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Testing a Reflection Education Intervention on Baccalaureate Nursing Students' Level of Reflection during Online Clinical Post Conference

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TESTING A REFLECTION EDUCATION INTERVENTION ON BACCALAUREATE
NURSING STUDENTS' LEVEL OF REFLECTION DURING
ONLINE CLINICAL POST CONFERENCE

by

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A dissertation submitted in partial fulfillment
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August 2013

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ABSTRACT

Testing a Reflection Education Intervention on Baccalaureate Nursing Students' Level of Reflection During Online Clinical Post Conference

By

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Background

The majority of faculty–student interactions are at low cognitive levels during nursing clinical post conference (CPC), a time often utilized for reflective thinking. Strategies have been implemented to promote or even teach reflection, but the level of reflection or impact of the intervention in nursing, such as the relationship to student attributes or clinical reasoning, is often not evaluated.

Specific Aims

The specific aims of this study are to (a) test the effect of a reflection education intervention on the baccalaureate students' level of reflection during online CPC, (b) examine the relationship between student attributes and level of reflection, and (c) examine the relationship between clinical reasoning and level of reflection.

Methods

A quasi-experimental, nonequivalent comparison group design was utilized, while up to six weeks of asynchronous online CPC was conducted during acute care clinical courses with three levels of students in a baccalaureate nursing program in Southern California.

Major Results

Prior health care experience was a predictor of level of reflection ($r = 0.37, p = 0.04$). Level of reflection was higher if participants had prior health care experience or a prior clinical failure ($t = 2.98, p < 0.01$). Level of reflection was higher if the participants were first year instead of second and third year ($t = 2.97, p < 0.01$).

Conclusion

There are three novel findings of this study. Prior health care experience predicts level of reflection in baccalaureate nursing students. Baccalaureate nursing students' level of reflection is higher if they had prior health care experience or a prior clinical failure. First year baccalaureate nursing students' level of reflection is higher than combined second and third year nursing students' level of reflection.

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DEDICATION

This dissertation is dedicated to my family. I would not have been able to accomplish such a feat without my husband, Sean, who encouraged me to continue on even when I thought I couldn't. To my children, Isaac, Iyana, and Ilijah, who have had patience when they just wanted to play, got short answers when they sought out my attention, and had to spend any time away from me so there were fewer distractions. Chapter 6 is done, so we can play now! Beyond my survivors at home and the support of the rest of my family and friends, there are so many who helped me along the way: Mom for all the errands, extra hours, and tolerance; Dad for your reading time and long distance phone support; my closest friends, Kelly and Linda, for the supportive words, texts, and encouragement; Meg, for your understanding, support, and shared tears along our dissertation journey; Joyce and family for your extra time, love, and attention to the kids. To the nursing students who inspired me to continue to improve my teaching in hopes of maintaining your own love for nursing and competence in practice. This accomplishment is only a reflection of all of the support and encouragement I had along the way to endure.

By three methods we may learn wisdom: First by reflection, which is noblest; second, by imitation, which is easiest; and third by experience, which is the bitterest. – Confucius

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CHAPTER 1

INTRODUCTION

Background

More than three-quarters of faculty and student verbal interactions during nursing clinical post conference (CPC) are fact reporting and other behaviors that represent a low cognitive level (Rossignol, 1997, 2000; Wink, 1993). Strategies have been implemented to promote reflection, but the impact of the reflective strategy on the level of reflection or cognitive level is often not evaluated (Ascano-Martin, 2008; Cooper, Taft, & Thelen, 2004; Pierson, 1998; Yehle & Royal, 2010). In addition, the literature review on reflection shows some study has been conducted teaching reflection and/or measuring levels of reflection; but, it has limitedly addressed students' level of reflection or the association to clinical reasoning or student attributes including age, gender, student level, grade point average (GPA), prior health care experience, and personality type. However, research evaluating students' level of reflection after an intervention may provide further information about best practices for teaching reflection in nursing curricula, such as education format, timing, delivery methods, and learner attributes toward reflection. The study may also help identify supports or barriers to students' ability to reflect and, potentially, their readiness to enter the nursing profession when they will make important clinical decisions about patient care.

Research Problem

In 2008, the National League for Nursing (NLN) sponsored a national interdisciplinary think tank on transforming clinical nursing education, calling for increased efforts to promote reflection and higher-order thinking in nursing education.

Three years later, the Institute of Medicine (2011) stated that in today's complex clinical setting, nurses are expected to provide competent, high quality, holistic patient care—and are expected to do so with a background provided by nursing education.

Furthermore, in 2005 Sigma Theta Tau International developed a task force of nurse leaders and scholars to address the scholarship of reflective practice in nursing education. This task force recommended that nursing education include reflective theory and processes in clinical education to enrich professional knowledge and skills.

In addition, according to the American Association of Critical-Care Nurses, holistic care, clinical decision-making, and reflection are the standards of care for nursing practice (Bell, 2008). Reflection improves patient care by enabling practitioners to self-identify current practice and recognize patient-centered desirable practices, in turn, improving patient care (Johns, 2009). Reflection also elevates nursing practice by (a) increasing nursing confidence; (b) improving job satisfaction, morale, and motivation; (c) providing clarity regarding documentation and professional credibility; and (d) maintaining the human, caring dimension in nursing practice (Thompson & Thompson, 2008). With these improvements, reflective learning may also assist leaders in acquiring the knowledge and skills to make better judgments in ambiguous situations (Densten & Gray, 2001).

Tanner (2010) also addressed the need to reform current clinical education practices (traditional practices) because of complex vulnerable patients, limitations for faculty to guide larger student groups, inadequate numbers of clinical sites, and traditional clinical learning practices, stating the following:

There is far too much down time, far too much time focused on doing repetitive tasks that do not result in new learning, and far too little time

focused on learning higher-order thinking skills. The sole reliance on a clinical education model that requires students to provide total patient care as their only or primary clinical activity is what stands between us and the mother lode of deep learning. (p. 3)

Specifically, the importance of reflection is to support a nurse's abilities to think at higher cognitive levels, evaluate circumstances and events, self-reflect, improve clinical reasoning, and contribute to the preparation of the nursing student to step into the role of the primary nurse. The significance of a nurse's clinical judgment and reasoning abilities impacting patient care, along with the acknowledgment of an increasingly complex clinical environment, has been repeatedly documented to address the need to transform clinical nursing education (Hughes, 2008; Murphy, 2004; Tanner, 2006). One method being utilized to accomplish these goals is the CPC (Benner, Sutphen, Leonard, & Day, 2010; Letizia, 1998).

Purpose

The CPC is an integral part of nursing education. Led by a faculty member, the CPC occurs during or immediately after the student's clinical time in the acute care setting. The major benefit of the CPC, when students discuss and reflect upon experiences as a group, is the opportunity for students to connect knowledge obtained during classroom lectures with hands-on practices caring for patients, while concurrently gaining insightful learning about the experiences of others (Benner et al., 2010; Gaberson & Oermann, 2010).

However, the traditional CPC format has difficulties. First, CPCs are usually conducted face-to-face, lasting only 50 to 60 min at the end of the day (Rossignol, 1997). This format is a critical barrier for reflection because of (a) time constraints that limit each student to process and share experiences, and (b) concerns about student

fatigue at the end of the clinical day (Cooper et al., 2004; Pierson, 1998). In addition, barriers to reflection include having an adequate knowledge base for how to carry out reflection and student reactions to demands for reflection (Hatton & Smith, 1995).

Unfortunately, the frequency of low cognitive interactions is a major problem during CPCs. Therefore, an innovative strategy to facilitate the development of reflection in CPCs is the use of online discussion boards. An online CPC engages students in reflective thinking by allowing increased time for thought, opportunities for students to participate equally, and the ability of students to respond at a time when they are less fatigued (Cooper et al., 2004). This unique learning opportunity links theory-based learning to clinical experiences while integrating self-reflection and peer insights to their knowledge base. However, while online discussion boards have successfully been utilized in many educational programs as an effective learning platform (Briceland & Hamilton, 2010; Dunfee, Rindfleisch, Driscoll, Hollman, & Plack, 2008; Glowacki-Dudka & Barnett, 2007; Meyer, 2003), they have not been widely administered in nursing clinical education (Cooper et al., 2004). While the advantage of online CPCs is the ability to measure levels of reflection by evaluating student writing, allowing time for student reflection, maintaining group learning opportunities, and offering equal student participation (Cooper et al., 2004), the impact of nursing students' level of reflection during asynchronous online CPCs is unknown. It is also unclear if nursing students' attributes or clinical reasoning scores have an association to levels of reflection.

There is agreement about the importance of reflective practice in nursing and strategies that can improve the ability to reflect (Carroll et al., 2002; Durgahee, 1996; Murphy, 2004; Platzer, Blake, & Ashford, 2000b; Teekman, 2000). However, there

remains no current study concentrating on testing a reflection education intervention or measuring students' level of reflection during online CPC. Although Cooper et al. (2004) found online CPC to be an adequate method as compared to traditional face-to-face CPC based on student knowledge, none of these aforementioned studies evaluated the effect of reflection education or measured levels of reflection during CPC (Ascano-Martin, 2008; Cooper et al., 2004; Yehle & Royal, 2010). Lastly, most research that did address patient outcomes specific to clinical reasoning or reflection was evaluated through qualitative methods or literature reviews, not a quasi-experimental approach (Epstein & Hundert, 2002; Platzer, Blake, & Ashford, 2000a; Shields, 1995), as in this study. While higher level reflection is important to promote in nursing students during online CPC because it provides a desired component to competent nursing practice, promotes the development of clinical reasoning, and is expected to improve patient safety and/or outcomes, a lack of empirical evidence guiding CPCs exists. Therefore, the specific aims of this study were as follows.

Specific Aims

The specific aims of this study were to (a) test the effect of a reflection education intervention on baccalaureate nursing students' level of reflection during online CPC, (b) examine the relationship between student attributes and level of reflection, and (c) examine the relationship between clinical reasoning and level of reflection.

Significance of the Study

Limited quantitative empirical research has evaluated the effect of an education intervention on baccalaureate nursing students' level of reflection. This study was innovative because a reflection intervention was implemented among three levels of

baccalaureate nursing students. The student written responses were evaluated through the use of asynchronous online CPC. There was analysis of the relationship between student attributes, clinical reasoning abilities, and levels of reflection. The ultimate goal of these innovative aspects of this study is to contribute to nursing education research in a new way and enhance the preparedness of new nurses, which may potentially offer future advances in nursing practices and/or improve patient outcomes.

This study may contribute to nursing education research by the use of an education intervention to evaluate the reflection in nursing clinical education. Different from other studies, this study evaluated reflection in nursing clinical education through quantitative measures. New knowledge may result to help direct best practices in introducing reflection education, such as with a certain level of student or about the relationship of reflection to student clinical reasoning. Applying reflection practices through online discussion board CPC presents some consideration for how the CPC time is spent, opening future discussions on best practices in CPC activities.

New graduates of today enter complex environments with sicker patients, where they are required to make accurate clinical decisions, using prior experience and knowledge, ultimately affecting the outcome of the health of the patient. For example, early recognition of assessment findings indicative of sepsis alone is not enough. The nurse needs to have early recognition patterns of assessment, go beyond task-oriented behaviors following only the written order, and have the ability to justify decisions and rationalize judgments to act (e.g., calling a physician based on assessment findings or holding a medication), ultimately with the goal of improving patient outcomes. At the very least, the innovation of this study may offer future advancement in nursing education

practices by opening new directions of discussion or ideas of study focused on improving nursing education to affect future patient outcomes.

CHAPTER 2

THEORETICAL FRAMEWORK

Before a literature review, it is beneficial to first understand how the theoretical framework led to the development of the methods of this study on reflection. Reflection is a concept first disseminated by philosopher John Dewey. Also one of the early writers of the benefits of experiential learning, Dewey (1933) discussed perceptions of cognitive thought, including evaluation of the process of how we reflect in relationship to individual experiences and perceptions. Dewey defined reflective thinking as “active, persistent, and careful consideration to any belief or supposed form of knowledge in light of the grounds that support it and the further conclusion to which it tends” (p. 6).

Dewey (1933) wrote about thinking in learning and identified the multiple ways—observation, memory, listening, reading, exploration, discussion, and investigation—experiences contribute to thought. Behavior, environment, and perception also influence the acquisition of thoughts and ideas. Dewey stated, “yet the fact that reflection originates in a problem makes it necessary at some points consciously to inspect and examine this familiar background” (p. 215), when referring to the analytical evaluation of one’s own ideas and sharing ideas in conversation. Learning should include experiences, insight, imagination, play, and observations, not only facts (Dewey, 1933).

More recently, Schön (1983) is the author of the most frequently referenced theory applied in health care research on reflection based on the literature review. Similar to Dewey, Schön identified that practitioners make decisions based on experience and knowledge, rather than just research-based knowledge. Schön introduced the theory of reflection–for–action (in planning for the event), reflection–in–action (while one is doing the action), and reflection–on–action (after the experience has taken place). From

Schön's perspective, professional practitioners utilize both scientific, or technical, knowledge and reflection to make decisions and judgments. The importance of recognizing feelings and prior experiences combined with scientific knowledge leads to, as Schön stated, decision-making, appraisals, and re-appraisals in unique or fluctuating situations. This concept is insightful when considering professions, such as nursing, that involve care for unique patients, focusing on individualized care plans rather than standardized solutions.

Although these concepts are very significant to nursing and important to associating reflection with clinical reasoning, Schön's (1983) theory did not completely align with the idea of reflection during CPC. Dunfee et al. (2008) and Padden (2011) applied Schön's theory to research in reflective writing online and reflective journaling. For this design, Schön's reflection-on-action was appropriate when considering student reflection writings during the week-long period after clinical experience had occurred. Reflection-in-action (during clinical) and reflection-for-action (planning for clinical) did not fit well with the research methodology, since the reflection period was not occurring during the clinical day, nor in planning for the clinical day. Therefore, because Schön has been the most documented theorist referred to in the literature on reflection in nursing, his theory in its entirety is important to consider for a nursing education intervention study on reflection during online CPC. However, Schön's theory was entirely not the best fit for this study design. Schön's ideas about reflection-on-action remain applicable, but another theory was found to be more suitable for the methodology.

Jack Mezirow first introduced the idea of transformative learning in 1978. Mezirow's (1990, 1991; Mezirow & Associates, 2000) transformational learning theory

is a practical framework for this planned research. Transformative learning has had a powerful presence in adult learning and higher education research for more than 25 years. Fields of study applying transformative learning theory include arts, leadership, education, health care, and technology integration in both graduate and undergraduate programs (Taylor, 2007). Mezirow (1991) supported the concepts of reflective thought by Dewey (1933), taking the concept further by identifying the process of reflection used to critically evaluate assumptions leading to problem solving. The goal in transformative learning is change: change in thought, belief, perceptions, or actions when acquiring new information. Therefore, the concepts of transformative learning were applicable to research involving a reflection education intervention with nursing students who discussed their clinical experiences among peers in an asynchronous online forum.

Mezirow and Associates (2000) defined transformative learning, stating:

Transformative learning refers to the process by which we transform our taken-for-granted frames of reference (meaning perspectives, habits of mind, mind-sets) to make them more inclusive, discriminating, open, emotionally capable of change, and reflective so that they may generate beliefs and opinions that will prove more true or justified to guide action. Transformative learning involves participation in constructive discourse to use the experience of others to assess reasons justifying these assumptions, and making an action decision based on the resulting insight. Transformation Theory's focus is on how we learn to negotiate and act on our own purposes, values, feelings, and meanings rather than those we have uncritically assimilated from others—to gain greater control over our lives as socially responsible, clear-thinking decision makers. (p. 7)

Reflection was also defined by Mezirow (1991) as a process of thinking and learning in which an individual uses knowledge, beliefs, generalizations, discriminations, and evaluations to interpret, analyze, perform, discuss, or judge, even when one is unaware of the process. Reflection is described as the moment “when we ‘stop and think’ about what we do or have done” (Mezirow, 1991, p. 104). It involves rationalizing,

examining, and assessing one's own experiences, beliefs, and values. Reflection is a key factor in transformational learning, allowing a process to occur that leads to change (Mezirow & Associates, 2000).

Besides Mezirow, many others have defined reflection using varied terms. Boud (2001) defined reflection as a "process of turning experience into learning, that is, a way of exploring experience in order to learn new things from it" (p. 10). Reflection has also been referred to synonymously with reflective thinking, reflectivity, mindfulness, sense making, and even used interchangeably at times with critical thinking. Reflection was explained as something beyond being thoughtful in practice, but actually learning from experiences while maintaining knowledge and theory (Jarvis, 1992). Mindful practice is how reflection is defined for physicians, stating nonjudgmental, critical self-reflection occurs while insight on values, inclusion of evidence-based practice, and knowledge are all included in technical skill, empathy, and decision-making in patient care (Epstein, 1999).

An expert on the concept of reflective practice is Johns (1995), who defined reflective practice as "the practitioner's ability to access, make sense of and learn through work experience to achieve more desirable, effective and satisfying work" (pp. 23–24). The commonality among all these experts on reflection and reflective practice is a need to self-evaluate for awareness of oneself, desire knowledge or answers, openness to new ideas, and willingness to change. These are some of the same criteria Mezirow (1991) indicated are needed to facilitate transformational learning. For this study, reflection is defined as critically assessing and self-evaluating one's own actions, thoughts, beliefs,

experiences, or values in an effort to interpret, explain, discuss, give meaning to, reevaluate, or decide upon future decisions or thoughts.

Beyond defining reflection, it is important to analyze the concept of reflection critically. Reflection in nursing education has been encouraged and criticized, but some authors believe reflection is not effective in teaching and learning. Mackintosh (1998) and Burnard (2005) indicated reflection is not well substantiated, but encouraged nursing to continue to reflect, even though the evidence of the benefits of reflection is poorly supported in nursing. Richardson (1995) indicated reflection theory applied to nursing cannot be a mechanical, linear process measured, but is rather a concept only understood by each individual's perspective. Some authors have recognized the paucity in empirical research on reflection in nursing with many studies limited by small sample sizes and exploratory or qualitative designs (Burnard, 2005; Hannigan, 2001; Mackintosh, 1998; Richardson, 1995). However, Lethbridge (2006) argued that over two decades of nursing literature and theory applied in nursing support the concepts of reflection, but did agree that more research is needed. Craft (2005) agreed with Lethbridge on the benefits of reflection and additionally recommended that the benefits of reflection are applicable beyond the student nurse, should be taught early, and should be continued into nursing practice.

Although reflection has been defined and the benefits of reflection have been identified, tactics for reflection exist in the literature and the theoretical framework, as well. Mezirow (1991) identified effective strategies for reflective learning through active participation in discourse that is thoughtful and collective. These effective strategies are important to address when planning a study involving teaching a reflection education

intervention using this theoretical framework. For successful discourse, participants were described as needing to freely participate without coercion and with equal opportunity, maintaining openness to others' ideas, having empathy to the thoughts and feelings of others, objectively assessing evidence, possessing accurate knowledge about the topic, and having the ability to reflect and critically think about their own and others' ideas. These prerequisites for successful discourse were included within the development and presentation of the reflection education intervention.

Mezirow's (1991) theory offered a framework for a study testing a reflection education intervention during reflective discourse (online postings during CPC) through active collective participation (nursing student clinical groups) to identify levels of reflection that may be indicative of transformational learning. Furthermore, Mezirow's (1991) broader three levels of reflection (see Table 1) guided the tool used to rate nursing students' levels of reflection (see Table 2) and the model used in the development of the reflection education intervention. To further explain the gaps in the literature supporting the need of this study evaluating baccalaureate nursing students' levels of reflection during online CPC, a firm knowledge of the current state of the science of CPC and reflection was necessary.

Table 1

Summary of Mezirow's Three Levels and Seven Sub-Levels of Reflection

Levels	Sub-levels	Description
Non-reflection	Habitual action	Action while focusing elsewhere; occurs outside of focal awareness.
	Thoughtful action	Analysis, performance, discussion, or judgment; occurs within focal awareness, drawing on prior learning.
	Introspection	Thinking about ourselves, thoughts or feelings, not involving prior learning.
Reflection	Content reflection	Considering what we perceive, think, feel, or act upon based on prior learning experiences. (What?)
	Process reflection	Examining how we perceive, think, feel, or respond and evaluating how well we perform. (How?)
	Premise reflection	Awareness of why we perceive, think, feel, or respond the way we do and consequences or reevaluation of the action or response. (Why?)
Critical reflection	Transformative learning	New transformed meanings, perspectives, or assumptions are developed that may resolve a problem, make a judgment, or lead to a decision.

Note. Reflection defined by Mezirow (1991) “involves the critique of assumptions about the content or process of problem solving” (p. 105). The descriptions in column 3 are from *Transformative Dimensions of Adult Learning* (pp. 105–107), by J. Mezirow, 1991, San Francisco, CA: Jossey-Bass.

Table 2

Reflection Index Score (RIS)

Score	Level of reflection	Description for expert panel
1	Non-reflection	Describing patient data or background, reporting facts, describing feelings, or identifying objective data without relating it to past experiences, clinical experiences, or investigating feelings, actions, or thoughts. Not reflection.
2	Reflection	Awareness and evaluation of feelings, thoughts, or actions. This could relate to past experiences, self-critiquing clinical performance or the clinical experience, peer responses, perceptions and feelings about actions, and what contributed to the choices, behaviors, or feelings that occurred. Students may identify thoughts or feelings related to the experience or perceptions about the experience. Self-evaluation or critique of self or others' statements, values, or beliefs may occur. Students may evaluate context and beliefs or values to identify reasons for behaviors.
3	Critical reflection	A change or new perception about a concept, idea, belief, or event. The change may or may not be acted upon, but transforms a prior belief, meaning, or behavior to some degree that is recognized. A new plan, idea, belief, decision, or judgment may be made.

Note. Each online response should be scored for the highest level of reflection demonstrated. This scoring tool was modified for application to nursing clinical experiences, but adapted from Mezirow's (1991) levels of reflection, along with review of Mezirow's levels of reflection applied in research studies by Chirema (2006), Plack, Driscoll, Blissett, McKenna, and Plack (2005), Plack, Driscoll, Marquez, and Greenberg (2010), and Wong, Kember, Chung, and Yan (1995).

CHAPTER 3
LITERATURE REVIEW

Introduction

To analyze and evaluate the state of the science concerning CPC and reflection, two separate reviews of the literature were completed. The first part of this section focuses on the state of the science of CPC. The second part addresses the state of the science of reflection. Details of the reviews of literature were provided in each section.

Clinical Post Conference State of the Science

The CPC literature review was conducted through the University of Nevada, Las Vegas (UNLV), library database search using a collective search that accesses more than 80 databases simultaneously. Terms searched were clinical conference, student nurse, and clinical education. These searches resulted in more than 119,340 articles. These articles were initially narrowed to only include journal articles, reducing the search to 1,009 results. Research articles that addressed topics other than those specific to CPCs in baccalaureate student clinical rotations were excluded from review. Eight studies were left to analyze and evaluate (see Table 14, Appendix A). These eight studies address three primary areas: (a) learning environment, (b) specific teaching and learning strategies, and (c) cognitive levels.

Learning Environment

The learning environment appeared in the CPC literature appraising the setting and practices supportive of CPC. Letizia (1998) recognized the lack of empirical evidence guiding CPCs and studied the format of the CPC with 60 nursing faculty from three Midwest schools. Faculty respondents were teaching junior and senior level baccalaureate nursing students, and the faculty response rate was 100%. Letizia found

that the CPC was usually 50.5 min, occurring once per week following the clinical day, with a mean student number of nine per group. When faculty rated the frequency of 15 different types of activities during CPC, informal discussion of clinical experiences was rated as the most common occurring activity.

Another study examining the CPC learning environment, Letizia and Jennrich (1998), (a) evaluated the usability of the Clinical Post-Conference Learning Environment Survey (CPCLES) and (b) identified the difference between baccalaureate nursing student and faculty perceptions of the face-to-face CPC learning environment. Faculty and students ($N = 457$) were recruited from three Midwest baccalaureate nursing programs. Faculty response rate was 61%, whereas student response was 42%.

The CPCLES, a 54-item Likert-type instrument, consists of three dimensions (relationship, goal orientation, and system maintenance and change) with six total subscales (involvement, cohesion, teacher support, task orientation, innovation or new learning strategies, and order and organization). Respondents rated the items on both frequency of occurrence and importance. Of the six subscales, teacher support was perceived by faculty (55.7%) and students (49.2%) to occur most frequently and have the greatest importance, whereas innovation (faculty 39% and students 33.8%) was perceived to occur least frequently and be of least importance. Cronbach's alpha coefficient values were greater than 0.90 for all dimensions. The test-retest procedure was conducted with 10% of the student population to document stability of the instrument. Theoretical support and a literature review established validity of the instrument. In conclusion, the results of this study indicated the CPCLES was a reliable and valid tool to assess the CPC environment (Letizia & Jennrich, 1998).

The findings from the studies by Letizia (1998) and Letizia and Jennrich (1998) suggested (a) faculty willingness to participate in research on CPC, (b) discussion is the primary activity used to guide CPC, (c) students need faculty guidance, and (d) learning environment is important to consider when planning teaching and learning strategies for CPC.

Specific Teaching and Learning Strategies

Approximately one-third of the CPC research applied new specific teaching and learning strategies during CPC (Ascano-Martin, 2008; Cooper et al., 2004; Yehle & Royal, 2010). The samples of these studies consisted of students, faculty, or both from baccalaureate nursing programs in two separate regions of the United States: West (Ascano-Martin, 2008) and Midwest (Cooper et al., 2004; Yehle & Royal, 2010). The courses of these CPCs were senior advanced medical–surgical clinical rotation (Ascano-Martin, 2008), senior leadership acute care clinical rotation (Cooper et al., 2004), and adult nursing clinical courses for junior level students (Yehle & Royal, 2010). As detailed in Appendix A, two studies did not report their response rate, but the response rate of the third study was 88% (Cooper et al., 2004).

The approach among these three studies was similar. Two of the studies used a single-group design. In regard to study variables, all three studies examined student and/or faculty demographics. All studies measured student and/or faculty satisfaction about newly implemented CPC strategies: situation, background, assessment, and response (SBAR); online; and rotating stations (Ascano-Martin, 2008; Cooper et al., 2004; Yehle & Royal, 2010). Along with satisfaction, Cooper et al. (2004) evaluated student knowledge based on quiz scores comparing online and face-to-face clinical

groups. Although Cooper et al. found online CPC to be an adequate method as compared to traditional face-to-face CPC based on student knowledge, none of these studies evaluated the effect of reflection education or students' level of reflection during CPC (Ascano-Martin, 2008; Cooper et al., 2004; Yehle & Royal, 2010).

Collectively, these findings on specific teaching and learning strategies of CPC suggested (a) faculty and students perceive CPC to support student learning, (b) students are willing to try new learning strategies, (c) most common strategy used during CPC is discussion when students report clinical experiences, (d) CPC is a learning situation to integrate higher level thinking and reflection in students, and (e) online format is a suitable learning approach.

Cognitive Levels

Another one-third of the eight CPC studies measured cognitive levels of verbal interactions during CPC. Rossignol (2000) conducted a descriptive, exploratory study to identify the type of verbal activities and cognitive level of these activities between faculty ($n = 10$) and students ($n = 57$) during face-to-face CPC. Three general cognitive processes (analytic, empirical, and evaluative) were defined, each process having a high and low cognitive level (see Table 3). The cognitive levels then operated as a coding scheme for evaluation of 30 tape-recorded CPC sessions. Two raters evaluated the audiotaped conferences that were randomly selected during the semester of clinical courses with varied focus (medical-surgical, maternity, pediatrics, and community health). Seventy-six percent of faculty questions and 79% of student responses were coded as low cognitive levels.

Table 3

Classification of Faculty–Student Verbal Interactions by Cognitive Level

Verbal interaction ^a	<u>Cognitive level</u>	
	Low	High ^b
Analytic	A term or event, or a report of personal experiences or opinions	Interpretation/inference/comparison of a term or event to explain personal experiences and support or criticize opinions
Empirical	Fact stating (e.g., report)	Description of cause and effect relationships
Evaluative	Statements of perceptions, personal opinions, praise, or blame	Support or criticism of personal opinions

^aVerbal interactions were also categorized as soliciting, reacting, responding, or lecturing. These were described by Rossignol (2000) as the flow of the verbal interactions describing the direction of the verbal behaviors between faculty and students as a method to describe the character of verbal interactions related to learning.

^bHigher-order thinking.

Studies measuring cognitive levels of verbal interactions were further compared. Although Rossignol (1997) and Wink (1993) had different study designs, these investigations also evaluated the level of cognitive questions or verbal interactions during tape-recorded CPCs. Rossignol’s (1997) study was conducted in the East; whereas, Wink’s study was conducted in the Southeast. Findings from both studies were similar, with 75% to 81% of faculty and student verbal interactions rated at low cognitive levels.

Collectively, the results of these three studies indicated that the current cognitive level of CPC interactions are at a low level. Additionally, the state of the science lacks intervention studies focused on methods to raise the cognitive level or reflective level of nursing students during CPC.

Clinical Post Conference Conclusions

The state of the science of CPC indicated that (a) online CPC is a method conducted that promotes learning, (b) faculty and students have positive perceptions of various CPC strategies, (c) clinical learning environment supports informal group discussion about clinical experiences, and (d) students require faculty guidance for processing clinical experiences. Despite these positive attributes of CPC, evidence exists that there is a major problem concerning CPCs. This problem is that faculty and student verbal interactions during CPC are mostly at a low cognitive level. A low cognitive level does not support teaching nursing students how to coordinate care and make decisions about patient care in a complex environment (The Joint Commission, 2012). Professional nursing practice requires the ability to provide direct patient care, identify changes in assessment, teach patients, coordinate interdisciplinary care, and apply clinical reasoning.

The literature review also showed that the state of the science lacks studies that focus on testing interventions to raise the cognitive level of faculty and student interactions during CPC. Therefore, a major gap in the state of the science is the need to test a reflection intervention on student levels of reflection during CPC. Investigating student attributes related to students' level of reflection may also help identify facilitators or barriers to learning reflection during CPC. Testing a reflection intervention on nursing

students' level of reflection and identifying if relationships exist between students' level of reflection, clinical reasoning, and student attributes may fill this gap.

Reflection State of the Science

The second part of the literature review was conducted to evaluate the state of the science on reflection. This literature review was initially conducted through the UNLV library database using a collective search that accesses more than 80 databases simultaneously. Terms searched were reflection, reflective thinking, reflection in nursing, reflective learning, reflective process, reflective practice, and higher-order thinking. These searches resulted in more than 34,000 articles. Initial reductions to the search results were conducted by eliminating all results except journal articles, such as reviews and textbooks. This resulted in 2,116 articles. Research articles that addressed topics other than studies about measuring reflection; learning how to reflect; or reflection as a method, theory, or process were excluded from review. Individual articles were further evaluated for in-article references to authors or other articles that were not previously obtained and appeared relevant to the study content to a point of saturation, as indicated by repetitive findings. This process left 56 articles to analyze and evaluate. After separating articles that were reviewed but did not conduct research, 39 were left, with 34 studies specific to engaging in reflection and 5 studies focusing on instrument development. Within the 39 articles, 7 studies implemented some form of reflection education and 12 assessed levels of reflection or cognition, while 3 more studies implemented reflection education and assessed levels of reflection or cognition. A summary of these 39 articles is listed in Table 15, Appendix B. The other articles reviewed but excluded from the summary of the research were literature reviews or commentaries. Further searches on the critical incident technique, tools measuring levels

of reflection, and nursing clinical reasoning or judgment pertinent to the research design were evaluated as well, adding to the literature already found. This complex topic of reflection was also assessed through textbooks or publications referenced in various research articles or written by authors considered experts on the topic.

Process of Reflection

Reflection literature reviews of nursing and higher education indicated two critical concepts: (a) reflection is a staged process that can be measured by levels (Atkins & Murphy, 1993; Chabeli & Muller, 2004), and (b) students need guided reflection (Kuiper & Pesuit, 2004; Ruth-Sahd, 2003).

Multiple studies were found that identified reflection as a three-stage process, which was then compared to the broader three levels of reflection described by Mezirow (see Table 4). In a literature review on reflection in nursing, Atkins and Murphy (1993) found a common understanding of the term, reflection, stating that reflection involves self-evaluation with the outcome of a changed perspective. Three stages of reflection were identified, while the outcome of reflection at the third stage was the development of a new perspective with or without behavioral changes (Atkins & Murphy, 1993).

Similar to Atkins and Murphy (1993), Chabeli and Muller (2004) also identified three phases of reflective thinking based on theories of reflection when conducting a concept analysis of reflective thinking in clinical nursing education. Reflective thinking only occurred when the individual had actively participated in collaborative discourse, shared ideas, and linked past and present experiences to expand knowledge (Chabeli & Muller, 2004). Although these phases were specific to clinical nursing education, these phases followed the three broad levels described by Mezirow, offering theoretical support

and a definition of reflective thinking, without evidence of new information in the application of these three phases to nursing clinical education (Chabeli & Muller, 2004).

Table 4

Stages of Reflection Compared to Mezirow's Levels of Reflection

Author	Stage 1	Stage 2	Stage 3
Mezirow (1990, 1991)	Non-reflective	Reflective	Critically reflective
Atkins & Murphy (1993)	Feelings or thoughts; Uncomfortable awareness	Examining feelings, integrating old and new knowledge	Critical analysis—Association, validation, integration, appropriation—Based on Boud, Keogh, and Walker (1985)
Chabeli & Muller (2004)	Knowledge, receptivity, reporting, self-awareness, open-mindedness, responsibility, comprehension, reasoning, and responding	Mutual active reciprocal relationship fostering growth while respecting one's own and others' ideas; analysis and synthesis	Integration and synthesis to gain a deeper understanding; gaining new perspective or insight
Hatton & Smith (1995)	Descriptive—personal beliefs or judgments	Dialogic—self-discourse, explore reasons	Critical reflection—evaluate impact of social/historical/political views
Kennison (2012)	Sense of surprise	Critical analysis of feelings and knowledge in a situation	Fresh perspective with new learning

Aligning with other authors, Kennison (2012) described reflection as a three-step process and further explained that reflective writing improves nursing practice by fostering deeper thinking, facilitating multiple perspectives, and empowering students to uncover gaps in meaning and knowledge. Alternatively, Boyd and Fales (1983) distinguished six phases in the reflective process. The first three phases (inner discomfort, identification of the problem, and openness) are the equivalent to stage one in other works. Phase four is resolution, where one finds personal significance to the situation, similar to stage two. Phases five and six are congruent with the last stage, where there is internalization and a new perspective and then one making a decision about whether to act on the new found perspective or change (Boyd & Fales, 1983). Applying reflection in writing, Baker (1996) developed a four-step reflective process model to guide nursing student reflective writing (identification, description, significance, and implications). The model instructs and guides student reflective writing rather than describing the process of reflection (Baker, 1996).

Similar to nursing, three stages of reflection were identified in teacher education programs. Hatton and Smith (1995) analyzed reflection articles to (a) create a definition of reflection, (b) identify stages of reflection, (c) describe barriers, and (d) determine the prevalence of reflective writing assignments. After the literature review, Hatton and Smith defined reflection as “an active and deliberative cognitive process, involving sequences of interconnected ideas which take account of underlying beliefs and knowledge” (p. 34). Three types of reflective writing were identified with comparable stages of reflection (Atkins & Murphy, 1993; Chabeli & Muller, 2004; Hatton & Smith, 1995). The three types of reflective writing were congruent with Mezirow’s (1991)

broader three levels of reflection from his theoretical framework, successfully implemented to assess written work (Hatton & Smith, 1995).

In summary, these works defined reflection and identified stages or levels of reflection that are consistent concepts within and beyond the profession of nursing, aligning with the theoretical work of Mezirow. National organizations, nursing education, nursing leaders, and evidence indicate the importance of reflection to nursing practice. In contrast to professional organizations, Mackintosh (1998) and Burnard (2005) critiqued the use of reflection without evidence, indicating reflection has not been well substantiated when the concepts, benefits, and framework of reflection have limited support through empirical evidence. Kennison (2006, 2012) valued the use of reflective writing in nursing education, but noted that facilitating reflective writing was time consuming and that a reliable tool for assessing reflective writing had not been identified. This information further supported the need of this study on a reflection education intervention in nursing to contribute to the state of the science in nursing clinical education.

Importance of Reflection

The importance of promoting higher levels of reflection in nursing practice is to support a student nurse's abilities to think at higher cognitive levels, evaluate circumstances and events, self-reflect, improve clinical reasoning, and contribute to the preparation of the student nurse to step into the role of the primary nurse. The National Council of State Boards of Nursing (NCSBN, 2005), the national regulatory nursing organization, identifies reflective, critical thinking as a key process in nursing education curriculum. Higher-order thinking through reflection has been documented as an

indicator of expertise in nursing (Benner, Tanner, & Chesla, 2009; Conway, 1998). Professional nursing organizations recommend increased efforts to promote reflection and higher-order thinking in nursing clinical education to support the development of critical thinking and enrich the knowledge and skills of nurses (NCSBN, 2005; NLN, 2008; Sigma, Theta, Tau International, 2005). Furthermore, Benner et al. (2010) recognized reflection as a strategy to develop thoughtful, self-evaluative, critical thinking during CPC.

However, the clinical setting may differ from student to student based on location, staffing, patient assignments, clinical faculty, collaborative peers, and learning opportunities. Tanner (2010) indicated limitations with traditional clinical learning, such as complex patients, limited faculty time per student, and limited clinical sites as some of the issues contributing to the lack of learning through higher level thinking. In comparison, Ironside and McNelis (2009) found students limited in new learning experiences because time in clinical was spent doing repetitive tasks or waiting for assistance (faculty/staff), resulting in little time spent on higher-order thinking or reflection. There is, however, agreement of the importance of reflective practice in nursing and strategies that could improve the ability to reflect (Carroll et al., 2002; Durgahee, 1996; Murphy, 2004; Platzer et al., 2000b; Teekman, 2000).

Most research addressing patient outcomes specific to clinical reasoning or reflection used qualitative methods or were literature reviews (Epstein & Hundert, 2002; Platzer et al., 2000b; Shields, 1995). Some reflection studies ($n = 10$) evaluated the impact of a reflection education intervention (Asselin, 2011; Branch, 2010; Dunfee et al., 2008; Durgahee, 1996; Forneris & Peden-McAlpine, 2006; Honey, Waterworth, Baker,

& Lenzie-Smith, 2006; Jensen & Joy, 2005; Lowe & Kerr, 1998; Murphy, 2004; Paget, 2001). Thirteen studies measured levels of reflection, with only five of these studies conducted in nursing (Chirema, 2006; Jensen & Joy, 2005; Padden, 2011; Richardson & Maltby, 1995; Wong et al., 1995). Of these studies categorized as teaching reflection or measuring levels of reflection, only the studies by Murphy (2004) and Padden (2011) investigated clinical reasoning in association with the ability to reflect, a concept discussed in more detail in the next section, Clinical Reasoning and Reflection.

Other authors acknowledged the importance of reflection by identifying the benefits of reflection. As an expert on reflection, Johns (2009) stated that reflection improves patient outcomes, asserting reflection enables practitioners to self-realize current practice and identify patient-centered desirable practices, in turn, improving patient care. Thompson and Thompson (2008) used a theoretical base and personal knowledge in teaching reflection to explain self-awareness and thinking are necessary for reflective practice, while empowerment and preparedness for professionalism are positive outcomes of reflection. Thompson and Thompson wrote that imbedding reflection into practice through applying knowledge and using meta-cognition with a mindful approach improved practice by (a) increasing confidence; (b) improving job satisfaction, morale, and motivation; (c) having clarity in thinking that supports quality documentation and professional credibility; and (d) maintaining the human, caring dimension in nursing practice.

Other positive outcomes of reflection were identified in the literature. Densten and Gray (2001) discussed the importance of critical reflection in management students in a leadership development course applying reflective processes. The authors perceived

a positive relationship between critical reflection and leadership effectiveness stating, “reflective learning can assist leaders to acquire the knowledge and skills to make better judgments in ambiguous situations” (p. 123), but did not report statistical data or research findings. Shields (1995) found associate degree nursing (ADN) students valued reflection as a learning strategy. Through a qualitative descriptive design, Shields summarized the most impacting result of the study was all participating students ($N = 11$) reported an intended or actual change in behavior related to their clinical nursing practice through reflection. In addition, Paget (2001) studied reflection in nursing to explore the impact of reflective practice education on long-term changes in current or graduated student practices. The majority of students (78%) self-reported they perceived a significant change in their practice had taken place as a result of reflection education. Themes for categories of change were organized, identifying positive outcomes of reflection with the most frequently student-reported categories, in order, as (a) increased self-awareness or insight, (b) specific practice changes, (c) unspecific practice changes, and (d) improved skills in communication and assertiveness (Paget, 2001).

Researchers and expert writers on reflection also acknowledged the unpredictable, dynamic, and variable nature of the clinical setting, along with variations in nursing education curricula in regard to difficulties assessing reflection, clinical reasoning, and nursing competence (Durgahee, 1996; Levett-Jones, Gersbach, Arthur, & Roche, 2010; Paget, 2001; Tanner, 2010). In a constantly changing clinical environment requiring nurses to provide complex patient care, identify changes in assessment and technology, and apply clinical reasoning, increased cognition during faculty and student interactions

is mandatory (Murphy, 2004; Tanner, 2010). Therefore, a literature review specific to clinical reasoning and reflection is discussed.

Clinical Reasoning and Reflection

As previously identified, clinical reasoning has been weakly associated with the ability to reflect; therefore, the literature review addressed how clinical reasoning was defined and measured related to reflection. Simmons (2010) described clinical reasoning as the cognitive thinking that occurs prior to making a decision or judgment based upon a concept analysis. Synonymous terms to clinical reasoning were clinical decision-making and clinical judgment (Simmons, 2010). In two of three research studies involving reflection in nursing education, clinical reasoning was defined as “the practitioner’s ability to assess patient problems or needs and analyze data to accurately identify and frame problems within the context of the individual patient’s environment” (Murphy, 2004, p. 227), while clinical decision-making was defined as “examining alternatives exploring risks and benefits, seeking new information, examining personal values and objectives in regard to the decision . . . completed when choosing and implementing the best alternative” (Padden, 2011, pp. 10–11).

In one of the aforementioned studies, Murphy (2004) found high clinical reasoning scores of ADN students were associated with higher use of reflection. However, the sample size was small (faculty $n = 4$, students $n = 33$), and the clinical reasoning scores were considered “the practice measure of clinical reasoning” (Murphy, 2004, p. 228). The clinical reasoning scores were measured by an evaluation of students’ written patient assessments at two points during the semester (practice measure) and through an exam testing knowledge of nursing assessments and diagnosis (knowledge

measure). The Assessment and Analysis Instrument was researcher developed to evaluate the student writing as the practice measure of clinical reasoning. The writing was evaluated on a 5-point Likert-type scale for comprehensiveness, priority, and accuracy of nursing diagnoses. The validity was not reported, but Cronbach's alpha was reported to be 0.90. The knowledge measure of clinical reasoning was evaluated using 31- to 34-question exams testing for knowledge about nursing assessment and diagnoses. Validity and reliability for the knowledge measure was not reported. The findings indicated there was no statistically significant association between the exams measuring clinical reasoning knowledge and reflection; however, the exam (knowledge measure) was perceived to evaluate knowledge comprehension rather than clinical reasoning per the researcher (Murphy, 2004).

More recently, Padden (2011) explored the level of reflection, self-awareness, and clinical decision-making in ADN students after implementing guided reflection journaling. In contrast to Murphy's (2004) findings, Padden's results indicated no significant correlation with levels of reflection and clinical decision-making, but the two studies used different measurement tools. Murphy used an evaluation of written patient assessments and a knowledge-based exam to evaluate clinical reasoning; Padden used the term clinical-decision making measured by a self-reported tool, the Clinical Decision Making Nursing Scale, by Jenkins (1985). Jenkins developed the 40-item Clinical Decision Making Nursing Scale for self-reported scoring of perceptions of clinical decision-making after conducting a literature review. An expert panel of four evaluated the tool, while reliability testing resulted in a reliability coefficient of 0.79 and Cronbach's alpha of 0.76 to 0.83. Although the instrument has sufficient reliability and

validity reporting, self-reporting could present a skewed viewpoint of student perceptions about the ability to make clinical decisions rather than the actual action they might take in a given situation.

The third study by Hicks Russell, Geist, and House Maffett (2013) integrated clinical reasoning and reflection using the SAFETY (System-specific assessment, Assignments and accuracy of orders, First/Priority, Evaluate interventions, Teach and test infection control, Cover your Practice Analysis) tool. Active learning strategies, implemented with senior baccalaureate students in the clinical setting (90-hr practicum), allowed for faculty-guided practice making clinical decisions through assignments and reflection during a pediatric nursing course. The SAFETY tool was used to guide reflection systematically to encourage deep thinking, while students produced a final presentation in class demonstrating examples of learning during reflection–on–practice as reported by faculty. Reliability and validity testing was not reported. Hicks Russell et al. (2013) reported, “many of these components are missed in clinical conferences due to focus on medications, procedures, and treatments” (p. 61), when addressing concepts of patient advocacy, psychosocial, and end–of–life issues presented by students after using the SAFETY tool.

Similarities occur when considering medical and nursing students related to outcomes of clinical judgments or clinical decision-making in patient care. Branch (2010) found medical students were more caring and humanistic with patients after reflection; Conway (1998) found reflective nursing practitioners offered more holistic patient-centered care. The Robert Wood Johnson Foundation initiative on the future of nursing reported nursing education should be directed toward improving care and patient safety,

while maintaining holistic patient care (Institute of Medicine, 2011). In a literature review, Robinson, Callister, Berry, and Dearing (2008) reported patient-centered care “is a key factor in improving the quality of health care” (p. 606). The American Association of Critical-Care Nurses (2008) referred to holistic care, reflection, and clinical decision-making in its standards of care for nursing practice. The American Association of Colleges of Nursing (2008), *The Essentials of Baccalaureate Education for Professional Nursing Practice*, recommended holistic patient-centered care for the baccalaureate nurse. Therefore, nurses who are able to reflect at higher levels are expected to provide competent, high quality, holistic patient care.

Mamede, Schmidt, and Rikers (2005) conducted a literature review to identify if a relationship exists between diagnostic errors and reflective practices. These authors perceived one cause of medical errors is poor clinical reasoning or poor clinical judgment, which could be minimized by implementing practice in reflection. It was reported that reflection while making clinical decisions probably minimizes mistakes and improves performance, but there was limited research found that could quantify an association between reflective practice and patient outcomes, most likely due to the complexities in the clinical environment. As in medicine, nursing literature has identified higher levels of reflection, or critical reflection, as one of the factors to developing expertise in the profession (Benner et al., 2009; Conway, 1998; Epstein, 1999).

In conclusion, higher-level reflection is important to promote in nursing students because it is a desired component to competent nursing practice, promotes the development of clinical reasoning, and is expected to improve patient safety and/or outcomes. To address this priority, the third aim of this study attempted to examine the

relationship between levels of reflection and clinical reasoning. To date the studies on clinical reasoning and reflection often applied qualitative designs and instruments not based on observations or evaluation of actual decisions made in patient care scenarios in the moment (Murphy, 2004; Padden, 2011). No research was found measuring an association between higher level reflection and clinical reasoning during patient care decisions, at least in part, due to the complex nature of the clinical setting. The sections to follow reviewed the reflection literature addressing (a) engaging in reflection, (b) reflection education interventions, and (c) measuring reflection.

Engaging in Reflection

Thirty-four articles were found promoting reflection through various strategies, most commonly journaling (see Table 15, Appendix B). Other strategies were portfolio development, online critical incident technique, one-min papers, reflection education, structured worksheets, and small student discussion groups. Research promoting reflection was found in diverse programs: nursing, teacher education, service learning, physical therapy, dentistry, and medical education. These studies in nursing and other areas of study demonstrate the successful use of writing as a strategy to promote reflection.

The samples from these studies were primarily students and/or faculty. The students were all from health science professions, except in one study (Glowacki-Dudka & Barnett, 2007). The studies were conducted in various level programs from associate degree programs through graduate programs inside and outside the United States, covering four continents. The response rates are documented in Appendix B.

The majority of the studies were descriptive qualitative studies with single group designs. Ten of the studies, discussed further in the next section, included some form of reflection education. Approximately one-third of the studies evaluated or measured levels of reflection, yet only one study had a comparison group design (Padden, 2011). The majority of the studies ($n = 27$) implemented a new method or strategy to engage students in reflection, but primarily focused on student and/or faculty perceptions of the new strategy rather than evaluating the impact of the strategy. One study used online e-Portfolio for written journaling, but did not implement a reflection education intervention (McMillan-Coddington, 2013). The limitations of these studies were that, quite often, the new strategy was only evaluated using a single group design, small sample sizes were used, and survey or perception data from students and/or faculty obtained from one program, school, or geographical area.

Collectively, however, these studies promoted a strategy for engaging students in reflection indicating five recurrent findings: (a) positive attitudes from students and/or faculty toward the strategy, (b) reflection should be guided by faculty, (c) writing has been an effective method for evaluating for the presence of reflection, (d) online methods are effective, (e) students perceive improved confidence in clinical practice, and (f) students perceived they gained new perspectives from reflection practices or peer discussion when participating in the strategy for reflection.

Another way of engaging in reflection is through the use of the critical incident technique. The critical incident technique was originally applied in research investigating air pilot failures in the United States Army Air Forces during World War II by Flanagan (1954). The study evaluated the elimination board proceedings to identify reasons for

failures and subsequently helped develop improved procedures for factual reporting of incidents leading to failures.

Brookfield (1998) has written about critically reflective practice for many years and developed the Critical Incident Questionnaire, modified from Flanagan's (1954) work, to promote reflection in health education. The critically reflective practitioners are constantly questioning, investigating, and reframing their views. Brookfield (1998) explained critically reflective practitioners have four lens views: their own, the learners, their colleagues, and a theoretical knowledge-based lens. The idea was that the lenses allow the practitioner to view the dynamics from all views and readjust those lenses when needed, which is the evidence of change. Brookfield (2000) described the use of the critical incident as a way to encourage critical reflection from the learner's perspective or lens by writing about the experience/incident. The benefits of the critical incident technique were (a) the learner self-identifies which event was significant, and (b) writing about the event is less intimidating assisting exploration of thought (Brookfield, 2000). The Critical Incident Questionnaire developed by Brookfield (1995) is a five-question guide students responded to in a written form in a classroom setting.

Nursing studies have successfully applied the use of the critical incident technique in the clinical setting and in nursing education by collecting and evaluating reports of events or behaviors in specific situations as early as the 1950s (de Swardt, du Toit, & Botha, 2012; Kemppainen, 2000; Murphy, 2004; Rich & Parker, 1995; Schluter, Seaton, & Chaboyer, 2008; VanHorn & Freed, 2008). The technique has been used to obtain written, verbal, and observational data from an incident (Kemppainen, 2000). Critical incident techniques were introduced in an effort to promote dialogue and active learning

among student nurse peers, along with gaining new insights from others' experiences (VanHorn & Freed, 2008). The majority of the studies reviewed using critical incident techniques utilized qualitative methods for the design, even when identifying the presence of reflection in the data (de Swardt et al., 2012; Murphy, 2004; Rich & Parker, 1995; VanHorn & Freed, 2008).

There are benefits and limitations to the critical incident technique. The greatest concerns relate to the individual's ability to recall the event in detail (Kemppainen, 2000). Requiring students to respond to the guided critical incident technique within the week of the clinical experience offered time to reflect without allowing too much time to pass that disrupts recall. In addition, the written critical incident offered an indirect method of reporting the events to limit factors related to intimidation or modified behaviors that observation or interview methods may cause.

Reflection Education Intervention

Although the literature review on reflection thus far has identified the stages of reflection, the importance of reflection, clinical reasoning and reflection, and engaging in reflection, this section is specific to the first aim of the study, testing the effect of the reflection intervention on baccalaureate nursing students' level of reflection during online CPC. The reflective literature ($n = 10$) focused on teaching a reflection intervention or teaching reflection and evaluating the impact if teaching was isolated. Two of these studies measured the effect of the intervention on the student level of reflection, but neither study evaluated the level of reflection using an online forum for CPC. Nursing and other health care professions aligning with nursing experiential learning practices were included in the review of reflection studies (see Appendix B).

These reflection studies, implementing education on reflection, presented the content within time frames as short as 30 min up to intermittent education updates over 6 months. Not all studies indicated the details or format in which the reflection education was presented, but many implied that the education occurred face-to-face. The education consisted of information about theory on reflection, purpose of reflection, and three studies offered information about how levels of reflection are determined. The research was primarily conducted with health science students, with the majority of the studies' participants consisting of nursing students only ($n = 7$). Nine of the studies also included some type of student writing: journaling, one-min papers, online discussion board postings, or a reflective written assignment.

Only four of the studies evaluated levels of reflection from student writings (Dunfee et al., 2008; Jensen & Joy, 2005; Murphy, 2004; Plack et al., 2010), while the other six studies focused on interviews, themes from written assignments, student satisfaction, and/or faculty observations of student participation. These four studies were of particular interest to this study because they evaluated student writings for levels of reflection or cognition after teaching about reflection. One of these three studies used a quasi-experimental design to evaluate the effect of the education intervention randomly assigning course sections to treatment or control groups (Murphy, 2004). Padden (2011) also measured levels of reflection from guided student journaling in a quasi-experimental study, but did not implement a reflection education intervention. Plack et al. (2010) facilitated online reflection education and evaluated student writing through the use of critical incidents posted online within small groups of three to four.

Murphy (2004) explored the use of reflection education intervention and journaling with first-semester nursing students ($N = 33$) to encourage the development of clinical reasoning. The reflection education intervention in this study was a two-hr workshop at the start of the semester, reinforced during the semester an unknown number of times, and covered the use of focused reflection. No further details were given about the reflection education intervention. The student written patient assessments were submitted at midterm and end of the semester and rated by clinical instructors using a researcher developed assessment and analysis scale (Cronbach's alpha 0.90). Students self-reported perceptions of the effectiveness of the reflection education intervention. Interviews were also conducted.

Clinical reasoning was evaluated by an exam testing knowledge on nursing assessment and analysis through multiple-choice questions. Murphy (2004) acknowledged the small sample size and limitations in measurement tools, including questioning the validity of the measurement tool for clinical reasoning, suggesting it may have assessed comprehension instead. The use of faculty to evaluate the student writing could be limited depending on the openness and relationship between the student and faculty member. The study did indicate, through student interviews, clinical reasoning development was supported by focused reflection, but the exams on clinical reasoning did not result in a significant difference between groups (Murphy, 2004).

Jensen and Joy (2005) collected student journals over a 12-week time period after implementing a reflection education intervention for junior baccalaureate nursing students. The sample size was small ($N = 20$) and the students were all from the same year in the nursing program, but this study by Jensen and Joy was the only one found to

evaluate reflection levels over multiple time points. One week prior to the first journal writing, students were introduced to the seven levels of reflection by Mezirow, were given a patient case study to review, practiced writing reflection, and shared and discussed writings with peers in the class. Sixty journals were collected over three time periods from participants, and 82% of all journal entries demonstrated lower levels of reflection (level four or lower). Over time, the incidence of higher levels of reflection in writing decreased 20%, which researchers explained was probably due to a lack of reinforcement of the reflection education content (Jensen & Joy, 2005).

Dunfee et al. (2008) evaluated cognitive levels as an outcome of reflection (Bloom's Taxonomy), along with elements of reflection (Schön, 1983). A method for assessing higher-order thinking was implemented by rating responses from online discussion board postings, but it was conducted with physical therapy graduate students ($N = 7$) rather than in nursing education (Dunfee et al., 2008). Higher-order thinking measured by cognitive levels was perceived to be necessary for reflection. The reflection education intervention was approximately a two-hr presentation including orientation to a Blackboard online discussion board, but focused on action learning, collaborative learning, critical incidents, and reflective practice introduced before the start of the clinical rotation. Students self-identified a critical incident event during the clinical experience over a four-week physical therapy clinical rotation and wrote asynchronous online postings. Reflection-on-action was found in only 4.3% of student postings, and the most common level of higher-order thinking demonstrated was the lowest level, data gathering.

Although the study had a small sample size of physical therapy graduate students rather than nursing, online discussion board responses using the critical incident technique were collected as data and evaluated for levels of reflection after teaching reflection (Dunfee et al., 2008). There was no research found testing a reflection intervention during nursing CPC using an online forum, but Dunfee et al. (2008) stated, “students in the clinical setting experience a ready supply of critical incidents. As a result, the clinical setting is particularly well-suited for developing reflective practitioners and critical thinkers” (p. 65).

Furthermore, Plack et al. (2010) implemented peer-facilitated virtual action learning, an online asynchronous process, whereby students write responses guided by critical incidents to learn from individual and peer clinical experiences. Third year medical students ($N = 70$) participated in anonymous weekly online asynchronous discussion boards during a six-week pediatric assignment after a 30-min presentation on reflection during orientation. A final written reflection summary was analyzed along with the weekly postings to identify content themes and descriptive levels of reflection (reconfirmed thinking or nonreflecting, broadened perspective or reflection, and questioned assumptions or critical reflection). The two unique and important factors in the study were (a) student writing using critical incidents in an asynchronous online format after a reflection intervention was successfully conducted to evaluate level of reflection, and (b) peer-facilitated online discussion was supportive of reflective learning, although medical students were participants rather than nursing students (Plack et al., 2010). Plack et al. (2010) stated the benefits of the peer-facilitated process of virtual action learning includes allowing student time to reflect, providing a safe environment for

student discussion, and encouraging self-directed learning. There was one 30-min reflection education session without follow-up education during the course of the study. This brief, one-time education session may explain why only 12 of 70 students demonstrated the highest level of reflection in their writings.

In conclusion, these four studies jointly indicated similar findings: (a) reflection can be taught, (b) reflection education promotes students' abilities to reflect, and (c) the majority of students' reflection writing is at lower levels of reflection. Additionally, research by Dunfee et al. (2008) and Plack et al. (2010) supported the use of the critical incident technique in online discussion boards to promote reflection.

Measuring Reflection

Table 16, Appendix C, lists a summary of literature that has utilized various tools to measure levels of reflection. The reliability of the tools from the studies is listed. In the studies that applied the theory of Mezirow (1990, 1991) and Mezirow and Associates (2000), many researchers indicated difficulties when using six or seven levels of reflection reported, due to raters struggling with differentiating between descriptive information for rating or due to the lack of training for raters before using the tool (Chirema, 2006; Powell, 1989; Wallman, Lindblad, Hall, Lundmark, & Ring, 2008; Wong et al., 1995). In studies that applied the work of Boud et al. (1985), using the six levels of reflective process, similar difficulties were reported by researchers when raters could not find clarity between the fourth and fifth levels (see Appendix C). Suggestions were made to improve the use of both tools by training raters and considering the use of a broader scale to improve reliability between raters (Powell, 1989; Wallman et al., 2008; Wong et al., 1995).

In addition, Akeroyd (2012) critiqued reflective thinking measurement tools applied in research in health care fields. Wallman et al. (2008) created a tool modifying Mezirow's seven levels of reflection to six levels for application in observation and rating of reflection in pharmacy students, while Aukes, Geertsma, Coehn-Schotanus, Zwierstra, and Slaets (2007) reported about the development of a 23-item reliable, valid self-report scale to measure reflection in medical practice. Akeroyd reported these two scales to be the most functional for classroom use; but because the tools offered self-reporting or observation for use, these tools could not be applied to written work. The self-report tool by Aukes et al. could be used to assess student growth or development of reflection abilities over the six-week online CPC while measuring levels of reflection from the weekly postings; but there were concerns about adding additional items for participants to complete as part of the study. In addition, because the tool is relatively new, the Aukes et al. self-report tool has yet to be utilized in another study for further reliability testing and was developed with the medical student in mind rather than the nursing student.

Student Attributes and Level of Reflection

Only three studies have addressed the relationship between student attributes and level of reflection (specific aim 2) (Padden, 2011; Wallman et al., 2008; Wong et al., 1995). Wallman et al. (2008) examined student attributes, such as age, gender, number of children, native language, and learning style (reflecting or doing). These investigators found no significant correlation between levels of reflection and age, gender, number of children, or native language, but a trend was found of a correlation between the level of the student and learning style.

Similar to Wallman et al. (2008), Padden (2011) tested the relationship between age and gender with the level of reflection. Padden examined self-awareness and decision-making measured by self-reported instruments. Findings indicated significantly higher scores of self-awareness were associated with reflection, but the interpretation of the results was cautioned due to the small sample size. Unlike Wallman et al., Padden found a significant correlation between gender and level of reflection, yet no correlation was found between age and level of reflection or decision-making and level of reflection. Furthermore, Wong et al. (1995) found years of experience were not significantly associated with higher levels of reflection. Padden collected student data about prior health care experience, but analysis was not conducted to evaluate a possible relationship to level of reflection. No other student attributes were found in the literature related to level of reflection. Due to the limitations in the literature, conflicting evidence about gender and the lack of data for many variables (such as student level, GPA, prior clinical failure, work and volunteer hours, prior health care experience, and personality type), this study examined the relationship between these student attributes and the level of reflection, elucidating student attributes that facilitate or hinder a student's ability to reflect.

Reflection Conclusions

Professional bodies of nursing, expressing the need for increased preparedness of newly graduating nurses to meet the demands of a complex health care environment, have promoted the use of reflection in nursing education. However, the use of reflection has been criticized. The criticism is partially from the recognition of the paucity in empirical research on reflection in nursing with many studies limited by small sample

sizes and exploratory or qualitative designs (Burnard, 2005; Hannigan, 2001; Mackintosh, 1998; Richardson, 1995). As indicated in this chapter, this author agreed with these limitations and identified other gaps.

Literature reviews on reflection in education and nursing have identified similar phases of reflection (Atkins & Murphy, 1993; Chabeli & Muller, 2004; Hatton & Smith, 1995; Kuiper & Pesuit, 2004). Studies in nursing and other areas of study have found strategies to promote reflection through journaling and reflective discourse through the classroom, online, telecommunication platforms, and critical incidents, applying Schön's and Mezirow's theories. Schön's three types of reflection and Mezirow's seven levels of reflection have been applied and tested in nursing student populations, as well as other health care related professions to measure the level of reflection in writing.

Summary of the Literature Review

Literature on implementing a reflection education intervention and measuring levels of reflection was limited. No study was found measuring levels of reflection during online CPC. New nursing graduates perceived a lack of preparedness for the primary nurse role, and findings indicated only 35% of new nurse graduates meet expectations for clinical judgment through a competency assessment (Del Bueno, 2005). The majority (69 to 80%) of faculty and student interactions were at low cognitive levels during CPC (Rossignol, 1997, 2000; Wink, 1993). The impact of a study implementing a reflection education intervention during online CPC is an innovative method of investing a much-needed strategy to improve student preparedness and generate new knowledge about reflection in nursing. Limited research addressed students' attributes related to levels of reflection. Anticipated findings for this research were considered. Evaluating the

relationship of student attributes and clinical reasoning related to the RIS may add to the understanding about students' abilities to learn reflection or circumstances contributing to improvement of the levels of reflection. Investigating research on reflection in nursing may ultimately lead to future research focused on improving patient care outcomes based on decision-making and clinical reasoning skills of the nurse.

CHAPTER 4

METHODS

This chapter describes the scientific approach of this study. The specific aims of this study were to (a) test the effect of a reflection education intervention on baccalaureate nursing students' level of reflection during online CPC, (b) examine the relationship between student attributes and level of reflection, and (c) examine the relationship between clinical reasoning and level of reflection.

Design

A quasi-experimental nonequivalent group design was implemented. This was a suitable design for the study, since groups were of unequal size and non-random group selection occurred. A true experimental design was unrealistic due to how clinical groups are assigned and the variability in clinical sites, clinical instructors, patient selection, and hospital staff. A posttest-only design with experimental and control groups was used to test the effect of a reflection education intervention (see Figure 1).

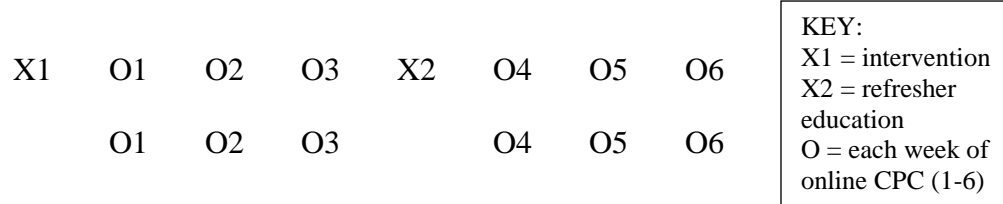


Figure 1. Study design diagram. The key offers guidance for the figures represented above. The student attributes data were obtained prior to X1 upon consenting participants for the study. The clinical reasoning scenarios were presented at the end of the semester. *Note.* Not all observations O1 – O6 were made by all participants. Online CPC collected responses were between 1 and 6 responses per participant.

Sample

The target population of this study was baccalaureate nursing students at all three levels (years 1, 2, and 3) enrolled in an acute care clinical course. Sample inclusion criteria were (a) healthy adults age 18 to 64 years, and (b) enrollment in an acute care clinical course at a Southern California baccalaureate nursing program (generic track) main campus and/or satellite campus during spring 2013. An exclusion criterion was enrollment in the clinical course (N421) with the principle investigator (PI) as the course instructor. Baccalaureate nursing students from the program were placed into clinical groups by self-enrolled course registration, leaving the potential for unequal numbers between groups. Although the clinical sections were randomized, the individual participants were not randomized; therefore, sampling was non-probability, convenience sampling. Using a computerized random number generator, the clinical course sections (0 – 11) were randomly assigned to the experimental or control group: (a) three experimental and three control groups for the year 1 level, (b) two experimental and one control group for the year 2 level, and (c) one experimental and one control group for the year 3 level. In total, six experimental and five control groups were randomly selected.

Power analysis was conducted prior to data analysis. For specific aim 1, power analysis (a priori) was conducted for *t*-test difference between means using G*Power 3 (Faul, Erdfelder, Lang, & Buchner, 2007). Based upon a moderate effect size (0.5) and 90% confidence interval, 80 total participants were required to detect a statistically significant difference with a power greater than 0.8. For preliminary or first time study, an alpha of 0.10 was an acceptable level of significance and would assist in avoiding Type II errors (Burns & Grove, 2009). Due to the small sample size, expected

homogeneous sample, and three-level scoring for reflection, it was anticipated that a Type II error was more likely than a Type I error. The estimated sample size of 80 seemed feasible at the time of recruitment with a total of 116 potential participants.

For specific aims 2 and 3, power analysis was again conducted using G*Power 3 (Faul et al., 2007). Based on a medium size effect (0.20) for analysis using multiple regression and 90% confidence interval, 82 total participants were required to detect a statistically significant difference with power greater than 0.8 and using 12 predictors. A conservative estimate of predictors (12) and alpha (0.1) was used, although it was anticipated the number of predictors could be less than 12, and alpha may be significant at a higher confidence interval. After regression analysis, power analysis for specific aim 2 was recalculated using G*Power 3 with 4 predictor variables rather than 12, a larger effect size ($f^2 = 0.35$) and alpha = 0.1, on recommendation of the statistician consultant. The repeated power analysis indicated a sample size of 41 participants would be needed to detect a statistically significant difference with power greater than 0.90 (Faul et al., 2007). Sufficient power analysis was met with the sample recruited ($n = 45$). Although the effect size was increased, many of the variables had previously been collapsed down to dichotomous variables due to the small sample size, which supported the increased effect size.

Study Procedure

Institutional Review Board (IRB) approval was obtained from both UNLV and the university the sample was recruited from prior to the start of the study. In preparation for recruitment and data collection, the following activities occurred:

1. Nursing program clinical faculty were updated via e-mail and in person prior to the start of recruitment and data collection for the clinical sections and to verify dates in which online CPC was to occur.
2. Using a web-based survey program, Qualtrics (see Appendix E), an online survey was created to obtain participant consent and demographic information.
3. Participation in the online CPC was an ungraded requirement of each acute care course, regardless of the decision to join the study; therefore, online instructions and deadlines were established within each clinical course via Blackboard for posting a critical incident (see Appendix E).
4. The reflection education intervention (experimental) and nursing documentation education (control) was developed with the support of an instructional designer at the university. This included development of the refresher education for both groups (see Appendix F and G).
5. Using an online random number generator, clinical course sections were randomly assigned to experimental or control groups by section number.

Once the preparatory activities were completed, recruitment and data collection methods were initiated. Potential participants were recruited and consented through online procedures during the spring semester. Each acute care clinical course section was informed about the study through e-mail and course announcement via Blackboard during the spring semester (see Appendix G). The course announcement and e-mail included a link to the Qualtrics survey (see Appendix E), which included an online

informed consent. A second reminder course announcement and e-mail was sent one to two weeks after the initial notification to potential participants was distributed.

As consented participants were verified through the Qualtrics survey, information to these participants related to research activities were communicated via Blackboard course e-mail and/or announcement. Sometime between weeks 5 to 10 of the semester, consented participants were sent e-mailed instruction to access the reflection education intervention or the nursing documentation education online (see Appendix F and G). Within the week following, students began the online CPC. After three weeks of online CPC, a brief review (refresher) of the reflection education intervention or nursing documentation education was sent to consented participants online via Blackboard course e-mail to the experimental or control groups, respectively. Within the last two weeks of the semester, study participants were e-mailed instructions on how to access the ATI Real Life™ Clinical Reasoning Scenarios. The instructions provided an access code/password entry, direction for which scenario to complete, and step-by-step visual/written guidance for scenario access (PDF file attachment created by ATI).

Upon confirmation of finalized student grades for the semester, the PI performed the following activities:

1. Downloaded the Qualtrics survey results.
2. Verified consented participants again.
3. Downloaded the online postings from Blackboard for consented participants.
4. Using a randomized numerical code (computer generated by Qualtrics survey), relabeled each response with the code in the designated spot.

5. Following each randomized numerical code, marked each posting to indicate if the posting was an individual response (IR) or peer response (PR) and the week number of the online CPC discussion posting (OCPC No.).
6. Deleted the student name on all pages.
7. Used the search function to ensure that each student name had been removed.
8. Sent CPC responses labeled by randomized code to raters for scoring.
9. Collected and verified data (RIS) returned from raters.
10. Downloaded ATI Real Life™ Clinical Reasoning Scenarios' results.
11. Applied the appropriate ATI Real Life™ Clinical Reasoning Scenarios' result to the appropriate randomized code already assigned.
12. Analyzed the data only identifiable by randomized numerical code with the support of the consulted statistician.
13. Saved the data and associated research files to a flash drive.
14. Kept the flash drive in a locked file cabinet drawer.
15. Upon verification of data entry, deleted the online Qualtrics survey results, ATI Real Life™ Clinical Reasoning Scenarios' results, and other files necessary to destroy records of links between the random numerical code information and participant name.

Study Variables

The study variables are summarized in Table 5. For specific aim 1, the independent variable was the reflection education intervention, while the dependent variable was the level of reflection. The experimental group received the reflection education intervention, while the control group received the nursing documentation

Table 5

Study Variables

Variable	Time point	Measurement	Specific aim
Reflection intervention	Between weeks 5-10 of the semester	Clinical groups randomized to receive reflection education intervention or act as the control group receiving nursing documentation education via online learning management system.	1
Student attributes			
Student level	Upon consenting	Year 1, 2, or 3	1, 2
Personality type	Upon consenting	Jung Typology Test™	2
Student age	Upon consenting	Age in years	2
Gender	Upon consenting	Female or male.	2
Ethnicity	Upon consenting	White or non-white.	2
Marital status	Upon consenting	Married or not married.	2
Children	Upon consenting	Number of children. Indicator of personal responsibilities.	2
GPA	Upon consenting	GPA student reported as indicator of success in prior course work or knowledge base.	2
Prior clinical failure	Upon consenting	Yes or no answer to identify if student has previously failed a clinical course.	2
School units	Upon consenting	Enrolled units of courses for the semester. Indicator of personal responsibilities.	2
Work hours	Upon consenting	Average work hours per week. Indicator of personal responsibilities.	2
Volunteer hours	Upon consenting	Average volunteer hours per semester. Indicator of personal responsibilities.	2
Prior work experience	Upon consenting	Yes or no if there has been prior work experience in health care areas; second level question will ask what area/type of prior work experience.	2
Clinical reasoning	Last 1–2 weeks of semester	ATI scores	3
Level of reflection	After the semester end, upon raters scored RIS	RIS	1, 2, 3

education. For specific aims 2 and 3, the independent variables were student attributes and clinical reasoning, respectively. The dependent variable was the level of reflection for specific aims 2 and 3. Additional important factors unique to this study not listed in Table 6 included the nursing documentation education presented to the control group, implementation of online CPC, critical incident technique used for online CPC, and rater training for level of reflection scoring from the online CPC responses.

Intervention

In an article by Castelli (2011), recommendations were made for conducting reflection education, and the author developed a guide for reflection education through a review of the literature and theory. The theoretical framework for the review and model by Castelli, applying Mezirow's transformative learning theory, aligned with the theoretical framework of this study. Castelli developed an integrated model for incorporating reflective learning into adult instruction (see Figure 2), which was used to guide the reflection education intervention (see Appendix H and I). The model was presented in four steps or categories: openness, purpose, meaning, and challenging beliefs. Figure 2 explains each of the four steps, while these four steps guided the development of the reflection education intervention and the nursing documentation education.

The four steps were evaluated before development of the intervention. The first step, openness, offers the learner an understanding and guidelines for conducting reflective learning in a safe environment that promotes trust, as the online postings were conducted within groups. Castelli (2011) explained the essential first step involves

creating a safe environment where students feel trust and comfort to be willing to share their experiences. Second, purpose was introduced by explaining the theory and literature

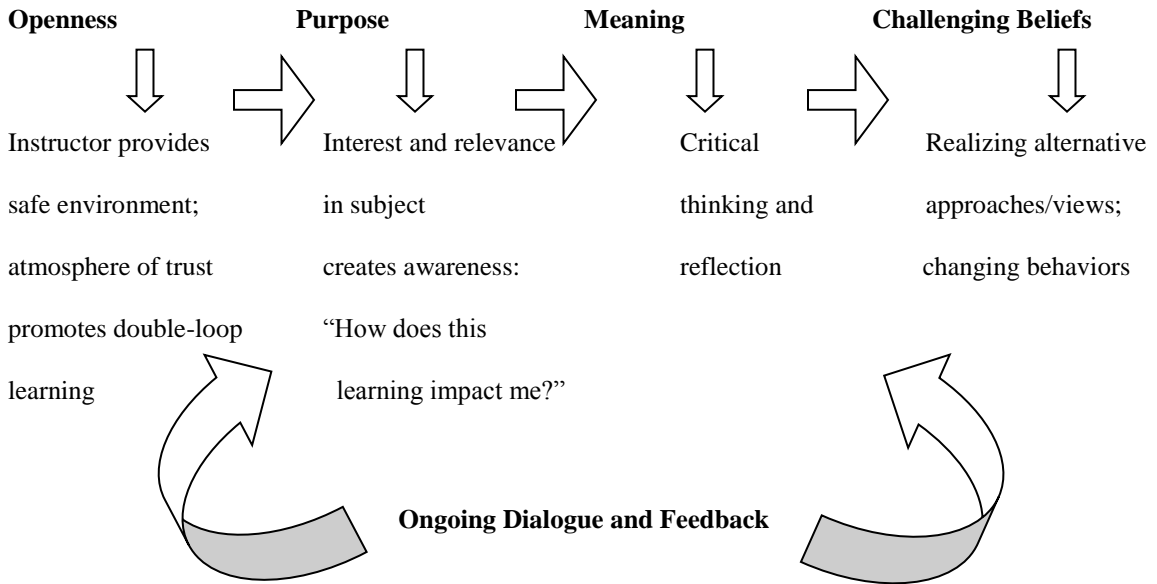


Figure 2. Integrated model for incorporating reflective learning into adult instruction. This model was used to guide the development of the reflective education intervention and nursing documentation education for experimental and control groups, respectively. From “An Integrated Model for Practicing Reflective Learning,” by P. Castelli, 2011, *Educational Leadership Journal 15*, p. 21. Reprinted with permission.

behind the application of reflection in nursing. In the model, purpose was explained as identifying what is most relevant to the learner and providing learning opportunities that encourage development and interest in the learner, meeting their needs in the instruction (Castelli, 2011). Meaning is the third step and was addressed by learners reviewing the different levels of reflection with examples of different levels of reflection in writings. Meaning was defined as a new awareness that leads to questions and finding significance in the learning experience (Castelli, 2011). In the model, the final step was challenging

beliefs. Challenging beliefs was explained as an openness and willingness to consider a change in behaviors when alternative approaches are presented (Castelli, 2011).

The four steps of the integrated model for incorporating reflective learning into adult instruction by Castelli (2011) were observable in the reflection education intervention developed for this study. Openness was achieved through student guidance about the atmosphere of the online discussion board and setting up guidelines for the online environment to promote trust among peers building a safe environment. The online environment for teaching the reflection content was ideal to meet individual needs explained in the second step, purpose, because the activities occurred at the learner's own pace while information was presented in an interactive modality. Meaning was addressed through explanation of the levels of reflection along with an opportunity for students to practice and question the new learning, making it personally significant.

The practice exercise with mock discussion board responses allowed learners to remain interactive in the online education intervention, offering further understanding of how the responses may be more or less reflective. The reflection intervention allowed learners to rate examples of writings for level of reflection with follow-up results, summarizing how each example meets the correct level of reflection. Offering results with explanations allowed students to identify and compare how they would respond to the example, considering alternative approaches in the feedback given as in the final step of the Castelli model, challenging beliefs. The reflection education intervention and refresher were evaluated by two experts on reflection. The experts had conducted previous research measuring level of reflection in writing and were educators in health sciences professions. No suggestions for change to the intervention were recommended.

In addition to the intervention, another educational session, PI-developed, was implemented with the same approach for the control group (see Appendix H and I). The focus of the education was nursing documentation, selected because the content had no relationship to teaching or promoting reflection. The nursing documentation education was designed to be uniform to the approaches in the reflection education intervention. The nursing documentation education was necessary to maintain equally comparable groups by providing the control group with equal educational time and contact as provided to the intervention group.

Characteristics associated with successful reflection and barriers to reflection are important considerations when teaching a reflection education intervention. Based on a literature review of reflective practice in nursing education, six characteristics were recommended for effective reflection. These characteristics were introspection, awareness of one's ideas, flexibility, mindfulness, affective learning, and safe learning environments (Ruth-Sahd, 2003). Barriers to reflection included time and opportunity for the development of reflection, having an adequate knowledge base, and student reactions to demands for reflection (Hatton & Smith, 1995).

Characteristics for reflection were considered in the development of the reflection education intervention. Within the intervention, an explanation of what is asked of participants for effective reflection and characteristics for reflection were addressed in step one: openness. Step 1 addressed introspection, flexibility, openness to others' ideas and perspectives, and respectfulness among peers within the online discussions. Participants were advised of some general guidelines and ground rules within the online discussion that provided for a safe learning environment.

Barriers to reflection were addressed in the study design and development of the reflection education intervention to minimize negative reactions to reflection. Barriers, such as time and opportunities to reflect, were addressed by allowing students to post to the discussion board over a week-long time period after clinical experiences asynchronously online. The opportunity to develop reflection was also examined by evaluating the relationship between the student level and the level of reflection. The participant's GPA or prior clinical failure may be an indicator of the participant having an adequate knowledge base to successfully reflect; therefore, these were included in student attributes. Reactions to demands for reflection may be considered a limitation of the study, but with the student-led discussions and the initial reflection education intervention-guided ground rules, the demand on participants to reflect was less of a concern.

Web-based instruction of the reflection education intervention and nursing documentation education was used to provide consistency of presented educational materials between groups and course sections and to provide the same interaction/education time between experimental and control groups. After three weeks of online CPC, a brief (approximately 15 min) refresher of the reflection education intervention or nursing documentation education was presented to participants. Without a review of the education, the percentage of higher-level reflection pieces was expected to decrease 20 percentage points by the end of the study (Jensen & Joy, 2005). Students who declined participation in the study did not receive the reflection education intervention or nursing documentation e-mail since this was an additional activity, which was not a normal part of the clinical course.

Online clinical post conference. Students accessed the online CPC through the Blackboard learning system already in operation for university courses. The CPC was conducted as an online, asynchronous discussion board thread within each course section for up to six weeks. This timeframe was determined based upon course/program scheduling and from the literature review. The timeframe in which levels of reflection or higher order thinking have been measured has been between 2 to 12 weeks (Dunfee et al., 2008; Plack et al., 2005; Plack et al., 2010; Richardson & Maltby, 1995; Williams, Wessel, Gemus, & Foster-Seargeant, 2002).

In addition to the literature review, the design of the clinical courses within one Southern California baccalaureate nursing program during one semester limited the time when all student levels were in acute care clinical practice to up to six weeks. The clinical courses start date for online CPC varied due to the curricula design and naturally occurring differences between assigned course dates (such as academic holiday or illness); therefore, the clinical courses had a minimum of four available dates for scheduling online CPC.

Participation in the online CPC was a requirement of each acute care course, regardless of the decision to join the study, but was not a scored requirement. All acute care clinical students were expected to participate weekly in an online forum to provide one individual and two peer responses, due by the following clinical day. Potential participants declining participation in the study were reassured their writings during online CPC would not be collected, evaluated, or scored.

The online discussion board included student names and access was available only to the enrolled students for the course section, course faculty, and PI. This access

through Blackboard allowed the PI the ability to collect and compile the data for consented participants, subsequently replacing the names with assigned random numerical codes previously assigned through the Qualtrics software survey. Although the course faculty had access to the online CPC responses, only the PI had access to consented participant names.

Critical incident technique. The critical incident technique was used to guide students to perform reflection during the online CPC (see Appendix F). The critical incident technique literature was presented in Chapter 3, documenting its use in nursing clinical education. The purpose of the critical incident was to trigger a response encouraging the reflective process through prompted questions, while allowing one to stop and think about the experience (Brookfield, 1995). As reported in the preparatory activities prior to recruiting participants, the critical incident technique was posted in course Blackboard discussion board for each week of online CPC

Level of Reflection

The level of reflection was the dependent variable for specific aims 1, 2, and 3. The level of reflection was determined from rater evaluation of participants' online CPC responses.

Rater training. The level of reflection was determined from expert rater scoring of participant responses. Three expert raters evaluated the online CPC responses. Three raters were selected because three was the most frequently number of experts used to evaluate the level of reflection or cognition (see Appendix C). One expert rater, Rater 1, was a physical therapy clinical educator with more than 20 years of experience in graduate and undergraduate programs, who had conducted past research measuring levels

of reflection from physical therapy student writing. Another expert, Rater 2, was a nurse educator who had also conducted research evaluating level of reflection in ADN student journaling. The third expert, Rater 3, was a nurse educator with many years of experience in clinical nursing education and was well versed in the use of simulation/debriefing in nursing (see Table 6).

Table 6

Reflection Index Scores (RIS) from Rater Training Session of Mock Student Responses

Mock participant	Clinical post conference written responses					
	Week 1			Week 2		
	Rater 1	Rater 2	Rater 3	Rater 1	Rater 2	Rater 3
ABCDE	1	1	1	3	3	3
JKLMN	2	3	3	2	2	2
STUVW	2	1	2	1	1	1

Expert raters received training and instructions, before reviewing the participant responses (see Appendix D). The goal for the rater training was to inform the raters of how to score the student responses and discuss the difference between the three levels of reflection. Approximately two weeks prior to the semester end, rater training occurred among the experts and PI to discuss and clarify the levels of reflection, verifying a cohesive understanding before scoring data. The raters practiced scoring reflection using

mock student CPC responses. Absolute agreement for the training session was used due to the small number of mock responses ($n = 6$) and was evaluated at 67%. A percentage of absolute agreement is usually acceptable at 70% (Multon, 2012). Therefore, the responses not in agreement were discussed among raters to clarify reflection levels based on absolute agreement results and rater feedback.

Student Attributes

For specific aim 2, the independent variable was student attributes. Table 6 lists the student attributes, including student level, age, gender, ethnicity, marital status, number of children, GPA, prior clinical failure, enrolled units for the semester, work hours per week, volunteer hours per week, prior work experience, and personality type. Student attributes were determined by considering personal and educational factors that could impact perspectives or learning abilities, along with the literature review.

Clinical Reasoning

For specific aim 3, clinical reasoning was the independent variable. For this study, clinical reasoning was defined as the ability to evaluate and assess patient issues and analyze data using knowledge and skills to make the best possible decisions in providing care within the individual patient situation.

Data Collection Methods and Procedures

To accomplish specific aim 1, the online CPC discussion board responses were evaluated for level of reflection, using the RIS, after a reflection education intervention was implemented. For specific aim 2, student attributes data were acquired via the Qualtrics survey results that participants completed upon consenting for the study. To achieve specific aim 3, clinical reasoning was assessed using the result from the ATI Real

Life™ Clinical Reasoning Scenarios' participants were given access to within the last two weeks of the semester.

Reflection Index Score

Levels of reflection were measured by a modified version of Mezirow's broader three levels of reflection called the RIS (see Tables 1 and 2). Mezirow (1991) described seven levels of reflection, contained in three broad forms of reflection (non-reflection, reflection, and critical reflection), which have been utilized in health care research studies effectively (Chirema, 2006; Jensen & Joy, 2005; Kember et al., 1999; Kember et al., 2000; Plack et al., 2005; Plack et al., 2010; Powell, 1989; Wong et al., 1995). The literature review and prior tools measuring levels of reflection (see Appendix C) were used to guide the RIS. The decision to create the modified tool, RIS, was initially based on the literature review about the developed tools to measure reflection in writing during CPC discussed in Chapter 3. Table 16, Appendix C, provides information about the available tools found in the literature while the reported interrater reliability scores were 0.88 to 0.95 when Mezirow's three levels were applied (Chirema, 2006; Wong et al., 1995).

Although Mezirow's (1991) three levels of reflection have been used in other studies, none of the studies applied the three levels of reflection for quantitative analysis as a score (Chirema, 2006; Plack et al., 2005; Plack et al., 2010; Wong et al., 1995), while many of the studies applied Mezirow's three levels of reflection in combination with other concepts to evaluate for evidence of reflection (Chirema, 2006; Plack et al., 2005; Wong et al., 1995). However, reliability results were reported; therefore, some type of numerical coding was conducted for analysis, although not reported in the literature.

Often, the student writing was evaluated for the presence of descriptive types of reflection or to classify the writing (Chirema, 2006; Plack et al., 2005; Plack et al., 2010; Wong et al., 1995). The reliability in the use of Mezirow's three broader levels of reflection in the literature review was consistently higher than with other methods of measurement (see Appendix C).

The tools found in the literature review were difficult to apply to this quantitative study design without adjusting for a numerical value assignment to the three levels applied by Mezirow. Therefore, the RIS was modified to be applicable to measuring levels of reflection from online responses about nursing student clinical experiences. The modification of the RIS involved assigning a numerical score to the level of reflection, while the description of the level remained consistent with Mezirow's description of the three levels. Since the content of Mezirow's three levels of reflection had not been modified, content-related validity evidence of the RIS was supported from the literature review and theory (Burns & Grove, 2009). Interrater reliability was reassessed as part of the analysis of this study.

The procedure for RIS involved measurement at weeks 1 to 6 of online CPC, for up to six weeks. Initially, the peer responses were to be included in the scoring, but as the responses were collected and reviewed by the PI, the majority of the peer responses were statements of encouragement, support, or agreement of peers, rather than offering new information or further discussion of the critical incident presented by the original individual response. The concern for inclusion of these peer responses was (a) they occurred twice as frequently per week as the individual response, and (b) it was possible

the inclusion of the peer responses could inaccurately depress the reflection scores from individual responses alone.

At the end of the semester, after final grades were posted, the collective CPC responses, only identifiable by randomized code and week of the posting, were compiled and sent to the expert raters via e-mail. Each individual response was scored for the highest level of reflection evident by each rater. Once scored, the raters sent RIS data per participant directly back to the PI via e-mail. RIS data were verified and averaged together to give a final mean RIS for each participant.

Qualtrics Survey

Student attributes were evaluated using the PI-developed self-reported questionnaire using Qualtrics survey software. Student attributes were determined by considering personal and educational factors that can impact perspectives or learning abilities, along with the literature review. The personality type was self-reported after students completed the Hummanmetrics Jung Typology Test TM (JTTTM).

Student attributes data (see Table 6) were collected through the completion of the PI developed Qualtrics survey (see Appendix E). The Qualtrics software program was available through the university campus secure login, which is cloud supported and designed for faculty conducting surveys for research. On the first page of the survey, the informed consent, potential participants agreed or declined participation on the first page of the Qualtrics survey by clicking to agree or disagree to participate. Upon consenting, the survey continued with the demographic information questionnaire. If participation was declined, the survey ended.

Hummanmetrics Jung Typology Test™. Participants self-reported their personality type after taking the online JTT™ accessed through an imbedded link within the Qualtrics survey. The JTT™ is an online accessible test, which displays results upon completion instantly. The purpose of including the test was to have further information about student attributes that may contribute to the ability to reflect. There is a four-letter combination to create the JTT™ result, with a possible 16 different personality types. The possible characteristics are extraversion or introversion, sensing or intuitive, thinking or feeling, and judging or perceiving. Specific attention was paid to introversion versus extroversion, as the characteristics by description of introverts favor the ability to reflect (Hummanmetrics, 2007). The comparative validation with the Keirsey Temperament Sorter was between 0.74 and 0.83, and the Eysenck Personality Profiler was 0.74 to 0.79. The test–retest reliability was reported as 0.70 to 0.82 (Humanmetrics, 2007).

The JTT™ was selected instead of other personality tests because of the convenience of web access to the test with instant results to students. Other personality tests, such as the Myers-Briggs Type Indicator, were not selected due to the risk of participants not completing the test related to time limitations and concerns about taking participants away from class or study time. The Myers-Briggs Type Indicator also required face–to–face administration by an individual trained to administer the test, with time for individual results to be reviewed and discussed, rather than online and self-paced.

ATI Real Life™ Clinical Reasoning Scenarios score. Clinical reasoning was measured by the ATI Real Life™ Clinical Reasoning Scenarios score (needs improvement, satisfactory, strong). These scenarios offered a method of evaluating the

student's ability to make clinical decisions through video vignettes and selections to demonstrate clinical reasoning score (needs improvement, satisfactory, or strong). For this study, clinical reasoning is defined as the ability to evaluate and assess patient issues and analyze data using knowledge and skills to make the best possible decisions in providing care within the individual patient situation. Clinical reasoning was evaluated for specific aim 3.

The currently used clinical reasoning tools address student self-perceptions of clinical reasoning abilities and knowledge/comprehension related to clinical reasoning (Jenkins, 1985; Murphy, 2004; Padden, 2011). In the clinical setting, clinical reasoning needs to be applied to actual situations or scenarios that can be complex, often requiring a decision be made. Therefore, the clinical reasoning tools from the literature review were not valid for measuring clinical reasoning in patient care practices. Although the ATI Real Life™ Clinical Reasoning Scenarios did not have reported reliability, the tool was chosen because it focused on clinical practice requiring a decision be made based on a patient care clinical scenario, rather than a self-reported or knowledge-based focus.

Additionally, the tool was accessible online offering convenience, the scoring was categorized in three broad levels, and immediate feedback was given to the user upon completion explaining the best choices in the scenario and why. The ATI Real Life™ Clinical Reasoning Scenarios have content-related validity evidence by an expert review panel, but have no reported reliability because they have yet to be used in research. A test–retest was considered with the use of the ATI Real Life™ Clinical Reasoning Scenarios, but concerns arose that participants would recall the scenario and the results/answers upon retest in a short time frame (six weeks). It is still important to

acknowledge the limitations to using the tool without reported reliability, but given the limitations of the other available tools, the ATI Real Life™ Clinical Reasoning Scenarios appeared to be the best option for examining a relationship between clinical reasoning and level of reflection from online CPC responses.

Within the last two weeks of the semester, participants were given instruction for accessing the ATI Real Life™ Clinical Reasoning Scenarios via Blackboard course announcement and e-mail. The users were able to logon to ATI as they normally would with their own login and password previously acquired for other skills modules and testing within the nursing program. The Blackboard course e-mail included instructions, an access code, and password to access the ATI Real Life™ Clinical Reasoning Scenarios within the ATI website. The course e-mail also included a PDF file attachment created by ATI with step-by-step instruction for how and where to submit the access code and password. The participants were instructed to complete a basic medical-surgical scenario for a patient diagnosed with clostridium difficile. The clostridium difficile scenario was selected out of the five available medical-surgical scenarios because all levels of potential participants had been exposed to this content in their prior studies. Using the access code and password, the PI obtained the ATI Real Life™ Clinical Reasoning Scenarios' scores. The scores were listed by participant names; therefore, they were collected and relabeled to match the appropriate randomized numerical codes previously assigned to participants.

Data Analysis Procedures

Data analysis was conducted using SPSS Data were analyzed using Statistical Package for the Social Sciences (SPSS) Version 20 for Windows® and with the support

of a statistician consultant. Prior to running analysis, data were verified, cleaned and transformed. Descriptive and inferential statistics were used to address the specific aims of this study. Results were coded for data entry and a codebook was maintained for definitions.

The description of the sample was obtained using descriptive statistics. Frequencies of descriptive variables of the sample, measures of central tendency, and dispersion relevant to the sample were evaluated (Burns & Grove, 2009). This was done to evaluate the sample for representativeness to the population (nursing students). Comparison groups (experimental and control) were assessed for being comparable groups based upon student attributes using frequencies for dichotomous variables, and using the independent samples *t*-test for interval or ratio variables.

Based on the power analysis, the sample size was underpowered, which is discussed further in Chapters 5 and 6. However, analysis procedures that were affected by the underpowered sample size should be addressed. Independent *t*-tests and regression were conducted even though the sample size was small because it would be more likely to have a Type II error occur than a Type I (false positive) when there is reduced power (Burns & Grove, 2009). Therefore, a statistically significant test with an underpowered sample would indicate the finding was significant even if the reduced power indicates the test less sensitive for finding a significant difference (Burns & Grove, 2009).

Additionally, due to the small sample size, the student attributes that were categorical or nominal, except student level, were reduced to broader dichotomous variables based on the recommendation by the statistician consultant. The student attributes for marital status, ethnicity, and personality type were changed to dichotomous

variables as follows: married/not married, white/nonwhite, and introvert/extrovert. The decision to change the JTT™ to only reflect introvert and extrovert was based upon the literature review. Cole (1986) found the most frequent personality type, using the MTBI, for the nursing profession was introverted. Introverts are reportedly more reflective by nature, because the mental functions tend to be inwardly driven (The Myers & Briggs Foundation, n.d.).

The level of reflection was evaluated from rater scorings of online CPC responses using the RIS; therefore, analysis was conducted for interrater reliability. Interrater reliability for three raters was calculated using the intraclass coefficient. Absolute agreement was also evaluated since the rater training evaluated the data using this method.

The final mean RIS was an average of three rater's scores for each completed response (between one to six weeks of CPC) for each participant. The final mean RIS for each participant was calculated by the computer and stored as a calculated variable. The RIS results were further examined using descriptive statistics monitoring for skewedness, variations in data, and outliers (Burns & Grove, 2009).

For specific aim 1, statistical analysis was conducted using independent samples *t*-tests for difference of means to test the impact of the reflection education intervention on the level of reflection. This analysis was indicated to identify any statistically significant differences between the experimental and control groups levels of reflection. The independent variable was the intervention, while the dependent variable was the level of reflection.

Specific aim 2 was analyzed using backward multiple regression analysis to investigate the relationship between student attributes and level of reflection. Backward elimination is useful in discarding predictors that are not particularly useful, similar to forward stepwise methods of analysis (Tranmer & Elliot, 2008). The goal was to help identify student attributes that were supportive of or barriers to reflection. For this analysis, the predictor variables were the student attributes, while the dependent variable was the level of reflection.

Simple linear regression was used to examine the relationship between clinical reasoning and level of reflection for specific aim 3. Simple linear regression was the appropriate test for evaluating for a relationship between the two variables. The independent variable was clinical reasoning, while the dependent variable was level of reflection. Correlations were obtained as part of both regression analysis results.

Follow-up analysis was conducted after conducting analysis for interrater reliability and noticing trends in the RIS scores. The student responses were evaluated to gain an understanding of the difference between the three raters' scoring by identifying the responses scored incongruently. All responses that were scored as RIS 1 – RIS 2 – RIS 3 were reevaluated for RIS and trends in rater scoring. CPC responses scored by Rater 1 as RIS 3 were reevaluated for RIS and trends in rater scoring. CPC responses scored by Rater 1 as RIS 3 were evaluated as well, due to trends of consistent scores between raters when Rater 1 scored RIS 3. Other CPC scored responses were investigated randomly. Trends were noted with participants having prior healthcare experience and prior clinical failures. Trends were identified with year 1 participants as well. Based upon these trends and the prior analysis for specific aim 2, an independent *t*-test for difference

between means was conducted. The independent variable was grouped by having a prior health care experience and/or prior clinical failure or neither. The dependent variable was the level of reflection. A second independent *t*-test was conducted to test the impact of the level of the student on the level of reflection. The independent variable was the level of the student, where year 1 was a separate group from year 2 and 3 combined. The dependent variable was the level of reflection

Limitations

Six limitations were identified during research design planning. One major limitation to this study was that it investigated nursing students from one nursing program in Southern California. This limits the generalizability to other programs nationwide based on curriculum and program differences; however, it was expected that the participants would have characteristics typical of most nursing students in the United States, except age. Nursing students were aware of the study's purpose, and this awareness may have promoted the students to write reflectively, which could have led to student bias. Concern existed about the Hawthorne effect occurring, expressed as behavioral changes in student writing because of knowledge about the specific aims of this study (Burns & Grove, 2009). During the length of the semester course and up to six weeks of online CPC, student maturation and response to demands for posted student reflection were considered as well.

During data analysis, threats to validity were considered related to student selection bias (Burns & Grove, 2009). Participants were not truly randomized to groups because of the nature of curriculum design and course instruction. The sections of clinical groups were randomized to experimental and control groups. To control for bias, one

section of the year 3 level clinical course (N421) taught by the PI was eliminated from the sample. Another important consideration during data analysis was confirming interrater reliability prior to further analysis with RIS results. The expert raters had group training, and interrater reliability was demonstrated in Table 6.

Threats to the design of the study may also be related to the selection of measurement tools included in the study. Content-related validity evidence for the RIS was established through a literature review, supporting the ability to evaluate levels of reflection based upon Mezirow. The use of a three-scale method for evaluation of reflection in other studies based on Mezirow's broader levels of reflection also offered strong reliability of the same three levels applied to the RIS (Chirema, 2006; Wong et al., 1995). The RIS was modified to be applicable to CPC, so reliability needed to be re-established based on the modifications; therefore, the lack of known reliability of the RIS tool with the three-scale numerical method was considered as a possible limitation. However, there were three items supporting the selection of RIS for measuring the level of reflection: (a) reported reliability of the tool prior to modification from the literature review, (b) modification involving assigning a numerical value to Mezirow's levels of reflection without changing the terminology of the levels, and (c) rater training.

The JTT™ has documented validity and reliability. The ATI Real Life™ Clinical Reasoning Scenarios do not have documented reliability, but do have content-related validity evidence. The ATI Real Life™ Clinical Reasoning Scenarios also offer a method of scoring for clinical reasoning abilities that can be statistically analyzed in relationship to level of reflection. The PI did not intend to determine if clinical reasoning was a direct result of reflection using this tool, but without reportable reliability, it was a limitation of

the study. The literature review did acknowledge the complex clinical environment and lack of usable, foundational tools to measure clinical reasoning as barriers to research in clinical practice.

Summary

Chapter 4 described the study design, study variables, and data collection methods and procedures in detail. A quasi-experimental design was implemented to evaluate the impact of a reflection education intervention on baccalaureate nursing students' levels of reflection during online CPC. Three levels of nursing students were recruited and randomly assigned by course section to experimental or control group during online CPC for up to six weeks. Expert raters evaluated the student responses from online CPC using the RIS to measure the level of reflection. Student attributes were evaluated from the Qualtrics survey, while clinical reasoning was measured using ATI Real Life™ Clinical Reasoning Scenarios. The timeline in Table 7 reviews the timing and procedural steps. Chapter 5 reports the findings of this study.

Table 7

Timeline

Aim	Process measure	Week of semester	Start date	End date
Study preparation	Qualtrics survey and intervention developed		1-Dec	28-Feb
	Discussion board prepared with critical incident		20-Jan	17-May
	IRB approval from both universities		1-Sep	15-Feb
	Randomize groups	After IRB	15-Feb	17-Feb
Data Collection	Post course announcement for recruitment	5-8	After IRB	8-Apr
	Send email for recruitment	5-8	After IRB	8-Apr
	Potential participants complete survey	5-10	15-Feb	22-Apr
	Verify discussion board completion and dates	4-5	8-Feb	15-Feb
	Send reminder announcement	Within one week	21-Feb	28-Apr
	Send reminder email	Within one week	21-Feb	28-Apr
	Verify consents and participants	Ongoing	22-Feb	22-Apr
	Create list of participants	Ongoing	15-Feb	22-Apr
	Save list of participants to flash drive	5-15	22-Feb	10-May
	E-mail reflection intervention	5-10	22-Feb	8-Apr
	E-mail nursing documentation education	5-10	22-Feb	8-Apr
	Start online CPC	5-10	22-Feb	8-Apr
	E-mail 15 min refresher education	8-13	22-Mar	29-Apr
	Verify access for ATI	12-13	15-Apr	29-Apr
	Email instructions for access to ATI Real Life™ Scenarios	14-15	29-Apr	10-May
	Data compiled from Qualtrics survey		22-Feb	24-May
Data compiled from discussion boards		25-May	26-May	
Data compiled from ATI Real Life™ Scenarios		25-May	26-May	
Data Analysis	Rater training		12-May	24-May
	Verify and compile data for analysis		25-May	26-May
	Send data to raters via email		25-May	31-May
	Rater data due back for analysis		31-May	5-June
	Verify rater data for analysis		1-June	8-Jun
	Rater scores/data to statistician for analysis		5-Jun	13-Jun
	Final analysis for results and conclusions		31-May	15-Jun

CHAPTER 5

RESULTS

This study implemented a reflection education intervention during online CPC as an innovative method of investigating a much-needed strategy to improve student preparedness and generate new knowledge about reflection in nursing. The aims of this study were to (a) test the effect of a reflection education intervention on baccalaureate nursing students' level of reflection during online CPC, (b) examine the relationship between student attributes and level of reflection, and (c) examine the relationship between clinical reasoning and level of reflection. This chapter presents the findings for each aim. Interrater reliability results and secondary analysis results are also presented in this chapter.

Sample

At the beginning of the spring semester 2013, 116 potential participants were enrolled in clinical courses at a Southern California baccalaureate nursing program. Figure 3 depicts a flow diagram of the sample with the number of participants in each experimental and control group by the year. Of the 116 potential participants, the online Qualtrics survey was completed by a total of 81, leaving 35 potential participants undecided and, therefore, unconsented. Fifty-one of the remaining 81 participants consented for participation in the study. Characteristics of the final sample ($n = 47$) were evaluated by descriptive statistics.

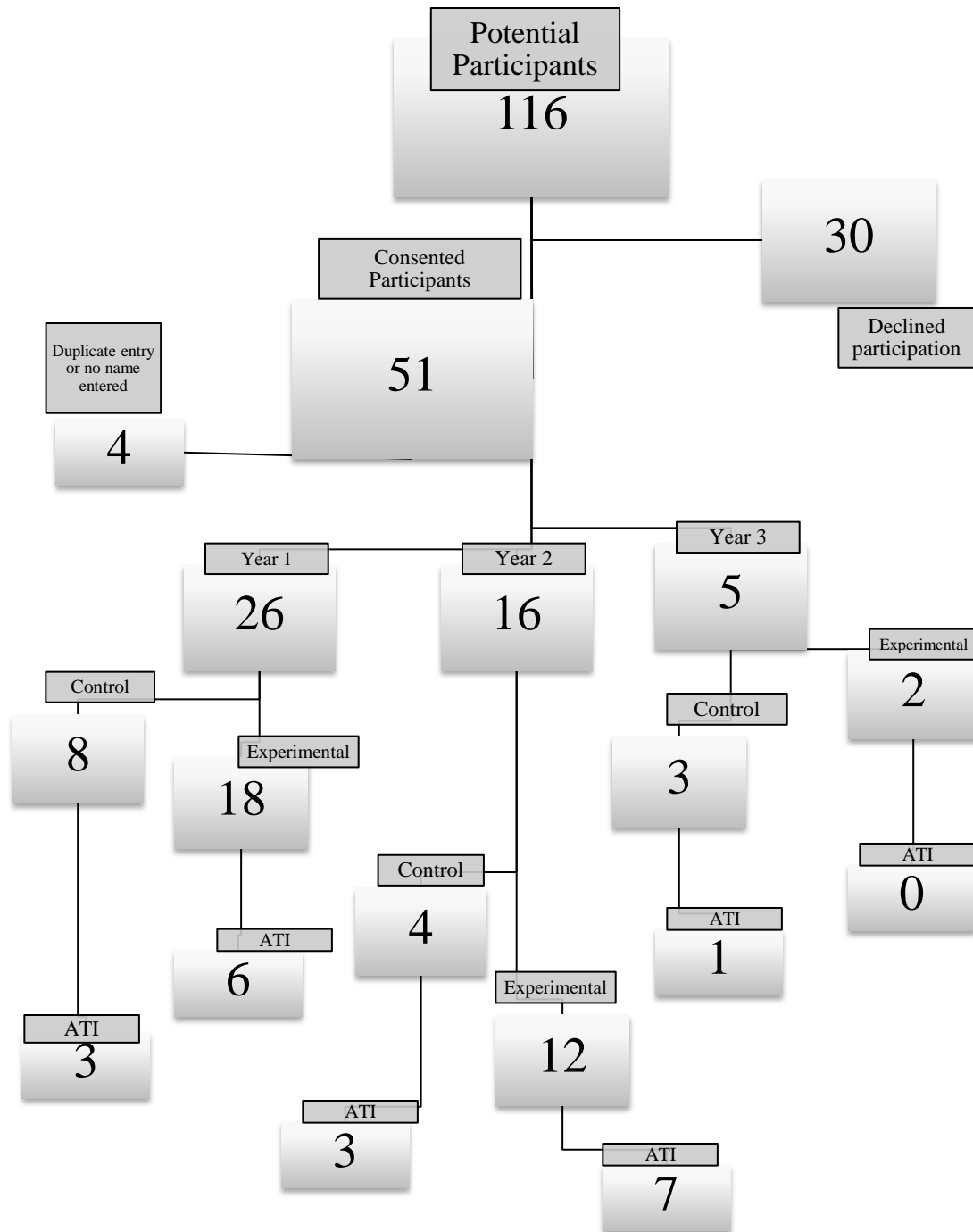


Figure 3. Flow diagram of sample; consented participants by level and intervention. Note: level of the student = year 1, year 2, year 3; intervention group for online CPC = control, experimental; completed ATI Real Life™ Clinical Reasoning Scenarios = ATI.

The response rate from the total sample for completing the Qualtrics survey to consent or decline participation in the study was 68%, after adjusting for duplicate entries. There were 81 submissions in the Qualtrics survey, but two were duplicates and incomplete. There were also two entries in which the participants consented but failed to enter their name; therefore, they were eliminated since the intervention could not be sent via e-mail without a name. From the remaining 77 submissions to Qualtrics, 61% consented to participate in the study ($n = 47$), while 39% declined ($n = 30$). Twenty-one of the 47 consented participants completed all variables of the study (Qualtrics survey, online CPC responses, and ATI Real Life™ Clinical Reasoning Scenarios), while the other 26 did not complete the ATI Real Life™ Clinical Reasoning Scenarios. Two submissions to Qualtrics did not record the GPA, and two did not enter the personality type. Two of the five participants from year 3 did not respond to the online CPC discussion boards, although they did complete the initial Qualtrics survey. The final consented sample size was 47, sorted by assignment to experimental ($n = 32$) or control ($n = 15$) groups, although noted above not all 47 completed all variables. Figure 3 describes in further detail the distribution of consented participants by student level and intervention group.

The majority of the sample was female, under the age of 30, White, and not married. Nearly 81% of the sample was female ($n = 38$). The mean age for the total population was 26.3 years, and 78% were under the age of 30, although the range spanned from 19 to 52 years of age. The majority of respondents were White (64%). Of the 36% non-White ($n = 17$), 12 identified themselves as Hispanic. Over three-fourths of the participants were not married (87%). Most participants (83%) had no children; those

who had children, had 1 or 2, except one participant who reported having 3 children (see Table 8).

Table 8

Comparison of Experimental and Control Groups: Dichotomous Demographic Data

Demographic	Control		Experimental		Total		
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
Gender							
	Male	4	27	5	16	9	19
	Female	11	73	27	84	38	81
Ethnicity							
	Not White	7	47	10	31	17	36
	White	8	53	22	69	30	64
Marital status							
	Not married	12	80	29	91	41	87
	Married	3	25	3	9	6	13
Prior failure							
	No	13	87	30	94	43	91
	Yes	2	13	2	6	4	9
Prior work experience							
	No	6	40	18	56	24	51
	Yes	9	60	14	44	23	49
Personality							
	Introvert	11	79	15	48	26	58
	Extrovert	3	21	16	52	19	42

Further data (see Table 9) evaluated from the Qualtrics survey included GPA, having a prior clinical failure, units of courses enrolled in for the semester, number of volunteer hours per semester, number of hours of work per week, and prior clinical experience. Most participants self-reported a GPA as 3.5 or greater (68%). Only two reported a GPA less than 3.0. Four participants reported a prior clinical course failure (9%). Participants were primarily enrolled full-time, with 12 to 16 units enrolled for the

semester (68%). The remaining participants were enrolled in 6 to 11 units for the semester (32%).

Table 9

Comparison of Experimental and Control Groups: Interval/Ratio Demographic Data

Demographic	Group	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	Sig. (2 tailed)
Age	Control	26.67	5.72	0.26	45	0.80
	Experimental	26.06	8.29			
Number of Children	Control	0.20	0.41	-0.52	45	0.60
	Experimental	0.31	0.78			
Grade point average	Control	3.58	0.53	0.16	45	0.87
	Experimental	3.57	0.26			
Units enrolled	Control	11.97	2.45	-0.44	45	0.66
	Experimental	12.28	2.17			
Volunteer hrs./semester	Control	16.40	26.28	0.58	45	0.56
	Experimental	12.38	20.02			
Work hrs./week	Control	8.27	9.82	0.26	45	0.80
	Experimental	7.53	8.82			

Forty percent of participants did not report volunteer hours during the semester, while 30% reported 1 to 16 hours per semester, and 30% reported 20 to 100 hours per semester. About half of the participants did not work, while the other half worked between 2 and 24 hours per week. Almost half (49%) reported some kind of prior clinical experience, which included roles such as certified nursing assistant, emergency medical technician, office medical assistant, or caregiver. The majority of the participants was extroverted (55%), rather than introverted. Although the personality test score was

reduced to a dichotomous result of extroverted or introverted for data analysis specific to aim 2, the frequencies were evaluated separately as well. The most frequent (44%) occurring personality type of the 16 possible 4-letter combinations was ENFJ (extrovert, intuition, feeling, judging). The combination of feeling and judging occurred in 32 participants (71%). The majority of participants were intuitive (76%) rather than sensing. Other frequently occurring single personality types were feeling (66.7%) and judging (97.7%).

Specific Aim 1

The independent samples *t*-test was conducted to examine whether there was a significant difference between experimental and control groups to determine the effect of the intervention in relation to level of reflection based on the total mean RIS. The test revealed no statistically significant difference between experimental and control groups ($t = -1.14, df = 43, p = .26$). Table 10 demonstrates the group statistics. The power analysis indicated 80 total participants were required to detect a statistically significant difference based on moderate effect size (0.5), 90% confidence level, and power greater than 0.8. The sample size for this aim was 45, indicating it was underpowered. Further discussion follows in Chapter 6 for discussion, conclusions, and limitations related to this aim.

Table 10

Specific Aim 1: Group Statistics for Testing the Intervention on Level of Reflection

Intervention	<i>n</i>	<i>M</i>	<i>SD</i>	<i>SE M</i>
Reflection Index Score				
Control	13	2.13	0.40	.11
Experimental	32	2.28	0.40	.07

Note. Two of 47 participants did not complete online CPC responses.

Specific Aim 2

Multiple regression analyses were conducted to examine the relationship between level of reflection and student attributes. The multiple regression model produced $R^2 = 0.28$, $F(4, 44) = 3.97$, $p < 0.05$, demonstrating the model is a good fit for the data after controlling for other variables. Only four predictor variables remained in the model after applying backward elimination procedures during analysis. The remaining four predictors in the model and the multiple analysis regression results are summarized in Table 11.

Table 11

Specific Aim 2: Summary Statistics, Correlations, and Results from Regression Analysis

Variable	<i>M</i>	<i>SD</i>	Correlation with RIS	Sig.	Multiple regression weights		
					<i>b</i>	β	Sig.
Reflective Index Score	2.24	0.40					
Student level	1.55	0.69	-0.30	0.04	-0.19	-0.29	0.06
Prior failure	0.09	0.28	0.17	0.27	0.38	0.27	0.06
Prior health care experience	0.49	0.51	0.37	0.01	0.24	0.30	0.04
Personality	0.58	0.50	0.09	0.58	0.22	0.25	0.08

Note. Level = year 1, 2, or 3; Personality type = extrovert/introvert. Two of the 47 participants did not complete the online CPC responses.

The level of the student (year 1, 2, or 3) had a positive but not significant regression weight ($p = 0.056$), while resulting with a negative correlation to level of reflection ($r = -0.30$, $p = 0.04$). The variable for prior failure in a clinical course was not correlated to level of reflection ($r = 0.17$, $p = 0.27$). The regression weight for a prior failure in a clinical course was not significant. As can be seen, prior health care experience showed a statistically significant ($p = 0.04$) positive regression weight, indicating students with prior health care experience were expected to have a higher level of reflection. Prior health care experience showed a weak to moderate positive correlation with level of reflection ($r = 0.37$, $p = 0.01$).

Specific Aim 3

Only 21 of the consented 47 participants completed the ATI Real Life™ Clinical Reasoning Scenarios. Eleven percent of the variation in RIS can be explained by variability in ATI Real Life™ Clinical Reasoning Scenarios per the regression model. The relationship between clinical reasoning and level of reflection was not statistically significant ($R^2 = 0.11$, $F(1,17) = 2.10$, $p = 0.17$). Clinical reasoning did not have a significant relationship to level of reflection ($r = 0.33$, $p = 0.17$).

Reflection Index Score Interrater Intraclass Reliability

A panel of three expert raters evaluating students' responses to the online CPC scored the level of reflection using the RIS. Participants posted between 1 and 6 CPC responses, each rated for RIS totaling 198 responses. Interrater reliability was calculated on two occasions. Initially interrater reliability was calculated as absolute agreement from the rater training (68%). After data collection, intraclass correlation was determined. The intraclass correlation is useful for ratings on a continuous scale and to represent a portion the variation in ratings related to performance of the participant rather than how the rater interprets it (Multon, 2012). The 95% confidence interval for the interrater reliability based on intraclass correlation was 0.49 to 0.69, $p < 0.05$.

Follow-up Analysis

Two independent t -tests were conducted after further review of the online CPC responses and rater variances for RIS. The effect of the student having a prior clinical failure and/or prior health care experience on the level of reflection was statistically significant ($t = 2.98$, $p < 0.01$). The effect of the student level on the level of reflection was statistically significant ($t = 2.966$, $p < 0.01$). Although these analyses were not part of

the specific aims of the study, the findings were significant and are further discussed in Chapter 6.

Summary

There were three major findings in this study. Prior health care experience was a predictor of level of reflection. Students having prior health care experience and/or a prior clinical course failure had higher level of reflection than students without prior health care experience and/or clinical course failure. Year 1 level students had a statistically significantly higher level of reflection as compared to year 2 and year 3 level students combined.

CHAPTER 6

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

This final chapter discusses the research findings, examines the implications of these findings, and addresses the limitations of the study. There was one major finding from the three specific aims of the study. During follow-up data analysis, two additional findings were revealed. Finally, conclusions about the findings are summarized and recommendations are made for future research in nursing education.

Summary of Major Findings

The three major findings were (a) health care experience was a predictor of level of reflection, health care experience had a low to moderate positive correlation with level of reflection; (b) baccalaureate nursing students with prior health care experience and/or a prior clinical failure had an increased level of reflection as compared to students without; and (c) year 1 baccalaureate nursing students demonstrated a higher level of reflection than year 2 and year 3 combined.

Sample

The sample demographics were comparative to the NLN (2013) report that baccalaureate nursing students are primarily female (86%), White (67%), and under the age of 30 (84%). The sample differed as compared to national statistics only slightly, with a lower percentage of Whites (64%) and students under the age of 30 (78%). The differences may be accounted for by the small sample size and, possibly, the increased percentage of Hispanics in the geographical area. The literature review did not indicate a relationship between gender, ethnicity, or age and levels of reflection (Padden, 2011;

Wallman et al., 2008). Other differences in student attributes are discussed further in future sections.

Specific Aim 1

The intervention did not have an effect on the level of reflection. This finding may be due to the low sample size. According to the a priori power analysis, 80 participants were needed, but only 47 participants completed the study. Additionally, not all 47 completed 6 online CPC responses. One major reason for the lower number of postings was only 8 of the 11 clinical groups had 6 days of clinical.

Additionally, the experimental and control groups were homogenous demographically, except for the personality type. This one variance could have possibly impacted the findings as well. In the literature, the most frequent personality type for nursing was introverted; but in this study, the personality type just over half (58%) of participants was introverted. Introverts are reportedly more reflective by nature, because the mental functions tend to be inwardly driven (The Myers & Briggs Foundation, n.d.). The possibility exists that participants were less reflective because overall nearly half of the sample was identified as extroverted.

Another issue, when comparing groups, was 52% of the participants in the experimental group were assessed to be extroverts. The personality type of the control group was consistent with the literature, where the majority was introverted (79%); however, the experimental group was primarily extroverted (Cole, 1986). One possibility is that there were so many extroverts in the experimental group; the results may have been different if the groups had been switched.

Another possible explanation for this finding is related to the quality of the reflection education intervention. An expert panel of two evaluated the intervention recommending no changes, establishing validity of the intervention. However, the intervention was presented in an online format; therefore, if the learner was not comfortable with technology, this discomfort could have impacted the results of the study. The learning style and comfort using technology was not evaluated as part of this study, but may be a consideration for study design. Consideration should also be made for the length of time it may take for the impact of a reflection education intervention to be evident. In this study design, the impact of the intervention was evaluated over a relatively short time (4–6 weeks), but Paget (2001) evaluated long-term changes of reflective practice education in nursing, finding the majority (78%) reported a significant change in their practice because of the education.

Lastly, the opportunity to reflect during online CPC through guided critical incident technique may have promoted reflection with or without the reflection education intervention. The majority of the literature on reflection implemented a strategy for reflection (see Table 15, Appendix B). Collectively, those 27 articles indicated online methods are effective, and there was a positive response from faculty and/or students with a strategy to reflect. Further research would be indicated to validate these possibilities.

Specific Aim 2

Of all the student attributes, prior health care experience was a predictor of level of reflection. This finding is novel. Nursing programs may include prior volunteer work or health care experience as a prerequisite to program entry, but no literature was found

to support that requirement prior to this study. Additionally, prior health care experience showed a positive relationship with level of reflection.

Limited studies were found addressing prior health care experience relative to reflection. Padden (2001) found increased self-awareness was positively related with reflection and collected data about prior health care experience, but did not evaluate the relationship of the prior health care experience to level of reflection. Flannery Wainwright, Shepard, Harman, and Stephens (2010) used qualitative research methods to gain insight about physical therapists ($n = 6$) and clinical decision-making processes through reflection. When both novice and expert groups of physical therapists were interviewed, researchers reported that previous clinical experience was identified by both groups of participants to be factors used to define clinical decision-making. When addressing prior experience related to one novice student who stood out in his performance from the other novice physical therapists, Flannery Wainwright, Shepard, Harman, and Stephens (2011) stated “most likely related to the nature and depth of his prior experience and his ability to incorporate reflection into the CDM (clinical decision-making) process” (p. 97). Perhaps with experience in the health care setting, there is less fear of the unknown, improved confidence, or increased comfort in the setting allowing for time to reflect. The possibility exists that the prior health care experience offers a frame of reference to build upon promoting the continued development of skills, such as self-awareness, needed for reflection.

In support, experts and theories about reflection associate reflection with self-awareness and learning from experience. Johns (2009) states one important benefit of reflection is the ability to self-realize current practice. Jarvis (1992) discussed reflection

as insight and learning from experience, while maintaining knowledge. Mezirow (1991) described reflection as the moment “when we ‘stop and think’ about what we do or have done” (p. 104).

Although there is a gap in the literature associating prior health care experience with levels of reflection, this finding aligns with the thought that exposure to the environment (similar to how nursing supports the necessity for experiential learning), linked with an opportunity to reflect may impact the frequency of higher levels of reflection. Teekman (2000) indicated self-questioning (as related to self-awareness) was an important part of reflective thinking as reported from interviews with experienced nurses. Perhaps students who seek out health care experiences as they are applying to nursing programs are already self-aware, demonstrated by having the ability to identify areas they anticipate needing to understand (health care environment) for success in the program.

Related to health care as a predictor for level of reflection, follow-up analysis revealed another novel finding. Students with prior health care experience and/or a prior clinical course failure, as compared to students with no prior health care experience or clinical course failure, were separated into groups. The level of reflection was higher in students with prior health care experience and/or a prior clinical course failure. Although the relationship between prior health care experience and level of reflection was demonstrated by the results of specific aim 2, which were previously discussed, the inclusion of students with a prior clinical course failure in these results was surprising. However, in the regression analysis results for a relationship between level of reflection and prior clinical course failure was nearly significant ($p = 0.056$). No other research was

found specifically relating prior health care experience and prior clinical failure to reflection.

A possible explanation for this finding may be related to the predictors for nursing students who have a clinical course failure. Allen, Higgs, and Holloway (1988) evaluated variables that may predict nursing students' risk for failure. Prior experience as a nursing assistant or licensed practice nurse was not a significant to program outcomes; however, students with health care experience showed a lower nursing course GPA. Reasons health care experience could be related to lower GPA may relate to the likelihood the individual with prior health care experience is working while in a nursing program. Although working hours did not impact level of reflection in this study, working while enrolled in school automatically decreases study time compared to those not working.

This study found GPA (academic success) did not have a relationship to level of reflection, while health care experience was a predictor of level of reflection. However, Hatlevik (2012) suggested reflective thinking requires the individual to have obtained pertinent professional knowledge and skills (academic success), but did not measure academic success by GPA. The relationship between GPA and health care experience was not evaluated due to the low sample, and GPA collected was a self-reported overall GPA rather than nursing program specific.

Another possible reason for the findings related to prior clinical course failure is remediation practices. For the nursing program sampled from, remediation practices included a written self-evaluation, root-cause analysis and discussion with the simulation lab coordinator, and specific activities focus for the specific event/issue leading to remediation. Therefore, the design of the remediation process may imbed practice of

reflection strategies within the activities. In agreement, Gallant, MacDonald, and Smith Higuchi (2006) discussed the benefit of remediation for faculty and student was the opportunity for oral and written discussion to share or review perceptions and responses, but reflection was not specifically measured. No other studies were found related to reflection and remediation. If there is an association between prior clinical failures and level of reflection, practices in remediating at-risk students in nursing education should be further evaluated to promote success from remediation related to reflection. This type of research could also give evidence for strategies used in remediation, and on a larger scale, potentially improve nursing program retention rates.

These two findings are novel and important in nursing education related to (a) requirements for nursing program admissions, (b) supporting evidence of the importance of reflection in experiential learning, and (c) retention in nursing programs. These concepts need further investigation due to the impact on nursing education.

Specific Aim 3 Findings

No statistically significant relationship was found between clinical reasoning and level of reflection. In spite of this, there was a moderately positive correlation ($r = 0.33$). This part of the study had a low response rate (43%); therefore, a conclusion could not be determined from this finding.

Perhaps with increased participation, the relationship between clinical reasoning and level of reflection could be determined. Nevertheless, Benner, Hughes, and Sutphen (2008) address the intertwining of clinical reasoning, decision-making, reflection, and critical thinking in expertise in nursing. Murphy (2004) found higher use of reflection was associated with clinical reasoning, but this study used a different tool to measure

clinical reasoning and levels of reflection. Flannery Wainwright et al. (2011) provided insight and examples of reflection practices demonstrated by novice and experienced physical therapists during clinical-decision making processes. Based on support in the literature, further research should be conducted with a larger sample before making a final conclusion about the relationship between clinical reasoning and level of reflection.

A second possible reason for these findings is related to the quality of the ATI Real Life™ Clinical Reasoning Scenarios. Although the ATI Real Life™ Clinical Reasoning Scenarios are relatively new, without reported reliability, the tool was developed with review by an expert panel. The development of the tool also includes program structure addressing Bachelor of Science in Nursing Essentials, NLN Competencies, National Council Licensure Examination client need categories, and Quality and Safety Education for Nurses competencies. The tool has not been used in research for reliability testing, but future testing should be done to report reliability.

The most likely explanation for this finding is the previous due to the insufficient sample size as discussed for specific aim 1. Only 21 of the original 47 consented participants completed the ATI Real Life™ Clinical Reasoning Scenarios. Attrition may have been related to the time the scenario was presented to participants (last week of the semester). Additionally, four students who stated the scenario “froze” before completion reported technical difficulties to the PI. Due to this occurrence, it is possible that students may have attempted to complete the scenario, but did not reattempt the scenario. When participants reported the technical difficulties to the PI, suggestions for dealing with the error (as recommended by ATI) and the ATI information technology support toll-free number were provided.

Future research should be conducted to explore and better identify the association of clinical reasoning and reflection. The literature review and professional bodies of nursing support the importance of promoting higher levels and the development of clinical reasoning as a desired component for competent nursing practice. This type of research would be specifically important in nursing education related to the impact on improving clinical reasoning through experiential learning in clinical to better prepare nursing students for the role of the primary registered nurse. Furthermore, research of this kind could have significance to student clinical reasoning in learning through simulated practices in nursing education.

Study Limitations

The findings of this study add to the research on nursing education specific to CPC and reflection; however, there are two limitations that are addressed in this section. These limitations were unanticipated in designing the study, yet are important to acknowledge due to the potential impact they had on the final results. The major limitation of this study was the insufficient sample size. The overall response rate to participate in the study was 68%; however, the response rate during the study was 42%.

There were four issues that may have contributed to the low response rate: online recruitment and consent processes, feasibility, timing of recruitment, and change in the CPC format for year 3 students. The recruitment and consent processes were online to avoid a sense of faculty persuasion or power because of the PI role as nurse faculty at the university. Online methods for recruitment and consenting may have led to potential participants disregarding e-mails or forgetting. In-person recruitment may have produced more interest and excitement about participating. Online recruitment response rates were

found to be reported as 11% below mail and phone surveys (Monroe & Adams, 2012). However, with well-designed surveys and repeated contact, response rates were reported to be between 62% and 79%. The response rate for this study was higher than 11%; however, it is possible that a face-to-face method of recruitment could have produced even higher response rates to attain the sample size of at least 80.

As previously mentioned, it was not feasible to continue data collection to improve the sample. Most nursing programs are set up where admission is once or twice a year and courses are only offered annually. Although there was a low response rate, the study needed to close because courses are only offered annually and only the students newly entering the program would be eligible for participation. If the study continued the following year, the remaining two years of students would have already been recruited from and exposed to the intervention.

Timing of the course e-mail and announcement contributed to the low response rate. One initial course e-mail and announcement through Blackboard, with one follow-up reminder may not have been sufficient. Timing of the start of clinical course dates was inconsistent; participation seemed to decrease particularly for year 2 students. Clinical start dates were delayed in year 2 level due to changes in the clinical dates, allowing for a total of 4 total clinical dates due to clinical site availability. This is most noticeable in the recruitment of year 2 level students where the section of the clinical course with an earlier clinical start date had a larger percentage of participants than later sections (see Table 12).

Table 12

Year 2 Level Participant Response Rate by Section and Time to Clinical Start

	Section A	Section B	Section C
Time from recruitment to clinical start	1 week	4 weeks	7 weeks
Response rate	75%	40%	23%

Furthermore, due to feasibility reasons, data collection needed to end at the end of the semester. A single university was sampled from due to the design of the study requiring online CPC for up to six weeks. Recruitment from another nursing program could be difficult depending upon the curriculum and clinical practices. Even within this study, there were issues with conducting a full six weeks of online CPC. When considering recruitment from the same program the following year, other issues were exposed. All three levels of nursing students were recruited from for this study, leaving only the newly enrolled year entering the program as a future sample population. The other two levels of students remaining have already been exposed to the variables and intervention. Waiting another three years for a new sample population was not feasible. Sampling from the newly enrolled students for next year would skew the total sample by year 1 level. Addressing these four concerns (sample homogeneity for personality type, development of the intervention, timing of the presentation of study variables, and

feasibility of the study related to the clinical education environment) would be important to address for future studies in nursing education.

Another possible factor contributing to the sample size was a change in the CPC format for year 3 students. During data collection, it was discovered the format for the CPC had been changed to face-to-face rather than online for one group, which may have contributed to the small sample and limited responses of year 3 students. This may have accounted for the attrition of at least three consented participants. Other potential participants may not have consented due to additional time required for online CPC, while face-to-face CPC was still occurring. The design of the study was planned in an attempt to require minimal additional time from students' outside of the regular course activities. Padden (2011) also reported 10% attrition due to a reported lack of faculty support for the research done, but recommended engaging faculty early on in the research process and offering instructions for the methodology. For this study, the faculty was approached three months prior to the start of data collection when planning the study. The faculty was given a presentation about the study methodology and design, highlighting faculty and participant roles, in the semester prior to the semester of data collection. At the beginning of the semester, online CPC dates were arranged and confirmed with faculty of each clinical course. These activities may have prevented larger attrition rates.

The second study limitation is discrepancies among the raters. Rater 1 tended to score lower than Rater 2 or Rater 3. Rater 2 scored lower than Rater 3. The largest variance was between Rater 1 and Rater 3. Table 13 demonstrates percent agreement between raters for all individual CPC responses ($n = 198$). There are two considerations

among rater differences. One is the raters were from different disciplines with Rater 1 having a background in physical therapy, while Rater 2 and Rater 3 were from nursing. Norrie, Hammond, D’Avray, Collington, and Fook (2012) conducted a literature review on reflective practice across interdisciplinary professions concluding different disciplines among reflection and reflective practice based on the preferred perspective. Nursing was reported to more often take constructivist approaches, while physical therapy tended to have more positivist views similar to medical literature. While this difference may be specific to reflection teaching and reflective practices as identified in the literature review, one might question if there could be differences between professions when evaluating student writing for levels of reflection.

Table 13

Frequencies of Reflection Index Scoring and Rater Percent Agreement for Clinical Post Conference Responses

Reflection Index	1	2	3	Rater 1	Rater 2	Rater 3
Rater 1	73	75	50	-	50%	37%
Rater 2	26	89	83	50%	-	54%
Rater 3	10	63	125	37%	54%	-

The second difference is Rater 1 and Rater 2 had conducted research scoring for level of reflection in the past, while Rater 3 had no experience in reflection scoring.

Additionally, Rater 3 may have scored higher due to having knowledge about the curriculum and was involved in the nursing program sampled from which could have led to unintentional bias. Although there were differences between raters, the interrater reliability met adequate intraclass correlation results. However, selecting of additional raters, revising the expert panel members, or re-evaluating the responses in a discussion with the raters are possible ways to improve the interrater reliability. Appendix J gives examples of CPC responses with scores for RIS by raters that are in agreement and scores that are in disagreement.

For the RIS scores that are in disagreement between raters, each of these responses seemed to be interpreted differently. One rater perceived both of these responses as a detailed report of the events as they occurred, non-reflective. Another perception was the responses demonstrated some level of relating the circumstances to their own feelings or beliefs on some level. The last rater perceived the student would change future practices based on the experience. All raters scored both responses the same individually, demonstrating consistency within scoring for the individual rater. All responses of this type (RIS 1 – 2 – 3) were reviewed and rescored by the PI looking for trends among the responses, raters, or scoring. This led to conducting follow-up analysis tests.

In each of the following three examples (see Appendix J), there was evidence of one level of RIS identified by the raters. Based on the scoring criteria, RIS 3 is reflective, RIS 2 is reflective, and RIS 1 is non-reflective. When evaluating the data further, it was noted that when Rater 1 scored RIS 3, there was a high percentage of agreement from the other two raters (%). Additionally, not one posting was scored RIS 1 by Rater 2 or Rater

3, when Rater 1 scored RIS 3, indicating Rater 1 was clearly able to differentiate between non-reflection and reflection or critical reflection. CPC responses that were scored RIS 3 were randomly evaluated.

As previously discussed related to specific aim 2, prior health care experience and/or clinical course failure indicated a higher level of reflection. In addition, year 1 level responses appeared to frequently be scored for higher level of reflection. Due to the differences in participants by level, it was decided to compare year 1 to years 2 and 3 combined for level of reflection. Year 1 baccalaureate nursing students demonstrated higher level of reflection than year 2 and year 3 combined. Although there were not many studies found evaluating the level of reflection related to the level of the student, this finding would deem further investigation is needed. The question arises if the decreased level of reflection was a finding specific to this group or if it is reproducible with a larger sample. Benner, Hughes, and Sutphen (2008) discussed the expert nurse who provides high-quality, holistic care based upon knowledge and skills learned over time, along with reflection and self-evaluation of those experiential learning opportunities. Therefore, it would be expected that the level of reflection is increased with advancement in the nursing program. There is further uncertainty if students reflect at lower levels or less as they advance, or if it is related to reflection-on-action (online CPC response) becoming reflection-in-action (actions/decisions at the facility during the clinical day). Flannery Wainwright et al. (2011) evaluated clinical decision-making abilities through video recording of novice and experience physical therapists finding evidence of reflection-on-action in both groups.

An alternative possibility is that as nursing students become more comfortable in their role, it is possible reflection occurs less as the focus turns to advancing knowledge and skill practice directed at advanced assessment. As confidence in the role improves, perhaps there is less doubt or questioning introspectively about what is already known. There may be issues of self-efficacy, academic burnout, and anxiety about graduation or job finding that could possibly contribute to decreased reflection. Paget (2001) found in pre- and post-registration nursing students, increased experience was associated with perceiving less of a benefit from reflective practice. Further research is needed.

The following examples are presented to clarify the difference between levels of reflection and present examples of writing that was scored consistently by all raters.

Implications

The implications of these findings and the significance to nursing education research have been mentioned throughout the discussion. Due to the small sample size, single university setting, and differences in curriculum design among nursing programs, there is no attempt to generalize these findings nationally. Rather, these results offer insight on methods for promoting reflective learning in nursing education. Specifically there is new information about promoting reflection through online CPC.

A relationship between prior health care experience and RIS has been identified, which is novel to nursing education research. Another important finding in this study was nursing students' level of reflection was higher in a lower level student. When new nursing graduates are entering a more complex, high acuity work environment when they will be required to make decisions about patient care, while being reflective about prior

experiences and learning. To better prepare future nursing students, it is critical to investigate this finding further in future nursing education research.

These findings contribute to the body of literature offering further information for nurse educators about research in clinical education, implementing reflection strategies, use of clinical post conference, and critical incident technique. New ideas about the role of prior health care experience in requirements for nursing program enrollment and strategies for clinical course remediation are important considerations for nursing program director and nurse educators. The discussion of results offers further considerations for both nursing program directors and nurse researchers related to the issues in nursing clinical education research.

Recommendations for Future Research

Future recommendations for research have been suggested throughout this chapter in discussion of each result. This study reveals the need for future research in a variety of ways. First, the study could be repeated with a larger sample or at multiple nursing programs. The reflection education had no impact on students' level of reflection; therefore, future studies might test a reflection education intervention on level of reflection in comparison to having a strategy or opportunity to reflect alone. In the literature many studies did not implement a reflection education intervention, but rather provided a strategy to reflect, while evidence of increased reflection was identified. The impact of reflection education, the use of simulation, or other teaching strategies, such as online CPC, could be evaluated related to clinical reasoning using adequate sample sizes. Much of the literature review presented studies with small or insufficient sample sizes. It may be useful to investigate the research literature in clinical education to identify if there

are consistently low sample sizes and if so, explanations for that finding to determine ways to improve power in nursing education research.

Beyond the intervention, further information about the relationship of student attributes and clinical reasoning associated with levels of reflection is needed to validate the other findings of this study. Clinical reasoning appears to have a positive relationship with students' level of reflection. Further research should be done to substantiate this. Additional reliability and validity research for the ATI Real Life™ Clinical Reasoning Scenarios and RIS should be established in future research, as well.

From the data already collected in this study, responses could be evaluated for themes in the writing. There may be common themes occurring for all levels of students, or specific to certain student levels. Interviews of participants could aid the interpretation of the writing and offer insight on perceptions about the reflection education intervention or use of the online CPC. The study could also be extended to evaluate level of reflection over time as the participants from level 1 progress to graduation. Upon graduation, participant interviews about the perceived progress and preparedness in new graduate positions could be evaluated. These types of study could give further information about teaching reflection, student development over time, and look to validate findings from this and other research.

Furthermore, although this study evaluated the impact of a reflection education intervention during online CPC, there is limited research about the best practices in CPC. Research is needed to identify the learning outcomes of CPC and best teaching strategies for CPC, so the benefits or disadvantages to the use of CPC are identified. Even recognizing how different nursing programs nationally implement CPC could be a

starting point for finding the ideal methods for conducting CPC to maximize learning and reflection related to experiential learning.

Similar research methods and design could be modified to evaluate the level of reflection during simulation debriefing using audio/video recording. This would offer a different perspective on reflection, where the faculty guiding debriefing would act as the guide for reflection with prompted questions. What would have been the written response becomes a recorded verbal response and discussion among students? This could look at similar specific aims, but related to simulated learning. Simulated learning in California is being substituted for up to 25% of traditional clinical hours, while NCSBN is completing data collection December, 2013, for a longitudinal study comparing the outcomes of the use of simulation for 10%, 25%, and 50% of traditional clinical hours (NCSBN, 2013). Learning outcomes from the application of simulation in nursing education will be important to identify in future research.

Multidisciplinary research among multiple health care professions measuring levels of reflection and identifying themes in reflective writing to recognize similarities and differences between programs using experiential learning could be a direction for new research. Understanding different pedagogical views or strategies for reflection may lead to new information about best teaching/learning strategies. Investigating rating of level of reflection in interdisciplinary research may reveal causes for differences among raters with diverse health care profession backgrounds. The use of experiential learning opportunities are unique to programs, such as nursing, physical therapy, medicine, and respiratory therapy; therefore, sharing methods or strategies for reflection successfully implemented would be beneficial. The collaborative approach to learning could also

impact longer-term collaboration for communication among these professionals aiding in efforts toward team-based care to improve patient outcomes as recommended by the Institute of Medicine (2011).

Future researchers should be aware of the difficulties in studies in clinical education. The clinical environment and nursing education environment has many inconsistencies and variability. This is difficult when planning a quasi-experimental study and is most likely the reason many studies in nursing education are qualitative in nature. Studies in clinical education have to be prepared for change because it is not a stable environment.

Conclusions

This issue with feasibility of study speaks to this type of research that is inherently limited because of the nature of clinical education. Even the best designed study could have limitations that could not be anticipated because of the variability in the nursing programs, students, and clinical settings.

The study findings have been presented and discussed. Limitations impacting the study results have been examined. Recommendations for future research on reflection and CPC in nursing education have been addressed. The findings of this study indicate an association exists between previous health care experience and level of the student with level of reflection. Also, a negative correlation exists between level of the student and level of reflection where increased level of the student was related to decreased level of reflection. Ideally, student advancement leads to less reflection-on-action because the reflection is happening in-action, but further research is needed to confirm this possibility. The implementation of the critical incident technique was a successful strategy for promoting reflection in online CPC. Consistent with other studies, the

reflection education intervention did not have an impact on baccalaureate nursing students' level of reflection. It is unknown if teaching reflection impacts the level of reflection more than offering an opportunity or strategy for reflection. Professional nursing organizations recommended increased efforts to promote reflection and higher-order thinking in nursing clinical education to support the development of critical thinking and increased new graduate readiness. CPC may be underutilized and could be directed toward promoting higher-order thinking and reflection to enhance learning from the clinical environment. This study has made efforts to begin to make those efforts, while revealing the need for further potential studies using reflection in online CPC and is ripe with potential for future interdisciplinary studies.

APPENDIX A: SUMMARY OF LITERATURE REVIEW ON CLINICAL POST
CONFERENCE

Table 14
Summary of Literature Review on Clinical Post Conference

Study	Purpose	Sample	Response Rate (%)	Design	Study Variables	Results
Ascano-Martin (2008)	Evaluate SBAR for report during CPC	$n = 24$	Not reported	1	Student demographics, satisfaction, and observed participation during role playing	Positive experience and increased self-confidence in giving report.
Cooper et al. (2004)	Compare online vs. face- to-face CPC	$n = 45$; $n = 32$	88	2	Student demographics, satisfaction with the CPC format, perceptions, and knowledge	Online vs. face-to-face: <ul style="list-style-type: none"> • Student participation ($p = .000$). • Opportunity to examine ethical issues related to patient care ($p = .001$). • Convenient time ($p = .000$). • Facilitation of learning by hearing other student's experiences ($p = .003$). • No difference in knowledge (quiz scores) in groups.
Letizia & Jennrich (1998)	Develop and test of CPCLES	$N = 457$	100	1	Student demographics, faculty demographics, and CPCLES scores	Cronbach's alpha .82 to .93 and reliability by alpha coefficient .90 to .96. Pearson r correlation coefficient = .87 to .99 for the actual and importance subscales. Teacher support subscale was rated as most important ($m = 58.1, SD = 5$).

Letizia (1998)	Describe strategies used during CPC	$N = 60$	100	1	Faculty demographics Faculty perceptions	Faculty (74-92%) reported CPC occurred at the end of the clinical day, lasting on average 50.5 min. Informal discussion rated as the most frequent activity.
Rosignol (1997)	Evaluate teacher discourse strategies	Faculty ($n = 10$); students ($n = 57$)	70	1	Faculty demographics Student demographics Discourse behaviors WGCTA	Teacher discourse strategies occurred for a small part (5%) of total teacher talk time. Positive relation between less student talk and high-levels of student critical thinking.
Rosignol (2000)	Evaluate verbal and cognitive activities between students and faculty	Faculty ($n = 10$); students ($n = 57$)	100	1	Student demographics Cognitive level of faculty-student verbal interactions	Lower cognitive level of 73% of faculty and 76% of student verbal interactions.
Wink (1993)	Test the effect of faculty education intervention on cognitive level of questions	Control group ($n = 4$); treatment group ($n = 10$)	78	2; 3	Faculty demographics Student demographics Faculty questioning level Student questioning level	Faculty asked a higher percentage (15%) of high-level cognitive questions after the intervention than the control group ($U = 4, p = .012$).
Yehle & Royal (2010)	Start with active verb Rotating stations (12-15 min each) for 90 min	Pilot studies ($n = 16, n = 8$); junior BSN students ($n = 144$)	Not reported	1	Student demographics Student satisfaction with the CPC format Student perceptions	Positive comments about the new teaching strategy. The students (21%) initially reported being overwhelmed which declined over the 15-week semester (5%).

Note. 1 = Single group; 2 = Nonrandomized 2-group; 3 = Pretest/posttest

Author	Purpose/Strategy	Sample	Response Rate	Design	Study Variables	Results
Asselin (2011)	Reflection education Face-to-face reflection exercises 1 min papers Online postings Journaling	Senior RN to BSN students (<i>n</i> = 10)	Not reported	Single group	Student demographics Student satisfaction Observed student participation during reflective strategies	Positive experience that supported the development of new perceptions. Reflections should be guided. Students willing to share ideas in group setting, but mentions needing trust and comfort within the group to do so.
Branch (2010)	Reflection education (Patient Doctor course)	1 st year and 3 rd year Harvard medical school students (<i>n</i> = 240) and faculty (<i>n</i> = 100) from 1988 - 2009	Not reported	Single group	Student perceptions Student writing Observations of students Faculty perceptions	Education programs successful in facilitating student and faculty self-reported transformational change in perspective, improved communication, and increased humanism in patient care.
Briceland & Hamilton (2010)	Electronic reflective portfolios using Blackboard™	Senior (final year) Advanced Pharmacy Practice students (<i>N</i> = 135)	97%	Single group	Student demographics Student self-assessment rubric Rater assessment rubric of evidence of professional development	Electronic reflective portfolios can be useable for professional development desired outcomes. Two raters concurred on 78 students of 135.
Chirema (2006)	Journaling	Post-registration (nursing) part-time students (<i>N</i> = 42)	Not reported	Single group	Level of reflection (Boud et al. and Mezirow from Wong)	The majority of students were scored as non-reflectors (<i>n</i> = 9) or reflectors (<i>n</i> = 28), with only 5 critical reflectors. Reported 0.95 interrater reliability using Mezirow 3 levels of reflection; 0.5-0.75 inter rater reliability using Boud et al. levels of reflection.
De Swardt, du Toit, & Botha (2012)	Facilitated guided reflection through semi-structured interview and critical incident narratives	2 nd year critical care BSN students (<i>n</i> = 7)	100%	Single group	Interviews, written narratives, researcher observations	Guided reflection resulted in a positive impact on the theory-practice gap.

Dunfee et al. (2008)	Reflection education and evaluation of method to assess reflection	Graduate physical therapy students ($n = 7$) online discussion board entries ($N = 122$)	97.5%	Single group	Level of reflection (Schön) Higher-order thinking (Bloom's taxonomy)	Interrater reliability ranged from 0.72 - 0.96 for levels of reflection; for higher-order thinking 0.68 – 0.95.
Forneris & Peden-McAlpine (2006)	Reflection education Reflective journaling, interviews, preceptor coaching, and leader facilitated discussion groups	New graduate nurses in orientation (6-mo) Subject N not reported	Not reported	Single group	Interviews Narrative stories Perceptions	Education intervention on contextual learning should: -Allow learners to discuss in groups to share experiences -Allow for time to reflect -Require guidance to reflect -Offer group dialogue to gain perspective from other's
Glowacki-Dudka & Barnett (2007)	Online critical incident questionnaire using Blackboard™ and small groups	Graduate students enrolled in 16-week asynchronous online adult teaching strategies course ($N = 36$)	Not reported	Single group	Student responses to critical incident questionnaire	Critical reflection was perceived to be especially important in online adult learning environments based on student responses by evidence of group development and ownership in the class.
Glynn (2012)	Structured reflective practice guide use	BSN students enrolled in an "early" clinical course ($N = 34$)	Not reported	Single group	Interviews at the beginning and end of the course	Students reported a perceived improvement in clinical judgment and confidence.
Hatlevik (2012)	Secondary analysis of survey data	3 rd year nursing students from 2 Norway universities ($N = 446$)	71%	Single group	Student written survey responses	Students' reflective skills and theoretical knowledge influence perceived coherence between theory and practice.
Hicks Russell et al. (2013)	Active learning strategy using SAFETY tool	Senior BSN students in pediatric course. Subject N not reported	Not reported	Single group	Student presentations Faculty observations	SAFETY template was perceived to be a successful guide for facilitating learning.

Honey et al. (2006)	Reflection education	2 nd year BSN students (<i>N</i> = 12)	Not reported	Single group	Reflection written assignment	Four themes identified related to coping with clinical practice (fear and anxiety, feeling alone, feeling unprepared, and coping) and the ability of students to reflect in writing.
Jensen & Joy (2005)	Reflection education Journaling	Junior year BSN students (<i>N</i> = 20)	Not reported	Single group	Level of reflection (Mezirow 7 levels)	Journals collected during weeks 1, 6, and 12 with decrease over time from 80 to 50% of evidence of higher levels of reflection. Most journaling (82%) was lower level reflection.
Kember et al. (1999)	Tool assessment for reflection (reflective papers)	Undergraduate health sciences students from nursing, occupational therapy, physical therapy and radiology (<i>N</i> = 9)	Not reported	Single group	Level of reflection (Mezirow 7 levels)	Interrater reliability among 3 raters was 0.74 indicating the tool is reliable.
Kember et al. (2008)	Tool assessment for reflection (critical incident report papers)	Undergraduate radiology students (<i>N</i> = 4)	Not reported	Single group	Level of reflection (Schön and Mezirow, 4 levels of reflection)	Interrater reliability was not measured, but rather conventional grades were determined among 4 raters reporting a high level of agreement based on consistency.
Leung & Kember (2003)	Student approaches to learning framework (SAL) compared to reflection framework	Undergraduate health science students (<i>N</i> = 402)	80%	Single group	Student demographics Study Process Questionnaire Reflection Questionnaire	Strong positive correlation between the two questionnaires indicating the SAL and reflection frameworks could be used collaboratively in future study.

Lowe & Kerr (1998)	Reflection education	Diploma nursing students in biological sciences course; control group ($n = 25$) and treatment group ($n = 21$)	73-81%	Non randomized, 2 group posttest only	Student demographics Knowledge	No significant difference between groups, but this indicated during a 20-week period students were able to accommodate to a new teaching method and still perform equally as well as the control group.
McMillan-Coddington (2013)	Guided journal writing online	Writing samples from associate degree nursing program ($n = 4$); 1 first semester nursing student and 3 final semester nursing students		Single group	Written journal	Guided reflective journaling can develop reflective thinking and deeper understanding of the nursing role to provide improved patient care.
Murphy (2004)	Reflection education	1 st semester ADN students ($n = 33$) and faculty ($n = 4$)	Not reported	Non randomized, 2 group posttest only	Assessment and analysis instrument Clinical reasoning ability, knowledge Reflection and articulation inventory Student interviews	Higher clinical reasoning scores were associated with self-reported higher frequencies of focused reflection and described learning events more in depth.
Padden (2011)	Guided reflective journaling	3 rd semester ADN students: intervention ($n = 33$) and control ($n = 79$)	79%	Non randomized, 2 group pre and post test	Level of reflection Student demographics Self-reflection and insight scale Jenkins clinical decision-making in nursing scale	Level of reflection was positively correlated to self-awareness. Self-awareness and work hours were negatively correlated. Level of reflection and clinical decision-making relationship was not statistically significant.
Paget (2001)	Evaluate perception of change in nursing clinical practice due to reflection education	Past or current nursing students ($N = 200$) who had formal preparation for reflective practice: focus groups ($n = 11$), questionnaire ($n = 72$)	35%	Single group	Questionnaire Student perceptions	Majority (78%) of students reported a significant specific change had taken place because of reflection. Most (77%) also identified the change was lasting 'integrated into their practice'.

Pee et al. (2000)	Progress file	Four dental schools; dental students ($n = 56$), tutors ($n = 8$), directors of dental schools ($n = 3$), and academic dentists ($n = 9$)	75-100%	Single group	Demographics Student perceptions Tutor perceptions Director and dentist perceptions	Knowledge, education, attitude, and perceptions can impact of a strategy promoting reflection.
Pee et al. (2002)	Structured worksheet	Dental therapy students at 3 dental programs ($N = 26$)	53%	Single group	Student demographics Student satisfaction Student writings from worksheets	Overall positive comments about the use of the structured worksheet for reflection. Worksheet demonstrated evidence that students could reflect by using it.
Plack et al. (2005)	Tool assessment for reflection (journaling)	Graduate physical therapy students in clinical course ($N = 27$)	100%	Single group	Level of reflection (Two methods: 9 elements Schön; Boud et al. and Mezirow)	Interrater reliability demonstrates reliable method (Schon 0.69 – 0.86; Boud et al. and Mezirow 0.65 – 0.93)
Plack et al. (2007)	Tool assessment for reflection (journaling)	3 rd year medical students ($N = 21$)	Not reported	Single group	Level of reflection (higher-order thinking as outcome)	Interrater reliability between 3 raters was 78-100% for a total of 308 entries.
Plack et al. (2010)	Reflection education Peer-facilitated virtual action learning	3 rd year medical students ($N = 70$)	100%	Single group	Level of reflection (descriptive levels) Written essay Weekly online postings Peer responses	Interrater reliability = 88-92% Content themes: communication issues, role identification, medical treatment concerns, lack of voice/power 12 of 70 essays had highest level of reflection
Platzer et al. (1997)	Literature review of reflection techniques	Educational and nursing and allied health databases from 1979 to 1996	Not reported	Single group	Models and frameworks of reflection Methods for promoting reflection	Journaling/writing is the most common strategy for promoting reflection. Research on reflection often used self-reports or perceptions rather than outcomes.

Platzer et al. (2000)	Reflective practice groups	Post-registration diploma nursing students	100%	Single group	Student perceptions Interviews	Individual reflection using small groups is present with students perceiving groups promoting changes in perceptions.
Platzer et al. (2000)	Reflective practice groups face-to-face and student guided	Diploma nursing students; 4 groups over 2 yrs. (<i>n</i> =30)	100%	Single group	Student demographics Student perceptions	Students reported overall positive experiences with the strategy stating: -Insight from group learning for new perspectives - Positive experience in group -Improved confidence
Powell (1989)	Tool for assessing level of reflection	Practicing RNs	Not reported	Single group	Level of reflection (modified Mezirow to 6 levels) Tape recorded interviews	Reflection is present and applied in the workplace by RNs. No reliability or validity was reported for the tool.
Richardson & Maltby (1995)	Journaling	2nd year BSN students in community health clinical (<i>n</i> = 30)	Not reported	Single group	Level of reflection Student demographics Student satisfaction	Positive experience. Reflections should be guided. Students willing to share but mentioned apprehension or discomfort. Indicated journal beneficial to self-assess. Only 6% of journals were reported at higher 3 levels of reflection.
Riley-Doucet & Wilson (1997)	3-step method for reflective journal writing	2nd year nursing students (<i>n</i> = 10) and faculty (<i>n</i> = 1)	Not reported	Single group	Student demographics Student satisfaction Faculty satisfaction	Faculty reported increased autonomy was noticed in students and increased active participation with peers. Students reported the need for faculty guidance to reflect, and the increased ability to reflect about clinical experiences after the strategy was implemented.
Shields (1995)	Mental previewing techniques and journaling	2 nd year diploma nursing students (<i>N</i> = 11); pilot study (<i>n</i> = 3)	Not reported	Single group	Student perceptions from tape recorded student interviews	Students reported relating new material in a new way, intent to make a practice behavior change, and value writing as a strategy for reflection.

Suhre & Harskamp (2001)	New educational program	1st year Diploma nursing students from 2 schools ($n = 58$) and nursing faculty ($n = 19$)	Not reported	Non randomized 2 group posttest only	Student demographics Faculty demographics Faculty satisfaction Checklist on learned skills and checklist on reflection on learning	Majority of faculty (> 70%) were satisfied with new program. Checklists indicated a correlation between learning skills and reflection on learning ($r = .73$), also finding student performance improved in reflection but not in skills per the checklist.
Teekman (2000)	'Sense making' to explore the use of reflection in nurses	Full-time or part-time working registered nurses ($N = 10$) in hospitals	Not reported	Single group	Interviews	Self-questioning was extensively used in undecided situations to reflect and ponder before making decisions. The interviews brought up unresolved issues of conflict for some nurses prompting further potential for reflection use in staff debriefing.
Wallman et al. (2008)	Factors affecting level of reflection	Master's level pharmacy students in advanced pharmacy practice experiences ($N = 186$)	71%	Single group	Level of reflection Student demographics Essay Critical thinking Learning style	The later year students in the program, the higher proportion of reflection occurred. Age, gender, critical thinking, and number of children were not found to be correlated to reflection.
Williams et al. (2002)	journaling	3rd semester physical therapy students ($n = 56$) and faculty ($n = 3$)	100%	Single group	Level of reflection Faculty demographics Student demographics Faculty perceptions Student perceptions	Positive attitudes from students and faculty about the journaling. Only 39% of students reached higher levels of reflection, but indicated that students can reflect at higher levels.
Williams & Wessel (2004)	journaling	2nd year physical therapy students ($n = 48$)	100%	Single group	Level of reflection Faculty demographics Student demographics Journal themes (graded writing from points 0-10)	Overall positive attitudes about the journaling experience. Students indicated a changing in attitudes and improved knowledge. Only 25% of students were able to demonstrate reflection at higher levels by journal writings.

Wong et al. (1995)	Tools for assessing levels of reflection	Post-registration nurses journal writings in BSN course (<i>N</i> = 45)	100%	Single group	Levels of reflection (Boud et al. and Mezirow) Individual interviews	Interrater reliability for Boud et al. levels of reflection was 0.5 – 0.75; Mezirow 3 levels of reflection was 0.88 by 5 raters. Student writing can be used to identify the presence and level of reflection.
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APPENDIX C: REFLECTION LITERATURE SUMMARY MEASURING
REFLECTION

Table 16
Reflection Literature Summary of Measuring Reflection

Study	Tool	# of Raters	Validity/Reliability
Chirema (2006)	Boud et al. 6 levels of reflection Mezirow's 3 broad levels of reflection	2	Current validity from expert (2) evaluation Interrater reliability = 0.5 – 0.75 Interrater reliability = 0.95
Dunfee et al. (2008)	Schön: reflection-for/on/in- action, 3 types Bloom's Taxonomy	3	Validity not reported 72.9 – 95% agreement PABAK = 0.46 – 0.92 68.8 – 95.2% agreement PABAK = .38 – .90
Jensen & Joy (2005)	Mezirow's 7 levels of reflection	2	Validity not reported Interrater reliability = 0.76
Kember et al. (1999)	Mezirow's 7 levels of reflection	4	Content-related validity evidence from literature review Cronbach's alpha = 0.65 (trial) Cronbach's alpha = 0.74
Kember & Leung (2000)	Four categories for levels of reflection	Not reported	Content-related validity evidence from literature review Cronbach's alpha for each of the four categories = 0.62 – 0.75; Goodness of fit test $\chi^2 = 179.3$, $df = 100$, CFI = 0.903
Padden (2011)	Level of Reflection on Action Assessment LORAA)	2	Content-related validity evidence from rater (3) evaluation and literature review Interrater reliability = 0.8 – 1.0
Plack et al. (2005)	9 elements (Schön 3 types, Boud et al. 3 stages, and Mezirow 3 levels)	3	Content-related validity evidence from literature review 78.2–100% agreement; Cronbach's alpha = 0.62 – 1.0

Plack et al. (2010)	Mezirow's 3 levels of reflection	2	Interrater reliability = 0.88 – 0.92
Powell (1989)	Mezirow's 7 levels of reflection reduced to 6 levels	Not reported	None reported
Richardson & Maltby (1995)	Powell's tool for reflectivity 6 levels	2	None reported, except stating interrater reliability was established
Wallman et al. (2009)	Mezirow's 7 levels modified to 6	2	Content-related validity evidence from rater (2) evaluation Interrater reliability = 0.59 – 0.65
Williams et al. (2000)	Boud et al. modified to 5 levels of reflection	3	Content-related validity evidence from literature review Reliability coefficient = 0.68
Wong et al. (1995)	Boud et al. 6 levels of reflection Mezirow's 3 levels of reflection	3	Content-related validity evidence from literature review Reliability coefficient = 0.5 - 0.75 Reliability coefficient = 0.88

APPENDIX D: QUALTRICS SURVEY



Informed Consent UNLV School of Nursing, in collaboration with CSU Channel Islands

TITLE OF STUDY: Testing a Reflection Education Intervention on Baccalaureate Nursing Students' Level of Reflection During Online Clinical Post Conference

INVESTIGATOR(S): Jaime A. Hannans, PhD, RN; Barbara St. Pierre Schneider, DNSc, RN For questions or concerns about the study you may contact Jaime A. Hannans at



For questions regarding the rights of research subjects, any complaints or comments regarding the manner in which the study is being conducted, contact the UNLV Office of Research Integrity – Human Subjects at 702-895-2794, toll free at 877-895-2794 or via email at IRB@unlv.edu. For related problems or questions regarding your rights as



Purpose of the Study

The purpose of this study is to (a) test the effect of the reflection intervention on the baccalaureate nursing student level of reflection during online clinical post conference, (b) examine the relationship between student attributes and level of reflection, and (c) examine the relationship between clinical reasoning and level of reflection.

Participants

You are being asked to participate in the study because you fit these criteria: you are a healthy adult age 18-64 and are enrolled in a clinical course at California State University Channel Islands Baccalaureate Nursing Students (generic track), but are not enrolled in the clinical course section for Nursing 421 taught by Jaime Hannans.

Procedures

This semester, all students enrolled in acute care clinical courses (N221, N321, or N421) will be required to complete online clinical post conferences for up to six weeks. If you decide to participate in this study, your responses will be used for research purposes. If you decide to participate in this research, you will also be asked to do the following additional activities that are not considered part of the clinical course: provide consent, complete an online demographic information survey, complete the Jung Typology personality test, view an online education session and education refresher, and complete an ATI Real Life™ Clinical Reasoning Scenario. The completion of these additional activities would take a total of about 90 minutes. Each section within each clinical course will be randomly selected to be part of the intervention or control group, which will not be disclosed to you during the data collection period. The only difference between the intervention and control groups is the education content presented within both the online education session and education refresher. If you decline the invitation for inclusion in the study, participation in the online clinical post conferences remains part of the normal course activities, but your responses will not be collected for any research purposes.

Benefits of Participation

As a participant of the study, you will have the opportunity to use the ATI Real Life™ Clinical Reasoning Scenarios at no cost to you. You will be given the opportunity to review the study results because of your participation. You will be able to experience the role of a participant in research and may not have other direct benefits to you as a participant; however, we hope to learn about the impact of a reflection intervention during online clinical post conference.

Risks of Participation

This study may include only minimal risks, such as feeling uncomfortable when answering some questions. Cost /Compensation There are no financial costs to you to participate in this study. The study will take 60-90 minutes of your time.

Confidentiality

All information gathered in this study will be kept as confidential as possible. No reference will be made in written or oral materials that could link you to this study. The region will be referred to as "Coastal California" or "Southern California" instead of Ventura County. All records will be stored in a locked facility at UNLV for 3 years after completion of the study. After the storage time, the information gathered will be destroyed/deleted. Your participation or refusal to participate will not be known by your clinical instructor.

Voluntary Participation

Your participation in this study is voluntary. Your participation or declination will not affect your grade or standing in the nursing program in any way. You may refuse to participate in this study or in any part of this study. You may withdraw at any time without prejudice to your relations with your nursing program and faculty, or CSU Channel Islands and UNLV. You are encouraged to ask questions about this study at the beginning or any time during the research study.

Participant Consent

I have read the above information and agree to participate in this study. I have been able to ask questions about the research study. I am over 18 years of age. A copy of this form has been made available to me for my own records via electronic version.

(No signature is required because by clicking on the answer below you are confirming or declining your decision to participate in this study, agreeing to or declining to answer further survey questions that will take approximately 10-15 minutes.) If you are not ready to decide about participating or do not have time to complete the rest of the survey, please return to this site when you have decided about participation.

- Yes, I voluntarily agree to participate in this research study.
- No, I do not want to participate in this research study.

>>

Please answer each question as openly and honestly as possible. Although you will be asked to provide your name at this time, you will be assigned a random number for this survey, and your name will be removed to protect your confidentiality. The survey will take 5-10 minutes (or less) to complete. Thank you for your time and participation in advance!

Type your first and last name.

What is your gender?

- Female
- Male

What is your current age in years?

What is your race?

- White/Caucasian
- African American
- Hispanic
- Asian
- Native American
- Pacific Islander
- Other

What is your current status?

- Single, never married
- Married without children
- Married with children
- Divorced
- Separated
- Widowed
- Living w/ partner

How many children do you have? If you do not have children, enter "0".



Actual or estimated Grade Point Average (GPA)

Have you ever had a failure in a clinical nursing course in this nursing program?

- Yes
- No

How many units are you enrolled in this semester (spring 2013)?

Estimate the number of hours that you volunteer each semester?

How many hours per week do you work? If you do not work currently, enter "0"

Do you have prior experience in the health care field?

- Yes
- No



APPENDIX E: CRITICAL INCIDENT TECHNIQUE

Critical Incident Technique: Guide for Nursing Student Online Discussion Posts

Please post one individual response and two peer responses by the next clinical day. Recall an aspect of clinical this week that resulted in an event which is significant to you. Examples of a critical incident may be a code situation, an unusual condition, a difficult situation, a communication problem, a memorable patient interaction (positive or negative), or an incident that made you stop and think or question. Describe this experience in the form of a story including details about the event. While you write consider the following:

- What were you thinking about during the experience?
- Why do you think things happened during the event as they did?
- How did you feel during the experience? Did your feelings cloud the issue?
- If the event involved a patient, how did the patient feel? How do you know?
- What significant factors contributed to the experience or events?
- What assumptions, beliefs, or values impacted the situation, if any?
- What past experiences helped you make sense of the situation, if any?
- Why was this event significant to you? What stands out in the event?
- What other thought(s) or action(s) could you have taken to deal with the situation?
- How did this event impact you? Will this experience impact your future nursing practice?

Note. This information was posted weekly for control and intervention group responses, guiding the CPC using asynchronous online threaded discussion boards for up to 6 weeks. This critical incident technique was modified for use during nursing CPC. Adapted from Brookfield (1995, 2000), Flanagan (1954), and Monash University (2007).

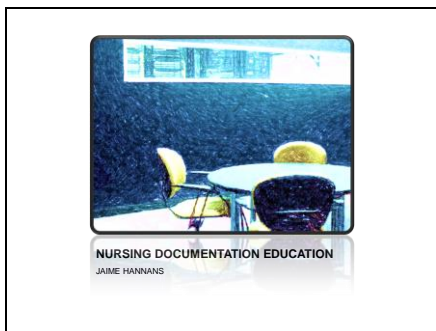
APPENDIX F: OUTLINE FOR REFLECTION INTERVENTION
AND NURSING DOCUMENTATION

	Reflection Intervention	Nursing Documentation Education
Openness	Guidelines for conducting reflective learning in a safe environment, promoting group trust.	Guidelines for appropriate nursing documentation from legal and facility perspective.
Purpose	Theory and literature explaining how reflection applies to nursing.	Background explaining how accurate documentation is important in the nurse role.
Meaning	Different levels of reflection with examples.	Different types of documentation with examples.
Challenging beliefs	Practice rating written examples of reflections followed by the correct results with reasoning.	Practice evaluating written examples of patient care documentation followed by the correct results with reasoning.

Note. Adapted from “An Integrated Model for Practicing Reflective Learning,” by P. Castelli, 2011, *Academy of Educational Leadership Journal*, 15. Reprinted with permission (see Figure 2).

APPENDIX I: POWERPOINT SLIDES OF REFLECTIVE EDUCATION INTERVENTION AND NURSING DOCUMENTATION EDUCATION

Nursing Documentation Education




Goals

- Documentation guidelines
- What is nursing documentation?
- Examples of documentation
- You try!

A graphic of a red target with a blue arrow hitting the bullseye.

Openness

- Accurate
- Cognitive process
- Objective
- Concise

A photograph of a candy store aisle with many colorful candy packages hanging from the ceiling.


Legal perspectives

- Did not occur if it is not recorded
- Medical records
- Professional liability
- Legible
- Factual
- Credibility

A photograph of medical supplies including a stethoscope, a syringe, and various pills on a green surface.

Regulating bodies

- Joint Commission
- Board of Nursing
- American Nurses Association

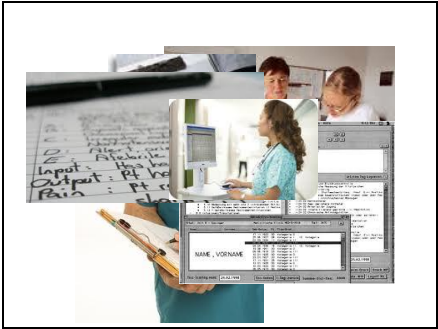
A line drawing of a nurse sitting at a desk with a computer monitor. To the right is a gold seal with the text "NATIONAL BOARD OF NURSING".

The facility

- Policy and Procedure
- Standardized practices
- Reporting

A graphic of a blue silhouette of a person standing on a yellow path that leads towards several blue arrows pointing in different directions.


What is nursing documentation?



A form of communication; an accurate account of what occurred and when it occurred; an accurate and objective snapshot of a patient at a particular point in time; any information about a patient that describes the care or services provided; all nurse interactions and information relevant to the patient's care and condition


History of documentation

- Nightingale
- JCAHO
- 1970's





Types of documentation

- Narrative
- Flowsheets
- SOAP, SOAPIE(R)
- CBE, DBE
- EMR, ERP




Key considerations

- Nursing process
- Objective
- Facts
- Accurate and complete
- HIPAA
- Abbreviations
- Avoid speculation
- Policies
- Corrections



Narrative

- Spelling and grammar
- Legible
- Authorized abbreviations
- Timely



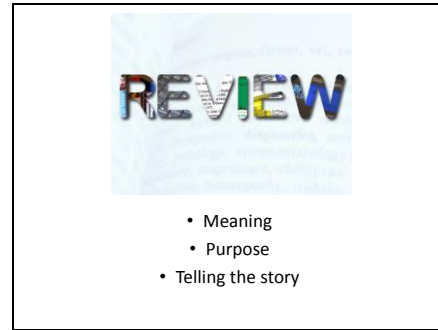
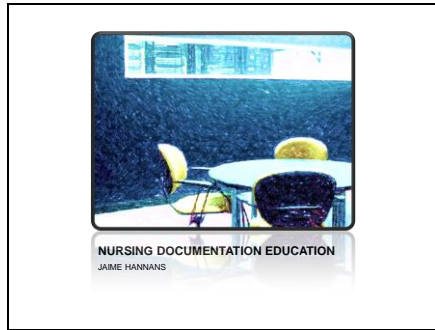
"Pt reported CP sternal, nonradiating 7/10. Denies SOB. NC O2 2L/min placed. VSS. On telemetry, NSR. Dr. White called to report. EKG ordered. Awaiting call back from MD"

Narrative Note

Charting by exception (EMR)

Event should not be recorded

Nursing Documentation Refresher

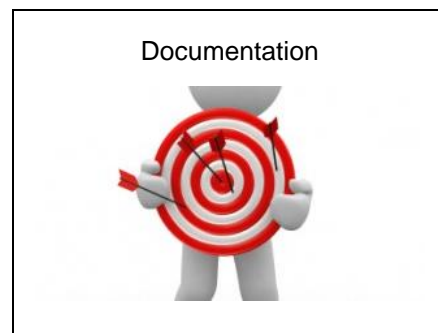


Openness

- Accurate, factual
- Cognitive process
- Objective
- Concise, legible
- Professional liability
- It did not happen if it was not documented
- Regulatory bodies
- Policies and procedures

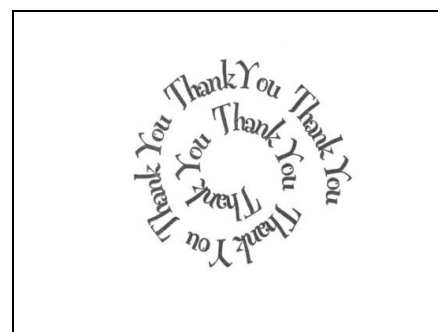


A form of communication; an accurate account of what occurred and when it occurred; an accurate and objective snapshot of a patient at a particular point in time; any information about a patient that describes the care or services provided; all nurse interactions and information relevant to the patient's care and condition

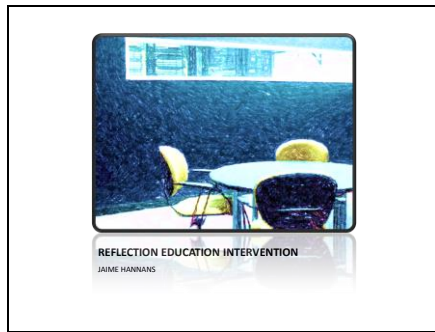


Types of documentation

- Narrative
- Flowsheets
 - SBAR
- SOAP, SOAPIE(R)
- CBE, DBE
- EMR, ERP



Reflection Education Intervention




Goals

- Facilitating reflection
- What is reflection
- Examples of levels of reflection
 - You try!




Openness

- Honesty
- Emotional and cognitive process
- First person perspective
- Comfort zone





Feeling safe sharing

- Privacy within the group
- Non-judgmental
- Multiple view
- Alternatives




Participating

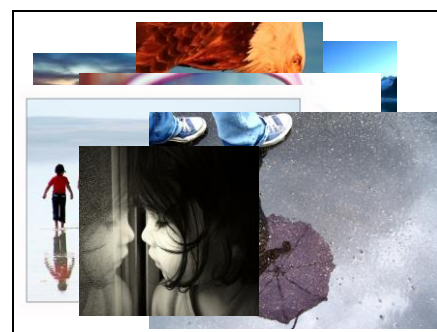


Focus

- The story
- The possible approaches
- Exploring the events



What is reflection?



Critically assessing and self-evaluating one's own actions, thoughts, beliefs, experiences, or values in an effort to interpret, explain, discuss, give meaning to reevaluate or decide upon future decisions or thoughts

Theory on reflection

- Schon
- Mezirow

Levels of reflection

- Non-reflective (NR)
- Reflective (R)
- Critically Reflective (CR)

Non-reflective (NR)

- Descriptive
- Patient data
- Facts
- Events
- Tasks
- Reporting feelings

Reflection (R)

- Awareness of feelings, thoughts, actions
- Relating to past experiences
- Self-critique
- Identifying reasons or justifications
- Considering other's views

Critical Reflection (CR)

- Change or new perception
- May or may not be acted upon
- Transformation
- New plan, idea, belief, decision, or judgment

Practice Time

What do you think?



I was in the cath lab today and we went to the telemetry floor to pick up a patient. The nurse addressed the 64 year old male patient in Spanish as she reviewed his chart at the bedside. The patient looked confused. He didn't speak Spanish. When I asked the nurse why she assumed he spoke Spanish, she showed me the H&P which indicated "Hispanic male" as written by the physician. She then said "Can you blame me?" Of course I can! I couldn't believe she never asked the patient if he even spoke Spanish. In addition, she was explaining the procedure and verify the consent which could have been a safety concern. Although I understand how this can happen, it seems as if the basics of nursing were forgotten. I will remember this experience, the reaction of the patient, and my own reaction. The basics, such as verifying if the patient speaks English or another language, is crucial to maintaining safe and culturally appropriate care. You can never assume from someone else's record. I was most surprised about the nurse's lack of acknowledgement of the event. I will always confirm with a patient first. This reinforces why the basics are so important.

Non-reflective (NR)

Reflective (R)

Critically Reflective (CR)

What do you think?



I hung antibiotics for M.M. today and I was very nervous. It seems like no matter how many times I have passed medications with the nursing instructors, my hands still shake. I feel like it makes me look unprepared and wonder if the patients notice my anxiety. I am never that way when I am doing my assessments or interacting with the patients otherwise. M.M. had been admitted the prior day for urosepsis and per her caregiver she already seemed more herself. She was pleasantly confused and was able to get out of bed with help. I worked with physical therapy with her and thought she might fall the first time she was up, but she managed to walk out to the nursing station with a walker. The day went rather well and I felt organized other than my continued anxiety with medication administration.

Non-reflective (NR)

Reflective (R)

Critically Reflective (CR)

What do you think?



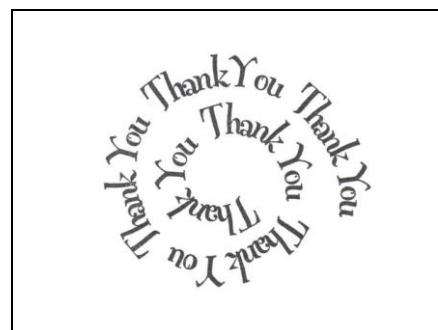
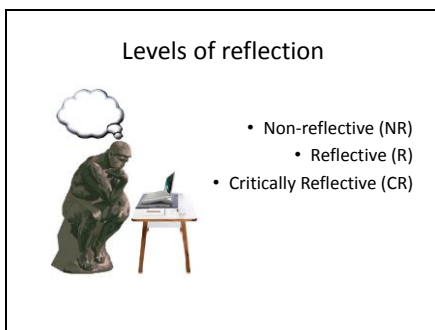
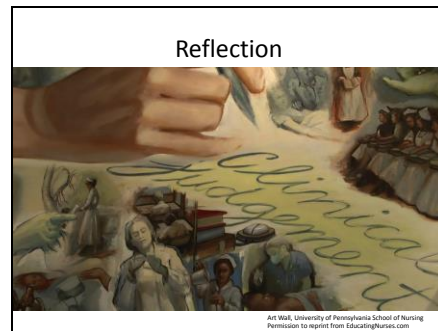
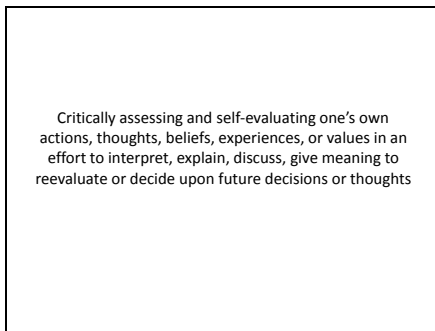
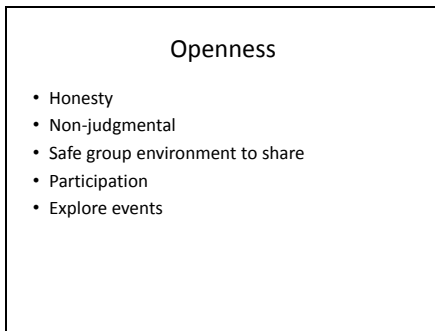
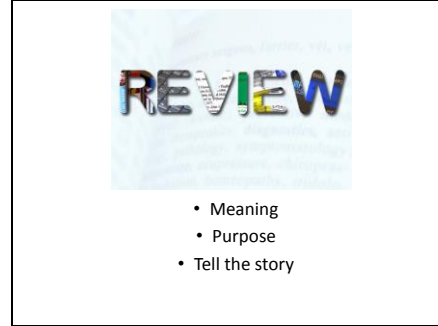
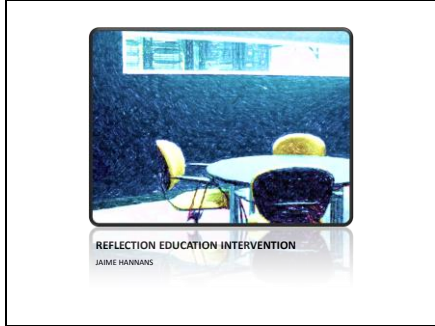
I was thinking back to what we learned our first semester of nursing school and how each semester adds something new. My goal this week was to be efficient and complete in my assessment. It seems like it was going well. I did my morning assessment and was focused on getting medications ready for my patient admitted for COPD exacerbation. I could not figure out why she was ordered antibiotics. I could not find any infection source. Her CXR reported findings related to her chronic COPD. I checked for urine or sputum samples without anything indicating an infection. I thought back to signs and symptoms of infections related to the assessment, and although her lung sounds were diminished in the bases, she had no fever. She was short of breath when I helped her get to the commode, but I asked her if that was normal for her and she said anything makes her short of breath. I asked the instructor to help, but she didn't find a reason either. I guess I could consider calling the physician, but I don't know if I should be questioning the order since it was just written on admit 2 days ago. The primary nurse seemed fine with giving the antibiotic not indicating we should call the physician, so we gave it, and the patient seemed aware and fine with receiving antibiotics.

Non-reflective (NR)

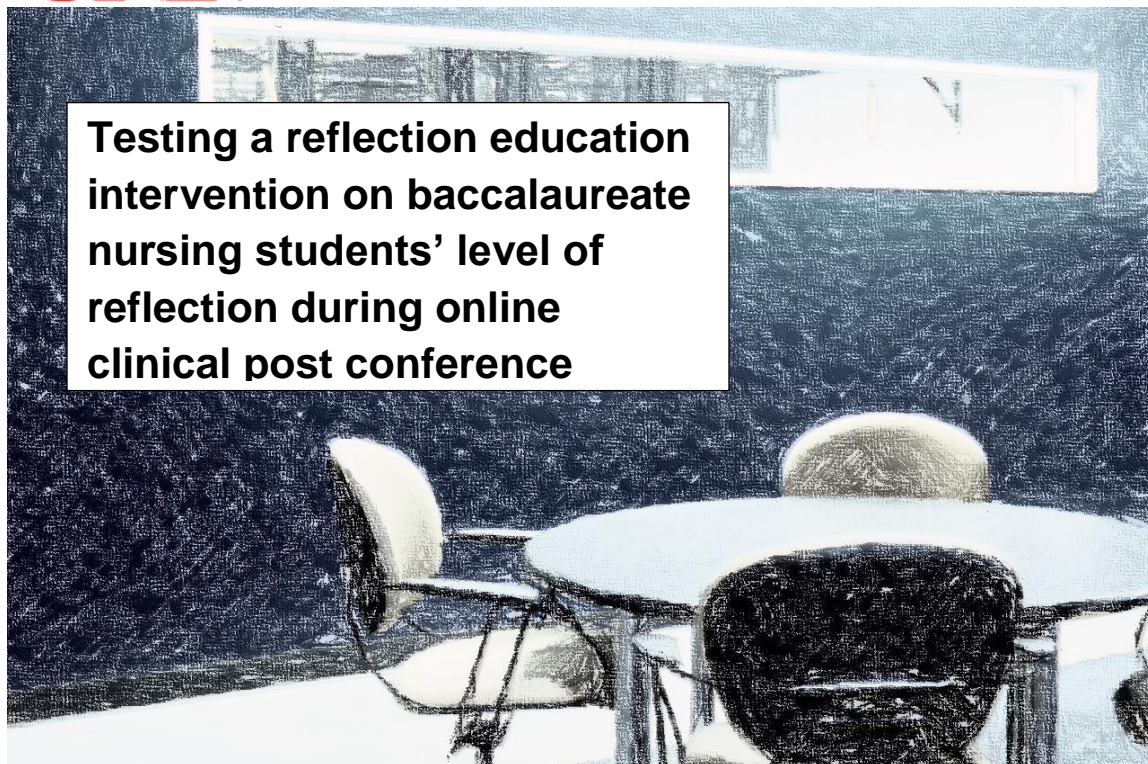
Reflective (R)

Critically Reflective (CR)

Reflection Refresher



UNLV



Are you interested in studies involving nursing students?

Are you willing to share your own experiences in clinical education research?

You are invited to participate in a research study conducted by Jaime Hannans, PhDc, RN and Barbara St. Pierre Schneider, DNSc, RN through University of Nevada, Las Vegas. The attachment (informed consent) explains the details of the study and your role. Please click the link below to accept or decline participation. If you decide to participate, you will complete a survey and personality test upon consenting, participate in online discussion board, and complete ATI Real Life™ Clinical Reasoning Scenario. It is expected that your participation in this study would take an additional 60-90 minutes of your time during this semester, outside of your normal course activities.

https://csuci.qualtrics.com/SE/?SID=SV_4Zore5uTJr4DygR

Thank you for your time! Contact Jaime Hannans at hannansj@unlv.nevada.edu or (999) 999-9999 or Dr. Barbara St. Pierre Schneider at (999) 999-9999 for any questions.

Rater Instructions for Scoring RIS

Read the posting once before scoring. As you read the posting the second time, you are to **assess the level of reflection (1-3)** in the student’s writing based on the RIS guidelines listed below. **Each posting may have evidence of multiple levels of reflection, but the final score for the written posting is the highest level of reflection achieved.** Use the table below to document examples of the level of reflection from the student writing. Record the final score for each posting. When you have completed all scoring, return the scores to the PI and destroy all emails containing data. Thank you for your expertise, time, and participation.

Reflection Index Score (RIS) Description of the level of reflection

- 1. Non-reflective (NR)** Describing patient data or background, reporting facts, describing feelings, or identifying objective data without relating it to past experiences, clinical experiences, nor investigating feelings, actions, or thoughts. Not reflection.
- 2. Reflective (R)** Awareness and evaluation of feelings, thoughts, or actions. This could relate to past experiences, self-critiquing clinical performance or the clinical experience, peer responses, perceptions and feelings about actions, and what contributed to the choices, behaviors, or feelings that occurred. Students may identify thoughts or feelings related to the experience or perceptions about the experience. Self-evaluation or critique of self or other’s statements, values, or beliefs may occur. Students may evaluate context and beliefs or values to identify reasons for behaviors.
- 3. Critically Reflective (CR)** A change or new perception about a concept, idea, belief, or event. The change may or may not be acted upon, but transforms a prior belief, meaning, or behavior to some degree that is recognized. A new plan, idea, belief, decision or judgment may be made.

Participant	CPC 1	CPC 2	CPC 3	CPC 4	CPC 5	CPC 6	Writing examples or comments (not required)

APPENDIX J: EXAMPLES OF CLINICAL POST CONFERENCE RESPONSES

Below are two postings in which the raters each scored different RIS (1, 2, and 3):

On the third clinical day I was assigned onto the L&D unit. Right from the start it was a busy morning; postpartum was backed up and there were no available rooms for incoming patients, and L&D received new nurses who had to be trained. Nurses were on their feet left to right and there was a sense of urgency in the staff. My first thought during this time was how they were going to deal with the “chaos” and if the patients were being attentively cared for. The nurse I was assigned to did a great job of dealing with the hectic morning. She had two patients in the recovery room whom were considered postpartum patients. She expressed concern about her ability to care for them as postpartum patients, but she handled the situation with a calm demeanor. When in doubt (especially during charting), she asked for assistance. What I got from this scenario was that as nurses when things go as unplanned you have to be able to adjust to the situation; yes, it may be stressful, but the best thing to do is to stay calm.

This week I was over at the wound center. I really enjoyed my experience there. It was nice to see the difference between the hospital setting where all our other clinical days are spent, and the wound center where it's more like a doctor's office and patients have scheduled appointments and come in for treatment and then leave. There was one patient that stood out in my mind. At first, I remember thinking how negative she was. She kept complaining about everything. She didn't like the nursing home she was staying at, she didn't like the food they served, she couldn't sleep, she was in pain, she missed her dog, etc. We did our best to just listen and try to cheer her up as best we could. After debriding and changing the foot wound dressing, the nurse will apply lotion to the patient's lower legs to prevent drying & flaking of the skin. The nurse I was shadowing really spent her time massaging this patient's feet. She was joking that she was at the spa. The patient finally seemed to relax a bit. Suddenly she began to cry and said, “You have no idea how good that feels... just to be touched. That's all I want sometimes, is just to be touched.” I got so emotional when I heard her say this. This little foot massage had moved her to tears. With all the negative things going on in her life, this is all she wanted. Just to be physically touched. It makes me realize how important touch can be when taking care of a patient. It can be the smallest little gesture, but mean the world to that patient. When the patient left, she hugged us both and thanked us for everything and said it had been “the highlight of her month.” Her attitude had completely turned around and she had a smile on her face. This experience really moved me. The things nurses do can really have an impact on a patient's life. Even the littlest things make a difference.

RIS 3: This week's shift, like every week, was a good learning experience because I had my first patient with dementia-like symptoms. When I walked into one of

my rooms, I could immediately tell that this patient would be difficult because she was lying in her bed with her eyes open and facing the wall. However, what I think was hardest about today was the fact that this patient reminded me so much of my grandmother; she looked very much like her, and had some mannerisms and expressions that were so similar...although my grandmother never once complained about her condition. This woman was depressed; she was widowed, and had been admitted because her mental status changed (she suddenly started staring blankly in a PT session, possibly secondary to encephalopathy/form of dementia according to the chart) and she had a new Dx of DM (her blood glucose levels were 227 at 1200), which now that I think of it, probably contributed to her altered mental status. She couldn't remember who the people in her photos were, even those of herself. At one point, she couldn't remember and she asked me, "Why am I here?" She seemed like the type of person that ends up in a nursing home with family that visits out of duty; the nurse indicated that this was the way of things at present—the family would come only for a few minutes and then leave. Patients like this need someone at their bedside, sitting down and talking to them with full attention. Something else I realized about this patient is that she did not want to hear about her new Dx of DM; when I asked her if she would like me to explain some things that she wasn't clear on (for example, she didn't even know what glucose was), she said that at her age, people die, and don't get better from their illnesses (basically saying "So what is the use of learning about it?"), but that she appreciated my effort to help her. She did not want to talk about it. I can understand this; if a middle-aged person is diagnosed with DM, they have a full life ahead of them if they can manage it well, so OF COURSE they want to learn about DM management. However, in elderly patients who just want to make it through the next week, what is more important is being a presence for them...and being gentle and loving with your nursing actions to show them how much you care for them. It all goes back to the developmental stage of the patient, where they are in life at that moment, and what they need today from me, as the nurse. So this week has been a good learning experience for me in that I shouldn't be so quick to jump to patient education simply because I love to teach and help patients in that manner; instead, I should assess my patient's willingness to be taught, and whether or not that is really the best intervention I can do for them at that time. That is patient-centered care.

RIS 2: Food, it is a vital thing in our life and besides that it is something that we all enjoy. We all like to eat. During clinical I know I was very happy to go to lunch as were some of my peers. After lunch and returning to the facility I decided to check on my patients. I walked in and saw that all the lunch trays had been picked up, except one. As I got closer to my patient I saw that she had just eaten a little bit of ice cream and had spilled the rest all over her shirt. This was when I decided that this woman needed feeding assistance. So I decided to feed her and the process lasted for about an hour and a half. It took me a long time and she ate about a third of her food. Even though this lady did not eat a lot, I still felt good about feeding her. Afterwards, I saw her in a better mood and more smiley. So I knew that she really appreciated the time that I took to feed her. I cannot

imagine how many people who need assistance in feeding go by without eating the adequate amount of food. It is sad to think that nurses cannot take the time to feed their patients or to send them to the dining room for proper assistance. I am pretty sure that my patient is not the only one that has been in that situation and it is very sad to think about.

RIS 1: I had the opportunity to view a circumcision, which from what I was told was a unique experience because most doctors will do that in their office. (They can charge more money and don't have to pay the hospital). The infant was 2 days old. This is a very hot topic in the medical community. The doctor told me, if you want to cause a fight, just talk about circumcision, it's worse than talking about politics. The doctor was great and took the time to talk to me after the procedure. I asked him what he thought about it and he said he is neutral. He told me that the Association of American Pediatrics states it can be done for religious beliefs or personal preference but there is no medical reason to do it; however, he said that the most recent research states that there may be benefits in certain populations. He stated a study that used military men and found that those who were not circumcised were more likely to have kidney problems. He says if the dad is circumcised the child will most likely be circumcised. I asked him if there is a particular culture that always circumcises and he said in his practice, everyone is about 50/50. The actual process was relatively quick and the infant didn't cry except when positioning him with his legs and arms out and then again when the anesthesia was given. It's just one snip down the center, and then the skin is pulled back. The excess skin is removed and a bandage placed around the penis. I was surprised at how quick the procedure was and how well the infant did.

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Curriculum Vitae

Jaime Alicia Hannans

University Emails:

Personal email:

Date of Birth: May 25, 1976

Personal Statement

I am working on my Ph.D. in Nursing Education currently with an anticipated graduation summer, 2013. I have over 10 years of clinical experience in the hospital setting, primarily in critical care areas. I have been teaching classroom, clinical, and lab courses in nursing education consistently for the last three years and intermittently for the three years prior to that. I have completed all Ph.D. coursework and am working on my dissertation. I plan to continue teaching at a university nursing program for many years. At home, I am supported by my husband and three young children.

Skills

Advanced Nursing Skills

Nurse Educator Skills

Advanced Internet & Email Skills

Organizational Skills

Problem Solving Skills

Researching Skills

Critical Thinking Skills

Interpersonal Communication Skills

Education

University of Nevada, Las Vegas

Ph.D. candidate, Nursing Education

2010–present

Dissertation: Testing a reflection education intervention on baccalaureate nursing students' level of reflection during online clinical post conference

California State University, Chico

Masters of Science, Nursing Education

2006–2010

Thesis: "Faculty perceptions of the use of varied shift lengths for nursing student clinical rotations"

Moorpark College

Courses only, intermittently, not seeking degree

1994–2010

Courses taken: Statistics; Child Development parent-toddler courses; General Education requirements during summer sessions in summers for undergraduate education

California State University, Chico

Bachelors of Science, Nursing

1994–1999

Continuing Education Rural Nursing Preceptorship Program completed Jan 1999

Computer Experience

Primary daily experience in PC use, some basic experience in MAC systems; Internet use with various search engines

Software Experience

Experience with many software programs including Microsoft Office, Blackboard 8.0 and 9.1, Moodle, Panopto, Webcast, Livescribe for SmartPen, IBM SPSS Statistics 20, TurnItIn, NurseSquared, Meditech, T-System, SimMan, Voicethread, Screencast-o-Matic, Google Drive, Google Docs, and ShowMe

Certifications

California RN license maintained in active status from February 2000-present. Current certifications held in Advanced Cardiac Life Support (ACLS), Pediatric Advanced Life Support (PALS), Basic Life Support (BLS), Neonatal Resuscitation Program (NRP), and Assaultive Behavior (AB508).

Current Employment

Registered Nurse

West Hills Hospital and Medical Center (HCA)

November, 2002 – Current

Super Float Pool requires the nurse is competent and able to float on a daily basis to any of the following units to work in the nurse role: ER, ICU, PACU, GI Lab, MRI, Postpartum, Nursery, L&D, Med-Surg, Oncology, Telemetry, DOU, COU.

Employer Contact: Regina Murphy, Director of Nursing Office and Float Pool

Lecturer, Nursing Department

California State University, Channel Islands

January, 2009 – Current

Coordinating, organizing, and directing courses as nursing faculty. Courses taught for the program include: pharmacology, Nutrition for nursing online, Advanced Adult Assessment lab for generic and RN-BSN tracks, multiple first, second, and third year level med-surg clinical rotations. Committee membership for Student Affairs committee.

Employer Contact: Karen Jensen

Current Certifications

California State Board of Registered Nurses RN License

Advanced Cardiac Life Support (ACLS)

Basic Cardiac Life Support (BLS)

Pediatric Advanced Life Support (PALS)

Neonatal Resuscitation (NRP)

Assaultive Behavior Training (AB508)

Work/Teaching/Publication History

Teaching preceptorship with Kaleen Cullen at CSU, Channel Islands (2008)

Observed and assisted with classroom lectures and clinical rotations in the acute care hospital setting. Created and presented lecture content in classroom setting.

Moorpark College (2006-2008)

Lecturer – Nursing Program

Instructed nursing students for clinical rotations in the acute care hospital setting.

Publications and Presentations

"Faculty perceptions on the use of varied shift lengths for nursing student clinical rotations"

Thesis work, poster presentation for Western Institute of Nursing Conference April 14-17, 2010

"Testing a reflection intervention in nursing clinical post conference"

Dissertation work, poster presentation for School of Allied Health Interdisciplinary Research Conference at University of Nevada, Las Vegas April 10, 2012

"Testing a reflection intervention in nursing clinical post conference"

Dissertation work, poster presentation for Western Institute of Nursing Conference April 18-21, 2012

"Testing a reflection education intervention on baccalaureate nursing students' level of reflection during online clinical post conference"

Dissertation work, poster presentation for ATI Nursing Education Conference April 7-10, 2013

"Testing a reflection education intervention on baccalaureate nursing students' level of reflection during online clinical post conference"

Dissertation work, poster presentation for Western Institute of Nursing Conference April 10-13, 2013

Memberships and Awards/Grants

CSUCI Student Affairs Committee Member

Golden Key Honour Society Member

National League of Nursing Member

Sigma Theta Tau International Member, CSU Chico Chapter and UNLV Chapter

Recipient of SNAPLE grant for MSN program loan repayment through HRSA

Recipient of Chancellor Incentive Doctoral Incentive Program for California State University (2010-2013)

Recipient of Faculty Loan Repayment Program, UNLV PhD program through HRSA (2010-2012)

Recipient of California State University Faculty Development Mini Grant Award (2012-2013)