurse educators ranged from 5–46 years in all areas of nursing practice. The total years of nursing education experience represented among the faculty ranged from 3–40 years. There were one male participant and 19 female participants solicited to participate in the study. Of the 20 participants asked, 14 met the criteria and agreed to participate in the study one participant had never taught first-year students and five participants declined to participate without giving a reason.

Instrumentation

The qualitative approach using interviews is effective in generalizing themes and commonalities of the participants' experiences. In a study conducted by Elliott and Oliver

(2016), data were collected using interviews to determine the relationship of faculty professional development to community-college student achievement. Sixty-minute semistructured face-to-face interviews were conducted to determine what teaching strategies were used to enhance student learning outcomes. All interviews were audio taped, transcribed, received, and reviewed by the participants for accuracy. The data were analyzed twice to identify units of data for coding and integrated into themes. Reliability was enhanced by printing the interview questions on rating cards to ensure procedure protocols were followed. Also, a detailed description and explanation of the methods, procedures and protocols were used and enhanced data reliability. The analysis of the transcripts of the faculty resulted in the emergence of three themes that focused around faculty development and its importance to student learning. Elliott and Oliver's (2016) study aligns with my study, using the qualitative approach with interviews to collect data to identify common themes and commonalities of the strategies used among nurse educators to foster CT in first-year nursing students.

As the researcher, I developed a list of questions (see Appendix A) for the participants' interviews that are in alignment with the cognitive processes of Bloom's revised taxonomy, based on the work of Anderson et al. (2001) and Krathwohl (2002). The revised taxonomy was intended as a measurement tool to help teachers teach and engage learners in higher-order thinking (Anderson & Krathwohl, 2001; Krathwohl, 2002). Consequently, nurse educators answered the face-to-face interview questions and shared their experiences of using strategies in education that incorporated the cognitive processes of remembering, understanding, applying, analyzing, evaluating and creating, of Bloom's revised taxonomy based on the work of Anderson et al. (2001) and Krathwohl (2002), and the HOM based on the work of Costa (2008) to guide students to critically think. Costa (2008) described the HOM as behaviors of what intelligent

people do when they are confronted with problems, such as persevering, managing rash behaviors, listening to understand and with empathy, thinking with deeper meaning, clarity, and reflection, striving for correctness, and taking risks.

Data Collection

Interviewing is the most common form of data collection in qualitative research, specifically interviewing individuals who have experienced the phenomenon (Jamshed, 2014; Creswell, 2013). All the nurse educators in a community college who have previously taught and who were teaching the ADN students at the time of the study were recruited for an interview by the researcher. The participants were notified by e-mail of the study and asked to participate. The participants could decline or opt out of the study. A standardized open-ended qualitative, face-to-face interview with each participant was conducted for a duration of 30 minutes to one hour. The participants gave lengthy answers. Generally, semistructured interviews are completed in less than one hour (Jamshed, 2014). The participants were given a list of the definitions of the descriptive words, a scale of the cognitive processes of Bloom's revised taxonomy (Anderson & Krathwohl, 2001), and a list of the behaviors that describe the HOM (Costa, 2008), prior to the interview, for their review and reference. This step gave time to the participants to process the information.

For this study, the interview session consisted of asking each participant the same 10 questions. The questions were asked in the same order without flexibility in the wording. I gave clarifications of questions to the participants when requested and follow-up questions were asked of the participants when further explanations of their answers were indicated. The interview questions were semistructured as used in the study conducted by Barnett and Francis (2012). The interview questions in Appendix A were used in this study. I conducted one-on-one

semistructured interviews privately with each participant and data were collected to answer the research questions. Private interviews enable participants to share ideas and respond to the questions without hesitation while considering the other participants' responses (Creswell, 2013; Jamshed, 2014; Yin, 2009). I inscribed handwritten notes during the interviews and the interviews were recorded with a digital audio tape recorder to effectively capture the data. To avoid missing key points, recording the interviews made it easier for me to focus on the interview content and aided in transcribing verbatim responses (Jamshed, 2014; Ashworth, 2015).

The semistructured interview questions were open-ended and sought to capture the phenomenon of strategies used by participants to foster CT abilities in first-year ADN students. Using open-ended questions encouraged participants to offer great amounts of information and did not limit or direct the participants' answers (Adams & Lawrence, 2015; Creswell, 2013; Jamshed, 2014). The participants' responses answered the research questions, based on the conceptual framework using Bloom's revised taxonomy (Anderson et al., 2001; Krathwohl, 2002) and the HOM based on the work of Costa (2008). In addition, the interview questions were written to elicit critical thinking from a lower-order thinking to a higher-order thinking of what the learner can do because of instruction. A higher level of cognitive skills leads to deeper learning and cognitive processes that promote CT and clinical judgment (Adams, 2015). The HOM are also used to elicit responses to complex problems (Costa, 2008).

In a study conducted by Barnett and Francis (2012), the use of higher-order thinking questions to foster critical thinking in a classroom study was examined. The students were given questions that warranted examination and revisions of ideas to find meaning and relationships. The questions were asked to determine the student's ability to develop critical thinking, using

higher-order cognitive processes. The study found quizzes that included higher order thinking questions encouraged students to think more deeply about the subject matter and led to their further review and thinking. The questions were embedded within the subject-matter instruction and provided details for the cognitive processes to emerge, for example, using writing tasks in which thinking was required. Consequently, it was believed that higher-order thinking questions were most effective in fostering critical-thinking.

Identification of Attributes

The attributes that defined this study were Bloom's revised taxonomy (Krathwohl, 2002); clinical-reasoning, CT abilities, HOM, active-learning strategies, and higher-order thinking. Bloom's revised taxonomy (Anderson et al., 2001; Krathwohl, 2002), served as the conceptual framework for the study and is comprised of the knowledge and the cognitive domains for learning. The six cognitive processes were arranged to transfer knowledge from simple to complex; *remember, understand, apply, analyze, evaluate,* and *create* as the highest level of thinking (Anderson et al., 2001; Krathwohl, 2002). The taxonomy provided a context for determining and clarifying learning objectives. Learning objectives involved both lower-order thinking skills and higher-order thinking skills, mixed with abstract and concrete knowledge (Anderson et al., 2001; Krathwohl, 2002).

Clinical reasoning, clinical judgment, higher-order thinking, creative thinking and problem-solving are often used synonymously to describe critical thinking that is needed for good decision-making (Fero et al., 2009; Tajvidi et al., 2014). Clinical reasoning refers to a process in which the nurse collects information about the patient's problem or situation, develops and implements a plan of action, evaluates the outcomes and reflects on the effectiveness of the outcomes (Josephsen, 2014). Dickison et al. (2016) described clinical judgment based on the

information processing framework that proposed a process for clinicians to use decision-making that involves recognizing cues, generating and judging hypotheses, acting and evaluating outcomes. Oppenheimer and Kelso (2015) stated that since memory and causal reasoning are best understood and developed based on how decisions are integrated, it implies that clinical judgment is interrelated with cognition. Wang (2017) provided a distinction among higher-order thinking, creative thinking, and problem-solving. Wang (2017) stated higher-order thinking occurs when there is critical thinking, creative thinking, and problem-solving. It involves scrutinizing arguments, distinguishing relevant information, analysis in problem-solving, developing solutions and asking clarification questions. Problem-solving includes both critical and creative thinking (Wang, 2017).

The HOM are essential to developing critical thinkers. Scheffer and Rubenfeld (2000) asserted, both HOM and cognitive skills are needed for CT in nursing practice. These findings confirmed the importance of the affective and cognitive components when considering CT in nursing. Costa (2008) described HOM as what people do when they are challenged with problems. In addition to creativity and knowledge, critical thinkers have HOM that include self-confidence, flexibility, curiosity, insight, broad-mindedness, persistence, and reflection (Raymond-Seniuk & Profetto-McGrath, 2011). Nurse educators also need to engage in learning environments that create student engagement into reflection and evaluation of complex situations (Jones, 2013; Josephsen, 2014).

Active-learning strategies are student-centered, engage students, encourage critical thinking and do not include lecture (Tedesco-Schneck, 2013). When creative-thinking is used with active-learning strategies, it involves analysis, synthesis, and evaluation, and possessing these skills promotes critical thinking (Jones, 2013). Some examples of active-learning strategies

that can be effective in teaching CT skills in nursing education are case studies (Bowles, 2006; Grossman, Krom, & O'Connor, 2010), role playing and simulations (Shin et al., 2015), performance assessments, concept-mapping (Maneval et al., 2011), and problem-based learning techniques (Abrami et al., 2015; Benjamin et al., 2015; Jones, 2013; Tedesco-Schneck, 2013). Other examples of active-learning strategies include reflective practice (McDonald, Straker, Schlumpf, & Plack, 2014) experiential-learning (Kolb & Kolb, 2005; Shin et al., 2015), cooperative-learning, and problem-based learning (Oja, 2011).

Data Analysis Procedures

The research questions guided the flow of the data to be analyzed. I coded and analyzed the data to find common themes identified from the interviews. Coding is a way of mapping data to generate an overview of the data to understand the responses to the research questions (Elliott, 2018). Since qualitative data analysis is an interpretative process, there are different types of codes used to interpret the data (Biddix, 2009; Elliott, 2018). I used a priori coding, open coding, and axial coding in the analysis of the data. A priori coding is where the researcher uses exiting criteria to code responses (Biddix, 2009). An example of a priori used in this study is the cognitive processes of Bloom's revised taxonomy based on the work of Krathwohl (2002) and the HOM (Costa, 2008). Open coding is when the researcher looks at distinct concepts and categories from the participants' responses to break down the data into headings (Biddix, 2009). Axial coding comes after open coding to re-read the responses to determine additional themes and categories from the participants' responses (Biddix, 2009).

A report of the experiences from the participants were generated, listing each participant's answers in a table. The data were triangulated, using multiple collection processes. As the researcher, I recorded participants' responses, and used an audio recorder, as well. I

provided each participant with a copy of his or her responses and participants were able to make any corrections or deletions within the interview transcript before the interview was coded and used as collected data.

The process in completing the interviews included steps supporting qualitative data analysis, as suggested by Creswell (2013), who recommended six steps in the analysis. The first step involved preparing the data for analysis, including transcription, and organizing texts into files. In the second step, reading of all data in its entirety took place to obtain a generalized sense and understanding of the data. The use of memos in the margins of the transcripts helped me to explore the key concepts that occurred. The third step involved organizing material into a database and using a spreadsheet to describe the personal experiences through epoché or without judgment (Creswell, 2013). Also, the materials consisted of the essence of the phenomenon with topics and themes. The fourth step included developing significant participants' statements into meaningful units. The fifth step involved interpretation of the data by the experience of the participants and the essence of the phenomenon, followed by the sixth step that displayed the overall results in tables, figures, and discussions. The data were coded by assigning the participants a letter of the alphabet to protect their confidentiality and the responses were entered on the spreadsheet.

Researchers use triangulation as a method to ensure that the responses from the interview are comprehensive and well developed. Triangulation of information also provides validity to the researcher's findings because evidence is obtained from different sources of data (Creswell, 2013). For the purpose of this study, triangulation of sources was used to ensure the responses are impartial. Triangulation occurred in three ways. A digital audio tape recorder was used during each participant's interview to record responses. Notes were also transcribed by me to capture

the responses of the interview from the participants. According to Creswell (2013), writing out the responses will enable the researcher to have interview notes in case of malfunction of the digital audio tape recorder. Based on the participants' responses, I asked the participants additional questions that I may not have thought to ask, for clarification to provide discovery of new information. According to Adams and Lawrence (2015), the use of detailed descriptions provides discovery of new information that the researcher may not have thought to ask. I sent a copy of the transcript via e-mail of the interview session to each participant to confirm that the responses corresponded with what the participant said, as a source of member checking.

Limitations of the Research Design

The study had several limitations. The analysis was limited to one community college's nurse educators. The number of structured interviews may be a limitation if fewer than 10 of the participants do not agree to participate in the study (Creswell, 2013). The variety of nursing education experiences of the participants may have influenced the answers. Nurses at the LPN and the RN level have a different scope of practice related to implementing the plan of care for clients and may view the ability to critically think with less importance for the LPN who has less autonomy in patient care (LPN Scope of Practice, n.d; RN Scope of Practice, n.d.). The RN scope of practice is comprehensive and the RN functions at an independent level. The RN has the responsibility of using the nursing process to develop and manage the plan of care for the patient. The LPN scope of practice functions at a dependent level in which the RN supervision is required. The LPN participate in the plan of care using the nursing process, making suggestions and collaborating with the RN as needed (LPN Scope of Practice, n.d; RN Scope of Practice, n.d.).

Another limitation of a qualitative study with a phenomenological design may be the epoché or bracketing that the researcher may have about the phenomenon. The researcher must set aside one's experiences as much as possible to examine a different perspective of the phenomenon (Creswell, 2013). Interviews are subject to interviewer bias, in which the interviewer's verbal and nonverbal responses to the participants' answers may change how the participants answer subsequent questions. The researcher must be objective and watch the participants' body language, facial expressions, and verbal responses, such as nodding the head and comments during the interview session (Adams & Lawrence, 2015). I had to address the notion of my own bias and be cognizant of my verbal and nonverbal responses to minimize the impact to the participants' answers. Lastly, interviews can be time consuming. The researcher must give the participant time to answer the questions thoroughly and follow-up questions may prolong the interview.

Validation

Precautions were taken to support credibility (trustworthiness) of the research and dependability (reliability) of the study's data (Adams & Lawrence, 2015). Credibility refers to the truth of the data as presented by the participants. Dependability supports the notion that the data is consistent and accurate as stated by the participant and inscribed and coded by the researcher (Adams & Lawrence, 2015). I made every effort to ensure the reported information was received with accuracy and confidentially by privately interviewing the participants, using an audio recorder during the interview and accurately transcribing the participants' answers. Follow-up questions were asked as necessary for clarity of responses. These measures were taken to strengthen the credibility and dependability of the research.

Credibility. The participants' confidentiality was protected, and their individual names were known only to the researcher. The interviews were conducted privately with each participant. Every effort was made by the researcher to protect against interviewer bias. Interviewer bias occurs when the researcher's verbal and nonverbal responses to the participants' answers change how subsequent questions are answered (Adams & Lawrence, 2015). I asked each question in the same order for each participant to protect against interviewer bias.

Dependability. To strengthen the dependability of the research, measurements were in place to maintain my impartiality. Each participant was interviewed privately in my office, objectively. Nurse educators at a single 2-year ADN program were studied. The accuracy of the interview notes and developing common themes were the major factors in decreasing any possible bias and preventing errors during the study. As well as, "the study will have value, both in informing and improving practice (the "So what?" question) and in protecting the confidentiality, privacy, and truth telling of participants (the ethical question)" (Creswell, 2013, pp. 255–256).

Expected Findings

From the research, I expected to find common themes that are essential to craft a nursing definition of critical thinking. The findings could also reinforce the current strategies used to assess critical thinking in nursing education, including the use of exams, nursing process, simulation, case studies, care mapping, clinical reasoning, active learning strategies, and clinical experiences to care for their clients. Also, I expected to find the use of Bloom's revised taxonomy (Anderson & Krathwohl, 2001, Krathwohl, 2002) promoted a higher level of thinking when the higher cognitive processes of apply, analyze, evaluation and create were used to assess the cognitive abilities of nursing students. These cognitive processes are skills needed to guide

students to critically think and promote positive patient outcomes (Anderson & Krathwohl, 2001; Krathwohl, 2002). The findings were also expected to support the idea that the HOM closely show a relationship with the abilities that are needed for critical thinkers.

Ethical Issues

Conflict of interest assessment. I do not feel there was a conflict of interest with myself as the researcher interviewing the nurse educators of the community college. I am a nurse with 33 years of nursing experience and of those 33 years, 13 years have been in nursing education. There was no financial connection to the research. The participants did not receive any financial compensation for participating in the study. This research minimized risks for all participants involved and may bring benefits to the field of nursing education. One of the benefits may be the opportunity to establish a more complex role of nursing leadership to promote positive patient outcomes. Nursing students may also have a broader view that leads to advanced thought patterns that formulate breakthroughs in nursing. The questions posed provided answers to the phenomenon of critical thinking, and the strategies used to assess CT abilities in one community college nursing program. Perhaps, one of the greatest benefits of the research would aid in crafting a definition of CT in nursing that were developed from the common themes found from the research.

Researcher's position. I assumed the role of the facilitator and interviewer for the study. I received IRB approvals from Concordia University and the community college in which the study took place. All participants received an informed-consent form to sign before the interview began. I explained the purpose of the research and provided definitions of pertinent terms to the participants before the interview began. At the completion of the participant interviews, I performed an analysis of the research and documented my findings.

Ethical issues in the study. Every effort was made to minimize interviewer bias. The participants in the study was completely on a voluntary basis. The interviews were conducted in the same manner with each participant in a private one-on-one setting. I listened and documented the answers that each of the participants provided without verbal or nonverbal responses. Follow-up questions were not coerced and only asked to clarify responses from the participants. The data was securely stored in a locked cabinet in the researcher's office. All data will be destroyed within three years of publication.

Summary

I conducted this study to assess the CT abilities of first-year ADN students at a community college and to explore the CT strategies used by nurse educators. The lived experiences of the nurse educators who have learned and used CT strategies in nursing education were also investigated. The information derived from the lived experiences of the nurse educators and their interpretations of those experiences provided exploration in a qualitative study using a phenomenological design with semistructured interviews of the participants. Bloom's revised taxonomy, based on the work of Anderson et al. (2001) and Krathwohl (2002), was used as one of the conceptual frameworks for the study, in which knowledge can be used in a variety of situations where meaningful learning occurs through knowledge and cognitive processes for problem-solving. The HOM based on the work of Costa (2008), was also used as a conceptual framework in this study. The HOM were described as a list of behaviors of what intelligent people do when faced with problems. When used together, Bloom's revised taxonomy and the HOM lead to high levels of thinking and peak performance.

The results revealed what the participants had in common related to their experience of the phenomenon. The findings provided more understanding of the phenomenon and revealed

the clinical significance that CT requires. The results also enabled participants to use the higher-level cognitive processes of applying, analyzing, evaluating, and creating of Bloom's revised taxonomy (Anderson et al., 2001; Krathwohl, 2002), to develop strategies that guide students to critically think and promote positive client outcomes. The results provided more understanding of the use of the HOM as they relate to the CT abilities of first-year nursing students in a community college setting. The HOM are essential to developing critical thinkers. Scheffer and Rubenfeld (2000) asserted, both HOM and cognitive skills are needed for CT in nursing practice. Costa (2008) asserted the HOM are skills needed to guide students in effective problem-solving, such as persevering, managing rash behaviors, listening to understand and with empathy, thinking with deeper meaning, clarity, and reflection, striving for correctness, and taking risks. Lastly, one of the most significant findings of the results may have aided in the development of a nursing definition of critical thinking.

Chapter 4: Data Analysis and Results

Introduction

Chapter 4 offers a discussion of how the data of this study were analyzed and the results of the qualitative research. The purpose of this study was to explore the CT strategies used by nurse educators to foster the CT abilities of first-year ADN students. The role of the researcher included conducting semistructured interviews with nurse educators to collect data related to critical thinking abilities and strategies used to foster critical thinking. Critical thinking is an important 21st-century skill that is needed in nursing practice where clinical decisions and clinical judgments are made to provide safe and effective care for patients (Josephsen, 2014).

This section includes the description of the sample, data analysis, results of data analysis, and the findings of the study. The study's purpose was to examine the strategies used by nurse educators to promote meaningful learning through the cognitive processes of the lower-order thinking categories and the higher-order thinking categories of Bloom's revised taxonomy based on the work of Anderson et al. (2001) and Krathwohl (2002). In addition, the research questions of this study examined how the HOM, based on the work of Costa (2008), influenced CT abilities of first-year nursing students. Last, this study sought to examine the common threads of critical thinking established from the nurse educators' responses and experiences. A summary of the results of the study concludes Chapter 4.

Description of the Sample

A convenience sample of 20 nurse educators was recruited by e-mail to participate in the study. Of the 20 solicited, 15 agreed to an interview via email or in person with the researcher. Of the 15 nurse educators interviewed, 14 met the criteria for participating in the study. The nurse educator who did not meet the criteria did not have experience teaching first-year nursing

students; for that reason, the participant was excluded from the study. In a phenomenological study, it is recommended that the researcher interview five to 25 participants who have experienced the phenomenon (Brinkmann & Kvale, 2015), so the sample size aligns with qualitative inquiry of phenomenological research.

The total years of nursing experience of the nurse educators ranged from 12−48 years (see Table 1) and the total years as a nurse educator ranged from 2–40 years (see Table 2). Ten nurse educators reported their ethnicity as Caucasian and the remaining four nurse educators identified as African American. Of the 14 nurse educators, one held the title of Director of Nursing, one held the title of Division Chair of Health Sciences, and the remaining 12 were nursing faculty. Of the educators who consented, 14 of 15 have taught first-year students in the ADN program; and four of the nurse educators have also taught in the LPN program. There were 14 females and one male who agreed to participate in the study. Of the 15 educators who consented to participate in the study, one did not meet the criteria of teaching first-year nursing students; therefore, 14 nurse educators participated in the study. At the time of the study, all nurse educators taught in some capacity in the ADN program.

Table 1

Participant Number of Years as a Nurse

Nurse Educators out of 14	Number of Years as a Nurse
0	< –10
2	11–20
3	21–30
5	31–40
4	41–50

Table 2

Participant Number of Years as a Nurse Educator

Number of Nurse Educators out of 14	Years as a Nurse Educator
8	< – 10
2	11–20
2	21–30
2	31–40
0	41–50

Brinkmann and Kvale (2015) suggested the researcher should sample as many participants as needed to examine the phenomenon. Kvale (2012) proposed the researcher select participants based on their experience of the phenomenon to be investigated, which is a purposive sample. In a purposive sample, the researcher is selective and judgmental based on the characteristics of the population (Kvale, 2012; Padilla-Díaz, 2015). For this study, the 14 participants were nurse educators recruited through the nursing department at a community college. The researcher sent an email, detailing the purpose of the study and the criteria of inclusion to participate in the study. Each participant, with the exclusion of one, met the inclusion criteria of having taught first-year nursing students in the past or teaching first-year nursing students at the time this study occurred. The participant excluded had only taught second-year nursing students.

Research Methodology and Analysis

Husserl (1913) proposed phenomenological research involved consciousness that reflected the nature of the phenomenon with logical inquiry of the phenomenon. Moustakas (1994, as cited in Creswell, 2013) further suggested the primary emphasis is on the phenomenon

to be explored. The exploration of the phenomenon is based on a group of individuals who have experienced the phenomenon with an awareness of the phenomenon (Quay, 2016). The lived experiences of both subjective and objective experiences of the phenomenon are investigated to discover commonalities with others who experienced the phenomenon (Brinkmann & Kvale, 2015; Rubin & Rubin, 2012). With the phenomenological research approach, there are several forms of qualitative data-collection methods that can be used by the researcher, including interviewing, observations, journals, poetry, and music (Nazir, 2016; Rubin & Rubin, 2012). In this study, the interview method was used to capture the essence of the lived experience of the phenomenon of critical thinking.

The data-collection period for this study lasted 3 weeks. Interviews were audio-taped, and I took field notes at the time of the interview to ensure accuracy of responses. The interview questions of this study were semistructured and consisted of open-ended questions (see Appendix A), allowing the participants to discuss their responses in detail (Padilla-Díaz, 2015; Rubin & Rubin, 2012). The researcher sent an email to the nurse educators with the handouts used in the study prior to the interview for review. The handouts included a copy of definitions used in the study (see Appendix B), the 16 HOM (see Appendix C), as described by Raymond Seniuk and Profetto-McGrath (2011) and Costa (2008), and a copy of the pyramid chart of Bloom's revised taxonomy with the cognitive processes and explanations listed (see Appendix D).

During the interviews, I asked appropriate questions to gather participants' perceptive data (Brinkman & Kvale, 2014). Follow-up questions were asked when necessary for clarification and explanation. The interviews lasted 35 to 65 minutes with each participant, depending on the responses provided by the participant. According to Rubin and Rubin (2012),

interviews should allow enough time for the participants to respond without coercion or hurry. Participants were given enough time to give detailed responses to the interview questions. I used active listening and silent communication techniques during the interview to capture the nurse educators' responses. Silence provides for time for the nurse educators to formulate their thoughts and ideas based on the questions asked (Rubin & Rubin, 2012). After the completion of all the interviews, I reviewed and analyzed the interview transcripts and field notes for repetitive themes. Moustakas (1994, as cited in Creswell, 2013) noted the description of the participants' experiences was important to examine in a thorough review of the responses. From this examination, an understanding of the participants' common experiences of the phenomenon occurred, and repetitive themes emerged.

The coding method used for this study was classifying relevant information by underlining relevant words and phrases of the interview transcripts and notes and giving a unique identification symbol or number for each participant in the study. A priori coding is the type of coding described here to analyze the data (Biddix, 2009; Elliott, 2018). A priori codes are developed by the researcher as data are examined by the researcher (Biddix, 2009). Then a coding sheet was used to represent the categories of relevant information in rows and columns. This method allowed me to compare the answers of each participant with another on the same topic or question asked, which allowed for summarization of the results on the same topic by showing the frequency of the information given. This process also helped with finding specific comments of each question, which assisted in the validity of the research. Open coding is a first level coding where the researcher looks for distinct concepts and categories in the data. These distinct units and categories form the basic units of the analysis, were master headings and subheadings are identified (Biddix, 2009; Elliott, 2018). According to Noble and Smith (2015),

different perspectives of participants are categorized from seeking out similarities and differences in their answers. These steps are essential to coding interview notes reliably (Noble & Smith, 2015).

I manually analyzed the data of the transcripts of the interview notes from each participant using a priori coding, open coding, and axial coding. In a priori coding, the researcher used predetermined categories to code the responses from the conceptual framework of Bloom's revised taxonomy (Krathwohl, 2001; Anderson et al., 2001) and the HOM (Costa, 2008). Coding of the nurse educators' responses consisted of examining the phrases and terminology used to answer the 10 questions (see Appendix A) from each participant about the phenomenon. A priori coding was used here to code the participants' responses. The data were examined for recurrent themes and common phrases related to the strategies used to foster CT abilities in first-year nursing students and identification of meanings of the phenomenon emerged. Open coding occurred here as distinct concepts and categories were identified (Biddix, 2009). Analysis of the data led to the finding of multiple themes related to teaching strategies to improve and foster critical thinking, and differences in the description of critical thinking among the nurse educators. Axial coding was used here since the researcher found multiple themes related to teaching strategies used by nurse educators to foster critical thinking (Biddix, 2009; Elliott, 2018). In axial coding, the researcher confirms the participants' responses are accurate by re-reading the text and exploring the themes and categories are related ((Biddix, 2009; Elliott, 2018). Kvale (2012) maintained data analysis from interviewing notes aids in finding multiple themes and commonalities.

I developed a table based on Bloom's revised taxonomy and the cognitive processes used in each of the nurse educators' answers (see Table 3). The number of times each of the nurse

educators responded using the cognitive process on the pyramid were tabulated. For example, the number of times the word, *remember* or an example of *remembe*r, such as *recall facts and basic concepts*, were counted when used in an answer. Also, the number of times the word, *understand* or an example of *understand*, such as *explain ideas or concepts* were counted when used in an answer. This form of coding was used for the remaining cognitive processes of Bloom's revised taxonomy, *apply (use information in new situations), analyze (draw connections among ideas), evaluate (justify a stand or decision), and create (produce new and original work).* The results were analyzed and the level of usage of the pyramid of Bloom's revised taxonomy were tabulated. Also, the lower level cognitive processes and the higher-level cognitive processes were coded. According to Bloom's revised taxonomy, the higher-level cognitive processes of *apply, analyze, evaluate, and create* foster critical thinking by promoting the transfer of knowledge and leads to deeper thinking (Anderson et al., 2001; Krathwohl, 2002). All the participants stated, *remember* and *analyze*, a lower-order thinking process and a high-order thinking process, were used to foster critical thinking. A significant finding was 13 of the 14 nurse educators thought *understand* promoted critical thinking. *Understand* is a lower-order thinking process and literature suggested the use of the higher-order thinking processes of *apply, analyze, evaluate,* and *create* promote CT abilities (Anderson et al., 2001; Krathwohl, 2002). The cognitive processes of *apply* and *evaluate* were stated by 11 and 12 nurse educators respectively. Only five nurse educators thought the higher-order thinking process, *create*, promote critical thinking.

The research data were analyzed with charts and tables to assemble the nurse educators' thoughts and perceptions of identified themes. The number of nurse educators who responded with the same themes and answers was listed in the tables and their direct responses were also

included. This method of coding describes the use of terms and themes by participants (Saldaña, 2013). Data that were unrelated to the phenomenon, CT were not included in the analysis. An example of unrelated data was stated by one nurse educator, “use common everyday examples like going grocery shopping with a certain amount of money to teach critical thinking.” This nurse educator struggled with explaining the concept of critical thinking and the description of CT abilities of nursing students.

Summary of the Findings

The concept of critical thinking continues to be difficult to define and measure, leading to a wide assortment of interpretations (Fero et al., 2009). “The term is often used interchangeably with problem-solving, clinical-decision making, and creative thinking in the nursing literature” (Fero et al., 2009, p. 141). The nurse educators’ answers focused on phrases that included taking in information, using knowledge learned to break down information and applying it to the patient’s situation to formulate problem-solving. Another phrase that was repeated by six nurse educators was “take appropriate action and finding solutions.” Moreover, the themes that emerged to define critical thinking related to the students’ ability to gather information, assimilate information, and applying it to the patient’s situation to problem-solve for solutions. All the nurse educators agreed that the HOM and critical thinking were important concepts for problem-solving. And, five of the 14 nurse educators agreed flexibility is needed for making good decisions (see Table 4). And, the responses revealed insight into the HOM when combined with CT abilities.

Presentation of Data and Results

The research questions of this study were aligned with Bloom’s revised taxonomy based on the work of Anderson et al. (2001) and Krathwohl (2002), which focused on the learner’s

cognitive processes that transfer knowledge at a higher level of thinking. When the results were analyzed, I discovered meaningful learning occurred when knowledge and cognitive processes were used in a variety of situations to effectively problem-solve. The nurse educators' responses to the interview questions in this study provided insight into their lived experiences and generated commonalities and themes related to the concept of critical thinking. These insights answered the research questions for this study. The table below represents each nurse educator and their years of nursing experience.

Table 3

Participants' Years of Nursing Experience and Years of Experience as a Nurse Educator

Participants	Years as a Nurse	Years as Nurse Educator
Ed A	45	25
Ed B	32	7.5
Ed C	42	31
Ed D	36	28
Ed E	29	15
Ed F	21	5.5
Ed G	30	7
Ed H	17	8
Ed I	37	15
Ed J	38	2
Ed K	31	2
Ed L	12	6
Ed M	43	9
Ed N(Excluded)	27	20
Ed O	48	40

Research question 1. What strategies are used by nurse educators to incorporate the lower-order thinking categories of remembering, understanding, and applying to guide students in CT abilities for first-year associate-degree nursing students? Interview questions two, three, four, and seven addressed this question (see Appendix A). The interview questions were the following: Tell me about the teaching strategies or methods you have used to improve the students' understanding of critical thinking in the classroom? Tell me about the strategies or methods you have used to apply critical thinking in the skills lab? Tell me about the strategies or methods you have use to implement critical thinking in the clinical setting? How do you evaluate the critical thinking abilities of first-year nursing students?

The nurse educators gave responses from student experiences in the classroom, skills laboratory, and clinical setting and the results indicated they used similar strategies to foster critical thinking (see Table 4). Nine out of 14 nurse educators believed that debriefing clinical experiences, six out of 14 nurse educators believed small group discussion, and five out of 14 nurse educators believed case studies were teaching strategies used to improve critical thinking in the classroom. An interesting finding was that only four out of 14 of the nurse educators believed the use of the nursing process and instructor-led scenarios/situational learning improved critical thinking in the classroom.

In the skills lab, the most significant responses reflected hands-on demonstration of skills and knowledge of concepts. Ed A explained that the knowledge of concepts was associated with having knowledge of medical content and the exemplars related to the concept. Ed A stated, "for example, if a person had a diagnosis of congestive heart failure (CHF), then the concept is perfusion, oxygenation, mobility, etc., and the exemplar is congestive heart failure (CHF)." The

most common CT strategies believed to be used in the clinical setting to foster critical thinking were the use of guided questions, knowledge of concepts, and small group discussions. Nine out of 14 nurse educators thought the use of guided questions, eight out of 14 nurse educators thought the knowledge of concepts, and seven out of 14 nurse educators thought small group discussion were the most common strategies used in the clinical setting to foster CT abilities in first-year nursing students. Debriefing clinical experiences, the use of guided questions, small group discussions and the knowledge of concepts were the strategies most commonly used in all three settings, classroom, skills lab, and clinical.

Table 4

Teaching Strategies to Improve Critical Thinking

Strategies	Classroom	Skills Lab	Clinical
YouTube	1	0	0
Ask Other Educators	1	0	0
Teach-Back	1	0	0
Nursing Process	4	1	3
Peer-Teaching	2	0	0
Case Studies	5	0	0
Debriefing Clinical Experiences	9	2	1
Guided Questions	4	4	9
Small Group Discussions	6	4	7
Knowledge of Concepts	2	6	8
Instructor-Led Scenarios/ Situational Learning	4	2	0
Concept-mapping	1	0	0
10-Step Process	2	0	0
Role-Play	1	0	0
Simulation/Therapeutic Communication	1	3	0
Library and Online Resources	2	0	1
Physical Assessment	0	3	4
Hands on Demonstration of Skills	0	9	0
Presentations	0	1	0

Research Question 1 Responses

Examples of the thoughts and viewpoints of the nurse educators are included in the responses of direct quotes from the transcribed data from Educators A thru N. A thorough description of the 14 interviews with the nurse educators was achieved and helped me to gain insight into the nurse educators' experiences in the classroom, skills lab, and clinical setting.

Nurse Educator A. Nurse educator A (Ed A) stated students learn in a variety of ways: "The use of YouTube . . . seems to help students remember, understand, and apply knowledge to get the basic idea of the concept and the use of weekly quizzes that included "teach back." Ed A also named the nursing process as an effective way for students to develop critical thinking using the lower order thinking categories in the classroom

Nurse Educator B. Ed B, believed the use of the nursing process, beginning with a patient assessment and obtaining a good knowledge base of the patient problems and concepts united with applied knowledge learned in class and the skills laboratory, fostered critical thinking.

Nurse Educator C. Ed C believed sequence and rationales are essential to grasping skills. "Not just to memorize a list of steps and do it. What does it mean and why do we do it this way?"

However, in clinical, all the nurse educators believed students needed knowledge from class and skills lab to incorporate the lower order thinking categories of remembering, understanding, and applying to guide students in CT abilities. Also, the nurse educators stated the ability of the student to answer guided questions about his or her patient care fostered critical thinking. It was also important for students in the clinical setting to explain what they were doing and give a rationale for why they were doing it.

Nurse Educators. Ed C, Ed D, Ed G, Ed I, Ed J, and Ed K thought the use of a pre-conference and post-conference for discussions with students and the use of guided questions were meaningful ways to promote critical thinking in the clinical setting.

All the nurse educators agreed students needed to understand concepts, make connections with the assessment data and the relationship it has to the patient. Students also need to take every opportunity to learn new information and act appropriately to make sound decisions when alterations in patient care occurs. Facione (2013) stated people need education to have good CT skills that will enable them to make good decisions.

Research question 2. How do nurse educators promote the CT skills of clinical reasoning and clinical judgment in first-year associate-degree nursing students using the higher-order thinking categories of analyzing, evaluating, and creating? Interview question six examined how nurse educators evaluated CT abilities of first-year nursing students and interview question 10 addressed how the nurse educators used clinical reasoning to foster creativity in student assignments (see Appendix A). Interview question six was stated as: how do you evaluate the critical thinking abilities of first-year nursing students? Interview question 10 was stated as: how do you use clinical reasoning to foster creativity in student assignments? In this study, student assignments are defined as the students' ability to use prior knowledge to understand how to apply, analyze and create solutions and answers to complex problems (Anderson & Krathwohl et al., 2001; Costa, 2008).

The nurse educators stated the higher-order thinking categories of analyzing and evaluating were strategies needed and used in a variety of settings to promote clinical reasoning and clinical judgment. The various strategies identified by the nurse educators are listed in Table 5. Seven out of 14 of the nurse educators believed in-class discussions with small groups created

opportunities for students to display creativity. The nursing process, the use of guided questions, and debriefs with patients and families also promoted occasions for students to display creativity. Four out of 14 nurse educators believed the nursing process, guided questions, tests, assignments, and exams were strategies to evaluate students' CT abilities.

Table 5

Clinical Reasoning to Foster Creativity in Student's Assignments

Responses	Total of Nurse Educators Who Responded
Post-conference	1
In-class discussions- small groups	7
Seek opportunities to confirm/reinforce learning	2
Past experiences to problem-solve	1
Simulation	1
Grand Rounds	3
Collaborative test reviews	1
Debriefs with students, patients, and families	4
Guiding questions	4
Community projects for problem-solving	1
Nursing process	4
Case study	3
Concept-mapping	1
Using SMART (specific, measurable, attainable, realistic, and timed) goals for nursing outcomes	1

The nursing process is a step-by-step method that consists of assessment, nursing diagnosis, planning with goals and outcomes, interventions, and evaluation of patient outcomes. The use of the nursing process gives the student the ability to recognize changes in a patient's status by analyzing the patient's condition, evaluating the effectiveness of the care rendered, and creating new strategies to promote positive patient outcomes when needed. Three of 14 nurse educators believed grand rounds (students present case studies of their assigned patients from

clinic with a discussion between students and the nurse educators) and case studies were beneficial strategies used to evaluate the students' CT abilities. Only one nurse educator believed that post-conference, past experiences with problem-solving, simulation, collaborative test reviews, community projects for problem-solving, concept-mapping, and using SMART (specific, measurable, attainable, realistic, and timed) goals for nursing outcomes were useful in improving critical thinking skills.

Guided questions and one-on-one discussions with students in class and clinic were discussed as most common answers for evaluating CT abilities of students. Four out of 14 nurse educators used tests, assignments, and exams to evaluate students' CT abilities. Three out of 14 nurse educators believed that small-group work with problem-solving techniques was beneficial to evaluating students' CT abilities. Nurse educators' answers also revealed comments related to learning content, comments regarding learning how to investigate and make decisions through exams and comments related to assignments in class. The use of reflection, case studies, and presentations were likewise used to evaluate the CT abilities of first-year nursing students.

Moreover, comments related to learning content, learning how to investigate and make decisions through exams and assignments in class were revealed in the nurse educators' answers. Eleven of the 14 nurse educators included how students progressed in clinicals and clinic documentation, which include collecting all patient assessment data, the pathophysiology, nursing care plan, medications, labs and diagnostics, and a journal to reflect on the clinical experience.

Research Question 2 Responses

Examples of the strategies used to foster clinical reasoning and clinical judgment identified by the perspectives of some of the nurse educators' direct quotes from the transcribed data are included.

Nurse Educator A. Ed A stated there were two ways to evaluate a student's CT abilities. "How they progress in clinic and how they could go from not knowing anything to being able to recognize a problem."

Nurse Educator B. ED B believed learning normal patient data was important. "Start out with learning normal patient information and then in the classroom discuss the abnormalities and looking at how to address those issues".

Nurse Educator D. Ed D suggested different perspectives on evaluating a student's critical- thinking abilities using clinical reasoning and clinical judgment. "A nurse needs to be very observant, in processing in post-conference . . . small group kind of processing is one of the best ways that I have seen . . . students' reflections show more about what they've learned".

Nurse Educator E. Ed E recognized several ways to evaluate students critical thinking. "I give the students group work and see how they can solve group problems, gather data, analyze data, implement goals and achieve those goals."

Nurse Educator G. Ed G did not agree that written tests demonstrate a student's critical-thinking abilities when it relates to medical problems. "Written tests give them memorization or recall from memory . . . their actions in the clinical setting and their discussions and how they answer questions in a classroom setting promotes higher-order thinking skills."

Research question 3. How do nurse educators incorporate the HOM (Costa, 2008) in the curricula to determine the CT abilities of first-year associate-degree nursing students to

promote student learning for nursing practice? Interview question five responses resulted in a mixture of answers (see Table 6). Interview question five was stated as: Explain the process of how the HOM compare to those abilities? According to Chan (2013), critical thinking abilities are defined as ways to gather and seek information, question and investigate, problem-solve and apply theory, analysis, evaluation and inference. It also includes clinical judgment that is results-oriented (Raymond-Seniuk & Profetto-McGrath, 2011). The results revealed that five of the 14 nurse educators believed confidence and flexibility reflect the HOM that are essential to CT abilities, followed by four of 14 nurse educators who believed intuition and reflection were important to CT. In addition, seven of 14 nurse educators believed problem-solving and eight of 14 nurse educators believed analysis were essential CT abilities to promote learning for nursing practice.

Table 6

HOM and CT Abilities in Nursing

HOM and CT Abilities	Yes	No	No Response
Confidence	5	0	9
Flexibility	5	1	8
Inquisitiveness	2	0	12
Intuition	4	0	10
Open-mindedness	3	0	11
Perseverance	2	0	12
Reflection	4	0	10
CT Abilities			
Information Seeking	2	0	12
Problem-solving	7	0	7
Apply Theory	4	0	10
Analysis	8	0	6
Evaluation	2	0	12
Inference	2	0	12
Clinical Judgment- Results Oriented	6	0	8

An interesting finding revealed by the nurse educators was only six of 14 nurse educators believed clinical judgment that is results oriented is an essential CT skill for nursing practice.

Clinical judgment that is results-oriented aligns with the nursing process, when looking at goals and outcomes (Raymond -Seniuk & Profetto-McGrath, 2011). An unexpected finding of the study results revealed that most nurse educators did not give a response of whether the HOM of inquisitiveness, intuition, open-mindedness, perseverance, reflection, and confidence were important to integrate into the curriculum to foster critical thinking. Also, an unexpected finding was 12 out of 14 nurse educators chose no response to the CT abilities of information-seeking, evaluation, and inference, and 10 out of 14 chose no response to apply theory.

Five out of 14 nurse educators agreed that flexibility is important and that students need flexibility to develop a knowledge base to increase their confidence to deal with challenges related to patient problems. It was also noted by the nurse educators that the goal of teaching is to help students learn good HOM, such as, gathering data and information, investigating, and analyzing pertinent data that lead to making good sound decisions. Examples of how some of the nurse educators incorporated HOM (Costa, 2008) in the curricula to determine the CT abilities of first-year associate-degree nursing students from excerpts of some of the interview responses are included.

Research Question 3 Responses

Responses identified by the perspectives of some of the nurse educators' direct quotes from the transcribed data are included. The responses helped me to understand the perceptions into the lived experiences of the nurse educators.

Nurse Educator B. Ed B stated that the "HOM are how students react when they have a problem to solve and how the patient react to the education that the student gives them,"

Ed E stated the following.

> CT is based on active learning and higher-order thinking; in clinical, clinical judgment and concepts are about applying and caring for the patient, they take in information, assess the patient, analyze the data, synthesize data . . . this leads to higher-order thinking where goals, expected outcomes are discovered . . . the nursing process is used to solve problems.

Nurse Educators. *Ed F, Ed G, Ed J, and Ed H.* The educators summed up CT and HOM with similarities and differences in viewpoints. Ed F summed up CT and HOM as "as a collection of thoughts and ideas and taking what they know to better understand new ideas." Ed G contended "the HOM are not at the forefront of new students; new students need experience to go in depth in the thinking process- the goal is for them to learn." In contrast, Ed J explained "CT and HOM are processes that are meshed together to problem-solve when challenged with a change in the patient condition. Using the nursing process in patient care develops critical thinking abilities."

Ed H further stated.

> Students needed CT abilities and HOM to get to the result of critical judgment to make sound clinical judgment in patient care, specifically, open-mindedness and reflection to be results-oriented, inquisitiveness to question and investigate, confidence to gather and seek information, flexibility to know what to do, and perseverance to get the answers you are investigating.

Interview question eight also added insight into the HOM and CT abilities. Interview question eight was stated as: Explain what a first-year nursing student would do when a patient develops an alteration in health status in the clinical setting? The nurse educators' responses were similar in what the student should do when a patient develops an alteration in health status

in the clinical setting. The consensus was that the student would recognize it, report it to the nurse and the clinical instructor, and do something about it. However, Ed G stated, “the reality is that some students panic and don’t know what to do at this stage.” Ten out of 14 of the nurse educators stated the clinic instructor would offer suggestions, ask guiding questions, and guide students to using the nursing process to integrate concepts learned, as well as involve the nurse in the care.

Interview question nine also produced a variety of answers of how first-year nursing students used appropriate CT abilities to provide safe and effective care that promoted positive patient outcomes. Interview question nine was stated as: Tell me a time when a nursing student used appropriate CT abilities to provide safe and effective care that promoted positive patient outcomes?

Appendix E represents excerpts from the nurse educators’ responses. To summarize, the nurse educators reported the students assessed the patient’s condition and performed the necessary teaching to help patients make the right decision for their situation. Also, the nurse educators reported the students recognized the problem or disease process that the patient was diagnosed with, and performed care based on their knowledge of the disease. In addition, the nurse educators reported the students gathered the necessary data, such as labs, meds and the patient’s symptoms to get to the root of the problem to plan and problem-solve the appropriate nursing care to perform.

Research question 4. What are the common threads of critical thinking established from the nurse educator’s responses and experiences, using the six categories of Bloom’s revised taxonomy based on the work of Anderson et al. (2001) and Krathwohl (2002), remembering, understanding, applying, analyzing, evaluating, and creating? Interview

question one provided descriptions of the definition of CT from the perspective of each nurse educator. Interview question one was stated as: What is your definition of critical thinking based on your experiences with students in nursing education? Eight of the 14 nurse educators offered similar answers to the definition of critical thinking. Eight of 14 stated apply knowledge, seven of 14 stated problem-solving, and six of 14 stated knowledge learned and taking appropriate actions to find solutions were common threads related to CT (see Table 7). Other themes that emerged regarding a definition for CT was to assimilate information, the nursing process, thinking about thinking, and logical reasoning.

Research Question 4 Responses

Responses identified by some of the nurse educators' direct quotes from the transcribed data are included. The responses helped me to identify the common threads and perceptions of the nurse educators using the six categories of Bloom's revised taxonomy.

Nurse Educator A. Ed A stated, "CT is defined as advanced level problem-solving, putting several pieces of the puzzle together and taking appropriate action."

Nurse Educator B. Ed B felt "CT is a combination of using the nursing process to determine the best care for the patient."

Nurse Educator C. Ed C stated, "CT is gathering and using information to meet the diverse patient needs. It is adapting to a situation"

Nurse Educator D. Ed D answered from a cognitive perspective. Ed D described CT as "thinking about your thinking". Ed D stated this definition belonged to someone who wrote it, but they adopted it as a best definition of CT. "CT is the ability to break down information and put it back together to find a solution, an approach, to try"

Nurse Educator E. Ed E was detailed in their response. Ed E stated CT was "being able to define concepts and apply concepts to answer or solve problems. I give them the information and they use the information to solve problems."

Nurse Educator F. Ed F was concise in their answer and stated, "CT is taking what has been learned from previous experience to gain new knowledge, new materials to problem-solve."

Nurse Educator G. Ed G stated, "CT is learning basic concepts, having knowledge of different skills, and the ability to use knowledge to work through problems to find solutions."

Nurse Educator H. Ed H stated, "CT is very close to problem-solving. It is taking the knowledge you have and applying it at the bedside. It includes decision-making as well."

Nurse Educator I. Ed I stated, "CT is applying knowledge you have learned through various resources and knowledge put in action"

Nurse Educator J. Ed J stated, "the CT process is the student taking compartmental knowledge about a subject and putting it together to get to the clinical situation to see the patient holistically."

Nurse Educator K. Ed K stated, CT is the student's ability to apply and discern information that they have learned and apply it to a situation or patient to make decisions based on what they have learned."

Nurse Educator L. Ed L detailed CT as, "being able to think through situations or problems using past or current knowledge to get to a solution."

Nurse Educator M. Ed M came from the perspective of using the nursing process to CT. CT was described as "applying the nursing process to get to the most important information and apply it to the situation."

Nurse Educator O. Ed O contended, "CT is being able to take in information that is basic, prescriptive, and formulating problem-solving based on that information. You want them to assimilate information and think about how they would use it in a situation."

Table 7

Critical Thinking Common Threads from 14 Nurse Educators' Responses

Themes	Number of Times Used
Problem-solving	7
Break down important information and put it back together	4
Assimilate information	1
Take appropriate action and find solutions	6
Nursing process	4
Gather and use information/Accumulate facts	4
Thinking about thinking	3
Good/logical reasoning	3
Knowledge learned	6
Apply knowledge	8

Summary

Chapter 4 provided a discussion of the analysis of the data of this study and the results of the qualitative research. The semistructured interviews of the 14 nurse educators were recorded and transcribed. The interview questions investigated the lived experiences of the nurse educators regarding strategies used to foster critical thinking in first-year ADN students.

Data were coded and analyzed manually. Multiple themes were identified, and common words phrases were used to describe the strategies that improve and foster critical thinking. Twelve of the nurse educators used various teaching methods to foster critical thinking. The major emphasis was that students have a good foundation or knowledge base, then develop the ability to assimilate information to promote positive patient outcomes. Interestingly, the nurse educators did not know how to explain the concept of critical thinking, but rather some of the components. So, the nurse educators used reflection and their own ideas of what critical thinking

is to justify their responses. For example, one response to the definition of critical thinking was "to gather and use information to meet diverse patient needs." This statement did not fully explain how to foster critical thinking.

As indicated in the interviews and in the literature, nurse educators are challenged with the ability to define critical thinking; consequently, they may have difficulty applying strategies to foster CT abilities in nursing students because the concept of critical thinking in nursing is not fully understood. Nevertheless, nurse educators believe critical thinking is important for students to have to become safe and effective practitioners. As well, more education needs to be furthered to better prepare nurse educators to effectively teach critical thinking to nursing students.

Chapter 5 includes a summary of the discussion and interpretation of the results of the study based on the research of the strategies used by nurse educators to foster critical thinking in first-year nursing students. It also includes a debate of the results in relation to the literature and the implications for nursing practice based on the data collected during the study. Next a summary of the limitations of the research is included. Lastly the recommendations for further research and conclusions are included based on the findings of the research.

Chapter 5: Discussion and Conclusion

Introduction

The purpose of this phenomenological study was to explore the CT strategies used by community college nurse educators to foster CT abilities of first-year ADN students. There was a large amount of research on critical thinking (Abrami et al., 2015; Chan, 2013; Crouch, 2015; Facione, 1990, 2015; Jones, 2013; Josephsen, 2014; Kaddoura, 2013; Maneval et al., 2011; Newton & Moore, 2013; Raymond-Seniuk & Profetto-McGrath, 2011; Schulz & FitzPatrick, 2016; Shaw, 2014; Sommers, 2018; Tajvidi et al., 2014; Yildirim & Ozkahraman, 2011), but little on how critical thinking strategies were used to foster critical thinking of first-year nursing students. The discoveries within this study reflected the lived experiences of the nurse educators and their interpretations of those experiences. I expected to identify common threads of critical thinking to craft a definition of critical thinking (CT), and to identify teaching strategies used to foster CT abilities of first-year nursing students using Bloom's revised taxonomy (Anderson et al., 2001 & Krathwohl, 2002), and the HOM based on the work of Costa (2008). The study did not aid in crafting a definition of critical thinking; however, it supported the assumption that further study is needed to explore critical- thinking skills and abilities to craft a definition of CT for the nursing profession. The literature suggest that first-year nursing students are limited in critical thinking skills, clinical reasoning, and clinical judgment. They also have inadequate knowledge and clinical experiences, that lead to critical thinking (Josephsen, 2014). Previous chapters provided information on the background of critical thinking, literature review, research methods, and data analysis of the information obtained from the semistructured interviews of the 14 nurse educators participants. Chapter 5 provides a summary of information that include a discussion of the results of the nurse educators' strategies used to promote CT abilities in the

classroom, skills lab, and clinical. This chapter concludes with limitations, implications, and recommendations for further research.

Summary of the Results

The study was conducted to examine the CT strategies used by community college nurse educators to foster CT abilities of first-year ADN students. The research study questions were the following: What strategies are used by nurse educators to incorporate the lower-order thinking categories of remembering, understanding, and applying to guide students in CT abilities for first-year associate-degree nursing students? How do nurse educators promote the CT skills of clinical reasoning and clinical judgment in first-year associate-degree nursing students using the higher-order thinking categories of analyzing, evaluating, and creating? How do nurse educators incorporate HOM (Costa, 2008) in the curricula to determine the CT abilities of first-year associate-degree nursing students to promote student learning for nursing practice? What are the common threads of critical thinking established from the nurse educator's responses and experiences, using the six categories of Bloom's revised taxonomy based on the work of Anderson et al. (2001) and Krathwohl (2002), remembering, understanding, applying, analyzing, evaluating, and creating?

A total of 14 nurse educators participated in the study. The lived experiences of the educators' experiences with CT strategies used to foster critical thinking in first-year nursing students were investigated. It was discovered that multiple themes were identified to describe the strategies used to improve and foster critical- thinking abilities in first-year nursing students. The consensus among educators was that students have a good knowledge base of nursing content and use that knowledge to assimilate information to promote positive patient outcomes. The study also revealed nurse educators did not have a grasp on the definition and concept of critical

thinking; however, they based it on their own ideas and reflection of what critical thinking is to justify their responses. Studies revealed educators teach CT according to their own perceptions and faculty who have a better understanding of critical thinking can use active- learning strategies to teach critical thinking (Cassum & Gul, 2017).

The research questions of this study were aligned with Bloom's revised taxonomy based on the work of Anderson et al. (2001) and Krathwohl (2002), which focused on the learner's cognitive processes that transfer knowledge to a higher level of thinking. The themes that emerged from the nurse educators' responses related to the students' ability to gather information, assimilate information, and apply it to the patient's situation to problem-solve for solutions. All the nurse educators agreed that the HOM and critical thinking were important attributes needed for problem-solving; however, they were varied in the responses regarding the importance of each disposition. The HOM, confidence, flexibility, intuition, and reflection, were stated as most important and inquisitiveness, perseverance, and open-mindedness were least important of the HOM. It was surprising that the nurse educators placed less emphasis on the HOM inquisitiveness since nurses are required to investigate and gather information from their patients daily.

The results also revealed the strategies used by all the nurse educators to foster critical thinking was debriefing clinical experiences. Debriefing clinical experiences, the use of guided questions, small group discussions, case studies, and the knowledge of concepts were the strategies most commonly used in the classroom, skills lab, and clinical. These strategies support the literature as the most frequently used strategies used to teach CT are questioning, small group discussions and knowledge of concepts (Wang, 2017). Concept mapping was also listed as a frequently used strategy to teach CT (Wang, 2017); however, the findings of this study did not

reveal concept mapping as a commonly used strategy. Only one nurse educator used concept mapping as a strategy to promote CT. In the skills lab, hands-on demonstration of skills was used to foster critical thinking.

The common threads among the educators for the use of Bloom's revised taxonomy were applying (eight out of 14 participants), analyzing (seven out of 14 participants), and knowledge with the use of problem-solving (seven out of 14 participants). An unexpected finding was that only six out of 14 participants stated knowledge learned was important to critical thinking. These responses contradicted the importance of knowledge of content when using Bloom's revised taxonomy because it was stated as an important ability needed to foster critical thinking in the previous responses. The varied responses of the nurse educators revealed they did not have a grasp on critical thinking. Another interesting finding was the nurse educators placed less emphasis on the nursing process (four out of 14 participants), assimilating information (one out of 14 participants), and logical reasoning (three out of 14 participants) as abilities necessary for critical thinking. In addition, only five out of 14 nurse educators agreed that flexibility was needed to make good decisions.

Discussion of the Results

Critical thinking is essential to learning for all students and promotes clinical judgment and problem-solving in nursing education (Schultz & Fitzpatrick, 2016; Wang, 2017). It is clear from the literature that new nursing students are deficient in their CT skills (Farrar & Suggs, 2010; Oermann, Poole-Dawkins, Alvarez, Foster, & O'Sullivan, 2010). Thus, the research questions that propelled this study were based on the conceptual framework of Bloom's revised taxonomy (Anderson et al., 2001; Krathwohl, 2002) and the HOM (Costa, 2008; Costa &

Kallick, 2008) to identify the strategies used by nurse educators to foster CT abilities in first-year associate degree nursing students.

The major findings of the study revealed nurse educators believe critical thinking is an important nursing function for nurses to be safe, effective, nurse practitioners; however, nurse educators are challenged with the ability to define critical thinking (Schultz & Fitzpatrick, 2016; Cassum & Gul, 2017; Wang, 2017). It was clear from the nurse educators' responses that many educators lack understanding of critical thinking and higher-order thinking. I expected the nurse educators to be able to define critical thinking and identify and explain the strategies used to foster critical thinking. Promoting a student's ability to critically think is influenced by the teacher's ability and approach to teaching (Cassum & Gul, 2017; Gul et al., 2014). If teachers are going to prepare students at a higher-level of thinking, they must model a higher-level of thinking in their teaching strategies, such as active-learning strategies with teacher facilitation (Gul et al., 2014; Cassum & Gul, 2017). When asked about the meaning of critical thinking and higher-order thinking, the nurse educators gave examples of instructional activities and the students' responses to changes in the patients' health status. However, from the findings the nurse educators' responses emerged major themes that foster critical thinking rather than activities and how critical thinking is cultivated. The major themes were the need for the student to gather information, assimilate information, and apply information to problem-solve patient situations.

The nurse educators thought the students' ability to gather information empowered the students to use that information to draw conclusions for clinical reasoning and problem-solving to improve patient outcomes. Students are engaged and interested in learning if they believe the assignment is important, which promotes deeper levels of thinking (Samson, 2015). Students

process information that is meaningful to them, which brings about a deeper understanding of the content. Students can also learn the ability to gather and assimilate information with teacher instruction, guidance and facilitation, using active learning strategies that promote creative problem-solving, using case studies (Gauthier & Lajoie, 2014), problem-based learning (Tilchin & Raiyn, 2015), and guided inquiry (Samson, 2015). Problem-based learning is a self-directed model that allows the learner to determine the problem given to them by the instructor and develop problem-solving actions for the problem (Tilchin & Raiyn, 2015). These activities foster higher-order cognitive skills that lead to CT abilities (Samson, 2015).

Nurse educators believe the students' ability to assimilate information is consistent with critical thinking. The use of guided questions is a strategy used to enable students to assimilate information and apply it to patient problems for solutions (Samson, 2015). Samson (2015) also stated the nurse educator asked students questions about the patient's history and physical assessment that-empower students to combine that information to seek solutions to the patients' complex problems. The nurse educator facilitated the discussions that followed. The use of higher-level questions compels learners to process information to create higher-level responses (Gul et al., 2014). In addition to asking higher-level questions, teachers need to be organized in their presentation of content to enhance critical thinking (Shim & Walczak, 2012). These findings are congruent with the literature and supports strategies that promote engagement, interaction, and active learning to foster critical thinking.

An expected finding discovered all the nurse educators agreed the HOM were important dispositions needed for problem-solving when combined with CT abilities; however, the importance of each disposition elicited varied levels of importance. Costa (2008) maintained the HOM are intelligent behaviors that lead to constructive actions. The HOM provides a means for

a process that promotes interaction for solving problems. It gives students the confidence to develop solutions when they are not immediately recognizable (Costa & Kallick, 2008). The results revealed five out of the 14 nurse educators believed confidence and flexibility were HOM essential to fostering CT abilities. The results were surprising since nursing students need confidence to assess patients, recognize changes in the patients' status and to know when to alert the appropriate healthcare team member to intervene. Nurses need the ability to view situations from a variety of viewpoints and interpret knowledge into effective healthcare interventions (Josephsen, 2014). Nurses also need flexibility due to the rapidly changing healthcare environment, which necessitates a more autonomous environment (Josephsen, 2014).

Since the nursing process is a systematic method of planning and providing patient care, it was surprising that nurse educators did not state it was important to improving critical thinking. The nursing process is a skill taught by nurse educators to help students learn to gather and analyze pertinent patient information, apply interventions appropriate for patient care, and an evaluation of care for clinical decision-making (Kammer, Schreiner, Kim, & Denial, 2015; Papathanassiou, Kleisiaris, Fradelos, Kakou, & Kourkouta, 2014). The nursing process is also used as a framework for nursing care for all types of patients and in all areas of healthcare (*Nursing: A concept-based approach to learning, 2015)*. Nurses must be taught to apply clinical reasoning with the use of the nursing process in daily clinical practice for effective problem-solving (Kammer et al., 2015; Papathanasiou et al., 2014).

As well, it was an unexpected finding that only four out of 14 nurse educators believed the use of the nursing process and instructor-led scenarios/situational learning improved critical thinking in the classroom. I also expected the nurse educators to state the nursing process is applied to nursing education to promote critical thinking because nurses emphasize and teach the

nursing process is used to guide patient care and ensure students know how to critically think. I did not expect that the nurse educators to say the nursing process was one of the least used strategies to foster critical thinking in all settings; classroom, skills lab, and clinical.

As expected, hands-on demonstration of skills and knowledge of concepts was the most significant finding in the skills lab. Students can use knowledge of content to perform skills and the rationale for the correct technique. Wang (2017) asserted skills refer to the capability and competence to perform a task well. Wang (2017) also stated and one must possess a mastery of critical thinking to acquire a CT ability to perform skills. In the clinical setting, nine out of 14 participants thought guided questions, eight of 14 thought knowledge of concepts and seven of 14 participants thought small group discussions were the most common strategies used to foster critical thinking. These findings are consistent with the themes stated by the nurse educators as the most commonly used in the classroom to improve critical thinking.

All 14 of the nurse educators believed students needed knowledge of content from class and the skills lab to incorporate the lower-order thinking skills of remembering, understanding, and applying to guide students in critical thinking abilities. Also, the nurse educators assumed students create their knowledge base, acquire an understanding of that knowledge base and then start to use the higher-order thinking skills of synthesis, analysis and evaluation in problem-solving patient situations. It appears that students prefer to engage with nurse educators in discussions, guided questions, and synthesizing knowledge to enhance CT abilities. According to Schulz and FitzPatrick (2016), teachers agreed that teaching thinking is important and can be effective when subject content is taught, when students are engaged in discussions that include questions and answers, and when students are exposed to higher-order thinking. The results in

this study revealed the nurse educators believed that this approach leads to students' independent thinking.

The use of guided questions, debriefing clinical experiences, small group discussions and the knowledge of concepts were the strategies most commonly used in the classroom, skills lab, and clinical setting to foster critical thinking. For example, the nurse educators gave responses of a scenario from clinic that could be used for discussion in class, skills lab and clinical. After the morning report is received from the previous nurse, students are asked by their clinical instructor about the patients' diagnosis, co-morbidities, and clinical status. Students are then asked to prioritize the patients' care based on the morning report. Students collect patient information during the clinical experience that include patient history, knowledge of the patient's disease process, labs, diagnostics, and medications to analyze and plan the patients' care. Students then set new goals and outcomes based on the patients' status. At the end of the day when students and the instructor meet for a post-conference, guided questions that includes debriefing clinical experiences with small group discussions occur. Evaluation of care is also discussed to determine if the care was effective and to determine the next steps to affect positive patient outcomes. This process appears to be an effective tool to enhance critical- thinking abilities in first year nursing students.

Discussion of the Results in Relation to the Literature

This study explored the teaching strategies used by nurse educators to foster critical thinking in first-year associate degree nursing students. The data collected from the nurse educators' responses revealed multiple teaching strategies were used to promote critical thinking. This section will include the relationship between the results and reviewed literature, which concentrated on the lack of a definition of critical thinking in nursing, the strategies that were

used to cultivate critical thinking in nursing education, the contributing factors such as the HOM that enhance CT abilities, and the inability of nurse educators to teach and evaluate CT skills or provide experiences to further the development of CT abilities in new nurses.

Critical thinking has been considered as an essential skill in nursing education programs and described as an important education outcome for all learners (Hunter, Pitt, Croce, & Roche, 2014; Riccio, 2015, Cassum & Gul, 2017; Wang, 2017)**.** However**,** new nursing students have been described as lacking in CT skills and abilities (Farrar and Suggs, 2010; Oermann et al., 2010). The work force seeks to find individuals who can critically think (Benjamin et al., 2015). The clinical learning environment has been recognized as essential to nursing education and provides nursing students with reasoning knowledge, psychomotor, and demonstrative-nursing skills (McClure & Black, 2013). The clinical learning environment is a holistic approach to patient care that allows students to have active involvement and collaboration with the healthcare team, patients, families, faculty and other students (McClure & Black, 2013).

Lacking definition of critical thinking in the nursing profession. Educators agree that critical thinking and higher-order thinking are important skills; however, many educators lack understanding of what critical thinking and higher-order thinking is and how to teach and assess it, regardless of the strategies used (Chan, 2013; Gul et al., 2014; Schulz & FitzPatrick, 2016; Wang, 2017). Nurse educators also agree that critical thinking is transformative and is a cognitive skill, which requires logical thinking (Riccio, 2015). Transformative thinking includes reflective thinking where students are engaged into new ways of thinking (Riccio, 2015). McDonald et al. (2014) asserted active-learning teaching strategies and reflection should be introduced early in the curriculum and educators must be prepared to adopt course structures that challenge students to higher- order cognitive processes that allows for interaction and

engagement. Therefore, it is imperative that nurse educators are skilled in using innovative teaching methods to foster critical thinking development to improve performance outcomes. And educational institutions need to prepare nurse educators to use teaching strategies that stimulate critical thinking and develop nursing students to work in complex environments (Carvalho et al., 2016).

Critical thinking was described by the nurse educators in this study in terms of phrases and related concepts. The nurse educators focused on the premise that students needed to have a knowledge of content, needed the ability to break down information, and apply it to patient situations to problem solve. Too, six out of the14 participants believed that critical thinking included the ability to act and find solutions. These were the major themes from the participants' responses. Peaks (2018) stated that critical thinking is a process used to care for patients that include collecting data, interpreting information, implementing interventions, and evaluating outcomes (p. 81). Peaks' (2018) definition aligns with the processes that make up the nursing process (*Nursing: A concept-based approach to learning*, 2015).

Facione's (1990) definition of critical thinking is one of the most widely used definitions of critical thinking; however, it is not a nursing definition. It incorporated expansive thinking that included "interpretation, analysis, evaluation, and inference, explanation, and self-regulation" (p. 5). Facione (1990) also stated it was a tool of inquiry that included problem-solving and reflection. Chan (2013) agreed with this definition and found that nurse educators believed that students used critical thinking when they anticipate problems and know how to respond to those problems. Scheffer and Rubenfeld's (2000) study provided a nursing consensus statement of CT. The statement's definition included affective and cognitive aspects that included the HOM and the cognitive skills of "analyzing, applying, discriminating, information

seeking, logical reasoning, predicting, and transforming knowledge" (p. 357). Even though the nursing profession has placed an emphasis on critical thinking and required the concept to be included as one of the core elements of curricula, there has not been a definition agreed upon for the nursing profession. Therefore, it is conceivable that nurse educators do not know how to define CT or how to incorporate it in the curriculum and evaluate its effectiveness.

In a study by Abrami et al. (2015) standardized measures of CT as outcome variables were examined. The results demonstrated that there are effective strategies for teaching CT skills at all educational levels and across all disciplines. The study found dialogue, exposing students to situational problems and examples, and mentoring had positive effects on CT skills. Riccio (2015) found that students expressed the need for quality instruction and instructor interaction, which created an environment that increased learning, and the students felt their critical thinking improved. The responses from this study revealed that through instructor interactions upon debriefing clinical experiences, asking guiding questions with small group discussions, having a knowledge of concepts using instructor led scenarios and situational learning, the learning environment was conducive for learning critical thinking.

Strategies used to cultivate critical thinking in nursing education. According to Tilchin and Raiyn (2015), it is important for nurse educators to use instructional strategies that will promote CT abilities that guide students to learn advanced nursing concepts and solve complicated problems. Oermann (2015) contended active- learning strategies promote increased learning and problem-solving. The study data supported the strategies used by the nurse educators to foster critical thinking were the higher-order thinking skills of apply, analyze, evaluate, and create. Most of the nurse educators' responses included knowledge of content, gathering information, applying and analyzing information, and problem-solving, which are the

higher-level cognitive processes stated in Bloom's revised taxonomy. The nurse educators believed the instructional strategies used in the classroom, skills lab, and clinical setting aided in the development of CT skills.

Conceptual framework-Bloom's revised taxonomy. The following section will include a discussion of the related literature to the research findings and the conceptual framework. For this study, the conceptual framework was Bloom's revised taxonomy based on the work of Anderson et al. (2001) and Krathwohl (2002) and the HOM based on the work of Costa (2008). Bloom's revised taxonomy was comprised of a hierarchy of knowledge and cognitive processes from simple to complex: *remember, understand, apply, analyze, evaluate,* and *create* (Krathwohl, 2002). The revised taxonomy was intended to help students learn by promoting knowledge transfer and using knowledge to aid in successful problem-solving, which is a higher level of thinking. This higher level of cognitive thinking is needed for nursing students to use CT abilities to effectively problem-solve (Anderson et al., 2001; Krathwohl, 2002). Hence, it is important for nurse educators to develop instructional strategies to incorporate all six categories of Bloom's revised taxonomy to guide students to critically think (Adams, 2015; Su & Osisek, 2011; Wang, 2017). Also, the learning activities that require a higher level of thinking using action verbs have proved to be the most effective in assessing the knowledge and skills taught and lead to deeper meaning (Adams, 2015; Krathwohl, 2002).

The nurse educators' responses in this study revealed that Bloom's revised taxonomy was important for fostering critical thinking and all participants believed the lower-order cognitive processes *remember* and the higher-order process *analyze* were used by first-year nursing students. They also stated that the hierarchy was from simple to complex and that students' knowledge should build from the bottom of the pyramid to the top. Thirteen of the participants

believed the remaining cognitive processes of Bloom's revised taxonomy were important in fostering CT; 13 believed *understand* was important, 11 believed *apply* was important, and 12 believed *evaluate* was important. Only five of the 14 participants believed that *create* was a skill that first-year students could apply. Since nurses use the nursing process in their daily practice, the cognitive process *create* could be interpreted as being used to evaluate the patient's care to develop goals to meet patient outcomes when outcomes are not met. Also, nurse educators need more education on the application of Bloom's revised taxonomy in the curriculum.

Conceptual framework- habits of mind. In outcomes-based learning environments, the HOM (Costa, 2008; Costa & Kallick, 2008) correlate with Bloom's revised taxonomy of cognitive processes of knowledge, and these processes can be integrated to stimulate critical thinking. "The HOM are a composite of skills, attitudes, cues, past experiences, and proclivities" of intellectual behaviors that lead to productive problem-solving (Costa, 2008, p. 17). These behaviors are used when students are faced with questions and problems where the answers are not instantly known. The intelligent aspect focuses on a pattern of behaviors that leads to productive actions. When students use the behaviors of inquiry, thinking flexibly, creating, learning from others with empathy and understanding, managing impulsivity, and taking responsible risk, they employ the HOM that promotes a higher level of thinking for problem solving and making good decision (Costa, 2008).

The results of this study indicated educators agreed the HOM and CT abilities that included application, analysis, evaluation and problem-solving were essential elements for nursing students to have to assess critical thinking outcomes. Research has shown that the HOM contribute to success and achievement (Costa, 2008; Raymond-Seniuk & Profetto-McGrath, 2011; Heick, 2012; Hazard, 2013, Costa & Kallick, 2008.). Costa and Kallick (2008) suggested

the HOM provided guidelines for interaction that results in changing practices that lead to problem-solving and a shared vision. Educators must engage in sincere conversations with students about the habits and behaviors that add to college success and assist in cultivating them. HOM focus attention on the student's ability to intellectually thrive and can be integrated in Bloom's higher categories of thinking; analyzing, evaluating, and creating and lead to the abilities needed for critical thinking.

Only five of the nurse educators believed that confidence and flexibility reflect the HOM that are essential to CT abilities. This was surprising since nursing students must be confident in their ability to identify complex alterations in health and recognize and know when to report adverse changes in the patient status to the healthcare provider. They must also be flexible in their approach to resolving complex patient problems. For students to work at a higher level, they must develop these HOM dispositions to be successful (Costa & Kallick, 2008). Educators must also develop students who are confident in their decision-making with the ability to think. Research confirms students and educators must use the HOM to learn to confront and solve problems (Costa & Kallick, 2008). Costa (2008) asserted flexible thinkers are confident in their perceptions. This study did not prove this in the nurse educators' responses since only four out of the 14 believed intuition and reflection was an important HOM for critical thinking.

Nursing process. Critical thinking in nursing requires the nurse to problem-solve and make clinical judgments and decisions to generate the best outcomes (Dickison, Haerling, & Lasater, 2017). Nurses use the nursing process to plan and evaluate nursing care using a scientific step-by-step problem-solving process of assessment, diagnosis, planning, interventions, and evaluation. Though the nursing process has been found to be effective in guiding the nurse in caring for patients, it is described as linear and narrowly focused (Yildirim & Ozkahraman,

2011). The findings of this study were unexpected with only four out of 14 nurse educators who felt that the nursing process was an effective strategy for fostering CT abilities in the classroom, one out of 14 in the skills lab, and three of 14 in the clinical setting. After nurses gather patient information through obtaining a detailed history and assessment of the patient status, nurses use the nursing process to analyze, synthesize, and evaluate patients (Jones, 2013, p. 1). These higher-order thinking skills help to improve critical thinking skills by providing a means to interpret and reason in solving complex problems. Higher-order thinking combined with the HOM promotes the educational development of critical thinking (Budsankom, Sawangboon, Damrononpanit, & Chuensirimongkol, 2015; Schultz & Fitzpatrick, 2016; Wang, 2017).

Raymond-Seniuk and Profetto-McGrath (2011), cited a nursing definition of critical thinking by Alfaro-Lefevre (2009):

> Critical thinking and clinical judgment in nursing is a) purposeful, informed, outcome focused (results-oriented) thinking, b) carefully identifies key problems, issues , and risks, c) is based on principles of nursing process, problem-solving and the scientific method, d) applies logic, intuition, and creativity, e) is driven by patient, family, and community needs, f) calls for strategies that make the most of human potential and, g) requires constant reevaluating self-correcting, and striving to improve. (p. 7)

Alfaro-Lefevre's (2009) definition is comprehensive and has essential elements required of critical thinking from a nursing perspective. The Alfaro-Lefevre definition is also outcomes-focused and assumes a strong link between critical thinking, nursing judgment, and clinical reasoning. This definition aligns with the scientific steps of the nursing process: assessment, diagnoses, planning, intervention, and evaluation. Consequently, it was surprising that the nurse

educators in this study placed less emphasis on the nursing process as an effective strategy for fostering critical thinking in nursing practice.

Chan (2013) described components of critical thinking as perceived by nurse educators as a process that included analysis, evaluation, and inference. He further expanded critical thinking to include the ability to gather and seek information, question and investigate, and problem-solve and apply theory. His study also found nurse educators regarded students as critical thinkers when they use critical reflection and anticipate problems before they arise and know what to do when problems arise. It follows that, the literature supports the belief that students need to be able to gather information, questions and investigate, and to problem-solve while critically reflecting through analysis, inference and evaluation to become critical thinkers. Abrami et al. (2015) concluded "critical thinking is purposeful, self-regulatory judgment, that results in interpretation, analysis, evaluation, and inference" (p. 275). The nurse educators in this study placed emphasis on the students' ability to gather and seek information, assimilate information, analyze, problem-solve and evaluate information to foster critical thinking. They also stated the higher-order thinking skills of analyzing and evaluating were strategies used to foster critical thinking.

Challenges of nurse educators. Researchers have found that educators are challenged with educating students to a deeper level of thinking; as a result, active learning and student engagement have proved to be key components to teaching CT abilities (Jones, 2013; Andreou, Papastavrou, & Merkouris, 2014; Tedesco-Schneck, 2013; Cassum & Gul, 2017). Active-learning techniques promote cognitive processes that lead to higher thinking, which leads to higher level of patient care (Youngblood & Beitz, 2001; Marques, 2012, Wang, 2017). Active learning also stimulates learner engagement, which "enhances the learner's assimilation of the

content and concepts" (Banfield, Fagan, & Janes, 2012, p. 24). Some examples of active-learning techniques include case studies, group projects and activities, questions and answer dialogues between the learners and the teachers that probes the student's viewpoint that seek to clarify, explain, and justify (Abrami et al., 2015; Cassum & Gul, 2017; Wang, 2017). Active-learning strategies also seek to use assessment of higher order processing and metacognitive knowledge with performance strategies (Raths, 2002; Airasian & Miranda, 2002; Jones, 2013).

Abrami et al. (2015) contended active learning strategies have a positive effect on CT skills. In addition, Shin, Sok, Hyun, and Kim (2015) suggested active learning strategies provide learners with CT skills and abilities and motivate students in clinical practice. Simulation has also been identified as an active learning strategy to promote critical thinking skills and a deeper understanding of content using a small group learning method. Simulation provides opportunities for student engagement, allowing students to experience realistic clinical situations in a nonthreatening environment (Bowling & Eismann, 2017, p. 96). As demonstrated in the results of this study, nurse educators use many of these active- learning strategies to guide students in demonstrating CT skills in nursing practice. The nurse educators detailed in their responses that debriefing clinical experiences, guided questions, small group discussions, knowledge of concepts, and instructor-led scenarios/situational learning were teaching strategies used most to improve critical thinking. Case studies, hands-on demonstration of skills, simulation, and the use of the nursing process were also listed as strategies used to promote critical thinking.

Consequently, it is conceivable that if nurse educators are trained to teach critical thinking and trained to assess and evaluate the effectiveness of their teaching, their students can be taught to critically think. Nurses must have the ability to recognize potential hazards in a patient's condition, ask pertinent questions, perform advanced nursing interventions, anticipate

orders, and prioritize care (Cassum & Gul, 2017; Wang, 2017; Fero, Witsberger, Wesmiller, Zullo, & Hoffman, 2009). Tajvidi, Ghiyasvandian, and Salsali (2014), contended if critical thinking is taught correctly, it will improve the status of nursing, as well as the quality of education. Cassum and Gul (2017) emphasized nurses need CT skills to confront complex heath concerns and having a quality education promotes the development of critical thinking skills.

Themes from the research. I discovered that multiple themes were identified to describe the strategies used to improve and foster CT abilities in first-year nursing students. One of the major themes among nurse educators was knowledge of nursing content. The students have a good knowledge base of nursing content and use that knowledge to assimilate information to promote positive patient outcomes. The next theme was interaction of students with their teachers. Through student engagement and interaction with their teachers critical thinking is cultivated. The most significant theme as stated by the nurse educators in this study were the active- learning strategies used to foster critical thinking in all three settings, which include the classroom, skills lab, and clinical setting. The strategies were debriefing clinical experiences, case studies, the use of guided questions and small group discussions with questions and answers. Hands-on demonstration of skills was the main strategies used in the skills lab. The review of literature supports this awareness (Youngblood & Beitz, 2001; Banfield, Fagan, & Janes, 2012; Marques, 2012; Tedesco-Schneck, 2013, Cassum & Gul, 2017; Wang, 2017).

Limitations

The study had several limitations. The study was limited to one community college with a sample of 14 nurse educators participating. Although the sample size was small, it allowed me to probe more deeply into the lived experiences of the participants. The results may be different if applied to a larger population of nurse educators who have taught first-year nursing students

using different teaching modalities. Also, the study may have had different results from nurse educators who teach in different schools of nursing, such as a baccalaureate curriculum or an institution with curriculums that explicitly include critical thinking. The participants' ethnicities, cultural beliefs, ages, and years of nursing experience may have influenced their responses to the interview questions. Further research in other ADN programs in the state of North Carolina and other ADN systems of community college nursing in other geographical regions may elicit difference viewpoints and responses.

Also, the length of time given to the participants to review the definitions may have limited their ability to discuss the impacts on fostering critical thinking. For example, the nurse educators had one week to review the definitions and may have elicited more thorough responses into the lived experiences of clinical reasoning, clinical judgment, the HOM, and critical thinking if they had additional time to review and understand these concepts. Likewise, a review of the research questions by experts for clarity may have improved the overall validity of the questions. Nurse educators tend to be challenged with producing meaningful data of a student's ability to make appropriate clinical judgments in the clinical setting (Dickison, Haerling, & Lasater, 2017). While the nurse educators can provide some insight into critical thinking, further studies need to be done to provide a more direct measure of the student's perception of critical thinking compared with the nurse educator's perceptions.

Implications of the Results for Practice, Policy, and Theory

Practice. Nurse educators should be educated to teach and evaluate critical thinking. Research has shown that one of the major principles of education is that students need to learn to become good thinkers and clear teaching of thinking is essential (Schulz & FitzPatrick, 2016; Wang, 2017). For nurse educators to teach critical thinking, it must be clearly defined and

understood (Kabeel & Mosa Eisa, 2016). My study clearly defined critical thinking from the perspective of the research of literature and it was discovered that nurse educators relate to the definition as defined by Alfaro-Lefevre (2009). Critical thinking and clinical judgment in nursing have been described as purposeful, logical, creative, outcome focused, which require constant evaluation and reevaluation to improve patient outcomes (Alfaro-Lefevre, 2009). This definition is comprehensive and contains essential elements that are aligned with the nursing process that uses the problem-solving and scientific method to promote positive patient outcomes. However, the nursing profession does not have a clearly defined definition of critical thinking.

It is clear in the literature that CT in nursing is important and essential to enhance student's CT development and equally important to improve educators' ability in teaching critical thinking (Fero et al., 2009; Chan, 2013; Newton & Moore, 2013; Josephsen, 2014; Tajvidi, Ghiyasvandian, & Salsali, 2014; Cassum & Gul, 2017; Wang, 2017). According to the U.S. Department of Education, the National League for Nursing (NLN) and the American Association of Colleges of Nursing (AACN), CT is an important part of undergraduate nursing education (Department of Education National Education Goals 2000 Panel, 1992; National League for Nursing, 1992; American Association of Colleges of Nursing, 1998). However, the challenge is that there is no clearly defined definition of critical thinking for the discipline of nursing. While this study did not craft a definition of critical thinking, the nurse educators did identify related concepts that encompass critical thinking. The nurse educators focused on the assumption that nursing students needed to have a good foundation of the knowledge of content, the ability to analyze and synthesize information, and the ability to apply that information for problem-solving. The nurse educators also believed students needed the ability to interpret

information, act by implementing interventions, and find plausible solutions for complex conditions.

Nurse educators should use teaching pedagogies that promote engagement, competence, reflection, and stimulating discussions between the learner and the teacher (Cassum & Gul, 2017). Active- learning skills have been researched and proven to enhance the development of critical- thinking skills (Cassum & Gul, 2017; Tedesco-Schneck, 2013). Active- learning teaching strategies foster communication and have been shown to increase critical thinking, problem-solving, decision-making, clinical reasoning and clinical judgment and should be used instead of the traditional learning approach that does not encourage critical thinking (Cassum & Gul, 2017). Researchers have discovered that the most frequently used strategies for teaching critical thinking are group discussions, concept mapping, and guided questions (Wang, 2017). Further use of active- learning strategies are implicated for teaching critical- thinking skills to prepare new nursing students for the complexities in healthcare and nursing practice.

Nurse educators should also be educated on the HOM and the relationship they have with critical thinking and have educational opportunities to teach them how to implement the HOM and CT in instructional pedagogy. Students should also be taught the HOM to help them to be more reflective in their practice (Costa, 2008). Since, the literature states that critical thinking is not clearly understood and there is no definition of critical thinking for the nursing profession (Raymond-Seniuk & Profetto-McGrath, 2011; Schultz & Fitzpatrick, 2016), a consensus definition of critical thinking should be established for the profession by nursing professionals from all levels of nursing practice. Nursing education programs should also implement strategies that promote critical thinking that includes clinical reasoning and clinical judgment (Kabeel & Mosa Eisa, 2016). Researchers have considered critical thinking, clinical reasoning, and clinical

judgment essential attributes for nurses to have to make decisions and solve complex patient problems (Cassum & Gul, 2017; Kabeel & Mosa Eisa, 2016).

The use of Bloom's revised taxonomy (Anderson et al., 2001; Krathwohl, 2002) can be used to encourage nursing students to learn from a lower-order thinking to a higher-order thinking and combine the components of the knowledge processes with the cognitive processes to foster critical thinking. Critical thinking can be introduced as a criterion for the taxonomy and how it is interpreted (Wang, 2017)**.** Bloom's revised taxonomy provides a complex perspective on learning and cognition when using action verbs that promote higher levels of cognitive skills in the role of assessment. Nurses need the ability to use application, analysis, evaluation, and create to develop critical thinking skills to perform as leaders in healthcare today.

The revised taxonomy was intended to help teachers teach and learners learn to promote higher levels of skills in the role of assessment (Anderson et al., 2001). Hence, nurse educators should incorporate Bloom's revised taxonomy into the curriculum to guide students to a higher level of thinking. Nurse educators should also be encouraged and taught to devise instructional strategies to incorporate all six categories of Bloom's taxonomy to guide students to critically think. Learning activities that use action verbs that require higher levels of cognitive skills leading to deeper learning has proven to be the best in assessing the skills and knowledge taught (Adams, 2015, p. 153;; Krathwohl, 2002; Raths, 2002). Therefore; as indicated in the literature, students will be able to use critical analysis of what they know and understand to apply, analyze, and create solutions and answers to complex problems and use the behaviors of the HOM to perform productive actions (Costa, 2008; Costa & Kallick, 2008; Krathwohl, 2002, Papathanasiou et al., 2014; Wang, 2017).

Policy. The results of this study do not reflect the views of all nurse educators in the community college setting regarding a nursing definition of critical thinking. All the nurse educators of my study agreed that critical thinking is necessary and important in nursing practice. For nurse educators to teach critical thinking, it must be clearly defined and understood, and the environment must engage students in critical reflection and evaluation (Jones, 2013; Kabeel & Mosa Eisa, 2016). The critical thinking skills of students need to be strengthened through a variety of educational strategies that involves investigative inquiry, explanation, clarification, and justification (Jones, 2013). And so, nurse educators need to be equipped to guide students to become critical thinkers. For this reason, further research should be directed toward an approved definition of critical thinking in nursing. The nurse educators in this study agreed that there was a great need for a clear definition of critical thinking in nursing and they were receptive to participating in developing a policy that would formulate a definition for critical thinking in nursing.

Educators also need more knowledge on the HOM and how to integrate the HOM into the curriculum. They should also be more skillful in employing the HOM in the culture of the organization. With a focus on HOM, educators must be able to cultivate students' attitudes, beliefs, habits, and behaviors to illuminate issues to solve complex problems that affect nursing practice and patient outcomes. The HOM facilitate thinking as the focus of curriculum and instruction (Costa & Kallick, 2008). The behavioral aspects of instruction assume students should have content knowledge of a specific discipline that is teacher-directed. For example, the HOM that would be necessary would be to strive for accuracy, thinking with clarity and precision, and remain open to continuous learning. However, if students need to be more metacognitive in their thinking, the HOM attitudes of wonderment and awe, developing a sense

of curiosity, creating imagining, and innovation, and thinking interdependently would be necessary.

Organizations should adopt the HOM as essential outcomes of the curriculum and instruction and expect teachers to incorporate the vocabulary of the HOM in instruction. It should also be emphasized that learning activities should be centered around the HOM to develop Metacognitive thinking as a vehicle for organizational interactions that lead to higher performance in solving problems (Costa & Kallick, 2008). The nurse educators in this study agreed that there was a need for education and policy change to incorporate the HOM in the curriculum and practice. The nurse educators agreed that multiple educational strategies were needed to get students to critically think. The nurse educators also agreed students needed to be challenged through probing and thought-provoking questions that elicit a deeper response to enable students to be more reflective, evaluative, and interpretive.

The implications of this phenomenological study also suggest it would be productive for the college to explore professional development opportunities for nurse educators to improve teaching strategies that foster critical thinking. The aim of a policy change for professional development in this area would also enhance teacher instructional skills and lead to increased academic achievement and performance in the classroom and in nursing practice (Elliott & Oliver, 2016). The nurse educators also believed faculty development is vital to enhancing teacher effectiveness and student learning outcomes.

Theory. The results from this study did have implications on the theories listed by Bloom's revised taxonomy, based on the work of Anderson et al (2001) and Krathwohl (2002), and the HOM based on the work of Costa's (2008). The conceptual framework of Bloom's revised taxonomy (Anderson et al., 2001: Krathwohl, 2002) provided a framework to apply

teaching methods to improve critical-thinking strategies using the cognitive processes to progress from lower-order thinking to higher-order thinking. According to Bloom et al (1956) learning takes place from simple to complex when using the cognitive processes. First-year nursing students build on a foundation of obtaining knowledge of content with understanding and progress to applying that knowledge to complex patient problems. Next there is an analysis of patient information to provide safe, effective care. Finally, patient care is further evaluated, and new actions are created when necessary to affect positive patient outcomes. The findings of the study support this contention.

The HOM are also used to elicit responses to complex problems (Costa, 2008). Therefore, students must be challenged with constructing meaning of the phenomenon of critical thinking with using these behaviors to enhance their capacities to problem-solve, make decisions, and construct new ideas. Students must also be able to use the components of HOM that include knowledge and creativity (Hazard, 2013; Costa, 2008; Costa & Kallick, 2008). Bruner (1960) maintained students are active learners who construct their own knowledge and meaning from experience. The learner takes ownership of his or her learning by the integration of new information with prior knowledge from their own personal experiences (Liu & Chen, 2010). The results of this study suggested that nursing instructors structured their knowledge, based on their own personal experiences in their role as instructors. As the data from this study indicated, nursing instructors at the community college continue to make meaning of their lived experiences to enhance the CT abilities of first-year nursing students.

Bloom's revised taxonomy and the HOM was relevant to this case study because the community college nursing instructors' attitudes and lived experiences regarding critical-thinking strategies contributed to the importance of promoting critical thinking in first-year

nursing students. The findings of this study suggested that the nurse educators have different ways of using active learning strategies to teach critical thinking. The data gathered from the study added to Bloom's revised taxonomy and the HOM because the nurse educators were able to give meaning to their experiences by their interactions with students as the students learned to construct and deconstruct knowledge, an ability that is needed for critical thinking.

Recommendations for Further Research

I hoped to achieve from this study an influence in nursing practice by empowering nurse educators to advance their level of thinking and teaching to guide nurses to critically think at the beginning of their nursing career and throughout practice. Nursing practice demands that nurses can identify alterations in health and illness in complex patients with several diagnosis and in multiple settings. Nursing practice must illustrate the skills and competency necessary to make intelligent inquiry into patient problems. More education for nurse educators needs to be included regarding the concept of critical thinking, clinical reasoning, and clinical judgment. Nurse educators also need to be educated on critical thinking and how to apply and incorporate it in the curriculum and how to evaluate its effectiveness.

Since researchers agree critical thinking and clinical judgment are necessary to explore complex problems (Kabeel & Mosa Eisa, 2016), educational research is needed to determine how these skills are acquired and integrated and how to use them in nursing practice. Moreover, nurse educators need to continue to explore nontraditional learning methods to improve critical thinking, rather than relying on traditional methods, such as lecture that results in rote learning. Lee, Lee, Gong, Bae, and Choi (2016), discovered several learning methods; reflective writing, case studies, and concept mapping improve critical thinking. Concept mapping is an organized visual method that allows the learner to evaluate patient data and apply interventions to promote

positive outcomes. The researchers found concept mapping is a more effective method of teaching critical thinking than traditional approaches. Wang (2017) also found concept mapping to be a successful strategy for teaching critical thinking.

Moreover, more research needs to be conducted with a larger sample of experts in nursing to find a consensus on a definition of critical thinking for the nursing profession. My study did not develop a definition of critical thinking; however, it did promote a discussion of what critical thinking is from the nurse educators' perspectives and how to use it in the curriculum to guide students to critically think. Further research is also needed to identify the educational needs of nurse educators relating to the HOM, critical thinking, and the use of Bloom's revised taxonomy to enhance critical thinking and learning. For students to be successful academic performers, they must engage in behaviors and attitudes that attribute to college success and learn how to cultivate them (Heick, 2012; Hazard, 2013). Nurse educators should have the ability to instill these attributes in students to prepare them for the advanced changes in technology, healthcare, and multifaceted patient conditions. Costa and Kallick (2008) contended teachers should get into the habit of teaching the vocabulary of the HOM using learning activities that involve asking questions and through reflection and using the vocabulary frequently in the curriculum.

Bloom's revised taxonomy (Adams, 2015; Anderson et al., 2001; Krathwohl, 2002) improved form the original taxonomy by using action words added to the cognitive and knowledge matrix and can be used for creating performance objectives in the curriculum. Nurse educators must have professional development opportunities to learn strategies to aid in the application in Bloom's revised taxonomy to prepare students as peak performers. It is an important framework for teachers to use to foster higher-order thinking and critical thinking.

With the use of the hierarchy levels of the cognitive processes from a continuum of increasing complexity, the taxonomy can teach teachers to design performance tasks, craft critical thinking questions, and provide feedback to students on the work (Anderson & Krathwohl, 2001).

Nurses continue to be challenged to prepare students with the knowledge and skills to problem-solve, use clinical judgment, and clinical decision-making (Fahlberg et al., 2014; Josephsen, 2014,). Research continues to emphasize the importance of assessment, mentoring, and coaching to improve and validate students' problem-solving and decision-making skills (Cassum & Gul, 2017; Fahlberg et al., 2014; Fero et al., 2009; Josephsen, 2014, Schultz & Fitzpatrick, 2016; Wang, 2017). Professional development opportunities geared toward critical thinking should be made available to nurse educators to enhance their ability to educate students on critical thinking to meet the demands of nursing practice and healthcare policy today (Elliott & Oliver, 2016). Elliott and Oliver (2016) further contended that few studies have been conducted to determine the effectiveness of professional development programs for educators to enhance student academic achievement. Tedesco-Schneck (2013) contended the lack of competencies of nurse educators in educating students in critical thinking from the traditional approach of lecture to more active learning approaches is a roadblock to the path of students' becoming critical thinkers. Tedesco-Schneck (2013) further stated the barriers to a more effective learning approach is lack of time, faculty resistance, structural barriers, and devaluing a nurse educators' ability to teach has hindered nursing faculty. Thus, educational institutions should provide the necessary environments and resources to enable nurse educators to meet the educational needs of students.

Also, future studies on the strategies used to foster critical thinking may provide more insight if the sample is larger in a different geographic location and at different educational

levels. It may also be beneficial to research the strategies used to foster the CT of other nursing students and faculty at different educational levels in nursing education, such as Licensed Practical Nurse (LPN), Associate Degree Nurse (ADN), Bachelor of Science in Nursing (BSN) nurses or nurses with advanced practice degrees, such as Master of Science in Nursing (MSN), to see if the results will reveal the same or similar responses. Furthermore, it would be advantageous to examine the strategies used to foster critical thinking for the beginning nursing student and the senior nursing student in all levels of nursing education to determine if the experienced nurse have better CT skills and if the same nursing strategies are used to promote critical thinking.

Conclusion

The research results of this study confirm the importance of the concept of critical thinking for students in nursing practice and for all learners. Students must make sound clinical judgments in nursing practice and be prepared to use clinical reasoning to problem-solve and find solutions to complex problems. Students must be able to analyze, synthesize, and evaluate patient outcomes to become critical thinkers. For that reason, nurse educators need to be competent in knowledge of content and use that knowledge to convey reasoning, judgment, inquiry, and evaluation to patient situations in nursing practice.

Notably, it is imperative that nurse educators are equipped to prepare nursing students to meet the demands of complex patients and take on more leadership roles in healthcare. When considering the skills needed to engage in critical thinking, the use of a conceptual framework is important to empower nurses to learn to critical think. Learning to use Bloom's revised taxonomy is an option that can help the learner synthesize simple to complex ideas and can allow for the development of the essential CT skills needed in nursing. The nurse educators in study

agree the cognitive processes of analysis, synthesis, evaluation, and create will lead to higher-order thinking that includes creative thinking and problem-solving. It is also believed that these skills are used to achieve a belief, judgment, or action in caring for complex patient conditions. The nursing educators also maintained interpretation is a skill that will help the learner to understand and interpret different points of view. Additionally, the nurse educators believed the HOM are also behaviors, attitudes, and habits that help nurses foster critical thinking when dealing with complex problems. The nurse educators in this study also maintained the HOM provide guidelines for interaction of people thinking together to promote effective problem-solving, while facilitating a shared vision as consistently noted in the literature (Wang, 2017). As a result, the focus of nursing education demands nurse educators to be able to integrate the HOM with critical thinking strategies to prepare nursing students for the complexities in nursing practice.

Nurse educators are given the responsibility to prepare nursing students for the complexities in healthcare and to meet the challenges of current nursing practice as well as the demands of the future in nursing practice. Nurses are also challenged to prepare students with the knowledge and skills to problem-solve, use clinical judgment, and clinical decision-making. Because of this reality, there needs to be more research to understand and define critical thinking for the profession of nursing to promote consistency in nursing education regarding the concept of CT and the expectations of the graduate nurse in nursing practice. Furthermore, since research has revealed critical thinking and the HOM are necessary components for critical thinking, nurse educators should understand and know how to teach the HOM and combine them with CT abilities in the curriculum to prepare nursing students for nursing practice. Teachers must also

get into the practice of using HOM vocabulary and offer opportunities for students to engage in using the HOM in their reflections and plans for meaningful learning.

Alternative approaches to traditional pedagogies, such as lecture and power point presentations, must be explored to encourage students to engage in inquiry and develop critical thinking. These learning strategies are considered passive rote learning (Cassum & Gul 2017). Research also support active learning approaches in curriculum to facilitate critical thinking (Bristol et al., 2019; Cassum & Gul, 2017; Shin, Sok, Hyun, & Kim 2015; Tedesco-Schneck, 2013; Wang, 2017). The educators in this study provided responses that demonstrated the use of active- learning approaches such as small group discussions, knowledge of concepts, case studies, guided questions, debriefing clinical experiences, simulation, care-mapping and instructor- led scenarios/situational learning. However, more nursing education is needed for creative approaches to pedagogy that include how to implement and evaluate creative active-learning strategies for student engagement and learning to foster critical thinking.

References

Abrami, P. C., Bernard, R. M., Borokhovski, E., Waddington, D. I., Wade, C. A., & Persson, T. (2015, June). Strategies for teaching students to think critically: A meta-analysis. *Review of Educational Research*, *85*(2), 275–314. http://dx.doi.org/10.3102/0034654314551063

Adams, K. A., & Lawrence, E. K. (2015). *Research methods, statistics, and applications*. Thousand Oaks, CA: Sage.

Adams, N. E. (2015, July). Bloom's taxonomy of cognitive learning objectives. *Journal of Medical Library Association*, *103*(3), 152–153. http://dx.doi.org/10.3163/1536-5050.103.3.010

Airasian, P. W., & Miranda, H. (2002, Autumn). The role of assessment in the revised taxonomy. *Theory Into Practice, 41*(4), 249–254. Retrieved from http://www.unco.edu/cetl/sir/stating_outcome/documents/Krathwohl.pdf

Alfaro-Lefevre, R. (2009). *Critical thinking and clinical judgment: A practical approach to outcome- focused thinking* (4th ed.). St Louis, MO: Saunders Elsevier.

American Association of Colleges. (2008). *The essentials of baccalaureate education for professional nursing practice*. Washington, DC: American Association of Colleges.

American Association of Colleges of Nurses. (2017). *Federal Policy Agenda 2017–2018: Advancing higher education in nursing.* Retrieved from http://www.aacn.nche.edu/education-resources/BaccEssentials98.pdf

American Association of Colleges of Nursing. (1998). *The essentials of baccalaureate education for professional nursing practice*. Washington, DC: AACN.

American Association of Colleges of Nursing. (2008). *The essentials of baccalaureate education for professional nursing practice*. Retrieved from http://www.aacn.nche.edu/education-resources/BaccEssentials08.pdf

American Philosophical Association. (1990). *Critical thinking: A statement of expert consensus for purposes of educational assessment and instruction* [The Delphi Report]. Millbrae, CA: The California Academic Press.

Anderson, C. (2010). Presenting and evaluating qualitative research. *American Journal of Pharmaceutical Education, 74*(8), Article 141. Retrieved From https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2987281/.

Anderson, L., & Krathwohl, D. (2001). *A taxonomy for learning, teaching, and assessing*. New York, NY: Longman.

Anderson, L. W., Krathwohl, D. R., Airasian, P. W., Cruikshank, K. A., Mayer, R. E., Pintrich, P. R., . . . Wittrock, M. C. (Eds.). (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives (complete edition*). New York, NY: Longman.

Andreou, C., Papastavrou, E., & Merkouris, A. (2014). Learning styles and critical thinking relationship in baccalaureate nursing education: A systematic review. *Nurse Education Today*, *34*, 362–371.

Antonenko, P. D. (2015). The instrumental value of conceptual frameworks in educational technology research. *Educational Technology, Research and Development*, *63*(1). 53–71. http://dx.doi.org.cupdx.idm.oclc.org/10.1007/s11423-014-9363-4

Armstrong, P. (2010). Bloom's taxonomy. Retrieved from https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/#2001

Ashworth, P. (2015). Conceptual foundations of qualitative psychology. In J. A. Smith (Ed.), *Qualitative psychology: A practical guide to research methods* (3rd ed., pp. 4–24). Thousand Oaks, CA: Sage.

Banfield, V., Fagan, B., & Janes, C. (2012, Spring). 2009-2010 Spacelabs Innovation Project Award: Charting a new course in knowledge: Creating life-long critical care thinkers. *Dynamics*, *23*(1), 24–28.

Barnett, J. E., & Francis, A. L. (2012). Using higher order thinking questions to foster critical thinking: a classroom study. *Educational Psychology*, *32*(2), 201–211. http://dx.doi.org/10.1080/01443410.2011.638619

Beischel, K. P., & Davis, D. S. (2014). A time for change: QSENizing the curriculum. *Nurse Educator*, *39*(2), 65–71.

Benjamin, R., Klein, S., Steedle, J., Zahner, D., Elliot, S., & Patterson, J. (2015). *The case for CT skills and performance assessment*. Retrieved from Council for Aid to Education website: http://cae.org/images/uploads/pdf/The_Case_for_Critical_Thinking_Skills.pdf

Benner, P. (1984). *From novice to expert: Excellence and power in clinical nursing practice*. Reading, MA: Addison-Wesley.

Berbiglia, V. A. (2011). The self-care deficit nursing theory as a curriculum conceptual framework in baccalaureate education. *Nursing Science Quarterly*, *24*(2), 137–145.

Biddix, J. P. (2009). Qualitative coding and analysis. Retrieved from https://researchrundowns.com/qual/qualitative-coding-analysis/

Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1956). Taxonomy of educational objectives: The classification of educational goals: Handbook I: Cognitive

domain. In *Taxonomy of educational objectives: Cognitive and affective domains* (pp. 1–207). New York, NY: David McKay Company.

Bowles, D. J. (2006). Active learning strategies . . . Not for the birds!. *International Journal of Nursing Education Scholarship, 3*(1), 1–11. Retrieved from http://web.a.ebscohost.com.cupdx.idm.oclc.org/ehost/pdfviewer/pdfviewer?sid=e949f135-cff9-462a-a97d-2718c6ab8865%40sessionmgr4009&vid=1&hid=4107

Bowling, A. M., & Eismann, M. (2017, March/April). An innovative and successful simulation day. *Nursing Education Perspectives, 38*(2), 96–97.

Brinkman, S., & Kvale, S. (2014). *Interviews: Learning the craft of qualitative research interviewing* (3rd ed.). Los Angeles, CA: Sage.

Bristol, T., Hagler, D., McMillian-Bohler, J., Wermers, R., Hatch, D., & Oermann, M. (2019). Nurse educator's use of lecture and active learning. *Teaching and Learning in Nursing*. 14, 94–96.

Bruner, J. (1960). *The process of education*. Cambridge, MA: Harvard University Press.

Budsankom, P., Sawangboon, T., Damronongpanit, S., & Chuensirimongkol, J. (2015, October 10). Factors affecting higher order thinking skills of students: A meta-analytic structural equation modeling study. *Educational Research and Reviews, 10*(19), 2639–2652. http://dx.doi.org/ 10.5897/ERR2015.2371

Carvalho, D., Azevedo, I. C., Cruz, G. K., Mafra, G. A., Rego, A. L., Vitor, A. F., . . . Ferreira Junior, M. A. (2017). Strategies used for the promotion of critical thinking in nursing undergraduate education: A systematic review. *Nurse Education Today, 57,* 103–107. https://doi.org/10.1016/j.medt.2017.07.010

Cassum, S. H., & Gul, R. B. (2017). Creating enabling environment for student engagement: Faculty practices of critical thinking. *International Journal of Higher Education*, *6*(1), 101–111.

Chan, Z. C. (2013). A systematic review of critical thinking in nursing education. *Nurse Education Today*, *33*, 236–240.

Costa, A. L. (2008). Describing the habits of mind. In *Learning and leading with HOM* (Ch. 2, pp. 15–41). Alexandria, VA: ASCD.

Costa, A. L., & Kallick, B. (2008). *Learning and Leading with Habits of Mind: 16 Essential Characteristics for Success. Alexandria*, VA: ASCD. Retrieved from http://search.ebscohost.com.cupdx.idm.oclc/login.aspx?direct=true&db=nlebk&AN=262381&site=ehost-live&scope=site

Creswell, J. W. (2013). *Qualitative inquiry & research design: Choosing among five approaches* (3rd ed.). Los Angeles, CA: Sage.

Creswell, J. W. (2014). Research design: Qualitative, quantitative, and mixed methods approaches. Thousand Oaks, CA: Sage.

Creswell, J. W.. & Poth, C. N. (2018). *Qualitative inquiry & research design: Choosing among five approaches* (4th ed.). Thousand Oaks, CA: Sage.

Crouch, S. J. (2015, First Quarter). Predicting success in nursing programs. *Journal of College Teaching & Learning*, *12*(1), 45–53.

Department of Education National Education Goals 2000 Panel (1992). *The task force on assessing the national goal relating to postsecondary education*. Washington DC: U.S. Printing Office

Dickison, P. (2017). Integrating the national council of state boards of nursing clinical judgment model into nursing educational frameworks. *Journal of Nursing Education*, *58*(2), 72–78. https://doi.org/10.3928/01484834-20190122-03

Dickison, P., Lou, X., Kim, D., Woo, A., Muntean, W., & Bergstrom, B. (2016). Assessing higher-order cognitive constructs by using an information-processing framework. *Journal of Applied Testing Technology*, *17*, 1–19.

Edmonds, M. (2013, April). "I want to be a nurse!" A qualitative descriptive study on the impact of an "Introduction to nursing" course. *Journal of Education and Training Studies*, *1*(1), 221–226.

Elliott, R. W., & Oliver, D. E. (2016). Linking faculty development to community college student achievement: A mixed methods approach. *Community College Journal of Research and Practice*, *40*(2), 85–99. http://dx.doi.org/10.1080/10668926.2014.961590

Elliott, V. (2018). Thinking about the coding process in qualitative data analysis. *The Qualitative Report 2018*, *23*(11), 2850–2861. Retrieved from https://nsuworks.nova.edu/cgi/viewcontent.cgi?article=3560&context=tqr

Facione, N. C., & Facione, P. A. (1994). *The California critical thinking skills test and the National League for Nursing Accreditation requirement for critical thinking* [A Resource Paper]. Millbrae, CA: The California Academic Press.

Facione, P. A. (1990). *The Delphi Report. Critical thinking: A statement of expert consensus for purposes of educational assessment and instruction*. Retrieved from http://files.eric.ed.gov/fulltext/ED315423.pdf

Facione, P. A. (2006). *Critical thinking: What is it and why it counts*. Millbrae, CA: California Academic Press.

Facione, P. A. (2015 update). Critical thinking: What it is and why it counts. Retrieved from www.insightassessment.com/.../1176/7580/file/what&why.pdf

Fahlberg, B., Rice, E., Muehrer, R., & Brey, D. (*2014*). Active learning environments in nursing education: The experience of the University of Wisconsin-Madison School of Nursing. *New Directions for Teaching and Learning*, *2014*(137), 85–94. http://dx.doi.org/10.1002/tl.20089

Farrar, F. C., & Suggs, L. (2010, May). Empowering critical thinking skills with computerized patient simulators. *Journal of College Teaching and Learning*, *7*(5), 1–3.

Faryadi, Q. (2018). PhD thesis writing process: A systematic approach—How to write your literature review. *Creative Education*, 9, 2912–2919. https://doi.org/10.4236/ce.2018.916219

Fero, L. J., Witsberger, C. M., Wesmiller, S. W., Zullo, T. G., & Hoffman, L. A. (2009). Critical thinking ability of new graduate and experienced nurses. *Journal of Advanced Nursing*, *65*(1), 139–148. http://dx.doi.org/10.1111/j.1365-2648.2008.04834.x

Gauthier, G., & LaJoie, S. P. (2014). Do expert clinical teachers have a shared understanding of what constitutes a competent reasoning performance in case-based teaching? *Instructional Science*, *42,* 579–594. https://doi.org/10.1007/s11251-013-9290-5

Grossman, S., Krom, Z. R., & O'Connor, R. (2010). Innovative solutions: Using case studies to generate increased nurse's clinical decision-making ability in critical care. *Dimensions of Critical Care Nursing*, *29*(3), 138–142. Retrieved from http://ovidsp.ovid.com.cupdx.idm.oclc.org/ovidweb.cgi?T=JS&CSC=Y&NEWS=N&PAGE=fulltext&AN=00003465-201005000-00010&LSLINK=80&D=ovft

Gul, R. B., Ahmed, A., Cassum, S., Saeed, T., Parpio, Y., Profetto-McGrath, J., & Schopflocher, D. (2014). Enhancing educators' skills for promoting critical thinking in their classroom discourses: A randomized control trial. *International Journal of Teaching and Learning in Higher Education*, *26*(1), 37–54.

Hammond, K. R. (Ed.). (1978). Toward increasing competence of thought in public policy formation. *Judgement and decision in public policy formation* (pp. 11-32). Boulder, CO: Westview Press.

Hazard, L. (2013, Spring). Cultivating the Habits of Mind for student success and achievement. *Research and Teaching in Developmental Education*, *29*(2), 45–48.

Heick, T. (2012, October 19). Critical thinking: Integrating the 16 Habits Of Mind [Edutopia comment]. Retrieved from http://www.edutopia.org/blog/habits-of-mind-terrell-heick

Hunter, S., Pitt, V., Croce, N., & Roche, J. (2014). Critical thinking skills of undergraduate nursing students: Description and demographic predictors. *Nurse Education Today*, *34*, 809–814.

Husserl, E. (1913). *Ideas: General introduction to pure phenomenology* (Trans. W. R. Boyce Gibson, 1937). New York, NY: Macmillan.

Jamshed, S. (2014). Qualitative research method-interviewing and observation. *Journal of Basic and Clinical Pharmacy*, *5*(4), 87–88. http://dx.doi.org/10.4103/0976-0105.141942

Johnson, K. (2013, February). Beyond standards: Disciplinary and national perspectives on habits of mind. *College of Composition and Communication*, *64*(3), 517–541.

Jones, R. C. (2013, July 29). The instructor's challenge: Moving students beyond opinions to critical thinking. *Faculty Focus*. Retrieved from

http://www.facultyfocus.com/articles/effective-teaching-strategies/the-instructors-challenge-moving-students-beyond-opinions-to-critical-thinking/

Josephsen, J. (2014). Critically reflexive theory: A proposal for nursing education. *Advances in Nursing*, 1–7.

Kabeel, A. R., & Mosa Eisa, S. E. (2016). The correlation of critical thinking disposition and approaches to learning among baccalaureate nursing students. *Journal of Education and Practice, 7*(32), 91–103.

Kaddoura, M. (2013, June). Think pair share: A teaching learning strategy to enhance students' critical thinking. *Educational Research Quarterly, 36*(4), 3–24.

Kaddoura, M. (2013, March). New graduate nurses' perceived definition of critical thinking during their first nursing experience. *Educational Research Quarterly, 36*(3), 3–21.

Kammer, R., Schreiner, L., Kim, Y. K., & Denial, A. (2015, April). The validation of the active learning in health professions scale. *Interdisciplinary Journal of Problem-Based Learning*, *9*(1), 58–72. http://dx.doi.org/10.7771/1541-5015.1504

Kelly, M. A., Forber, J., Conlon, L., Roche, M., & Stasa, H. (2013). Empowering the registered nurses of tomorrow: Students' perspectives of a simulation experience for recognizing and managing a deteriorating patient, *Nurse Education Today.* doi: 10.1016/j.nedt.2013.08.014

Kolb, A. Y., & Kolb, D. A. (2005). Learning styles and learning spaces: Enhancing experiential learning in higher education. *Academy of Management Learning & Education*, *4*(2), 193–212.

Krathwohl, D. R. (2002, Autumn). A revision of Bloom's taxonomy: An overview. *Theory Into Practice, 41*(4), 212–218. Retrieved from http://www.unco.edu/cetl/sir/stating_outcome/documents/Krathwohl.pdf

Kvale, S. (2012). *Doing interviews*. Thousand Oaks, CA: Sage.

L'Ecuyer, K., Pole, D., & Leander, S. A. (2015). The use of PBL in an interprofessional education course for health care for health care professional students. *Interdisciplinary Journal of Problem-Based Learning*, *9*(1), 9–18. http://dx.doi.org/10.7771/1541.5015.1497

Lee, J. H., Lee, Y., Gong, S., Bae, J., & Choi, M. (20*16*). A meta-analysis of the effects on non-traditional teaching methods on the critical thinking abilities of nursing students. *BMC Medical Education*, *16*(1), 240–249. https://doi.org/10.1186/s12909-016-0761-7

Liu, C. C., & Chen, I. J. (2010). Evolution of constructivism. *Contemporary Issues in Education Research, 3*(4), 63–66. doi:10.19030/cierv.3i4.199

LPN Scope of Practice-clarification. (n.d.). Retrieved from NCBON: www.ncbon.com/myfiles/downloads/position-statements-decision-trees/lpn-position-statement.pdf

Maneval, R. E., Filburn, M. J., Deringer, S. O., & Lum, G. D. (2011, July/ August). Concept mapping: Does it improve critical thinking ability in practical nursing students? *Nursing Education Research*, *32*(4), 229–233.

Marques, J. F. (2012). Moving from trance to think: Why we need to polish our critical thinking skills. *International Journal of Leadership Studies, 7*(1), 87–95. Retrieved from http://www.regent.edu/acad/global/publications/ijls/new/vol7iss1/IJLS_Vol7Iss1_Marques_pp87-95.pdf

Marques, J. F. (2012). Moving from trance to think: Why we need to polish our critical thinking skills. *International Journal of Leadership Studies, 7*(1), 87–95. Retrieved from http://www.regent.edu/acad/global/publications/ijls/new/vol7iss1/IJLS_Vol7Iss1_Marques_pp87-95.pdf

McClure, E., & Black, L. (2013). The role of the clinical preceptor: An integrative literature review. *Journal of Nursing Education, 52*(6), 335–341. https://doi.org/Retrieved from

McDonald, P. L., Straker, H. O., Schlumpf, K. S., & Plack, M. M. (2014, November). Learning partnership: Students and faculty learning together to facilitate reflection and higher order thinking in a blended course. *Online Learning*, *18*(4), 1–21.

Moustakas, C. (1994). *Phenomenological research methods*. Thousand Oaks, CA: Sage.

National League for Nursing. (1989). *Criteria for the evaluation of baccalaureate and higher degree programs in nursing*. New York, NY: Author.

National League for Nursing. (1992). *Criteria and guidelines for the evaluation of baccalaureate and higher degree programs of nursing education*. New York, NY: NLN.

National League for Nursing Accrediting Commission, Inc. (2012). http://www.nlnac.com/Manual%20&%20IG/2003Edition/Manual_I.pdf

National league for nursing commission for nursing education accreditation: Accreditation standards for nursing education programs. (February, 2016). Retrieved from http://www.nln.org/docs/default-source/accreditation-services/cnea-standards-final-february-201613f2bf5c78366c709642ff00005f0421.pdf?sfvrsn=10

Nazir, J. (2016). Using phenomenology to conduct environmental education research: Experience and issues. *The Journal of Environmental Education, 47*(3), 179–190. http://doi.org/ 10.1080/00958964.2015.1063473

Newton, S. E., & Moore, G. (2013, May/June). Critical thinking skills of basic baccalaureate and accelerated second-degree nursing students. *Nursing Education Perspectives, 34*(3), 154–158. Retrieved from http://search.proquest.com.cupdx.idm.oclc.org/docview/1370894743?accountid=10248

Noble, H., & Smith, J. (2015). Issues of validity and reliability in qualitative research. *Evidenced-Based Nursing, 18,* 34–35.

Nursing: A concept-based approach to learning. (2015). In K. Trakalo (Ed.), *Nursing: A concept-based approach to learning* (2nd ed., Vol. 2; pp. 2269–2301). Boston, MA: Pearson.

Oermann, M. H. (2015). Technology and teaching innovation in nursing education: Engaging the student. *Nurse Educator, 40,* 55–56. https://doi.org/10.1097/NNE.0000000000000139.

Oermann, M. H., Poole-Dawkins, K., Alvarez, M. T., Foster, B. B., & O'Sullivan, R. (2010). Manager's perspectives of new graduates of accelerated nursing programs: How do they compare with other graduates? *The Journal of Continuing Education in Nursing*, *41*(9), 3944–00. https://dx.doi.org/10.3928/00220124-20100601-01

Omer, T. (2016). Nursing students' perceptions of satisfaction and self-confidence with clinical simulation experience. *Journal of Education and Practice, 7(5),* 131–138.

Oja, K. J. (2011). Using problem- based learning in the clinical setting to improve nursing students' critical thinking: An evidence review. *Journal of Nursing Education*, *50*(3), 145–151.

Oppenheimer, D. M., & Kelso, E. (2015). Information processing as a paradigm for decision making. *Annual Review of Psychology*, *3*, 277–294.

Padilla-Díaz, M. (2015). Phenomenology in educational qualitative research: philosophy as science or philosophical science? *International Journal of Educational Excellence*, *1*(2),

101–110. Retrieved from https://pdfs.semanticscholar.org/1c75/935d3682047beb9723ce467a136b8456e794.pdf

Papathanasiou, I. V., Kleisiaris, C. F., Fradelos, E. C., Kakou, K., & Kourkouta, L. (2014). Critical thinking: The development of an essential skill for nursing students. *ACTA INFORM MED*, *22*(4), 283–286. http://dx.doi.org/10.5455/aim.2014.22.283-286

Paul, R. (1992). What, why, and how. *New Directions for Community Colleges*, *77*, 3–24.

Peaks, P. V. (2018, July). Developing critical thinking in perioperative staff members. *AORN Journal*, *108*(1), 81–85. https://doi.org/10.1002/aorn.12295

Peisachovich, E. H., Murtha, S., Phillips, A., & Messinger, G. (2016). Flipping the classroom: A pedagogical approach to applying clinical judgment by engaging, interacting, and collaborating with nursing students. *International Journal of Higher Education*, *5*(4), 114–121.

Pintrich, P. R. (2002, Autumn). The role of metacognitive knowledge in learning, teaching, and assessing, *Theory Into Practice*, *41*(4), 219–225.

Qualitative research methods and methodology. (2016). Retrieved from http://atlasti.com/qualitative-research-methods/

Qais, F. (2017). *Everything you need to know about PhD thesis writing: from proposal to viva*. Malaysia: Future Expert Solutions.

Quay, J. (2016) Learning phenomenology with Heidegger: Experiencing the phenomenological 'starting point' as the beginning of phenomenological research. *Educational Philosophy and Theory*, *48*(5), 484–497. https://doi.org/10.1080/00131857.2015.1035632

Raths, J. (2002, Autumn). Improving instruction. *Theory Into Practice*, *41*(4), 233–237. Retrieved from http://www.unco.edu/cetl/sir/stating_outcome/documents/Krathwohl.pdf

Raymond-Seniuk, C., & Profetto-McGrath, J. (2011). Can one learn to think critically? - A philosophical exploration. *The Open Nursing Journal*, *5*, 45–51.

Riccio, P. A. (2015). Predictors of improvement in critical thinking skills among nursing students in an online graduate nursing research course. *Universal Journal of Educational Research*, *3*(9), 606–609. https://doi.org/10.13189/ujer2015.030904

RN Scope of Practice-clarification. (n.d.). Retrieved from NCBON website: www.ncbon.com/myfiles/downloads/position-statements-decision-trees/rn-position-statement.pdf

Rubin, H. J., & Rubin, I. S. (2011). *Qualitative interviewing: The art of hearing data* (3rd ed.). Thousand Oaks, CA: Sage.

Saldaña, J. (2013). *The coding manual of qualitative researchers* (2nd ed.). Thousand Oaks, CA: Sage.

Samson, P. L. (2015). Fostering student engagement: Creative problem-solving in small group facilitations. *Collected Essays on Learning and Teaching*, *VIII*, 153–164. Retrieved from www.stlhe.ca

Scheffer, B. K., & Rubenfeld, M. G. (2000). A consensus statement on critical thinking in nursing. *Journal of Nursing Education*, *39*(8), 352–359. https://doi.org/Retrieved from

Schulz, H., & FitzPatrick, B. (2016, Spring). Teachers' understandings of critical and higher order thinking and what this means for their teaching and assessments. *Alberta Journal of Educational Research*, *62*(1), 61–86.

Shaw, R. (2014). How critical is critical thinking?. *National Association for Music Education*, *65*, 65–70. https://doi.org/10.117/00274327432114544376

Shim, W., & Walczak, K. (2012). The impact of faculty teaching practices on the development of students' critical thinking skills. *International Journal of Teaching and Learning in Higher Education*, *24*(1), 16–30. Retrieved from http://www.isetl.org/ijtlhe/pdf/IJTLHE1128.pdf

Shin, H., Sok, S., Hyun, K. S., & Kim, M. J. (2015). Competency and an active learning program in undergraduate nursing education. *Journal of Advanced Nursing*, *71*(3), 591–598. http://dx.doi.org/10.1111/jan.12564

Sommers, C.L. (2018). Measurement of critical thinking, clinical reasoning, and clinical judgment in culturally diverse nursing students-A literature review. *Nursing Education in Practice*, 30, 91–100. https://doi.org/10.1016j.nepr.2018.04.002

Stevens, R. (2015). Role-play and student engagement: reflections from the classroom. *Teaching in Higher Education*, *20*(5), 481–492. http://dx.doi.org/10.1080/13562517.2015.1020778

Su, W. M., & Osisek, P. J. (2011). The revised Bloom's taxonomy: Implications for educating nurses. *The Journal of Continuing Education in Nursing*, *42*(7), 321–327. http://dx.doi.org/10.3928/00220124-20110621-05

Tajvidi, M., Ghiyasvandian, S., & Salsali, M. (2014). Probing concepts of critical thinking in nursing education in Iran: A concept analysis. *Asian Nursing Research, 8*, 158–164.

Tedesco-Schneck, M. (2013). Active learning as a path to critical thinking: Are competencies a roadblock? *Nurse Education in Practice*, *13*, 58–60.

Thayer-Bacon, B. (2000). *Transforming critical thinking: Thinking constructively*. New York, NY: Teachers College Press.

The future of nursing: Focus on education [IOM Report brief]. (2010). Retrieved from National Academies website:

http://nationalacademies.org/hmd/~/media/Files/Report%20Files/2010/The-Future-of-Nursing/Nursing%20Education%202010%20Brief.pdf

The Joint Commission. (2016). Sentinel event policy and procedures. Retrieved from https://www.jointcommission.org/sentinel_event_policy_and_procedures

Thyer, B. A. (2012). *Quasi- Experimental research designs*. Oxford England, UK: Oxford University Press.

Tilchin, O., & Raiyn, J. (2015). Computer-mediated assessment of higher-order thinking development. *International Journal of Higher Education, 1*, 225–231.

Vanderbilt University Center for Teaching. (2019). Bloom's Taxonomy. Retrieved from https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/

Wang, S. (2017). An exploration into research on critical thinking and its cultivation: An overview. *Theory and Practice in Language Studies, 7*(12), 1266–1280. https://doi.org/10.17507/tpls.0712.14

Watson, G., & Glaser, E. (1980). *Manual: Watson-Glaser Critical thinking Appraisal*. Cleveland, OH: Jovanovich.

Webster, D., & Dibartolo, M. C. (2014). Using a standardized patient learning activity to teach baccalaureate nursing students about dementia care. *Nurse Educator*, *39*(3), 103–104.

Yildirim, B., & Ozkahraman, S. (2011, September). Critical thinking in nursing process and education. *International Journal of Humanities and Social Science, 1*(13), 257–262.

Yin, R. K. (2009). *Case study research: Design and method* (4th ed.). Thousand Oaks, CA: Sage.

Youngblood, N., & Beitz, J. (2001, January/February). Developing critical thinking with active learning strategies. *Nurse Educator*, *26*(1), 39–42.

Yu, W. W., Charlie, C., Ho, M., & Wang, J. (2015, January). Technology facilitated PBL pedagogy and its impact on nursing student's academic achievement and critical thinking dispositions. *The Turkish Online Journal of Educational Technology, 14*(1), 97–107.

Yuan, H. B., Williams, B. A., & Man, C. Y. (2014). Nursing students' clinical judgment in high-fidelity simulation-based learning: A quasi-experimental study. *Journal of Nursing Education and Practice*, *4*(5), 7–15. http://dx.doi.org/10.5430/jnep.v4n5p7

Yuan, H., Williams, B. A., & Fan, L. (2008). A systematic review of selected evidence on developing nursing students' critical thinking through problem-based learning. *Nurse Education Today*, *28*, 657–663.

Appendix A: Interview Questions for the Participants in the Study

1. What is your definition of critical thinking based on your experiences with students in nursing education?

2. Tell me about the teaching strategies or methods you have used to improve the students' understanding of critical thinking in the classroom?

3. Tell me about the strategies or methods you have used to apply critical thinking in the skills lab?

4. Tell me about the strategies or methods you have used to implement critical thinking in the clinical setting?

5. According to (Chan, 2013), critical thinking abilities are defined as the ability to gather and seek information, question and investigate, problem-solve and apply theory, analysis, evaluation and inference. It also includes clinical judgement that is results-oriented (Raymond-Seniuk & Profetto-McGrath, 2011). Explain the process of how the Habits of Mind compare to those abilities?

6. How do you evaluate the critical thinking abilities of first-year nursing students?

7. Tell me how you combine the cognitive processes of Bloom's taxonomy to foster critical thinking?

8. Explain what a first-year nursing student would do when a patient develops an alteration in health status in the clinical setting?

9. Tell me a time when a nursing student used appropriate CT abilities to provide safe and effective care that promoted positive patient outcomes?

10. In this study, student assignments are defined as the students' ability to use prior knowledge to understand how to apply, analyze and create solutions and answers to complex problems (Anderson & Krathwohl et al., 2001, Costa, 2008). How do you use clinical reasoning to foster creativity in student assignments?

Appendix B: Terms and Definitions

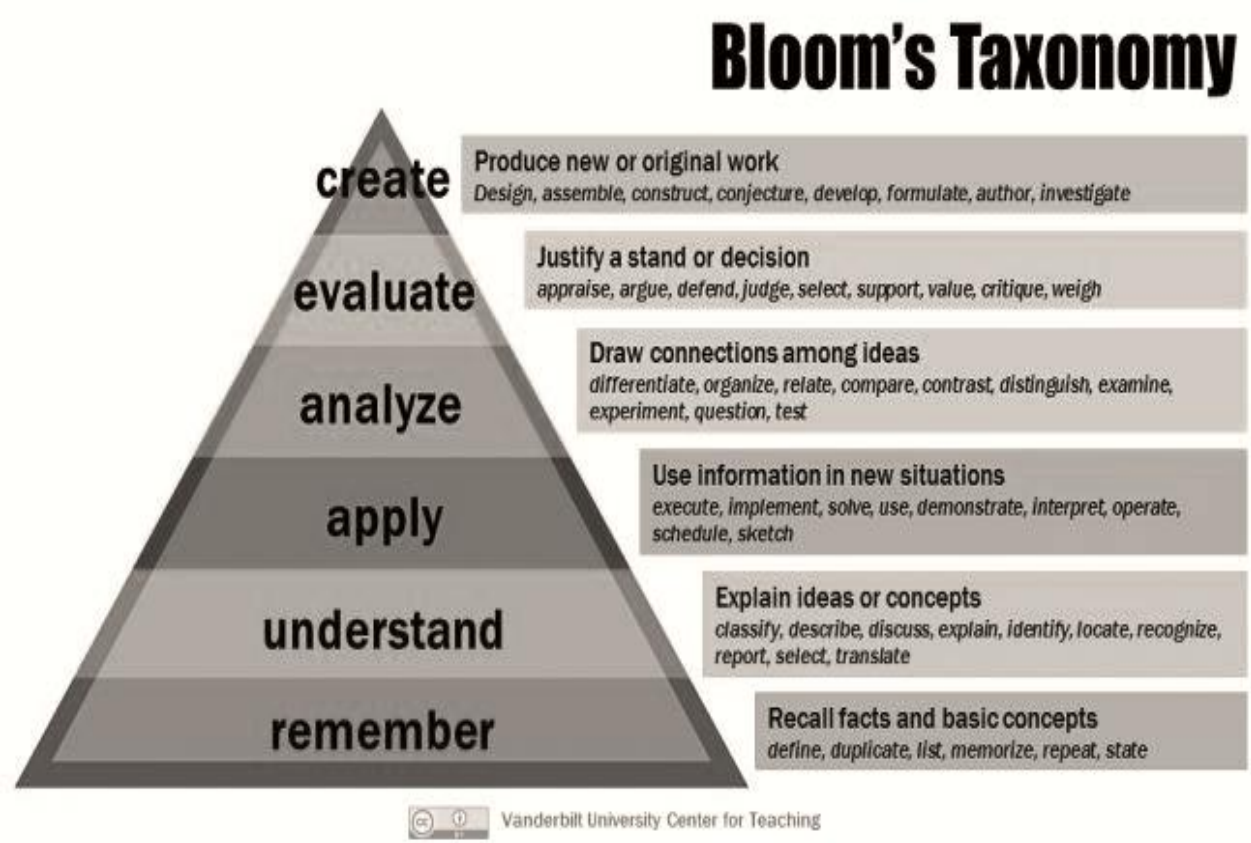
Terms	Definitions
Bloom's Revised Taxonomy	*Bloom's revised taxonomy* was comprised of knowledge and cognitive processes: r*emember*, *understand*, *apply, analyze, and evaluate, create.*
Clinical Reasoning	*Clinical reasoning:* the nurse collects information about the patient's problem or situation, develops and implements a plan of action, evaluates the outcomes and reflects on the effectiveness of the outcomes.
CT Abilities	*CT abilities:* the capacity to gather and seek information, question and investigate, problem-solve and apply theory, analysis, evaluation and inference, and clinical judgment that is results-oriented.
Higher -Order Thinking	*Higher-Order Thinking:* a thinking process that use skills such as analysis, synthesis, comparison, inference, interpretation, assessment, inductive and deductive reasoning to find answers, make decisions, and solve problems.
Methods	M*ethod*s are defined as techniques and procedures that guide in collecting and evaluating data.
Strategy (Active-Learning Strategies)	A*ctive-learning strategies* used for instruction are student-centered, engage students, and encourage critical thinking and do not include lecture. Some examples include case studies, concept mapping, role playing, simulation, reflective-practice, experiential-learning, cooperative-learning, and problem-based Learning.

Appendix C: Habits of Mind

The Habits of Mind as described by Raymond Seniuk and Profetto-McGrath (2011) include: confidence, flexibility, inquisitiveness, intuition, open-mindedness, perseverance, and reflection. 16 Habits of Mind (Costa, 2008) A composite of many attitudes and ques, past experiences, and proclivities. It implies more choices about the patterns of behaviors we use in certain situations.

1. Persisting
2. Managing impulsively
3. Listening with understanding and empathy
4. Thinking flexibly
5. Thinking about thinking (Metacognition)- evaluate the quality of your own thinking, becoming increasingly aware of ones' own actions and the effect of those actions on others and on the environment
6. Striving for accuracy
7. Questioning and posing problems
8. Applying past knowledge to new situations
9. Thinking and communicating with clarity and precision
10. Gathering data through all senses
11. Creating, imagining and innovating
12. Responding with wonderment and awe
13. Taking responsible risks
14. Finding humor
15. Thinking interdependently
16. Remaining open to continuous learning

Appendix D: Bloom's Revised Taxonomy



Revised Bloom's Taxonomy

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Appendix E: Nurse Educators' Response to Students' Use of CT Abilities.

Nurse Educators	Responses
Ed A	"The student explained to a patient with heart failure, on flu restrictions what would happen if he drank too much water."
Ed B	**"**The student found a lab that was very low, due to the medicine given for vomiting. The patient had been vomiting a lot. The student reported it to the nurse, and they called the doctor together . . . doctor ordered specific medication for the patient based on the lab reporting data that the student found . . . I thought that was great. The student found something that nurses overlooked."
Ed C	"The student noted that the patient's blood pressure (BP) and heart rate were too low and questioned if to give the BP medicine."
Ed D	"The student assisted the nurse with putting an NG tube down and he started vomiting and he eviscerated His mid-line incision and tore his bowel . . . They quickly did all the right things . . . She remained Calm and prayed with the family . . . The staff talked about how she handled the situation. She was awesome."
Ed E	"The student assisted patient with going to the bathroom, and while in the bathroom the chest tube came out. She quickly put on gloves, turned the patient on the side and called for help. She saved the patient's life. This incident was put into the newspaper and was hired by the hospital."
Ed F	No example given. Stated what a student should do.
Ed G	"I had a student with a patient that had a blood pressure of 170/120 . . . student panicked . . . she came running out and grabbed Me. I bragged on her, because she came and found me and the nurse. She literally took us by the arm and said, 'come on, you have to come and check the patient with me.' She described the symptoms that the patient had . . . She put her knowledge into action and got the patient some help."
Ed H	"The student noted there were psychosocial problems in an affluent, pediatric patient's family that the nurse overlooked."
Ed I	No example given. Stated what a student should do.
Ed J	

Nurse Educators	Responses
	"The student detected a patient with a possible stroke (CVA). She noticed a change in the patient's level of consciousness (LOC). She reported It to me . . . nurse was unable to be found . . . patient ended up going for a CT scan and ended up being transferred to ICU."
Ed K	No example given.
Ed L	"The student was doing an assessment on a baby and noticed respiration higher than the normal range. The student informed the nurse and the nurse asked for suggestions from the student. The student suggested Chest PT. The nurse agreed, and the student performed Chest PT and the respirations returned back to normal."
Ed M	"The student was in the room with the nurse performing a dressing change. The student questioned the redness and inflammation, then asked If it could be a reaction to the tape. The nurse changed the tape to a stretchy tape."
Ed N	Participant's comments excluded due to participant excluded from study.
Ed O	"I had a student who had a psych patient that was able to say 'the patient was not talking right, and his tongue sounds thick. He's mumbling, and I know this is abnormal. I think he is probably having a reaction to the medicine.' The student went to the nurse and the nurse gave him a PRN medication."

Appendix F: Statement of Original Work

The Concordia University Doctor of Education Program is a collaborative community of scholar-practitioners, who seek to transform society by pursuing ethically-informed, rigorously- researched, inquiry-based projects that benefit professional, institutional, and local educational contexts. Each member of the community affirms throughout their program of study, adherence to the principles and standards outlined in the Concordia University Academic Integrity Policy. This policy states the following:

Statement of academic integrity.

As a member of the Concordia University community, I will neither engage in fraudulent or unauthorized behaviors in the presentation and completion of my work, nor will I provide unauthorized assistance to others.

Explanations:

What does "fraudulent" mean?

"Fraudulent" work is any material submitted for evaluation that is falsely or improperly presented as one's own. This includes, but is not limited to texts, graphics and other multi-media files appropriated from any source, including another individual, that are intentionally presented as all or part of a candidate's final work without full and complete documentation.

What is "unauthorized" assistance?

"Unauthorized assistance" refers to any support candidates solicit in the completion of their work, that has not been either explicitly specified as appropriate by the instructor, or any assistance that is understood in the class context as inappropriate. This can include, but is not limited to:

- Use of unauthorized notes or another's work during an online test
- Use of unauthorized notes or personal assistance in an online exam setting
- Inappropriate collaboration in preparation and/or completion of a project
- Unauthorized solicitation of professional resources for the completion of the work.

Statement of Original Work (Continued)

I attest that:

1. I have read, understood, and complied with all aspects of the Concordia University–Portland Academic Integrity Policy during the development and writing of this dissertation.

2. Where information and/or materials from outside sources has been used in the production of this dissertation, all information and/or materials from outside sources has been properly referenced and all permissions required for use of the information and/or materials have been obtained, in accordance with research standards outlined in the *Publication Manual of The American Psychological Association.*

Pamela Rogers

Digital Signature

Pamela Rogers

Name (Typed)

September 3, 2019

Date