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Using Ignatian Pedagogy to Improve Reflective Thinking in Neonatal Nurse Practitioner Students

Mary Ellen Honeyfield

Submitted as Partial Fulfillment for the Doctor of Nursing Practice Degree

Regis University

March 26, 2014

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EXECUTIVE SUMMARY

Problem

As a clinically experienced educator responsible for achieving successful outcomes for Neonatal Nurse Practitioner (NNP) graduates in an urban private Jesuit University, study investigator recognized no formal theory or model addressing reflective thinking existed in the NNP program curriculum. Providing students with a method of transferring empiric knowledge to practice was the identified challenge of this project. Korth (1993, as cited in Traub, 2008) stated skills and techniques of reflection are the foundations for faculty to teach students to learn how to learn. The project problem statement asked: can reflective thinking be improved using the Ignatian Pedagogy Conceptual Model© as a student teaching tool for reflective thinking? The question was developed using PICO formatting: Population, NNP students in their final clinical practicum, spring 2013; Intervention, use of the Ignatian Pedagogy Conceptual Model© as a guide to direct reflective thinking; Comparison, current pedagogy; Outcome, improved reflective thinking as demonstrated by increased scores on a Reflective Thinking Questionnaire (Kember, 2000).

Purpose

The purpose of this capstone project was to utilize the Ignatian Pedagogy Conceptual Model© as a teaching tool to generate reflective thinking assignments and improve reflective thinking in the NNP student.

Goals

Project goals were: graduate marketable, recognizable Regis University NNPs able to engage in higher levels of reflective thinking as they applied knowledge in clinical practice settings; and gather baseline data for evaluating the Ignatian Pedagogy Conceptual Model© as a teaching strategy generalizable to other healthcare profession educators and students.

Objectives

Objectives of the project were: develop strategies for teaching reflection and reflective thinking; engage NNP student participation in reflective thinking practice through guided assignments using the student teaching tool; demonstrate higher pre and post-test scores on the Reflective Thinking Questionnaire (Kember, 2000) after reflective thinking practice.

Plan

A systematic literature review was conducted to provide project rationale and theoretical foundation for the problem statement. Sequencing of the project plan and evaluation was developed using a timeline, budget, analysis of strengths, weaknesses, opportunities and threats, and logic model outlining resource requirements, activity lists, outputs, and impact outcomes for change and sustainability. Regis University Institutional Review Board approval was received January, 2013. Study implementation began with administration of the pre-test Likert scale format questionnaire.

Outcomes and Results

While mean percentages of pre and post-test paired sample data were noted to increase, pre and post test data analysis did not demonstrate statistical significance in this small sample of 16 students. These results were not unexpected because of short, less than one semester, study implementation timeframe. Investigator observation in the classroom revealed students were more reflective in their assignment responses as the semester progressed. Further research is planned and will begin earlier in the next NNP program cohort.

ACKNOWLEDGEMENTS

A scholarly project of this depth and magnitude cannot be accomplished without resources, both professional and personal. I would like to first acknowledge the students who have sat before me or stood by my side and inspired my own curiosity about how best to teach reflective thinking. Early struggles to be concise in project focus were supported by university faculty. Dr. Lynn Wimett directed me to Dr. Candace Berardinelli and Dr. Karen Pennington who became my clinical mentor. Dr. Berardinelli set initial direction for this project when she slid the book *A Jesuit Education Reader* across her desk and said, "maybe you should start with this". Dr. Pennington's wise counsel showed me everything I needed was already there even though I was not able to see those resources at the beginning of my project development.

Catherine Witt, PhD(c), NNP-BC, a colleague and faculty mentor had endless patience with my technology deficits. As a co-faculty peer in the NNP program, Ms. Witt supported this project from inception, during data entry, checking and re-checking the accuracy of numbers prior to statistical analysis, through exploring implications for future students. Without her support as co-faculty this project could not have been accomplished.

My Capstone Chair, Dr. Cris Finn, an extraordinary editor and scholar always led me down the shortest and straightforward path to completion when complexity was the doctoral student's temptation. Thank you for your patience and nudging at just the right time.

To my family who silently, most of the time, endured my absence and begging off hosting family celebrations for the duration of this project…thank you with love.

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As a clinically experienced educator responsible for achieving successful outcomes for Neonatal Nurse Practitioner (NNP) graduates in an urban private Jesuit University, there was an awareness of the importance of assessing, encouraging, and teaching reflective thinking to this population. Fawcett (1997) suggested nurses are "greatly influenced by the medical model" (as cited in Kenney, 2006, p. 296). The current NNP program curricula, appropriately, provided and tested for empiric knowledge. No formal theory or model for addressing reflective thinking and developing an approach to the diagnostic process existed. Teaching had been intuitive and based on faculty expertise. Brooks and Thomas (1997) stated teaching clinical decision making or diagnostic reasoning with a structured empiric method leads to a mechanistic problem solving approach to care. Rubenfeld and Scheffer (2010) charged educators to help students become active knowledge seekers as opposed to passive recipients of content. Providing students with a method of transferring empiric knowledge to practice was the identified challenge of this project. Reed and Shearer (2011) stated "reflection in practice has been identified as a particularly effective strategy for producing knowledge in practice" (p. 141). Korth (1993, as cited in Traub, 2008) suggested the skills and techniques of reflection are the foundations for faculty to teach students to learn how to learn.

Problem Statement

By identifying study population, project intervention, comparison to current pedagogy, and desired outcome (PICO), problem statement formatting was developed. Elements of the PICO guide were: Population, NNP students in their final clinical practicum class, spring 2013; Intervention, use of the Ignatian Pedagogy Conceptual Model© (Appendix A) as a tool to improve reflective thinking; Comparison, current pedagogy; Outcome, improved reflective thinking as demonstrated by increased scores on a Reflective Thinking Questionnaire (QRT).

The PICO guide generated the final project question: can reflective thinking be improved using the Ignatian Pedagogy Conceptual Model© as a student teaching tool for reflective thinking?

Chism (2010) suggested Doctor of Nursing Practice (DNP) educators are positioned to impact healthcare through education of the next generation of nurses. The DNP graduate brings clinical expertise, knowledge, and skills to facilitate application of research into practice. The American Association of Colleges of Nursing (AACN) Essentials of Doctoral Education for Advanced Nursing Practice (2006) utilizes Boyer's scholarship model for defining core essentials and competencies integrating scientific underpinnings for DNP practice (as cited in Chism, 2010). One concept is developing and testing education materials to advance learning (Zaccagnini & White, 2011).

Purpose and Scope of Project

The overriding purpose of this project was to improve patient care by preparing a mindful, and reflective NNP. Houser and Oman (2011) suggested encouraging reflection enhances what we know about aspects of patient care, to include every phase of healthcare processes: assessment, diagnosis, planning, intervention, and evaluation.

The principal investigator's (PI) practice context, the classroom, and concept of enhancing student engagement in reflective thinking were at the forefront of the project's problem statement. The purpose of this project was to utilize the Ignatian Pedagogy Conceptual Model© as a tool to create reflective thinking assignments for NNP students in their final clinical practicum. Korth (1993, as cited in Traub, 2008) stated the challenge for faculty is to be able to formulate questions that broaden student's awareness and compel them to consider others' viewpoints.

Significance of the project was to examine whether the tool demonstrated improved reflective thinking, as assessed on a Reflective Thinking Questionnaire. Outcomes were nurse and patient sensitive as the supposition was improved reflective thinking would impact both provider (NNP) and patient thus improving patient care (Zaccagnini & White, 2011).

Definition of Reflection

The central purpose of the Ignatian Pedagogy Conceptual Model© is to provide a guided tool leading students to become 'contemplatives in action'. *The Jesuit Education Reader* (Traub, 2008) provided the definition of reflection that guided this project:

> Thus, reflection is the process by which meaning surfaces in human experience by understanding the truth being studied more clearly; understanding the sources of one's sensations or reactions in the consideration; deepening one's understanding of the implications for oneself and others; achieving personal insights into events, ideas, truths, or the distortion of truth; coming to an understanding of who I am…and who I might be in relation to others. Reflection is a formative and liberating process that forms the conscience of learners in such a manner that they are led to move beyond knowing to undertake action (Korth, 1993, as cited in Traub, 2008, p. 282).

Project Rationale and Theoretical Foundation

The current NNP program curriculum covered no formal method of addressing reflective thinking. Facione and Facione (1996) suggested there are three components in the development of expertise in clinical judgment: critical thinking, knowledge of content, and contextual experience. Knowledge of content, acquiring empiric knowledge, is perhaps the construct most comfortable for the student as well as the educator. Pesut (2001) commenting on nursing education, suggested thinking and clinical reasoning are complex concepts, offering differences

between critical thinking and clinical judgment. Pesut (2001) further stated clinical judgment requires different types of logic, one of which includes the concept of conscious reflection. If, as McMullen (2009) stated, acquisition of increasing layers of knowledge does not necessarily improve thinking, this project proposed a way to conceptualize critical thinking as it relates to contextual practice through the practice of reflection. Dyche and Epstein (2011) stated inclusion of time for reflection and generation of curiosity, foster contextualization and the ability to apply knowledge.

Mann, Gordon, and MacLeod (2009) after a systematic literature review, proposed two dimensions of models of reflection exist. The iterative dimension is generated by experience, producing a new understanding with potential or intention to act differently in response to similar experiences in the future. Schön's (1983) model of returning to an experience to serve as a guide in the future is an example of the iterative, empirical dimension. The vertical dimension includes varying levels of reflection on experience, moving from less analytical to deeper analysis, and critical synthesis (Mann, 2009).

Patricia Benner's (1984) framework of novice to expert is an example of a theoretical model using vertical dimension. Applying the Dreyfus model, Benner's theory proposed acquisition of skills requires movement through levels of proficiency: novice, advanced beginner, competent, proficient, and expert (Benner, 1984). Expertise is gained over time.

Imogene King is one of the few nursing theorists who generated a systems theory conceptual framework, transitioned to a grand theory, which also led to a middle-range Theory of Goal Attainment, further expanding King's initial concept (Parker & Smith, 2010). Developed within King's Interacting Systems framework, Brooks and Thomas' (1997) mid-range theory developed concepts of intrapersonal perceptual awareness.

Kuiper and Pesut's (2004) self-regulated learning theory is another middle-range nursing theory providing justification for the study project. These theories address intrapersonal individuality of the student and conceptualize how self-reflection guides students in their efforts to learn, practice, and apply decision making for the purpose of developing critical thinking and judgment (Brooks & Thomas, 1997; Kuiper & Pesut, 2004).

Brooks and Thomas' (1997) major premise is everything the nurse (student in this context) is intrapersonally, moves with the individual in clinical decision making. The sub-concepts of the theory suggested these processes contribute to how students learn to make decisions, practice making decisions, and guide how educators can teach decision making.

Kuiper and Pesut's (2004) theory stated cognition, critical thinking, is the mind's intellectual work while metacognition is reflective thinking that takes place through cognitive control and self-communication. The authors further assert one without the other diminishes understanding of the complexity of critical thinking and both are necessary for reflective contextual practice (Kuiper & Pesut, 2004). An individualized phenomenon in each student, cognitive dissonance drives intellectual curiosity and critical thinking (Kuiper & Pesut, 2004).

Another vertical dimension reflection model, proposed by Mezirow in 1991 (as cited in Mann, 2009) forms reflection constructs utilized in this project: habitual action, understanding, reflection, and critical reflection. This model will be further explored in the methodology section.

In addition to a nursing theoretical foundation, reflection has a neuroscientific pathway. Siegel (2007) defines the four 'Rs' of education: reading, 'riting, 'rithmetic, and reflection. The author's assertion is that prefrontal areas of the brain mediate and reinforce the overlapping social, emotional, cognitive, and attentional mechanisms of neural circuitry. Reflection then, is an activity Siegel (2007) contends develops the prefrontal cortex. Because of the brain's

neuroplasticity, teaching mindful awareness promotes prefrontal neural integration and "promotes a reflective mind, an adaptive, resilient brain, and empathic relationships" (Siegel, 2007, p. 262). Reflection, as defined by Siegel (2007), has three dimensions: receptivity, self-observation, and reflexivity. Repetitive exercises nurture the prefrontal brain's capacity to not only be self-aware but also meta-aware, as Siegel stated "the awareness of awareness" (p. 262). The exploration of the neuroscience of reflection is not dissimilar to the theories previously described.

Change Theory

The introduction of an intervention derived from a problem statement requires change. Pipe (2007) describes utilization of Rosswurm and Larrabee's model for change to evidence based practice (EBP) as a leadership strategy to blend both EBP and theory-driven care in a specific setting. The model has applicability to any implementation of practice change intervention.

The six steps of Rosswurm and Larrabee's model (1999, as cited in Pipe, 2007) were applied in the development of this project. The first step was recognizing a need for change, identified as absence of a formal process for teaching reflective learning skills to NNP students. The second step required linking the problem with interventions and outcomes and necessitated a literature search and evaluation of applicable theories. The third step required selection of best theories to provide a practical and relevant approach and could demonstrate pragmatic outcomes as outlined in step two. The choice of QRT reinforced Kuiper and Pesut's (2004) model for self-regulated learning theory and supported a hypothesis of demonstrating a higher level of reflective thinking in pre and post intervention questionnaires. The fourth step was to design the practice change. This step required introduction of the theory to faculty peers and developing

student assignments to prompt contextual reflective thinking. The fifth step was implementing and evaluating the change. The sixth step of integrating and maintaining change will require continued evaluation of student and faculty acceptance of the change as compared to past programs. Retooling the Ignatian Pedagogy Conceptual Model© guidelines to reflect student and faculty assessment of applicability of the model may be required, and awareness of the learning curve for both student and faculty development of assignments will be essential (Pipe, 2007).

Literature Review

A systematic literature review (Appendix B) was conducted to better understand theoretical concepts, and breadth of previous research and measurement tools addressing the problem statement. The EBSCO Host, CINAHL, and Ovid databases were searched through the University library portal using keywords: critical thinking, reflection, self-reflection, diagnostic reasoning, clinical judgment, nurse practitioner, nursing education, and teaching learning strategies.

The literature search process was circuitous as the problem statement was being refined. Critical thinking is one of the core competencies of the University graduate nursing program curriculum framework and is reiterated in the NNP program option. The original PICO statement was defined to enhance critical thinking skills through self-reflective learning. Key words 'critical thinking' yielded 16,404 journal articles of which three provided insight the project statement was too broad, and directed narrowing of concepts of reflective thinking.

Raymond-Seniuk and Profetto-McGrath (2011) provided a literature review of critical thinking in nursing by reviewing English articles from 2000-2010. Critical thinking narrative articles as well as articles related to critical thinking measurement in nursing were discussed. The article made a point of the numerous definitions of critical thinking, which provided further

direction to focus this project more narrowly. The authors concluded critical thinking is a process that can be taught which supported the project premise (Raymond-Seniuk & Profetto-McGrath, 2011).

Additional articles found with key words 'critical thinking' provided basic concepts, yet steered the literature search toward reflection. With the guidance of faculty mentors, the problem statement became more concise and focused.

The key word 'reflection' yielded 127,479 articles, 'reflection in practice' 14,718, 'teaching reflection' yielded 11,290, and teaching reflection in nursing yielded 1,261 articles. Article titles were scanned quickly for subject pertinence; abstracts were then reviewed for English language, currency, and applicability. While publications within the past five years were preferable, the concept of reflective thinking has a history that spans decades and early journal publications provided a historical and theoretical perspective. If a journal article was assessed as valuable to the investigator, the reference list was also reviewed for suitable value and additional articles as well as new key words were identified in this process. Twenty-six articles contributed to scholarly content of this project. Sixteen referenced texts were purchased to further enhance theoretic and empiric understanding of the research question.

Important to the project was searching for a reflective thinking measurement tool that had been utilized for a comparable population, tested for reliability and validity, and was relatively easy to administer. Valuable sources for appraising evidence came from faculty mentors who shared articles and texts. The guiding article for this project, which included the reference for the measurement tool, was provided by a faculty mentor. Discussion with a clinical faculty mentor revealed the Ignatian Pedagogy Conceptual Model© was a teaching tool that could be utilized for the project. The four semester search for the teaching tool was already in use by this

investigator in the DNP program. This serendipitous realization led the investigator to further review of Jesuit literature to guide creation of new NNP program content on reflection, as well as creation of questions to prompt student reflective thinking utilizing the teaching tool.

Situational Analysis

A tool to analyze strengths, weaknesses, opportunities, and threats (SWOT) of the project intervention, and internal and external organizational factors was assessed. Identification of internal and external strengths, weaknesses, opportunities, and threats characterized the project's potential impact on NNP program students, curricula, nursing faculty, and University mission (Fortenberry, 2010). Internal environment was envisioned as the School of Nursing and external environment, the University as the broader organization. Assessing processes within the internal and external organizational environment informed the project's development as well as sustainability (Harris, 2011). The SWOT Analysis is presented in Table 1.

Table 1
Intervention SWOT Analysis

INTERNAL	
Strengths	**Weaknesses**
• Guided model adopted by School of Nursing	• Lack of understanding/implementation of model
• Fulfills identified gap in NNP program	• Personal vs. professional reflections?
• All students exposed to the model	• Faculty education and time to generate reflections
• Classroom time is available	• Data will reflect only one NNP cohort
• Reflection questions can be shared	• Number of participants unknown currently
• Refinement of tool yields sustainability	• Timeframe may be too short for achieving accurate data analysis
EXTERNAL	
Opportunities	**Threats**
• Supports University mission	• Administrative change may prompt new model

• Generalizable to other schools/colleges	• Faculty education and time to generate reflections
• Build into curricula for sustainability	• Disinterest in model over time
	• Loss of sustainability

Sustainability of organizational change is reinforced by underlying values held by organizations (Fortenberry, 2010). Driving forces supporting use of the Ignatian Pedagogy Conceptual Model© as a teaching tool were University values: care for person, striving for excellence, justice for all persons, educating the whole person, and "developing the habit of reflection centers and strengthens one's spiritual life and guides our actions" (Regis University, 2013, p. 1). The project intervention was University mission and values focused. Berry's Success Sustainability Model (1999, as cited in Fortenberry, 2010) stated success retains seven core values: excellence, innovation, joy, teamwork, respect, integrity, and giving back to the community. The teaching tool as guided reflection leading contemplative students to action encompassed the University values and positioned the intervention for sustainability.

Stakeholders of a project intervention can be divided into two groups, patients and significant others (Rubenfeld and Scheffer, 2010). Both groups experience direct consequences of proposed change. Specific stakeholders and beneficiaries of this project included: NNP program team faculty, nursing faculty, students, clinical organizations that partner for student placement, site personnel, patients, families, and the University as an educational institution. Benefits seemingly outweighed the minimal cost of faculty time.

Project Objectives

- Mission: transition the NNP program from empiric passive learning to active learning by nurturing student mindfulness. The assumption was project intervention would improve reflective thinking and thereby reflective practice.

- Vision: support student life-long learning and intellectual curiosity.
- Goals:
    - Graduate NNPs with reflective thinking ability in the clinical practice setting, applying knowledge to practice
    - Graduate marketable, recognizable University program NNPs with ability to engage in higher level critical reflective thinking

By the end of the NNP program, graduates would be able to:

- Demonstrate engagement in reflective thinking by completing contextual reflective practice assignments in clinical classes
- Demonstrate higher QRT scores on pre and post questionnaires after repetitive reflective thinking practice

Evaluation Plan

Planning for evaluation of the proposed project included development of a logic model (Appendix C). The purpose of a logic model was to provide a template for strategic planning and evaluation of the project and demonstrate how parts of the project are sequenced (Zaccagnini & White, 2011). At a minimum, logic model elements are inputs, outputs, and outcomes (Zaccagnini & White, 2011). The model utilized for this project outlined: required resources, activities necessary to achieve desired outcomes, outputs which are immediate project results, short and long term outcomes that measured effect of activities on knowledge and understanding of project data and suggest a change in behavior, and impact outcomes attributed to change on the population served (Zaccagnini & White, 2011). The Kellogg Foundation (2004, as citied in Zaccagnini & White, 2011) stated logic models provide "clarity and specificity required for success" (p. 480) and, this author forecasted, would add to project sustainability.

The Capstone project was a voluntary, generic, quasi-experimental, time-series design. The design was a broadly applied intervention where randomization was not employed. The intervention was conducted with a single population of 17 NNP 2013 cohort students. Measures were obtained over one semester, spring 2013, to allow for evaluation of effects of change in reflective thinking engagement after implementation of the new teaching tool (Cullen, 2012; Kane & Radosevich, 2011). The project hypothesis was, the intervention would demonstrate statistically significant aggregate mean scores on the QRT tool administered at the beginning of the semester compared to the aggregate mean scores at class completion. This outcome would be interpreted as mean scores were not attributable to chance and the teaching tool promoted student engagement in reflective thinking (Polit, 2010).

The independent variable was the Ignatian Pedagogy Conceptual Model©, used as a teaching tool to guide reflective thinking. The dependent variable was student engagement in reflective thinking. The concept of reflection and its potential use to guide reflective practice was introduced during classroom lecture. The teaching tool and its four constructs: context, experience, action, and evaluation, guided the principal investigator to develop questions to prompt student responses on contextual reflection assignments. The contextual reflection assignments were part of class coursework and were completed every two weeks. The framework for these assignments was already in use in various coursework at the school of nursing. In summary, the problem statement question asked, did using the Ignatian Pedagogy Conceptual Model© (independent variable) as a student teaching tool influence student engagement in reflective thinking as demonstrated by improved scores on the QRT (dependent variable)?

Extraneous variables considered were: years of neonatal intensive care unit (NICU) experience, age, and selection bias (volunteers versus non-volunteers). One might hypothesize NNP students with more NICU experience may be more likely to engage in higher levels of reflective thinking. Students who are chronologically older with more life experience may also be more likely to engage in higher levels of reflective thinking. Beauchesne and Douglas (2011) have observed there are students who do not value reflection as a learning methodology and may sort as non-volunteers thereby affecting measurement values.

The Kember et al, (2000) Reflective Thinking Questionnaire (QRT) (Appendix D) was designed to be used in academic programs and specifically for courses that include a clinical practice component. QRT is a model utilizing continuous variables. The instrument is a 16 item questionnaire measuring four constructs: habitual action, understanding, reflection, and critical reflection, with four items in each of the four construct categories. A five point Likert type scale, using a range of definitely disagree to definitely agree, ranks responses along a continuum (Kember et al, 2000). The response set choices, for example 1 through 5, with 5 being definitely agree, are symmetric and only the total score is scalable. Responses to multiple items are combined by addition of the response choices. The developers of QRT invited use of the tool for research purposes under the condition the source is acknowledged (Kember et al, 2000). This requirement was acknowledged on the QRTs submitted to student participants.

The QRT has been tested for reliability using Cronbach alpha values for each scale (habitual action 0.621, understanding 0.757, reflection 0.631, critical reflection 0.675, (range of 0.621-0.757), indicating scales can be interpreted as reliable (Kember et al, 2000). The four items in each construct were shown to measure the particular construct and not contribute to other categories. A single factor model also tested whether there was only one dimension for

individual items (Schmitt, 1996, as cited in Kember et al, 2000). Goodness of fits were also tested using confirmatory factor analysis and interpreted as being acceptable indicators of the intended four constructs ($x2 = 179.3$, $df = 100$, $CFI = 0.903$). Further model testing revealed no item on the scale had statistically significant loading on any other scale item (Kember et al, 2000). In summary, the psychometric properties of the QRT have been established using confirmatory factor analysis. Kember et al (2000) argued each scale is valid based on long established literature on reflective thinking.

The QRT underwent multiple revisions prior to the final version, tested on a sample of 303 students, of which 24 were masters level nursing students, supporting utilization for this project. Threats to internal validity of this project included: study participants were students from the same class, however, would differ in age, years of experience in nursing, as well as the NICU, and because of the choice to participate, may have dissimilar personality characteristics. Extraneous variables of age and experience bias could be tested for with use of the t-test, which tests significance of mean differences on background characteristics. Attrition bias may also occur if some students completed the pre-QRT and not the post-QRT, either by withdrawal from the study, the program, or absence when the post-QRT was administered. The number of students available to participate was 17. The anticipation was there would not be a 100% participation rate. In the Kember (2000) study, 80% of the master's level nursing students participated.

In addition to the above possibilities, missing data may involve a participant omitting portions of QRT, either accidently or by choice. Missing data reduces data available for analysis and would impact detection of differences. The scoring on each item was calculated by adding the response score for each of the four items, then computing a mean score for each of the four

constructs. Data would be presented with standard deviations. If there were only a few items missing, 1-2%, that might be acceptable. Mean substitution could be used when the outcome variable, as in this study, is derived from a multi-item scale. The rationale given for this technique is the best predictor for missing data is other mean scores for the same participant (Kane & Radosevich, 2011). Another technique suggested is if a participant only completes three of four items, scale score is based on those available items (Kane & Radosevich, 2011). The author's suggest analyzing data utilizing each of the above stated techniques to evaluate if missing data has had an effect on study results.

The outcomes of this descriptive study, external validity, would not be generalizable because of small, non-random numbers as well as a defined group of students enrolled in one class at one private university. Because the teaching tool was new to the investigator and course faculty, it was anticipated revision over time would be required for subsequent classes and likely be improved as a result of findings in this study.

As research participants, students are protected by agreements such as the Nuremberg Code (Ferguson, 2006) as they are "captive", particularly if the researcher is their faculty. Issues of such research include: true voluntary consent considering the differing status relationship between teacher and student; differing power relationships because of knowledge, skill, experience; the evaluative role of grading and assuring student progress; conflicting loyalties for the educator who assumes a 'dual agency' role of both teacher and researcher; recruitment pressure on the researcher to adequately satisfy number of participants for study design; student pressure to 'voluntarily' participate or withdraw to not jeopardize the relationship with faculty, especially when faculty has current teaching responsibility; student and data anonymity and confidentiality (Ferguson 2006).

While students are considered a vulnerable population, the student reasonably can trust their instructors are committed to their education. Students expect ethical principles will be maintained in teaching and learning as well as research relationships (Ferguson 2006).

Project proposal received Institutional Review Board (IRB) *Exempt* status and approval in January, 2013 (Appendix E). Justification for *Exempt* status included:

- Research would not involve greater than minimal risk to student participants
- Questionnaires would be distributed in envelopes to NNP cohort, spring 2013, by individual other than principal investigator
- Questionnaires would be coded to protect student identity
- Demographic data would be requested in ranges to protect student identity
- Participation would be voluntary and consent demonstrated by completing QRT, replacement in envelope, sealed and deposited in box with faculty out of classroom
- Students could choose to exercise their right to not participate by not completing QRT, returning blank QRT to envelope, sealed and deposited in box with faculty out of classroom
- Questionnaires were stored in individual sealed envelopes in Capstone Chair's office
- Questionnaires were not accessed by principal investigator until conclusion of NR657, after final grades were submitted, and student Capstone projects completed. Therefore, data analysis was not conducted until after students graduated.
- All students were exposed to the Ignatian Pedagogy Conceptual Model© regardless of participation in the study.

An informational recruitment letter (Appendix F) was sent to each student by course email prior to administration of the first QRT. The letter's intent was to make clear study

purpose, methodology, design, and voluntary nature of participation. Students were informed of data collection protocol and steps to protect privacy, including coded identity, storage of questionnaires as well as electronic data and analysis.

As a requirement of the University, PI, faculty mentor, and Capstone chair successfully completed CITI Collaborative Institutional Training Initiative, Human Research Curriculum. Certifications were up-to date and certificates (Appendix G) accompanied the IRB application.

Project Timeline

Lewis (2007, as cited in Zaccagnini and White, 2011) stated a usable template for constructing objectives for a project uses the acronym SMART: specific, measurable, attainable, realistic, and timely. Specific names the population (NNP students), measurable infers collectible data to quantify change (QRT), attainable and realistic for resources available (logic model), and timely (accomplishment within University structure) (Zaccagnini & White, 2011). Successful attainment of DNP project objectives were within the following proposed project timeline.

- January 7, 2013 ► NR 657 Clinical Practicum Began
- January 29, 2013 ► IRB Approval Received
- January 30, 2013 ► QRT #1 administered to students
- Jan 30 – April 17, 2013 ► Contextual reflection assignments
- April 17, 2013 ► QRT #2 administered to students
- May 4, 2013 ► 2013 NNP cohort graduated
- July 29 – Sept 30, 2013 ► Data entry and analysis
- Nov 1 – March 26, 2014 ► Final writing of project paper
- April 8, 2014 ►Defense of Capstone proposal
- April, 2014 ►Publication of final project

Resources and Budget

Project management included considering resources and development of a budget (Zaccagnini & White, 2011). PI is University affiliate faculty and co-taught NR657 Clinical Integration for NNP. Indirect, in kind, costs of the project included: classroom space, audio-visual equipment, storage space for project data, and faculty time all of which were supported by University NNP program curriculum. PI solely created the four contextual reflection question assignments, reviewed and commented on each of 17 every other week student's assignments for eight weeks. Assignments were planned with co-faculty support during the 2013 NNP program. Direct costs were estimated and are outlined in Table 2. There was no intent to compensate students participating in the study. Direct costs equal $2190 and included office supplies, photocopying, in kind faculty compensation for development of reflection questions, review of assignments, feedback on each assignment, and statistician consultant services (Table 2).

Table 2
Project Resources and Budget

Resources: Indirect Costs	**Budget: Direct costs/personal resources**
Faculty time/caveat: model accepted and	Envelopes, paper, copier usage: ~ $50
incorporated in University classes	
NNP Program faculty team in kind support	Faculty time: PI 24 hours ~ $1840
Classroom time in kind support	Statistician consultant: ~ $300
Storage space for data, in kind	No funding sources to declare
Total: $0	**Total Project Cost: $2190.00**

Project Findings and Results

Objective One: Demonstrate engagement in reflective thinking by completing contextual reflective practice assignments in clinical classes.

The dependent variable of the project hypothesis was student engagement in reflective thinking. Student participation in contextual reflection assignments was 100%. Guidance for students included reflection was to be personal rather than scholarly. Assignments were reviewed and commented on by faculty PI exclusively. Assignments were not graded, but were an expectation of class participation. Feedback from faculty PI was included on student assignment submission by track changes and returned to student. PI comments were intentionally supportive and not a critique of the reflective process.

Objective Two: Demonstrate higher QRT scores on pre and post questionnaires after repetitive reflective thinking practice.

The independent variable of the project hypothesis was use of the Ignatian Pedagogy Conceptual Model©, as a teaching tool to guide reflective thinking. The project hypothesis proposed the use of the teaching tool would demonstrate significant aggregate mean scores on the QRT administered at the beginning of the semester compared to aggregate mean scores at class completion.

A 100% return rate in this convenience sample of 17 students on the test-retest questionnaire was achieved. An outlier appeared by a 100% flip from other students on the Likert scale and this data was deleted from analysis yielding 16 usable data sets.

Instrumentation

The QRT is a 16 item self-report questionnaire. Utilizing a 5-point Likert scale, responses range from strongly disagree (1) to strongly agree (5). Four dimensions of reflective thinking are measured: habitual action (HA), understanding (U), reflection (R), and critical reflection (CR). Scoring is the summed responses of each dimension and may range from 4 (strongly disagree) to

20 (strongly agree) (Kember et al, 2000). For this project the QRT was administered in a paper/pencil format.

The Statistical Package for Social Sciences (SPSS) version 21 (IBM, 2012) was utilized for descriptive statistics and two sample paired t-Test. While 100% of students completed all items on both questionnaires, one student's data set was deleted as mentioned above. Descriptive analyses were run to determine means and standard deviations (SD). Interrelatedness among items has been previously supported by Cronbach's alphas between 0.60 and 0.80 (Kember et al, 2000). Two sample paired t-Tests were utilized to identify differences in performance on the four dimensions of the test re-test QRT, examine the continuum of reflective thinking, and identify statistical significance of test re-test scores.

Results

Study participants (n = 17) were 100% female. Two items of demographic data were solicited. Two students did not complete the demographic data (n = 15). Age and years of NICU experience was requested in ranges to protect identification in this small sample. Four age ranges were represented: 26-30 (n = 2), 31-35 (n = 6), 36-40 (n = 2), 41-45 (n = 4), and 46-50 (n = 1). Years of NICU experience was also requested in ranges with four ranges represented: 1-5 years (n = 1), 6-10 years (n = 9), 11-15 years (n = 2), and 16-20 years (n = 3). In this study, the typical participant was female, aged 31-35 years with 6-10 years of NICU experience.

Study results depicted the differences in the pre/post-test HA (Table 3), U (Table 4), R (Table 5), CR (Table 6) dimensions were not statistically significant at the .05 level for a 2-tailed test. Confidence intervals for the four dimensions all contained zero indicating non-significant differences. Pearson correlations (.197-.418) indicated weak positive correlations for all four

dimensions and in this study does not demonstrate reliability of the instrument to measure the attribute it was designed to measure (Polit, 2010).

Table 3
Paired t Test Pre/Post HA

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PretestHA	9.5000	16	2.58199	.64550
	PosttestHA	10.5625	16	2.60688	.65172

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	PretestHA & PosttestHA	16	.262	.326

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PretestHA - PosttestHA	-1.06250	3.15106	.78776	-2.74158	.61658	-1.349	15	.197

Table 4
Paired t Test Pre/Post U

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PretestU	16.8750	16	2.44609	.61152
	PosttestU	17.6875	16	1.85180	.46295

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	PretestU & PosttestU	16	.197	.465

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PretestU - PosttestU	-.81250	2.76209	.69052	-2.28432	.65932	-1.177	15	.258

Table 5
Paired t Test Pre/Post R

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PretestR	17.6875	16	1.62147	.40537
	PosttestR	18.1875	16	1.04682	.26171

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	PretestR & PosttestR	16	.312	.240

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PretestR - PosttestR	-.50000	1.63299	.40825	-1.37016	.37016	-1.225	15	.240

Table 6
Paired t Test Pre/Post CR

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PretestCR	16.8750	16	2.06155	.51539
	PosttestCR	17.5000	16	2.55604	.63901

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	PretestCR & PosttestCR	16	.418	.108

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PretestCR - PosttestCR	-.62500	2.52653	.63163	-1.97129	.72129	-.990	15	.338

PI did not anticipate statistical significance because of small sample size and short study timeframe. The four scale dimensions exhibited weak positive correlations and a trend supporting the continuum of constructs previously reported (Kember et al, 2000; Dunn & Musolino, 2011; Lethbridge et al, 2013; Leung & Kember, 2010; Lim, 2009; Phan, 2009).

Based on PI observation of contextual reflection assignments in the classroom, students became more reflective in their responses to questions. Responses to questions became longer, demonstrated more personal engagement, and if PI did not respond quickly, students alerted PI in anticipation of feedback comments. Further research is planned in the next NNP program, with IRB approval, introducing reflective practice concepts, reflection assignments, and QRT administered with a longer timeframe between pre and post-tests.

This study was an evidence-based practice (EBP) project that applied an educational intervention and utilized a pre and post-test evaluation. The project was internal to one Jesuit University and results were not meant to generate new knowledge or be generalizable across settings. The study addressed one specific population over an identified timeframe and focused on the explicit problem statement question for this project proposal: can reflective thinking be improved using the Ignatian Pedagogy Conceptual Model© as a student teaching tool for reflective thinking?

Limitations, Recommendations, and Implications for Change

Limitations

Data used in this project was from a small sample (n = 17), nonrandom convenience sample of one cohort of graduate students in a NNP program at one University. Generalizability to other student cohorts either in future NNP programs or other professional practice disciplines is cautionary. While reliability and psychometric properties of the QRT have been determined in larger study sample populations, correlational data in this small study prohibited suggestion of causality between variables and limited more robust statistical measurement.

The 100% participation rate might suggest pressure felt by the students to respond in a way to satisfy the faculty PI. A recent study analyzed student honesty in reflective assignments. Results of the study indicated while students believed reflective practice was an important skill to acquire, they questioned whether it was essential to base reflection assignments on true-life experiences (Maloney, et al., 2013). Student honesty on the QRT may be a limiting factor when analyzing study data.

Use of the Ignatian Pedagogy Conceptual Model© as a teaching tool for contextual reflection assignments is uniquely interpreted by each University faculty member and a limiting factor to study design. The reflection questions developed for this study were created for the first time and with further development may enhance student's reflective thinking and contribute to future study significance.

Recommendations

In 2010, the Superior General of the Society of Jesus, spoke at a conference and remarked, "Jesuit education should change us and our students" (Nicolas, p. 5). Fr. Nicolas challenged educators to graduate students with professional competence as well as a

transformative engagement at their deepest core, which is critical reflection. Nicolas (2010) also spoke to educators' obligation to evaluate this transformation.

The Ignatian Pedagogy Conceptual Model© was developed to guide reflection. The four concepts, as represented in the model's Maltese cross, address: context, experience, action, and evaluation (Regis, 2012). These concepts steer faculty development of questions for student contextual reflection assignments.

Use of reflection as a pedagogy for clinical teaching requires an educator to facilitate practice of reflective thinking (Benner, Sutphen, Leonard, & Day, 2009). Astin (2004) acknowledged a higher education focus on the superficial exterior of the student rather than the spiritual interior that develops skills such as self-awareness. Astin (2004) asked "how can we help our students achieve a greater sense of meaning and purpose in their academic and personal lives" (p. 38). Mann (2009) asked "can reflective practice be taught and learned?" (p. 614).

This project implementation capstone provided a theoretical foundation and systematic review of the literature to recommend further research in reflective teaching, student engagement, and improvement in reflective thinking. The Ignatian Pedagogy Conceptual Model© represents values of Jesuit education and requires further standardization of concepts and evaluation as was attempted in this study design.

Use of the QRT as an assessment of improvement in reflective thinking over time was demonstrated in previously reported studies to be a stable measurement tool (Kember et al, 2000; Dunn & Musolino, 2011; Lethbridge et al, 2013; Leung & Kember, 2010; Lim, 2009; Phan, 2009). While this study did not demonstrate statistical significance for the identified variables, results have not deterred planning and examination of use of the QRT in future NNP program cohorts. Emphasis on project objectives will be sustained.

Implications for Change

The Ignatian Pedagogy Conceptual Model© provided a teaching tool that could be used by educators to guide student's reflective thinking practice. Student feedback implied eagerness for faculty comments on reflection assignments, suggesting engagement in the process, one of the objectives of the project.

Previous studies demonstrated reliability of the QRT to assess improvement in reflective thinking (Kember et al, 2000). The small sample size in this study was unable to duplicate previous study findings of improvement in reflective thinking. The project succeeded in developing and testing an educational strategy to advance learning.

Zeichner and Liston (1996, as cited in Minott, 2011) stated, "if a teacher never questions the goals and the values that guide his or her work, the context in which he or she teaches, or never examines his or her assumptions, then it is our belief that this individual is not engaged in reflective teaching" (p. 133). Mann (2009) suggested reflection can be utilized as a teaching strategy to aid students in applying knowledge to practice and further offer that students may be unaware of the implications of reflection in their learning. Therefore, a structure that guides development of this skill may be helpful. The Ignatian Pedagogy Conceptual Model© provided structure for student reflection in this project and supported a transition from exclusive passive learning to participative, active learning.

While there is, as yet, no evidence to suggest improvement in reflective thinking improves patient outcomes (Mann, 2009), there is also no evidence to counter the assumption that reflection enhances how students learn about themselves and their ability to make clinical judgments. The premise of this project contended assessing, encouraging, and teaching reflective thinking through practice may ultimately demonstrate improvement in patient care. Mann's

(2009) systematic review of reflection in health profession education stated reflection allows practicing professionals to learn from experience by reflecting on and during experiences. Anticipating a challenging situation appears to stimulate reflection (Mann, 2009) and supports development of intellectual curiosity. Studies support the ability to develop reflective thinking over time with practice and emphasize importance of the learning environment (Mann, 2009). Further research will guide use of reflection as a teaching and learning strategy with a goal of enhancing integration and application of knowledge into clinical practice (Mann, 2009).

Conclusion

The complex and rapidly changing health care environment challenges educators to prepare professionals who possess knowledge, skills, and capabilities to enter these environments with self-confidence. The premise of this project proposal was that inclusion of a teaching tool for reflective thinking would enhance critical reflective thinking abilities of NNP students in their final clinical practicum class as assessed by a questionnaire administered at the beginning and completion of the class. Mann's (2009) review of published studies support reflective practice can be taught and learned as well as assessed. The authors cited the Kember et al., (2000) QRT measurement tool, the instrument utilized for this project, which demonstrated statistically significant differences between undergraduate and postgraduate students, with the latter students more likely to engage in deeper forms of reflective thinking.

The goal of this project was to optimize experiential learning through reflective thinking within the classroom learning environment. Outcomes as demonstrated by data analysis of pre/post questionnaire administration contribute to the database of ways of learning and educating advanced practice NNP students in this University research setting.

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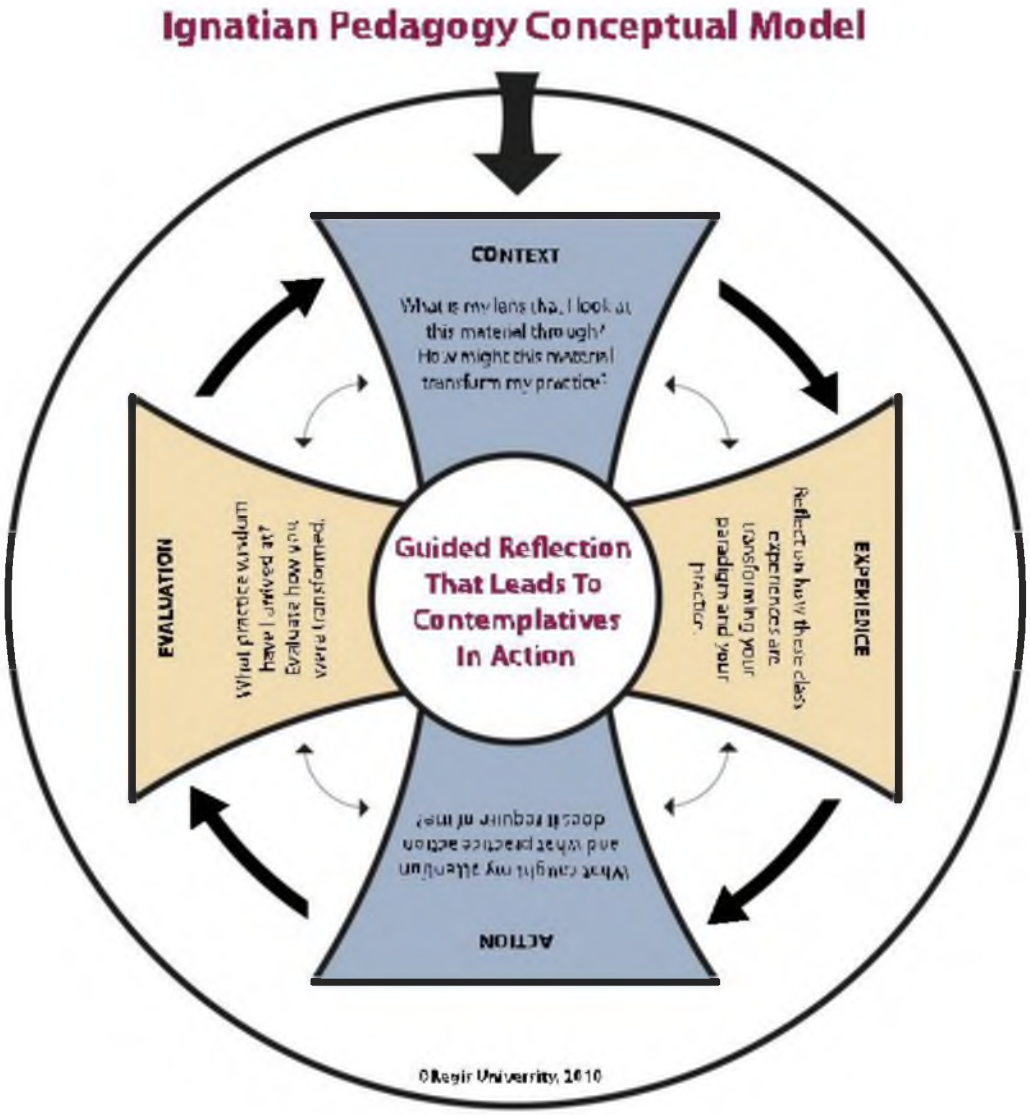
Appendix A

Ignatian Pedagogy Conceptual Model©



Appendix B

Systematic Literature Review

Article/Journal	Reflection and reflective practice in health professions education: a systematic review. *Advances in Health Science Education*	Development of a questionnaire to measure the level of reflective thinking. *Assessment & Evaluation in Higher Education*, 25(4)
Author/Year	Mann, K., Gordon, J., MacLeod, A. (2009)	Kember, D. et al (2009)
Database/ Keywords	Reflective Practice/paper provided by clinical mentor	From Mann article reference list/Regis Library
Research Design	Systematic review of descriptive and qualitative studies	Quasi-experimental study. Controlled trial without randomization.
Level of Evidence	Level V (Melnyk & Overholt, 2005)	Level III (Melnyk & Overholt, 2005)
Study Aim/Purpose	Understand key variables that promote educating reflective practice, identify gaps in evidence, explore implications for practice and research	Whether students engage in reflective thinking and to what extent. Synthesize conclusions about curriculum design promoting reflective thinking. Develop a simple instrument to examine the extent students engage in reflective thinking.
Population/ Sample size Criteria/Power	600 papers in original search/29 in final selection	First version trial on 350 students from health science university. Cronbach alpha and factor analysis done. QRT revised after four more cycles. Trial/revision reliability and factor analysis repeated.
Methods/ Study Appraisal Synthesis Methods	Systematic review of literature in area of reflection and reflective learning in health professional education and practice	Final version tested from sample of 303 students from eight classes at health science facility. Reliability established by acceptable Cronbach alpha values. Confirmatory factor analysis revealed good fit. Mean score comparison between classes revealed predicted significant differences between undergrads and postgrad students.
Primary Outcome Measures/ Results	29 studies that examined process and outcomes of reflective practice (RP) in health professional education and practice.	Outcome an instrument with four scales each having four contributing items. Factor analysis showed good fit. Reliability satisfactory using Chronbach alpha.

		Also distinguished between undergrad and post-grad students.
Conclusions/ Implications	Synthesized 29 studies, nature of RP makes quantification challenging, need for studies to evaluate effect of different strategies to promote reflection.	Four scales each with four items measured individual scale and did not contribute to another scale. Single factor model tested for one dimension for items used. Goodness of fits confirmed. No item has statistically significant loading on any other scale.
Strengths/ Limitations	Demonstrates study is in early development, majority of studies observational, comparison groups rare, no RCTs, identified several instruments for measuring reflective thinking/limitations are student's perception of safety in revealing thoughts, reviews positive and negative effects of promoting reflection, varied terminology, some studies didn't define 'reflection'. Terminology comes from several fields of study/professions. Terms not always explained.	Experienced professionals may deal with common cases in a routine way, without thinking deeply. Unusual problems give rise to more critical reflection. Age and experience may impact scores. Undergrads were homogenous group with little professional experience. Postgrads were part-time students while practicing nursing. T-tests showed post-grads more likely to engage in critical reflection.
Funding Source	None noted	Grants from Action Learning Project, Educational Development Fund, Research Committee, University Grants Committee of Hong Kong Polytechnic University.
Comments	The primary article of insight to Capstone, 6 questions developed by authors: *can reflective practice be taught and learned? Important to my research. This article provided the reference measurement tool for my Capstone.	Provides the reflection questionnaire as an appendix with permission to use as long as acknowledgment of the source is given. Is the Capstone measurement tool.

Article/Journal	Assessing reflective thinking and approaches to learning. *Journal of Allied Health.*	The theory-practice relationship: reflective skills and theoretical knowledge as key factors in bridging the gap between theory and practice in initial nursing education. *Journal of Advanced Nursing.*
Author/Year	Dunn, L., Musolino, G. (2011)	Hatlevik, I. (2011)

Database/ Keywords	EBSCO/Reflective Thinking	EBSCO/Reflective Thinking
Research Design	Test-retest measurement study	Cross-sectional, correlational design, secondary analysis.
Level of Evidence	Level III (Melnyk & Overholt, 2005)	Level C (Armola, et al. 2009)
Study Aim/Purpose	Examine reliability, responsiveness and model validity of reflective thinking and approaches to learning measures.	Examine the relations of nursing students' acquired reflective skills, practical skills and theoretical knowledge on their perception of coherence between theory and practice.
Population/ Sample size Criteria/Power	Entry level OT (MOT) and PT (DPT) students. Convenience sample of 125 students who volunteered for the study. All three years of program study represented.	446 nursing students at the end of their nursing training at two Universities in Norway voluntarily participated by written questionnaire. Response 71% of target 628 students.
Methods/Study Appraisal Synthesis Methods	Two measure, test-retest investigation with electronic data collection. Do the two methods have internal consistency among items, temporal stability for assessing change over time, responsiveness to measure changes in grad students reflective thinking and expected conceptual direction for QRT scores.	Secondary analysis of existing data. The data are part of a survey of nursing students completing their training in Norway. Structural equation modeling analyses were performed.
Primary Outcome Measures/ Results	Outcomes support the stability of the four scale QRT and the two scale RSPQ-2F.	Students' perception of coherence between theory and practice is directly influenced by reflective skills and theoretical knowledge.
Conclusions/ Implications	QRT data supports use to assess changes in reflective thinking and approaches to learning for graduate health professions students. Quantitative measures allow faculty to assess changes within a semester, across curriculum, and later in practice. Further studies will strengthen internal consistency and relevance for graduate level students.	Results suggest that reflective thinking is not just a generic skill but a skill that depends on the acquisition of professional knowledge and experience. Reflective skills, as a variable, is closely connected to both theoretical knowledge and practical skills variables. Helping students develop reflective skills may be beneficial in promoting coherence between theory and practice…in initial nursing education.

Strengths/ Limitations	Support the use of the QRT in grad students. Convenience sample size insufficient to perform exploratory confirmatory factor analyses.	Self-reported perceptions by students. Items not part of established measurement instrument. There was correlation between variables. Confirm research that reflective skills variable is key factor in bridging gap between theory and practice.
Funding Source	None noted	None
Comments	Study that supports Capstone. (U. of Utah)	Supports Capstone in concept/undergrad population.

Article/Journal	A review of evidence-based practice, nursing research and reflection: leveling the hierarchy. *Journal of Clinical Nursing.*	Reflective practice: a critical analysis of data-based studies and implications for nursing education. *Journal of Nursing Education.*
Author/Year	Mantzoukas, S. (2007)	Ruth-Sahd, L. (2003)
Database/ Keywords	EBSCO/Reflection	EBSCO/Reflective Practice
Research Design	Qualitative review	Analysis & overview of data-based studies
Level of Evidence	Level VI ((Melnyk & Overholt, 2005)	Level V (Melnyk & Overholt, 2005)
Study Aim/Purpose	Critically analyze aims, intentions, processes of EBP movement, to identify if these are best achieved in nursing by using RCTs. Explore relationship between EBP process and reflective process.	Critically examine data-based studies and provide overview of reflective practice. Discuss common themes, identify implications for reflective practice in nursing education. Qs: conditions necessary to foster reflection, educator responsibilities, does it affect learning outcomes?
Population/ Sample size Criteria/Power	Initial yield 1114 references, 400 rejected, remaining abstracts screened, 500 excluded. Data reduced to 66 articles and book chapters to include comprehensive list of seminal articles and articles with conflicting arguments. (In author's opinion!)	Final yield, 20 articles, 12 dissertations, 6 books. Criteria: RP defined, methodology section evident, RP in educational setting, 10 years (1992-2002), English.
Methods/Study Appraisal Synthesis Methods	Data read/re-read to acquire in-depth understanding of phenomena and achieve data saturation.	Computerized lit search with keywords. Titles and abstracts searched for terms, articles located and ref lists located further articles,

		as well as discussion with colleagues. Note: some articles found serendipitously.
Primary Outcome Measures/ Results	Presents three aspects of why EBP as the only valid form of evidence is flawed. 1) impracticality of implementing RCT findings into practice 2) underlying political and ideological assumptions 3) epistemological contentions because practice is complex and more than one type of knowledge is necessary.	Identified common themes, then discussed several articles in more depth to include: conditions necessary for RP process success in classroom, ongoing process, issues of time, teaching strategies, levels of reflection.
Conclusions/ Implications	Impractical to base majority of clinical decisions on RCTs as daily practice requires on the spot decisions. Thus, purporting reflection and reflective practice as the means of acquisition of knowledge.	Discusses educators can facilitate reflection and how. Provides strategies. RP 'under researched'. Presents negative implications, ethical, power, and impact on learning.
Strengths/ Limitations	Provides summary table of process of implementing reflection in practice by four authors. Reflection provides valid evidence for practice. One author's review.	Not exhaustive attempt at literature review. Addresses many important points from students and educators lens.
Funding Source	None noted	None noted
Comments	Provocative, suggesting EBP and reflection similar in definitions. Individual practitioner is most important element for best practice.	Provides great historical overview of RP. Points out students are novices to start, supports novice to expert as theory. One of the stronger articles re history and ? negative impact of RP.

Article/Journal	Introducing medical students to reflective practice. *Education for Primary Care*.	Reflection as a transforming process: student advanced nurse practitioners' experiences of developing reflective skills as part of an MSc programme. *Journal of Advanced Nursing.*
Author/Year	Chambers, S., Brosnan, C., Hassell, A. (2011)	Glaze, J. (2001)
Database/ Keywords	EBSCO/ Reflective Practice	EBSCO/Reflection
Research Design	Systematic Review of Literature	Qualitative Methodology

Level of Evidence	Level V (Melnyk & Overholt, 2005)	Level VI (Melnyk & Overholt, 2005)
StudyAim/ Purpose	Inform about how and why RP is being integrated into medical education and what students think about it.	Explore advanced practice nursing students experiences of reflection after completion of reflective practice module used in Masters level program. Evaluate experience, inform curriculum, assess reflection as transforming (part 1).
Population/ Sample size Criteria/Power	Primary search revealed 73 references. Abstracts read, additional criteria applied. Final review assessed 58 references.	Pilot study of one ex-student included, purposeful sampling of 16 students requested to participate, 13 volunteered, with ex-student total 14. Had completed practice module.
Methods/Study Appraisal Synthesis Methods	Selection criterion not well defined. Post-1990 related to medical or allied health student groups. Does define methods of reflection. Appraisal and synthesis is authors assessment.	Data triangulation using interviews and reflective contracts. Aim to obtain student perceptions of their world-view on items. Questions used as prompts, to clarify, and probe. Interviews taped, transcribed, read and re-read for themes.
Primary Outcome Measures/ Results	No 'gold standard' of assessment of RP. No scale with sufficient validity. Studies that attempt to predict RP varied. Review student attitudes toward RP, understanding, guidance and feedback, when to introduce. Does mention study of graduating nursing students who felt concept should be introduced at beginning of training.	All but one student's experiences revealed: process of transformation, increased awareness, increased valuing of nursing, deepening reflection by utilization of theory and literature, empowerment, becoming more political.
Conclusions/ Implications	Emphasizes varied definitions of RP, 'evidence' for RP cautionary. When to introduce remains question, how to nurture and how to assess. Suggest introducing early, the concept can be more embedded and valued.	Integration of reflection into APN Master's program was beneficial for majority of students. Viewed reflection as part of personal and professional development. Assisted with implementation of APN role.
Strengths/ Limitations	Despite limitations brings up strong points not previously noted in other articles. Limitation authors' assessment. UK authors. Medical students are study group.	Seems to validate reflection as a positive addition to curriculum, however does not provide module info, tool, or state limitations. Not generalizable beyond these 14 students, UK program.

Funding Source	None	None noted.
Comments	Supports reflective ability developing over time. Also that a minority of students struggle, must be identified as concept is a critical professional skill. Points not usually found: embed concept in curriculum rather than 'add on', supports Capstone pedogogy, educators may be less skilled than students, importance of RP needs teaching, if not formal 'process' students will opt out. Most interesting is guidance and feedback: purpose, consistent framework to use, ongoing support about the development of skills. Supports Capstone concept.	Addresses Master's APN students. Some value supporting concept of RP. Weak study otherwise.

Article/Journal	Stages in coming to terms with reflection: Student advanced nurse practitioners' perceptions of their reflective journeys. *Journal of Advanced Nursing.*	Doing it differently? A review of literature on teaching reflective practice across health and social care professions. *Reflective Practice: International and Multidisciplinary Perspectives.*
Author/Year	Glaze, J. (2001)	Norrie, C., Hammond, J., D'Avray, L,. Collington, V., Fook, J. (2012)
Database/ Keywords	EBSCO/Reflection	EBSCO/Reflective Practice
Research Design	Qualitative methodology. Reflective learning contracts analyzed.	Systematic literature review on teaching reflective practice in health and social care and compared what was available multi-professionally and inter-professionally.
Level of Evidence	Level VI (Melnyk & Overholt, 2005)	Level V (Melnyk & Overholt, 2005)
Study Aim/Purpose	Explore advanced practice nursing students experiences of reflection after completion of reflective practice module used in Masters level program. Evaluate experience, inform curriculum development, assess reflective journeys (part 2).	Review how reflection is taught in service professions of: nursing, medicine, mid-wifery, physiotherapy, social work. Aim to create a map for further research in teaching RP inter-professionally.

Population/ Sample size Criteria/Power	Pilot study of one ex-student included, purposeful samp1ing of 16 students requested to participate, 13 volunteered, with ex-student total 14. Had completed practice module.	Database literature from previous decade on teaching practices of above disciplines. Hand searching reference lists, reports and documents published by organizations (inclusion criteria pragmatic, stayed within university network.) 74 articles/reports identified. 52 assessed as pertinent to review.
Methods/Study Appraisal Synthesis Methods	This part of study assessed the student's reflective learning contracts. Qualitative methodology, data triangulation using interviews. Aim to obtain student perceptions of their world-view on items. Questions used as prompts, to clarify, and probe. Interviews taped, transcribed, read and re-read for themes.	Three questions to focus search: type of literature, justification and criticism of teaching reflection in different professions, learning contexts and pedagogical approaches for teaching and assessing reflection. Types in two categories: aspects of teaching, empirical studies about the teaching of reflection. Citations given for all three questions with discussion.
Primary Outcome Measures/ Results	Students describe development of reflective abilities as compared to a journey. Eight stages identified as descriptors by authors. Not all underwent all stages. Continuum concept.	Teaching reflection is dependent on professional discipline with own perspective. Positivist (medicine/physiotherapy) to 'measure' reflection to constructivist (mid-wifery, nursing) to explore and understand teaching processes. Some exceptions. Each supports separate legitimization and identity. Especially if sub-ordinated by medicine. Medicine and physiotherapy outcome focused. Nursing discussion about teaching methods.
Conclusions/ Implications	Reflection as a transitional process. In early stages, lack of insight was barrier to reflective ability. Time is property of transition. No previous experience with being challenged in this way, took time to conceptualize this type of learning. Recognition of importance of reflection affects reflective engagement process. Support and feedback reiterated.	Provided background data of audit of teaching reflective practice Inter-professionally in one academic network. Goal was to form basis for future research. While much literature available, most uni-professional. Less empirical re teaching across professions. Implication to understand drivers and approaches to teaching RP. Promote inter-

		professional collaboration academically.
Strengths/ Limitations	Seems to validate reflection as a positive addition to curriculum, however, does not provide module info, tool, or state limitations. Not generalizable beyond these 14 students, UK program.	Provides inter-professional perspective re RP not yet reviewed. Adds to knowledge base, but includes only this network as that was goal of review.
Funding Source	None noted	South West London Academic Network (SWAN) Grant University of London, UK
Comments	However…this part of study does address the novice to expert concept. Enforces need for time to learn and engage in the process. Supports anecdotal experience of this student/instructor that reflection takes practice. Also noted is that concept of personal transformation is only minimally addressed. Focus is on professional role development.	Article points out deficits in literature re teaching RP. Articulates inter-professional biases not previously considered. Is intriguing as this Capstone addresses both positivist and constructivist rationale and methodology.

Article/Journal	Why spirituality deserves a central place in liberal education. *Liberal Education*.	Depth, universality, and learned ministry: challenges to Jesuit higher education today. Remarks for "*Networking Jesuit Higher Education: Shaping the Future for a Humane, Just, Sustainable Globe"*. (Published conference presentation)
Author/Year	Astin, A. (2004)	Nicolas, A. (2010)
Database/ Keywords	Copy provided by clinical mentor.	Copy provided by clinical mentor.
Research Design	Expert opinion paper.	Expert opinion paper.
Level of Evidence	Level VII (Melnyk & Overholt, 2005)	Level VII (Melnyk & Overholt, 2005)
Study Aim/Purpose	Emphasizing the 'interior' of students' development in contrast to what they 'do'. Over the past several decades focus on spiritual interior has been replaced by focus on material exterior. How to switch focus?	Adding author's perspective on future of Jesuit higher education to challenges presented by conf participants from 200 Jesuit institutions of higher learning's selection of regional and 'frontier' challenges.
Population/	Author discusses own previous study.	Author begins discussion with

Sample size Criteria/Power	Participated in qualitative study of 70 faculties from a consortium on Spirituality in Higher Education.	suggestion that there is an opportunity to shape new future with positive and negative challenges of globalization. How does this direct the Jesuit mission?
Methods/Study Appraisal Synthesis Methods	Discusses qualitative interview format study of 70 faculties from four diverse universities who were members of consortium.	Discussion Point #1: globalization of superficiality short-circuits critical thinking. Technology limiting the development of students' response to the world. Need to find ways to promote depth of thought and imagination = Ignatian tradition.
Primary Outcome Measures/ Results	Presents one major finding, in keeping with topic of paper, faculty are eager to discuss issues of meaning, purpose and spirituality.	Goal to bring students beyond being well-educated, to whole persons. Exercise of creative imagination, engagement with reality, personal transformation. See beyond reality. Concept of 'floating awareness".
Conclusions/ Implications	Asks: how can faculty help students achieve greater sense of meaning and purpose in academic as well as personal lives. Encourage inspiration, creativity. May be 'new way of teaching', mentoring, leading, or collaborating. Suggests there is movement toward 'learning', seeing educational process holistically, beginning as freshman. Making deeper connection to sense of meaning and purpose in life. This mirrors Ignatian pedagogy.	Can never grasp the uniqueness of each person/student. Need to be open to help individuals. One model of education doesn't work. Starting point is real, within that we look for change and transformation, Ignatian pedagogy. We should not simply populate the world with 'bright and skilled' superficialities. Missing in our teaching: sense of urgency and willingness to evaluate and measure. Are students being transformed? Learning and growing from their experiences? How to teach students to ask: who benefits from knowledge gained in institution, who does not? Voice for voiceless? Becoming advocates.
Strengths/ Limitations	Learned opinion supporting introduction of and changing academic culture toward spirituality for students and faculty.	Learned opinion of Superior General of the Society of Jesus, 29th successor to St. Ignatius. Supports Regis mission and Ignatian Pedagogy. Important for Capstone purpose statement.
Funding Source	None noted	None noted
Comments	Describes importance of service	Suggests the need to study the

	learning. Strong statement: "the pedagogical key to service learning experience appears to be the use of personal reflection" (p. 40). Supports Capstone purpose, though one expert's opinion.	cultural world of students and find creative ways to promote depth of thought and imagination that is transformative to the person. Important article in developing the premise of Capstone purpose.

Article/Journal	Promoting cognitive and metacognitive reflective reasoning skills in nursing practice: self-regulated learning theory. *Journal of Advanced Nursing.*	Curiosity and medical education. *Medical Education.*
Author/Year	Kuiper, R., Pesut, D. (2004)	Dyche, L., Epstein, R. (2011)
Database/ Keywords	EBSCO/Reflection	EBSCO/Reflection
Research Design	Integrated review of critical thinking and reflective practice literature supporting paper's premise.	Qualitative review of the literature.
Level of Evidence	Level V (Melnyk & Overholt, 2005)	Level V (Melnyk & Overholt, 2005)
Study Aim/Purpose	Explore impact of self-regulated learning theory on reflective practice in nursing. Advance notion that both cognitive and metacognitive skills support development of clinical reasoning.	Identify common barriers to and facilitators of curiosity and related habits of mind in the education of doctors.
Population/Sample size Criteria/Power	English databases of educational and healthcare research in area of adult learning from past two decades reviewed for specific keywords. No mention of number of articles.	Does not review the databases used or articles reviewed beyond reference list. Narrative discussion.
Methods/Study Appraisal Synthesis Methods	Focus on synthesis: critical thinking and reflection are desired characteristics of nursing regulatory bodies; are desired outcomes of curriculum development, program evaluation; service settings expect nurses to be proficient and apply skills to practice; keys to life-long learning.	Theory-driven conceptual exploration of the concept of curiosity. Research and studies from fields of cognitive psychology and education reveal common practices may inadvertently suppress curiosity.
Primary Outcome Measures/ Results	Definitions of CT and RP provided and suggest CT is cognitive while RP is metacognitive. Refer to Benner's work to support differing levels of	Curiosity related to inquisitiveness, reflection, and mindfulness. Some educational practices can suppress by confusing haste with efficiency,

	skill acquisition related to years of practice experience. Suggestion that RP requires different model of learning. Reviews CCTST which has been shown to relate more to clinical experience/college effect rather than curricula. Does not correlate with RP.	neglecting negative emotions, promoting overconfidence, and using teaching techniques that encourage passive learning. Introduces concept of how mindfulness and reflection are bridge between curiosity and higher cognitive skills, problem solving, CT, and self-assessment.
Conclusions/ Implications	Note: CT not as important as the reflective activities required to nurture and influence process over time and between contexts. How to embrace both CT and RP? History of reflection. Reviews study revealing critical levels of reflectivity documented when students have guided reflection over 3 years. RP skills develop depending on individual student and instructor support.	Curiosity and related habits of mind can be supported in education through specific evidence-based instructional approaches. Defines terms and how domain leads to reflective habits. Utilizes inter-professional literature to support discussion. Discusses how to nurture concepts in students. Provides example of how to use concepts in classroom.
Strengths/ Limitations	Reviews positive and negative teaching strategies for engaging students in reflection. Structured reflection better for novices to conceptualize. Proposes self-regulated learning model as theoretical structure. Promotes author's model and develops literature as support is limitation.	Concise, seemingly thorough review of concepts that support authors premise. Limitation-application is only medical students, however, concepts applicable to APN education, and do not take away from purpose/aim of review.
Funding Source	None noted	None
Comments	While model is complex, this article is important conceptually with very good review of literature. Supports theoretical framework of Benner, yet introduces metacognition as an adjunct skill supporting RP. Well published authors.	Underlined 90% of this article's content. Concise introduction of concepts for educators to consider as well as student responses.

Article/Journal	Can one learn to think critically? – A philosophical exploration. *The Open Nursing Journal.*	The nurse teacher's role in the promotion of reflective practice. *Nurse Education Today.*
Author/Year	Raymond-Seniuk, C., Profetto-McGrath, J. (2011)	Burrows, D. (1995)
Database/	EBSCO/Critical Thinking	EBSCO/Reflective Practice.

Keywords		
Research Design	Literature review of critical thinking in nursing.	Expert opinion paper with reflective journal writing model.
Level of Evidence	Level V (Melnyk & Overholt, 2005)	Level VII (Melnyk & Overholt, 2005)
Study Aim/Purpose	A starting point to promote additional discussion to examine concepts of CT using philosophical approach.	Provide review of reflection, it's pros and cons, skill development, one strategic model proposed.
Population/ Sample size Criteria/Power	English articles published from 2000-2010 with critical thinking focus. Issues of defining and measuring CT evident. Seminal works included. Narrative articles included. Articles related to CT measurement in nursing.	Known author in topic area. Believes reflection is part of the 'art' of nursing. Brings in research suggesting that students < 25 may lack cognitive readiness and experience for critical reflection.
Methods/Study Appraisal Synthesis Methods	Overview of definitions of CT in nursing education, and results of measurement efforts. Philosophical focus of learning CT is offered. Various positions of CT and whether nursing definition compatible with learning explored.	Review of history of reflection including Dewey and Schön. New concept that as practice becomes spontaneous/automatic, routine may lead to inattention and errors. Reviews studies that challenge reflection including age/experience barrier.
Primary Outcome Measures/ Results	Addresses concept of person as unique individual. However, similarities provide common foundation of core thinking from which thinking skills can be defined, taught and measured. Can relate to reflective thinking? Reference Rubenfeld &Scheffer, known to this student as supporting reflection. Discuss knowledge and truth as relates to CT. Traits of CT includes inductive and deductive reasoning. Reviews nature of nursing, science, art. Suggest students learn to use theoretical knowledge through CT to meet pragmatic outcomes. 'Application of practice' (my thought).	Author suggests reflection is necessary, includes supportive literature and how teachers might develop effective techniques for students to learn the skill. Supports reflective journaling. Presents options for students to reflect upon.
Conclusions/ Implications	To generate and foster the application of nursing knowledge in practice, CT is necessary skill. Authors believe CT can be learned and skill should be fostered in nursing education.	Summarizes RP as a complex and cognitively demanding skill. Specific implication is the novice to expert concept (does review Benner) and that younger students,

	Support pluralism to explain variety of perspectives of CT. Multiple ways of knowing/perspectives would capture various aspects of CT and help define concept, principles, and how CT is learned by students. More research needed.	developmentally, are unable to reach levels of critical reflection. Without teaching, author suggests students will remain novices and un-interested in deeper reflection.
Strengths/ Limitations	Very good lit review of CT. Anecdotal articles, CT outside nursing, dissertations and unpublished works not included.	One author's assessment, however, adds several new concepts to think about.
Funding Source	None noted	None noted
Comments	Good reference list. Important to examine similar concept to reflective thinking, explore differences in definitions. Philosophical and pluralistic approach a different viewpoint.	Another nice review of historical literature. Supports novice to expert concept as it relates to RP. Brings in developmental maturation, which bears consideration (provides reference).

Article/Journal	The ethics of conducting educational research on your own students. *Journal of Nursing Law*.	Research ethics application: a guide for the novice researcher. *British Journal of Nursing*.
Author/Year	Comer, S. (2009)	Greaney, A. et al. (2012).
Database/ Keywords	EBSCO/Ethics and Nursing Faculty Research	EBSCO/Ethics and Nursing Faculty Research
Research Design	Expert opinion paper including quick tips table.	Expert opinion paper including table of principles of Belmont Report.
Level of Evidence	Level VII (Melnyk & Overholt, 2005)	Level VII (Melnyk & Overholt, 2005)
Study Aim/Purpose	Inform faculty researchers re anticipating ethical dilemmas of conducting research on own students.	Assist novice researcher in research ethics application process.
Population/ Sample size Criteria/Power	Student population and faculty who conduct research on students. Does support classroom research to contribute to body of knowledge of nursing education.	Impetus for article, an audit of common reasons why full approval not granted following initial IRB review at Ireland nursing school. Not a study, therefore, did not reveal sample size of audit.
Methods/Study Appraisal Synthesis Methods	Reviews ethical components to consider when doing research on own students. Students as vulnerable population, ethical principles of justice, beneficence, autonomy. National standards.	Reviewed purpose of structured framework for ethics of research approval, supported principles of Belmont report, respect for persons, beneficence, justice.

Primary Outcome Measures/ Results	Reviews specific research designs and provides examples of ethical issues to be considered. Provides alternative methods to consider re not doing research on own students. If those not possible provides suggestions how best to conduct research to protect the student participant.	Reviews ethics application: criteria and principles. How the IRB reviews information. Summarizes the Belmont principles. Discusses methodology and research ethics process, poor science having ethical consequences. Best advice is: to treat the application as an academic assignment!
Conclusions/ Implications	An important article for this Capstone project. In depth overview of potential ethical hazards and also 'how to". Will need to be included in IRB application as well as final project.	Ethical judgment for the researcher begins as soon as study commences. Many good points for reflection re responsibility of the researcher.
Strengths/ Limitations	Not a study, however, author is nurse/lawyer and reviews the literature including ANA Code of Ethics and ethical standards of American Educational Research Assoc.	Not a study, however, provides a guide for IRB application using internal audit results of why initial applications not approved…in one nursing school.
Funding Source	None noted	None
Comments	Suggestion that research be quantitative rather than qualitative, which supports Capstone research design.	Beneficial information as an addition to IRB guidelines at Regis.

Article/Journal	Assuring ethical treatment of students as research participants. *Journal of Nursing Education*.	Student's involvement in faculty research: ethical and methodological issues. *International Journal of Qualitative Methods.*
Author/Year	Ridley, R. (2009).	Ferguson, L., Yonge, O., Myrick, F. (2004)
Database/ Keywords	EBSCO/Ethics of Student Research	Reference List/Retrieved from on-line e-address
Research Design	Expert opinion using exemplar study.	Expert opinion of authors.
Level of Evidence	Level VII (Melnyk & Overholt, 2005)	Level VII (Melnyk & Overholt, 2005)
Study Aim/Purpose	Describe ethical principles that nurse educators can use when planning education research to assure ethical treatment of students. Presents basic	Exploration of ethical and methodological issues of double agency when faculty involve students as participants in their research. Present issues and

	assumptions and examples from an intervention study comparing two teaching styles. Discusses how principles apply.	strategies to reduce participant risk/vulnerability and conflicts of interest.
Population/Sample size Criteria/Power	Not a study, however reviews an exemplar study for purpose of discussion.	Student population and faculty who conduct research on students. Not a study.
Methods/Study Appraisal Synthesis Methods	Describes ethical issues of exemplar study as reviewed by institution IRB and how they might be remedied.	Provides background discussion with lit review. Multi-disciplinary review, including nursing.
Primary Outcome Measures/Results	Reviews concept of double agency, the investigator as faculty and researcher. Reviews applicability of additional ethical principles of nonmaleficence and veracity.	Unlike other articles addresses data collection process and strategies to maintain ethical principles.
Conclusions/ Implications	Concepts provided basis for a research protocol in one educational setting. Discuss perception issues of students re communication. Suggest that when conditions of perceived unfairness are dealt with participation increases. Goal to improve nursing education as well as create teaching techniques to improve student outcomes via research.	Dual agency from perspective of teacher-student explored. Power inequities place onus on teacher to support best interest of student. Impairment of trust addressed and researcher must not jeopardize this relationship. Faculty have responsibility to maintain high standards.
Strengths/Limitations	Good reminders, however, one institution's opinion.	Very good review, some new concepts. These author's opinions.
Funding Source	None noted	None noted
Comments	Good reference for Capstone with applicable quote: "faculty should employ their own students…..as inissues of program evaluation or pedagogy". (Ferguson, 2004, p. 11). Supports project.	Excellent overview re this topic.

Article/Journal	*A Jesuit Education Reader* (book)	*The Reflective Practitioner: How Professionals Think in Action.* (book)
Author/Year	Traub, G. (2008)	Schön, D. (1983)
Database/Keywords	Provided by clinical mentor.	Purchased by student as cited in majority of articles on reflection.
Research Design	An anthology of essays on Jesuit education.	An authored textbook. Personal study of epistemology of what practitioners, in varied professions, actually do.
Level of Evidence	Level VII (Melnyk & Overholt, 2005)	Level VII (Melnyk & Overholt, 2005)
Study Aim/Purpose	Designed for anyone engaged in Jesuit education.	Focus of study is on 'art', 'intuition', and capacity for reflection in the midst of knowing.
Population/Sample size Criteria/Power	As above and below. Power is in concepts!	Author collected sample of vignettes of practice and focused on episodes where senior practitioner tries to help a junior one to learn to do something.
Methods/Study Appraisal Synthesis Methods	Goal for reader to not only acquire information but also to assimilate material personally. 'Ignatian repetition'! Multiple authors reviewing multiple topics as they relate to history of Jesuit mission and education, Ignatian pedagogy and application of applying principles in education.	Constructed and tested models of knowing based on vignettes. Basis for concept is analysis of structure of reflection-in-action. Contrasts reflective practice with technical rationality and criticisms common in scientific professions.
Primary Outcome Measures/Results	This book, for this student, necessary for developing the thought processes necessary for Capstone purpose and outcomes.	Asks, what happens to educator who thinks and acts not as a technical expert but a RP? Poses threat to conservative system!
Conclusions/ Implications	Editor's purpose was met for this student and educator. Referred to often for classroom use, developing 'reflection' assignments, and as student in multiple classes and development of Capstone.	Professional roles, institutional contexts conducive to reflective practice. Explores RP within an institution. Is both a consequence and cause of surprise. May increase learning or be a danger to status quo of rules and technical regulations.
Strengths/ Limitations	Includes glossary of terminology: 'do you speak Ignatian'. Very helpful.	Often cited text as basis for reflective practice. Seminal text challenging institutional norms.
Funding Source	Grants from US Jesuit colleges/universities and assoc of Jesuit Colleges and Universities	None noted

Comments	Has been personal reflection 'Bible' to understand Jesuit/Ignatian mission. Contains definition of reflection for Capstone.	The 'other' Bible for reflective practice.

Article/Journal	OPT: transformation of nursing process for contemporary practice. *Nursing Outlook*.	A comparison of two methods of teaching reflective ability in year 3 medical students. *Medical Education*.
Author/Year	Pesut, D., Herman, J. (1998)	Aronson, L., Niehaus, B., Hill-Sakurai, L., Lai, C., O'Sullivan, P. (2012)
Database/Keywords	EBSCO/Reflection	EBSCO/Reflective practice in education
Research Design	Description of third generation reasoning model that is outcome driven.	A 2 (guidelines) X 2 (feedback) X 2 (time) randomized controlled trial.
Level of Evidence	Level VI (Melnyk & Overholt, 2005)	Level II (Melnyk & Overholt, 2005)
Study Aim/Purpose	Proposal of an iterative model of clinical reasoning that emphasizes reflective self-monitoring.	Assess impact of reflection guidelines, feedback about reflective ability, interaction between the two on reflective ability of medical students in written reflections.
Population/Sample size Criteria/Power	Nurses, the nursing process and providing a structure for clinical reasoning.	Entire third year 2009-2010 class at UCSF. 163 students. Approved by IRB.
Methods/Study Appraisal Synthesis Methods	Presents a model (OPT) and example of its application in a patient setting.	Three week long intersessions. Required to write a critical reflection on professionalism in response to a prompt. Random assignment of half the class who received guidelines the other half received only definition. Then each half divided in half, one receiving feedback on both content and reflective ability, the other receiving feedback on content feedback alone. Performance measured using previously validated scoring rubric. Data for reflection scores and repeated-measures analysis of variance with

		two between-group factors, guidelines and feedback, and one within-group factor. Dependent variable, reflective ability.
Primary Outcome Measures/Results	An alternative reasoning model for applying the nursing process clinically. Does present table of thinking strategies, the last of which is meta-cognition. Not a study, therefore no data.	Regardless of study arm, reflective ability did not change across two occasions. The three-way interaction and two-way interactions non-significant. Hypothesis that use of guidelines would affect performance significant. Scores better for students who used guidelines than for those who only received definitions. The hypothesis that receipt of feedback would have effect on content and ability also supported. Secondary analysis supported primary analysis.
Conclusions/ Implications	While model is purported to be built on concept of critical thinking and reflection would seem to be difficult to apply to practice.	Findings reinforce notion that structure helps improve reflective ability, but raises questions about best practices for providing feedback when teaching reflection.
Strengths/ Limitations	Commonly cited author of RP concept. Complex. Would have to research original article where data was presented on metacognitive skills.	Informs research on reflection in medical education. Study arms contained unequal numbers. Feedback only group may have differed as may have taken time out from school.
Funding Source	None noted	Assoc of American Colleges Western Group on Educational Affairs Education Research Award: UCSF Med Education Research Fellowship
Comments	Review for potential model use for research. Was rejected, however some good concepts on RP. Concepts esoteric, obscure. Even clinical example was difficult to follow in depth and ability to apply.	While used with medical students, has some applicability to Capstone. Supports guidelines (Ignatian pedagogy model) and feedback on reflection (which is being done with reflection assignments.) Major difference is that reflections are not scored as part of grading rubric.

Article/Journal	The lost path to emancipatory practice: towards a history of reflective practice in nursing. *Nursing Philosophy*.	Professional knowledge and the epistemology of reflective practice. *Nursing Philosophy*.
Author/Year	Nelson, S. (2012)	Kinsella, E. (2009)
Database/Keywords	EBSCO/Reflective Practice	EBSCO/Reflective Practice
Research Design	Historical review of RP.	Historical review of RP.
Level of Evidence	Level VII (Melnyk & Overholt, 2005)	Level VII (Melnyk & Overholt, 2005)
Study Aim/Purpose	To challenge the historical acceptance of RP as fundamental professional practice in nursing.	Addresses lack of clarity of term RP. Provides analysis of epistemology of RP through exam of theoretical philosophical influences.
Population/Sample size Criteria/Power	Not a study. In depth history of RP beginning with Dewey.	Not a study. In depth history of RP by examining philosophical underpinnings.
Methods/Study Appraisal Synthesis Methods	Historical review from Dewey to Schön, Boud, Freire, Habermas. Why reflection is appealing to nursing practice and education.	States RP is one of the most adopted theories of professional knowledge in past twenty years and widely integrated into educational programs.
Primary Outcome Measures/Results	Reviews RP movement in universities in 1980s and 1990s. Then the 'shedding' of political aspects towards professional practice.	Presents RP concept confusion. Critiques the history of RP, including Schön, as pulling together attributes to suit particular theory and situations.
Conclusions/ Implications	Lends support for legitimacy of reflection as a 'moral' practice and means to further nursing practice. Anti-technology/rationality. **Main point is to build case against 'domination' of reflection in assessing 'competence' in nursing.	Points out difference between knowing how vs. knowing that. While supporting Schön's position also brings in work of philosopher Gilbert Ryle who addressed link between intelligence and action. *Action may reveal knowledge apart from prior intellectual operation. Both important assumptions of theory of RP.
Strengths/ Limitations	Historical review/one author's opinion. RP as assessment more a Canada, UK, British requirement.	Historical review/one author's opinion. Brings in a different perspective from philosophy offering a 'deeper' interpretation by this author.
Funding Source	None noted	None noted
Comments	One of the better historical reviews of RP. Much content valuable to own knowledge base	Reviews primarily: Schön, Dewey, Nelson Goodman, Michael Polanyi, and Gilbert Ryle and summarizes

	as well as following historical threads.	their five concepts. Good for developing purpose.

Article/Journal	Traces of self: online reflective practices and performances in higher education. *Teaching in Higher Education.*	Exploring reflective thinking in nursing practice. *Journal of Advanced Nursing.*
Author/Year	Ross, J. (2011)	Teekman, B. (2000)
Database/Keywords	EBSCO/Reflective Practice in Education	EBSCO/Reflective Practice
Research Design	Exploration of issues related to use of online reflection in higher education.	Qualitative method to obtain and analyze data from interviews.
Level of Evidence	Level VII (Melnyk & Overholt, 2005)	Level VI (Melnyk & Overholt, 2005)
Study Aim/Purpose	Explore conceptual issues of how students and educators negotiate authenticity, ownership, privacy, performativity with online reflection.	To assess whether study nurses engage in reflective thinking, the focus of the thinking, and how they use it in practice.
Population/Sample size Criteria/Power	Not a study. Groups online RPs into four categories: informal, extra-curricular, low stakes and high stakes. Author would consider compulsory reflective assignments as high-stakes.	Ten RNs working full or part time on variety of units from three hospitals. Data from twenty-two interviews collected.
Methods/Study Appraisal Synthesis Methods	Metaphorically uses concept of 'mask' with six concepts: performance, disguise, protection, transformation, discipline, and trace. Reviews literature to support student conflicts with high stakes reflection.	Data from twenty-two interviews collected. RNs shared one self-selected clinical situation outside their usual range of experience (by Schön creating uncertainty and disorder). 'Sense making' method used.
Primary Outcome Measures/Results	Identifies humanist theoretical issues of high stakes reflection. Identity and authenticity online. Cultural understanding of blogging, permanence of data. Suggests need for insight and research as to how this practice is negotiated in the future.	Narratives revealed that most perceptions were pre-shaped prior to experience. Situational gaps when confronted with unusual event. Supports that experience rather than knowledge important factor. Framing, discourse with self used.
Conclusions/ Implications	Reveals ethical conflicts, truth of personal thoughts, multiple meanings and expectations.	Reflective thinking used for action. Next RT for evaluation. Two aspects: whole situation/self.
Strengths/	Powerful conceptually, one	Provides model of RT as dynamic

Limitations	authors opinion. Difficult to ignore as an educator.	process. Moving between knowledge and practice equals growth.
Funding Source	None noted	Research grant
Comments	Thought provoking and very relevant to mindfulness when using online reflection assignments. Important project reference.	Model is quite good. Included lingering anxiety of RNs re their responses. *RT doesn't happen automatically, requires supportive environment.

Article/Journal	*Transforming Nursing Through Reflective Practice.* 2nd Ed. (book)	*Critical Thinking Tactics for Nurses: Achieving the IOM Competencies.* 2nd Ed. (book)
Author/Year	Johns, C., Freshwater, D. (2006)	Rubenfeld, M., Scheffer, B. (2010)
Database/Keywords	Purchased by student as cited in many articles on reflection. Author Johns, C. cited often.	1st Ed. provided by clinical mentor. Assessed as valuable and this edition purchased by student.
Research Design	An authored textbook.	An authored textbook.
Level of Evidence	Level VII (Melnyk & Overholt, 2005)	Level VII (Melnyk & Overholt, 2005)
Study Aim/Purpose	Foreword by Jean Watson describes a meta-reflective lens, from RP towards contemplative/mindful/intentional caring-healing for self.	Written for all clinicians regardless of area of practice, including educators, who desire to explore own CT and help others as well.
Population/Sample size Criteria/Power	Multiple chapters that are written or co-written by Johns. Provides multiple definitions historically referenced by early authors.	Addresses CT needed to achieve the IOM competencies. Content comes from Delphi study to find consensus description of CT in nursing.
Methods/Study Appraisal Synthesis Methods	Some chapter authors also have chapters in other program texts. Repetition of concepts will strengthen knowledge base.	Synthesizes the data from original study. Highlights skills of CT and reflection.
Primary Outcome Measures/Results	Important concept Ch 7. People can only be truly reflective when they demonstrate: openness, curiosity, and intelligence. Suggests much of what is called reflection is learning (or being) these three. After those come commitment and reflectiveness. Supports the theory that reflective thinking is a developmental process.	This book has great applicability from CT and reflection definitions, the why, what, who (are critical thinkers), to the how, when and where of CT. Addresses QI, safety, patient centered care, inter-professional teamwork, EBP, change, informatics, and assessing CT. Essentially the DNP curriculum!
Conclusions/	Have yet to explore fully, topical	Text is formatted with easy to read

Implications	chapters only. Will be important reference for project.	tables, lists, and humorous examples at times.
Strengths/ Limitations	Well cited text and author. Some chapters not necessarily applicable, i.e. prison setting and will be last on reading list.	Addresses critical thinking and application to practice. Each chapter ends with reflection cues for reader.
Funding Source	None noted	None noted
Comments	May be the only reference outside Ignatian pedagogy that addresses reflection as it applies to self.	This text has been a 'go to' for every class thus far in DNP program. First index used when researching any topic.

Appendix C

Logic Model

RESOURCES	ACTIVITIES	OUTPUTS	SHORT/LONG-TERM OUTCOMES	IMPACT
NNP program student volunteers NNP program teaching faculty concept support Faculty Director of NP programs concept support Administrative support Select/design teaching tool for student reflection Revision/Completion of reflection questionnaire IRB approval Time as a resource Financial resource for developing/ analyzing tool Access to equipment for development/ printing tool Co-faculty support for intro of new teaching tool and classroom time for student completion of pre & post-test tool	Recruit student volunteers for questionnaire completion Seek faculty support for concept development Incorporate the concept of reflection and teaching tool into NNP clinical classes Administer pre-post clinical NNP classes questionnaires Analyze questionnaire data	Successful completion of volunteer questionnaires Baseline data for evaluating new teaching strategy and questionnaire Project description, use of tools and initial results should provide material that is publishable and presentation ready	In 1-3 years the teaching tool for student reflection will be refined and revised as necessary with faculty experience and outcome results from questionnaires. More students will demonstrate higher level of reflective thinking in pre and post questionnaires having been provided a teaching tool for reflection during the NNP program. In 4-6 years, after sufficient numbers of questionnaire measures are assessed, biases may surface such as age and/or experience further refined/revised. New research outcomes topics may become evident and publishable.	As the entry level for the NNP will by now be the DNP, the NNP graduate will possess higher level critical thinking skills in keeping with expectations and outcomes for DNP practice. The DNP NNP will be marketable with interdisciplinary team peers. The tools will be generalizable to other healthcare profession educators and students.

Appendix D

Reflective Thinking Questionnaire (QRT)

QRT Reflection Questionnaire #1/#2

Questionnaire reprinted with permission: Kember et al. (2000).

Please **circle** your level of agreement with the following statements that indicate your actions and thinking in this course.

5—definitely agree

4—agree

3—neither agree nor disagree (only to be used if a definite answer is not possible)

2—disagree

1—strongly disagree

---

1. When I am working on some activities, I can do them without thinking about what I am doing.	5	4	3	2	1
2. This course requires us to understand concepts taught by the instructors.	5	4	3	2	1
3. I sometimes question the way others do something and try to think of a better way.	5	4	3	2	1
4. As a result of this course I have changed the way I look at myself.	5	4	3	2	1
5. In this course we do things so many times that I started doing them without thinking about it.	5	4	3	2	1
6. To pass this course you need to understand the content.	5	4	3	2	1
7. I like to think over what I have been doing and consider alternative ways of doing it.	5	4	3	2	1

8. This course has challenged some of my firmly held ideas.	5	4	3	2	1
9. As long as I can remember handout material for exams, I do not have to think too much.	5	4	3	2	1
10. I need to understand the material taught by the instructor to perform practical tasks.	5	4	3	2	1
11. I often reflect on my actions to see whether I could have improved on what I did.	5	4	3	2	1
12. As a result of this course I have changed my normal way of doing things.	5	4	3	2	1
13. If I follow what the instructor says, I do not have to think too much on this course.	5	4	3	2	1
14. In this course you have to continually think about the material you are being thought.	5	4	3	2	1
15. I often re-appraise my experience so I can learn from it and improve my next performance.	5	4	3	2	1
16. During this course I discovered faults in what I had previously believed to be right.	5	4	3	2	1

Thank you for completing the questionnaire. Please **circle** the applicable range of the following two items that relate to your:

Age in years: 21-25 26-30 31-35 36-40 41-45 46-50 51-55 56-60

NICU Experience in years: 1-5 6-10 11-15 16-20 21-25 26-30 >30

Appendix E

IRB Approval Letter

REGIS UNIVERSITY

Academic Affairs
Academic Grants

3333 Regis Boulevard, H-4
Denver, Colorado 80221-1099

303-458-4206
303-964-3647 FAX

IRB – REGIS UNIVERSITY

January 30, 2013

Mary Ellen Honeyfield
Regis University, G-8

RE: IRB #: 13-024

Dear Ms. Honeyfield:

Your application to the Regis IRB for your project "Using Ignatian Pedagogy to Improve Reflective Thinking in the Neonatal Nurse Practitioner Student" was approved as an exempt study on January 29, 2013. This study was approved under exempt category 45CFR46.101.b(1).

The designation of "exempt." means no further IRB review of this project, as it is currently designed, is needed.

If changes are made in the research plan that significantly alter the involvement of human subjects from that which was approved in the named application, the new research plan must be resubmitted to the Regis IRB for approval.

Sincerely,

Patsy McGuire Cullen

Patsy McGuire Cullen, PhD, CPNP
Chair, Institutional Review Board
Associate Professor and Director
Department of Accelerated Nursing
Loretto Heights School of Nursing
Rueckert-Hartman College for Health Professions
Regis University

cc: Dr. Christine Finn

A JESUIT UNIVERSITY

Appendix F

Project Recruitment Letter

Dear Student,

As a DNP student, my Capstone research involves using Ignatian Pedagogy to improve reflective thinking in neonatal nurse practitioner (NNP) students. This educational strategy is being used in other classes and is not unique to the NNP program.

My research project involves distributing a questionnaire to each student in the 2013 NNP cohort at the beginning and the end of NR 657. The questionnaires will be contained in envelopes and will be distributed during class on January 30, 2013 and again during class on April 17, 2013 by an individual other than myself. Your choice to participate is voluntary and you may exercise this choice by either completing the questionnaire or leaving it blank, returning it to the envelope, sealing and placing in a box that will be in the classroom. Questionnaires will be coded, without names, so that individual identity is protected. There will be two items of demographic data collected, age and years of NICU experience. Both items will use ranges to assure protection of your identity and will appear on the second questionnaire only. The questionnaire normally takes less than 10 minutes to complete and faculty will leave the room during the completion process.

Questionnaires will be kept in a locked cabinet in my Capstone Chair's office. I will not access them until NR 657 concludes, final grades posted and your own Capstone projects completed. No grades will be at risk for participating or not participating. Analysis of the questionnaire data will not take place until after you have graduated. Data and analysis will be stored on a password protected computer.

Thank you in advance for your voluntary participation. Should you have any questions please contact my Capstone Chair, email address _____. My Chair's office is in Carroll Hall, 318. You may also contact me at mhoneyfi@regis.edu.

Should you be interested, the data analysis will be complete in August, 2013, and I would be happy to share the research information with you.

Sincerely,

Mary Ellen Honeyfield, MS, RN, NNP-BC

Appendix G

CITI Collaborative Institutional Training Initiative Certificate

Human Research Curriculum Completion Report
Printed on 1/10/2013

Learner: Mary Ellen Honeyfield (username: mhoneyfi)
Institution: Regis University
Contact Information Department: Professional Studies
Email: mhoneyfi@regis.edu
Social Behavioral Research Investigators and Key Personnel:

Stage 1. Basic Course Passed on 08/06/12 (Ref # 8403971)

Required Modules	Date Completed	
Introduction	08/05/12	no quiz
History and Ethical Principles - SBR	08/05/12	4/5 (80%)
The Regulations and The Social and Behavioral Sciences - SBR	08/05/12	5/5 (100%)
Assessing Risk in Social and Behavioral Sciences - SBR	08/05/12	5/5 (100%)
Informed Consent - SBR	08/05/12	5/5 (100%)
Privacy and Confidentiality - SBR	08/06/12	3/5 (60%)
Regis University	08/06/12	no quiz

For this Completion Report to be valid, the learner listed above must be affiliated with a CITI participating institution. Falsified information and unauthorized use of the CITI course site is unethical, and may be considered scientific misconduct by your institution.

Paul Braunschweiger Ph.D.
Professor, University of Miami
Director Office of Research Education
CITI Course Coordinator

Return