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# Using Unfolding Case Studies to Develop Critical Thinking in First-Semester Nursing Students

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**Using Unfolding Case Studies to Develop Critical Thinking in First-Semester  
Nursing Students**

by

Carol Daley Cook

A project submitted to the faculty of  
Gardner-Webb University Hunt School of Nursing  
in partial fulfillment of the requirements for the degree of  
Doctor of Nursing Practice

2023

Boiling Springs, NC

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04/05/2023  
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## Acknowledgements

I wish to extend gratitude to those who supported me in the pursuit of this accomplishment. My husband Cook, over the past 11 years you have supported every decision I made with love and without hesitation. To say that you have gone the extra mile for our family is an understatement. My strong, amazing daughters Halle, Cami, Jane, and Piper James are my “why”. Always remember WHO and WHOSE you are. I am infinitely thankful for my parents, Jim, and Diane Daley. Education was a top priority in our home, and you worked tirelessly to ensure that Steven and I had access to the best resources. My brother, Steven, set the bar of success so high.

Amy Cooke, you were patient, kind, and encouraging as a preceptor to this new nurse in 2011. You had a tremendous impact on my nursing career. I admire you as a leader and friend. Tina Lamberta, my dear “Big”, thank you for mentoring me as a new faculty member. Alison Thornburg Dolce, you made it possible for me to succeed in nursing school by welcoming my girls on those early mornings I attended clinical. Jody Glass-Chapman and Jenny Schmitt, my dear DSWW sisterhood, thank you for praying for me and believing in me.

In academia, it is said that we stand on the shoulders of giants. Dr. Cindy Miller, thank you for your patience and wisdom as my project chair at Gardner-Webb University. Dr. Keith Rischer, thank you for your support and guidance. Your passion for supporting nurse educators is nothing less than inspiring. I wish to extend gratitude to my project committee who supported this endeavor: Amy Smith, DNP, Dina Khentigan, DNP, Sherena Samuel, DNP, Caroline Hosseini, MSN, and Karen Miller, MSN. I am grateful for the encouragement from the faculty and staff at Carolinas College of Health Sciences.

It is an honor to work alongside you as we teach the next generation of nurses. Finally, I appreciate the support of The Cato Foundation and Wake Forest Atrium Health.

### **Abstract**

There is a crisis in competency among new nurses in the United States. Prelicensure nursing education prepares them to pass the NCLEX-RN, but it does not provide the necessary foundation for sound clinical decision-making. Mistakes in the clinical setting can lead to failure to rescue, resulting in the third leading cause of death: medical error. A radical change is needed to prepare nurses with the clinical judgment skills necessary for patient care. Educators must be mindful of the academic-practice gap and adopt evidence-based improvements, including active learning with unfolding case studies. This quality improvement project involved a four-part unfolding case study in lieu of a traditional lecture to teach content to first-semester nursing students. A significant improvement ( $p < 0.05$ ) in the Clinical Application Thinking Skills subsection of the ATI RN Content Mastery Series<sup>®</sup> 2019 Proctored Fundamentals Test resulted.

*Keywords:* unfolding case studies, critical thinking, clinical reasoning, clinical judgment, prelicensure nursing, nursing students

## Table of Contents

Problem Recognition .....	9
Literature Review.....	11
Critical Thinking, Clinical Reasoning, and Clinical Judgement Defined.....	11
A Crisis in Competency .....	14
The Call for Radical Transformation .....	15
Expectations of the New Graduate Nurse .....	17
Scope of the Problem .....	17
The Current State of Pre-Licensure Nursing Curricula .....	19
Recommendations for Best Practice Teaching Strategies .....	21
Recognition of Patient Safety .....	21
Failure to Rescue.....	22
Active Learning with Unfolding Case Studies .....	23
Documented Benefits of Case-Based Learning .....	25
Lower Fidelity = Higher Impact .....	27
Clinical Judgment Models .....	27
Needs Assessment.....	29
Target Population.....	29
Sponsors and Stakeholders .....	29
Organization Assessment.....	30
SWOT Analysis .....	31
Available Resources.....	35
Desired Outcomes.....	36

Team Selection.....	37
Cost/Benefit Analysis .....	37
Scope of the Project .....	38
Objective and Mission Statement .....	39
Objective.....	39
Mission Statement.....	40
Theoretical Underpinnings.....	41
Work Planning .....	43
Project Timeline.....	44
Project Evaluation.....	48
Project Implementation.....	51
Interpretation of Data .....	53
Qualitative Analysis.....	53
Quantitative Analysis.....	54
Plans for Project Sustainability and Further Research.....	55
Conclusion .....	56
References.....	58

## List of Figures

Figure 1: SWOT Analysis (Strengths, Weaknesses, Opportunities, and Threats).....	32
Figure 2: Conceptual-Theoretical-Empirical Diagram .....	43
Figure 3: Work Breakdown Structure.....	46
Figure 4: Logic Model .....	51



**List of Tables**

Table 1: Milestones.....	47
Table 2: Budget.....	48
Table 3: Group Statistics for Fall I and Fall II 2022 Cohorts .....	55
Table 4: Results from Independent Samples Test.....	55

## Problem Recognition

Recently graduated nurses are entering the workforce lacking the necessary skills to provide proper care in a fast-paced environment where critical thinking and clinical reasoning are crucial for successful patient outcomes (Huston et al., 2017; Kavanagh & Sharpnack, 2021; Kavanagh & Szveda, 2017). A deficiency in critical thinking has been noticed among nurses who have earned associate or baccalaureate degrees and subsequently passed the National Council Licensure Examination for Registered Nurses (NCLEX-RN). This inability to exercise critical thinking and clinical reasoning to formulate a sound clinical judgment can lead to failure to rescue, where a nurse neglects to recognize signs of patient decline (Clarke & Aiken, 2003).

The significance of ensuring patient safety in health care cannot be overemphasized, as its impact on patient outcomes is substantial. Safe and competent nursing practice plays a crucial role in reducing adverse events. According to a study by Makary and Daniel (2016), medical errors by both nurses and physicians are the third leading cause of death in the United States, with an estimated 250,000 deaths per year being preventable. Sixty-five percent of patient care errors stem from a lack of clinical judgment by healthcare professionals, and novice nurses are responsible for half of all healthcare mistakes (*Next Generation Nursing (NGN) Frequently Asked Questions for Educators*, n.d.). Patient outcomes could improve by developing clinical judgment skills among prelicensure nurses.

Patricia Benner, a renowned nursing scholar, and theorist partnered with the Carnegie Foundation for the Advancement of Teaching to investigate and propose recommendations for the future of nursing education. The team identified best practices

and suggested radical changes in the delivery of pre-licensure nursing education. They recommended didactic content be contextualized and related directly to nursing care at the bedside. Faculty were encouraged to integrate the classroom with clinical learning and to encourage multiple ways of thinking, emphasizing clinical reasoning, and professional identity formation (Benner et al., 2010).

The research team noted that in the same way bedside nurses are expected to follow evidence-based guidelines, educational best practices should not be considered optional (Benner et al., 2010). Improving practice readiness will have a significant impact on patient care and eventually affect patient safety and clinical outcomes. Cultivation of critical thinking skills among nursing students must become a primary goal of prelicensure nursing programs and be afforded equal emphasis as preparation for the NCLEX-RN (Benner et al., 2010).

Despite widespread recommendations for changes to nursing education, an academic-practice gap persists, exposing patients to potential harm (Burns & Poster, 2008; Huston et al., 2017; Kavanagh & Sharpnack, 2021; Kavanagh & Szweda, 2017). This inconsistency denotes the incongruity between the content taught in pre-licensure nursing education and the expectations and skills of the new graduate nurse (Benner et al., 2010; Huston et al., 2017; Kovner et al., 2010). Despite these concerning results indicating inadequate nurse preparedness, educators have persisted in utilizing didactic lectures, which prioritize content ahead of active learning (Kavanagh & Sharpnack, 2021; Kavanagh & Szweda, 2017). In order to understand the nursing practice environment, it is essential to explore the underlying factors that drive it. Furthermore, to fully

understand the scope of the issue at hand, it is important to assess the deficiencies in skills and abilities that emerge in contemporary nursing practice.

### **Literature Review**

Despite the evidence suggesting that improved classroom-to-bedside transitions could enhance patient outcomes, no discernible progress has been observed. A review of the literature underscores the necessity for modifications to be made to nursing education. Numerous sources have pointed out the inadequacy of newly graduated nurses' ability to exercise critical thinking and clinical judgment (Chang et al., 2011; Kavanagh & Szveda, 2017; Kavanagh & Sharpnack, 2021). Benner et al. (2010) and her colleagues suggested a shift in pedagogical approach from teaching decontextualized material to promoting situated cognition through the coordination of classroom and clinical instruction. They recommended that educators move from a concentration on critical thinking to one of clinical reasoning and clinical judgment to address the gap between academia and practice. However, contemporary clinical experiences tend to emphasize task completion at the expense of student learning (Ironsides et al., 2014).

### **Critical Thinking, Clinical Reasoning, and Clinical Judgment Defined**

Throughout the literature, critical thinking, clinical reasoning, and clinical judgment are used interchangeably. Understanding these thinking skills, in addition to the nursing process, is essential for practice and licensure (Alfaro-LeFevre, 2019; American Nurses Association [ANA], 2021). The outcome of clinical judgment is the result of integrating these ways of thinking into practice (Alfaro-LeFevre, 2019). It is necessary to differentiate these distinct yet related terms to have a clear understanding of each.

The nurse exercises critical thinking by applying knowledge and understanding to practice. Effective critical thinking involves planning ahead and working systematically to identify and analyze potential solutions. This precursor to clinical reasoning requires open-mindedness, self-confidence, and inquisitiveness (Facione & Facione, 1996; Potter et al., 2022). Benner et al. (2010) emphasizes that critical thinking depends upon the nurse's knowledge rather than the immediate situation at hand. As they recognize the relationship between didactic content and care at the bedside, nursing students learn to think critically (Rischer, 2021).

Clinical reasoning involves applying knowledge, reasoning in action, and interpreting assessment data as the situation unfolds (Benner et al., 2010). The nurse must notice and recognize salient cues and analyze their clinical relevance. Next, the nurse sets priorities, responds to the situation accordingly, and later reflects on the intervention (Alfaro-LeFevre, 2019). Nursing students develop this cognitive reasoning skill by applying learned concepts to thinking in action at the bedside (Rischer, 2021). Tanner (2006) illustrates this as an iterative model of noticing, interpreting, responding, and reflecting on practice.

Clinical judgment is an outcome dependent upon the nurse's ability to think critically and apply clinical reasoning at the bedside (Alfaro-LeFevre, 2019). Therefore, instead of learning this skill directly, students acquire the ability to formulate a correct clinical judgment over time as they gain confidence and experience in the clinical setting. According to Tanner (2006), a correct clinical judgment is based upon the interpretation of the problem followed by the decision of whether or not to respond. Clinical judgments are strongly influenced by the nurse's skills and capabilities. The context and culture of

the care setting and the nurse's familiarity with the patient's trajectory also influence clinical judgment. The nurse relies on patterns of reasoning followed by a thorough reflection on practice, particularly when ineffective clinical judgment contributes to a negative outcome (Tanner, 2006).

Brooks and Morphet (2021) have identified important characteristics that work-ready newly graduated nurses should possess to ensure safe and professional practice. A comprehensive understanding of pathophysiology, anatomy, and physiology is essential for safe patient care, which includes promptly recognizing the primary problem and initiating appropriate interventions (Brooks & Morphet, 2021). Nurses must also possess medication safety knowledge, effective patient assessment skills, and the ability to manage time and prioritize care. Moreover, newly graduated nurses should be able to readily identify changes in patient conditions, synthesize clinical data, and execute appropriate decisions, in addition to demonstrating competency in passing the NCLEX-RN examination (Brooks & Morphet, 2021).

The National Council of State Boards of Nursing (NCSBN) has recently recommended modifying teaching and curriculum development strategies to enhance clinical reasoning and clinical judgment skills by contextualizing course content (Dickison et al., 2019).

This recommendation acknowledges the necessity of improving the critical thinking capacity of licensure candidates. Accordingly, graduates in 2023 will be required to take the Next Generation NCLEX (NextGen NCLEX), which encompasses alternate format questions to assess their critical thinking ability (Dickison et al., 2019).

Despite passing the NCLEX-RN, new graduate nurses encounter difficulties in applying theoretical knowledge and didactic content to practical patient care. This lack of skill in discriminating and identifying salient cues may result in suboptimal clinical outcomes. Employers expect inexperienced registered nurses to accurately recognize primary problems and identify appropriate interventions based on assessment and clinical data. Failure to do so may result in mismanagement of care and potentially a sentinel event (del Bueno, 2005; Kavanagh & Sharpnack, 2021; Kavanagh & Szweda, 2017).

### **A Crisis in Competency**

A 2005 landmark study (del Bueno) revealed that only 35% of new graduate nurses met the benchmark for safe clinical practice. These students were unable to identify the patient's primary problem and choose the correct course of action (del Bueno, 2005). Since then, the Performance-Based Development System (PBDS), a reliable indicator of nursing competency used in del Bueno's research, has been utilized to assess the practice-readiness of both experienced and new graduate nurses.

Competency levels of new graduate nurses have markedly declined since the publication of del Bueno's study. According to Kavanagh and Szweda (2017), only 23% of new graduates met the benchmark for safe care in 2015. Further evaluations in 2019 and 2021 reported that the number of new nurses demonstrating readiness for safe and competent care dropped to 14% and 9% respectively (Kavanagh & Sharpnack, 2021). A study of 626 nurses who graduated in May 2020, affected by COVID-19 clinical limitations, indicated that 40% of the students failed to notice changes in the patient's condition, while only 7% met the criteria for acceptable entry-level competency (Kavanagh & Sharpnack, 2021).

A substantial majority of newly qualified nurses experienced a medication error within their first year of practice, with almost 75% reporting such an occurrence (Monagle et al., 2018). Moreover, greater than 46% of basic nursing procedures performed by graduate nurses require clinical judgment. One study showed that nurses made a clinical decision every 30 seconds while caring for a critically ill patient (Bucknall, 2000). Hensel and Billings (2019) estimate that effective decision-making could prevent as many as 65% of sentinel events. Consequently, academic educators are being called upon to collaborate with staff development professionals in a concerted effort to enhance the teaching of clinical reasoning skills (Caputi & Kavanagh, 2018; Huston et al., 2017).

### **The Call for Radical Transformation**

Benner et al. (2010) stressed the significance of contextual learning and prioritization in nursing education. The student nurse should integrate the theoretical and pathophysiological knowledge acquired in the classroom with practical experiences in the clinical setting. Moreover, they should be aware of the consequences of their actions. As stated by Benner et al. (2010), patients who were previously treated in the intensive care units are now being accommodated in medical-surgical beds. This has resulted in nurses taking on more responsibilities traditionally assigned to physicians, including identifying early changes in patient condition and managing multiple aspects of care across different settings (Kavanagh & Szweda, 2017).

In contemporary nursing practice, it is imperative to consider the rapidly evolving healthcare environment and the growing body of knowledge being implemented. Historical data indicates that the rate of medical knowledge doubling occurred every 50



years in 1974, whereas it was predicted that this rate would accelerate to every 73 days by 2020 (Densen, 2011). The abundance of knowledge and digital disruptions have resulted in content saturation in the nursing curricula (Caputi & Kavanagh, 2018; Kavanagh & Szweda, 2017; Kavanagh & Sharpnack, 2021). The inclusion of more content in nursing education does not necessarily equate to better-prepared nurses, as students become inundated with assigned reading, leading to an emphasis on memorization rather than comprehension of fundamental concepts. The progress of technology and the constantly changing healthcare environment have further exacerbated the challenge of content overload in nursing curricula. Kavanagh and Szweda (2017) referred to this phenomenon as “infobesity” (p. 58) and echo the urgent need for reform.

The underestimation of the necessary training and education required to prepare nurses for contemporary practice has been noted in the literature (Benner et al., 2010; Brooks & Morphet, 2021). While completion of prerequisite classes, nursing coursework, and clinical training are essential, they do not fully prepare nurses to deliver safe and compassionate care in diverse settings or engage in lifelong learning. Despite possessing knowledge and academic preparation, new graduate nurses often lack the confidence and clinical reasoning skills to apply learned concepts to patient care, leading to reduced nursing competence and performance (Brooks & Morphet, 2021; Gonzalez, 2018). A nurse’s ability to think critically and apply critical reasoning significantly impacts their competence and performance, ultimately affecting the quality of care provided (Chang et al., 2011).

## **Expectations of the New Graduate Nurse**

The new graduate nurse is expected to have the competence and proficiency to apply clinical reasoning in a varied and evolving healthcare setting. The ability to make autonomous decisions based on incomplete information and limited resources is crucial (Brooks & Morphet, 2021; van Graan & Williams, 2017). The complexity of clinical decision-making has increased significantly, with nurses assuming responsibility for patients with multiple comorbidities. Possessing nursing knowledge alone is inadequate to enable clinical judgment (Zehler & Musallam, 2021).

Employers expressed discontent with the decision-making proficiency of new graduate nurses, with only 20% reporting satisfaction (Muntean, 2019). Nurses face demands, including the care of highly complicated patients and persisting staffing challenges, exacerbating the situation (Monagle et al., 2018). The pursuit of enhanced patient satisfaction scores has contributed to the intricacy of the nurse's duties.

Underprepared novice nurses are promptly entrusted with self-directed patient care in a progressively complex healthcare setting (Brooks & Morphet, 2021; van Graan, 2017). It is essential that the nurse be prepared to use higher-order thinking to synthesize evidence-based data into practice and integrate concepts of patient care (Brooks & Morphet, 2021; van Graan, 2017).

## **Scope of the Problem**

Research has indicated a deficiency in critical thinking abilities among newly graduated registered nurses across both baccalaureate and associate degree nursing programs. The nurse's program of study has been found to influence their capacity to provide safe and competent care and to exercise clinical judgment (Kantar & Sailian,

2018). The prelicensure education acquired by the new graduate significantly affects their competence in delivering nursing care (Kim & Kim, 2015). Nurse educators play a vital role in teaching theory and skills, and in fostering the student's ability to analyze evidence and use proper clinical judgment in challenging situations (Englund, 2020). Insufficient critical thinking skills consistently observed in new nurses have impacted their transition to practice, leading to errors, low patient satisfaction scores, and attrition from the profession (Eckerson, 2018; Muntean, 2019).

The clinical competence of nurses is positively associated with their critical thinking capability (Chang et al., 2011). Effective critical thinkers, characterized by creativity, curiosity, and intuition, are capable of analyzing data and translating knowledge into practice (van Graan & Williams, 2017). Conversely, inadequate critical thinking skills can impede a nurse's ability to interpret cues and problem-solve and lead to negative clinical outcomes (Hajrezayi et al., 2015). Erroneous approaches to data collection and analysis can result in delayed care and compromised clinical decisions (Theobald et al., 2021).

Inadequate clinical judgment by nurses may contribute to instances of failure to rescue, where the nurse fails to recognize indications of impending decline (Clarke & Aiken, 2003; Herron, 2017). Cognitive failure, characterized by a failure to recognize and act upon clinical findings, accounts for nearly 60% of sentinel events. Insufficient capacity for higher-order thinking also leads to the failure to identify a change in patient status, resulting in substandard care (Clarke & Aiken, 2003; van Graan & Williams, 2017). Furthermore, the most common reason for disciplinary action against new

graduate nurses is failure to detect and respond appropriately to changes in a patient's condition (Zehler & Musallam, 2021).

### **The Current State of Pre-Licensure Nursing Curricula**

Kantar and Sailian (2018) explain the two primary approaches to nursing education curricula, namely experiential and traditional. The experiential approach emphasizes combining a clinical context with pedagogical content, whereas the traditional, lecture-based approach typically involves decontextualized lecture-based instruction. Benner et al. (2010) aimed at improving students' clinical judgment through evidence-based teaching methods. Nevertheless, nurse educators have been hesitant to abandon lecture-based pedagogy. Despite extensive research demonstrating the inefficacy of classroom lectures in developing clinical judgment, educators have been reluctant to embrace recommended teaching strategies (Englund, 2020; Hong & Yu, 2016; Kavanagh & Sharpnack, 2021).

Nurse educators encounter challenges in designing and developing appropriate educational experiences that integrate critical thinking and clinical reasoning into the curriculum (Hong & Yu, 2016; Kaylor & Strickland, 2015). The reluctance to implement evidence-based practice may be attributed to the stress and frustration experienced by instructors who must teach a large quantity of content with limited resources and time (Carr, 2015; Englund, 2020; Herron et al., 2016). While lecture-based instruction may facilitate rapid learning within a short timeframe, it may not encourage learners to achieve educational objectives (Gholami et al., 2017). Students tend to focus on memorization and may struggle to retain information and apply their knowledge at the bedside (Cantrell & Farer, 2019).

The practical reality for the new nurse involves a constantly changing and dynamic environment, where they must have the ability to access resources quickly. The delivery of pre-licensure content via lectures is insufficient for developing the clinical judgment skills essential for safe patient care (Costello, 2017). This approach to instruction is often presented in a fragmented and disconnected manner presenting challenges for recall and application of knowledge (Kantar & Sailing, 2018). Furthermore, decontextualized content does not promote long-term retention (Forsgren et al., 2014; Kantar & Sailing, 2018).

According to Kim and Kim (2015), the use of lectures alone is inadequate in fostering clinical reasoning and self-assurance among learners. The Institute of Medicine's Future of Nursing Report (2011) underscores the notion that modern patients have complex care needs, requiring nurses to be mindful of patients' cultural and socioeconomic backgrounds. Kantar and Massouh (2015) and Popil (2011) argue that the development of professional skills in a practice-oriented profession is reliant on knowledge acquisition.

Evidence-based nursing practice requires the application of effective critical thinking skills. However, an emphasis on delivering a greater volume of content has paradoxically hindered the development of critical thinking abilities among students (Laver & Croxon, 2015). In addition, the prioritization of completing nursing tasks has overshadowed the cultivation of clinical judgment skills (Ironside et al., 2014). Consequently, isolating content from context has led to a disconnect between theoretical learning and its application to clinical practice (Herron et al., 2016).

### **Recommendations for Best Practice Teaching Strategies**

The development of high-order cognitive skills and competencies, as well as a compassionate disposition, is essential for learners to effectively navigate the unpredictable trajectory of patient encounters. This requires that the learner integrate theoretical knowledge with clinical practice. Nurse educators are challenged with implementing innovative teaching strategies that facilitate a higher level of thinking among students (Carr, 2015; Kantar & Sailian, 2018; van Graan & Williams, 2017).

Oermann and Gaberson (2019) argue that it is imperative for nurse educators to foster a secure learning environment that cultivates student growth and development. An interactive, student-focused curriculum that promotes the development of clinical judgment may encourage a lifelong desire for learning (van Graan & Williams, 2017). Repeated exposure to learning opportunities fosters the acquisition of critical thinking and clinical reasoning skills necessary for professional practice (Kim & Kim, 2015). A seamless transition to professional practice is dependent on collaboration between academic and hospital educators (Herron, 2018; Lasater et al., 2015).

### **Recognition of Patient Safety**

Numerous healthcare and nursing advocacy groups have acknowledged the significance of patient safety and its influence on outcomes. In 1999, the Institute of Medicine (IOM) published a seminal work titled *To Err is Human: Building a Safer Health System*, which exposed the widespread occurrence of medical errors and suggested essential measures to improve patient safety (Institute of Medicine [IOM] & Committee on Quality of Health Care in America, 2000). Safety has been identified as one of the six priority areas for improvement, designed as a framework for patient care

and reduction of harm by healthcare providers (Institute of Medicine (US) Committee on the Robert Wood Johnson Foundation Initiative on the Future of Nursing, at the Institute of Medicine, 2011). Awareness of the root cause of medical errors has prompted a change in approach, from assigning blame to practitioners to recognizing errors as an opportunity for learning. Consequently, experts in the public and private sectors have made a concerted effort toward zero patient harm, the gold standard in patient safety (Haskins, 2019).

The Centers for Medicare and Medicaid Services (CMS) established safety as a priority quality measure, with an emphasis on the coordination of care to achieve favorable patient outcomes (CMS, 2021). The Joint Commission (TJC) released the 2022 National Patient Safety Goals to emphasize the importance of safe patient care (TJC, 2022). Miscommunication between healthcare professionals is identified as a significant threat to patient safety and the leading root cause of the medical error (Makary & Daniel, 2016; TJC, 2017). The IOM Future of Nursing report (2011) emphasizes the necessity of an innovative approach to nursing education, particularly in prelicensure programs and continuing education. Modifications to current pedagogy could help address the growing intricacy of health care and the demand for quality acute care for patients presenting with multiple comorbidities (IOM, 2011).

### **Failure to Rescue**

Case-based learning is an established approach to enhance problem-solving skills and motivation to learn among nursing students (Gholami et al., 2021; Kaylor & Strickland, 2015). This teaching method enables students to expand their perspectives and acquire enduring and meaningful knowledge by integrating theoretical concepts with

practical applications (Forsgren et al., 2014). Furthermore, case-based learning provides a secure learning environment for students to develop decision-making skills as they encounter complex clinical scenarios (McLean, 2016., Rischer, 2021).

Despite compelling evidence supporting the efficacy of case-based learning, educators have been hesitant to adopt this approach as a substitute for traditional lectures (Kavanagh & Sharpnack, 2021; Kavanagh & Szweda, 2017). Experiential learning opportunities, such as those provided in the classroom, skills lab, or clinical setting, encourage the development of clinical reasoning and clinical decision-making abilities (Bowman, 2017; Herron et al., 2016). According to Jessee (2018), meaningful and positive feedback and guidance from instructors, coupled with peer discussions, are crucial to developing clinical judgment. Instructors should encourage students to articulate their thought processes, as it facilitates the development of higher-order thinking skills (Herron et al., 2016; Kaylor & Strickland, 2015). Popil (2011) emphasizes that case studies are a superior form of instruction for practice-based disciplines. Notably, case-based learning has been successfully included in other academic disciplines including public health, business, dietetics, and biochemistry (Newton et al., 2017; Palermo et al., 2018; Thistlethwaite et al., 2012; Yousey, 2012).

### **Active Learning with Unfolding Case Studies**

Unfolding case studies are a cost-effective and easily integrable instructional method for engaging learners and fostering critical thinking skills (Bowman, 2017; Carr, 2015; Carter & Welch, 2016; Rischer, 2021). Unlike conventional case studies, unfolding case studies feature a gradually evolving patient scenario that challenges students to engage in multifaceted thinking (Bussard, 2017; Rischer, 2021). Students collaborate



with peers as the narrative unfolds, revealing new data or changes in the patient's condition (Carr, 2015). Traditional, static case studies primarily address the lower levels of learning within Bloom's Taxonomy (i.e. remembering and understanding), by presenting all clinical data upfront (Anderson & Krathwohl, 2001; Bloom et al., 1956). Through unfolding case studies, students develop their own reasoning and analytical skills and identify their strengths and limitations (Carr, 2015; Englund, 2020; Kaylor & Strickland, 2015). Here, students engage with the higher-order thinking skills of application, analysis, evaluation, and creation, all of which are part of real-world nursing practice (Bowman, 2017; Costello, 2017; Oermann & Gaberson, 2019).

Unfolding case studies are a type of low-fidelity simulation that offers a realistic contextual environment without requiring a designated simulation setting. This pedagogical approach provides students with an opportunity to engage with theoretical, practice-based scenarios that promote critical thinking and problem solving (Carr, 2015). The collaborative nature of these exercises enables students to encounter complex patient scenarios that may not be encountered during clinical experiences (Carr, 2015; Costello, 2017).

To promote meaningful learning, an effective unfolding case study should align with course objectives and learning outcomes and be relevant, realistic, engaging, and instructional (Costello, 2017). Students benefit when information is not presented all at once, as this approach requires them to research the material and anticipate appropriate steps for care (Costello, 2017; Kim & Kim, 2015). A salient unfolding case study should include contextual cues and open-ended reflection questions to facilitate understanding (Rischer, 2021).

## **Documented Benefits of Case-Based Learning**

Numerous studies have demonstrated the advantages of case-based instruction in nursing education. Young et al. (2013) discovered that the utilization of online case studies helped to increase the passing rates of newly graduated nurses for the NCLEX-RN. The use of case studies resulted in an average pass rate of 92.69% for students who prepared for the NCLEX-RN and Health Education Systems Incorporated (HESI) exams, compared to an 89.49% pass rate for those who did not (Young et al., 2013).

Furthermore, Kulak and Newton (2014) observed that students who consistently engaged in case-based learning throughout their nursing program achieved higher scores on course exams. Hong and Yu (2016) also found that frequent exposure to case studies led to improved critical thinking and problem-solving abilities among students. Moreover, students who learned through case-based learning reported greater in-depth learning and better long-term knowledge retention (Kulak & Newton, 2014; Newton et al., 2017).

One study found that case-based learning led to better communication and critical thinking skills among students, who then felt more equipped to provide care for patients with complex needs (Harman et al., 2015). Yoo and Park (2014) concluded that case-based learning was an ideal method for promoting students' ability to solve problems. Englund's (2020) research investigated the efficacy of utilizing unfolding case studies as a teaching strategy in an Adult Health II theory course. The study found that students who were exposed to this teaching approach achieved significantly higher mean exam scores compared to those who learned through traditional static case studies. In another related study, Li et al. (2019) designed a case-based course and found that it facilitated self-directed learning by simulating realistic work processes.

Over the course of 2 years, Sanders et al. (2020) incorporated a series of five unfolding case studies into the nursing curriculum. The project resulted in favorable outcomes for this cohort, including improved clinical readiness and exposure to content that would have otherwise been restricted. The students reported satisfaction with this opportunity to utilize critical thinking and clinical judgment (Sanders et al., 2020). In a separate study, Hong and Yu (2016) designed 19 case-based learning lectures and introduced them into the nursing curriculum over a period of eight months. Their investigation revealed that students who received case-based instruction demonstrated significantly better problem-solving, critical thinking, and clinical decision-making skills compared to their counterparts instructed via conventional lecture-based methods (Hong & Yu, 2016).

Bowman (2017) found that the integration of unfolding case studies throughout the nursing program can help faculty identify students who require support with decision-making. Additionally, students perceived this approach to be a meaningful learning experience that promoted creativity and higher-level thinking skills. Yoo and Park's (2014) study revealed that new graduate nurses who underwent case-based learning exhibited a significant enhancement in their objective and subjective problem-solving ability compared to their counterparts who received lecture-based education. Similarly, a study that involved students enrolled in a medical-surgical nursing course demonstrated that those taught using problem-based learning achieved higher test scores than those who were taught through traditional didactic methods (Yu et al., 2013). This study revealed a noteworthy increase in critical thinking disposition among those who experienced problem-based learning.

**Lower Fidelity = Higher Impact**

It may be assumed that simulation with expensive manikins and software surpasses lower-fidelity approaches, such as case studies, due to their closer representation of reality. Some educators believe that high-fidelity simulation offers a stronger incentive for learning and better prepares students for translating acquired knowledge into clinical practice. Nevertheless, research studies have demonstrated that higher-fidelity nursing simulation does not consistently result in superior learning outcomes (Aluisio et al., 2016; Chen et al., 2015; Massoth et al., 2019; Weston & Zauche, 2021; Yang et al., 2019).

**Clinical Judgment Models**

There are numerous clinical judgment models used in nursing education to prepare students for nursing practice. The use of a clinical judgment framework within the nursing curriculum serves as a helpful and consistent structure throughout the program. Furthermore, it helps to develop critical thinking among students, enabling them to identify problems and formulate appropriate responses (Gonzalez et al., 2021).

The nursing process and Tanner's Model of Clinical Judgment are two of the most commonly used clinical judgment models in prelicensure curricula (Gonzalez et al., 2021). The nursing process is typically one of the initial subjects taught in a fundamentals of nursing course, where students learn to gather assessment data, establish a nursing diagnosis or problem, create a plan of care, implement it, and evaluate its effectiveness on the patient (Benner et al., 2010). Tanner's Model of Clinical Judgment involves a four-step iterative process followed by nurses as they provide patient care: noticing, interpreting, responding, and reflecting (Tanner, 2006).

The National Council of State Boards of Nursing (NCSBN) formulated the Clinical Judgment Measurement Model to align with both the nursing process and Tanner's Clinical Judgment Model (Dickison et al., 2019). The NCSBN framework is intended to serve as a model to evaluate research and testing, whereas Tanner's Clinical Judgment Model is the appropriate framework for nursing education and practice (Dickison et al., 2020). Students benefit from the introduction of Tanner's Clinical Judgment Model early in the nursing curriculum (Jessee, 2018). This allows them to familiarize themselves with the process of thinking like a nurse (Tanner, 2006).

Utilizing unfolding case studies as an interactive learning approach within the classroom setting has been identified as an evidence-based education intervention that, when utilized in conjunction with Tanner's Clinical Judgment Model, can effectively equip students for both practice and licensure (Bussard, 2017; Klenke-Borgman et al., 2020; Rischer 2021). The construction of an effective case study should include authentic and equivocal situations that entail illnesses and conditions frequently encountered in the healthcare setting (Hensel & Billings, 2019; Rischer, 2015). It is incumbent upon students to notice patterns, establish priorities, implement interventions, and formulate clinical judgments as they work through the unfolding case study (Bristol, 2019; Klenke-Borgman et al., 2020; Wyatt et al., 2021).

This pedagogical activity combined low-fidelity simulation in a four-part unfolding case study series based on Tanner's iterative framework of noticing, interpreting, responding, and reflecting (Tanner, 2006). Students in a fundamentals of nursing course took an active role in their learning, gaining new perspectives, and

insights into patient care. The project leader provided a safe and collaborative learning environment for students to develop critical thinking and clinical reasoning abilities.

## **Needs Assessment**

### **Target Population**

A 2-year associate degree in a nursing program affiliated with a major healthcare system throughout the southeastern United States has boasted an impressive pass rate on the NCLEX-RN among its graduates. Despite this success, a survey of managers who hired graduates from this college reflected dissatisfaction with the critical thinking ability of these nurses. This outcome is consistent with the findings of Muntean (2019), who observed that only 20% of employers reported being satisfied with the decision-making capacity of inexperienced nurses.

This quality improvement project examined the critical thinking skills of first-semester students enrolled in this nursing program. A four-part unfolding case study aligned with course content was implemented as in-person active learning over four weekly class sessions. In addition to these facilitated 2-hour class sessions, this Fall II cohort comprised of 30 students was offered the same recorded lecture material that was available to students in the Fall I cohort.

### **Sponsors and Stakeholders**

The goal of this quality improvement project was to enhance critical thinking skills among first-semester nursing students. This project's primary sponsors were the college and its affiliated healthcare system, whose faculty and students will be affected. The instructors of the fundamentals-level courses supported this initiative. In addition, the college leadership, including the Department Chair, Provost, President, and faculty

across the program were stakeholders because of their vested interest in the success of their future graduates. The Institutional Review Board (IRB) of the parent healthcare system approved this project.

The team of faculty giving direct support to this project was comprised of the NUR 120 (Fundamentals of Nursing II) course instructors and the Department Chair of the nursing program. Faculty teaching intermediate and advanced coursework in this program are also stakeholders since they would receive students with refined clinical thinking skills. Apart from the students, faculty, and the college, the affiliated healthcare system is a significant stakeholder since most nursing program graduates accept jobs within the system. Ultimately, patients receiving care through this hospital system will benefit from newly graduated nurses improved critical thinking skills. Therefore, stakeholders also encompass members of the surrounding community.

### **Organizational Assessment**

This project reinforces the values and beliefs articulated in the mission statements of both the college and its affiliated healthcare system. The mission of the college highlights the importance of preparing healthcare professionals to adapt to the constantly evolving healthcare landscape, with a primary goal of transforming lives. In line with its vision of being the top choice for healthcare education, the college places a strong emphasis on its core values of caring, commitment, integrity, and teamwork. Similarly, the healthcare system is committed to promoting health, hope, and healing for the community, with a focus on remaining the leading institution in the field. The interconnected nature of these two entities ensures that their respective visions and

missions align seamlessly, providing a comprehensive and cohesive approach to healthcare education and service.

The fundamentals of nursing course, formerly delivered over an entire semester, has undergone a transformation and is now divided into two, 7-week segments with a week-long break in between. The nursing program begins with NUR 110, where students receive didactic and laboratory instruction for 7 weeks. Once they successfully complete this course, they move to NUR 120, where they learn additional didactic content and are introduced to the clinical environment. Following this class, students progress to intermediate and advanced nursing courses before completing their preceptorship before graduation.

### **SWOT Analysis**

Before implementing change, it is crucial to conduct a SWOT analysis that evaluates the organization's strengths, weaknesses, opportunities, and threats. This analysis should encompass both internal and external factors that may positively or negatively affect the organization (Zaccagnini & Pechacek, 2021). The project leader reviewed these organizational characteristics, shown in Figure 1, to identify areas of focus for the project and gain a deeper understanding to formulate a plan.



**Figure 1***SWOT Analysis (Strengths, Weaknesses, Opportunities, and Threats)*

<p style="text-align: center;"><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• Extensive financial and operational support from a central healthcare system (parent organization provides funding for healthcare programs at this college and rich clinical experiences)</li> <li>• Accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) and Accreditation Commission for Education in Nursing (ACEN).</li> <li>• Most graduates from the ADN program begin their careers within the affiliated system</li> <li>• Option of generous loan forgiveness for service program</li> <li>• Faculty are all prepared at the master's or doctoral levels</li> <li>• Health sciences programs include Medical Laboratory Science and Radiological Technology</li> <li>• This college offers an online RN-BSN program</li> <li>• State-of-the-art simulation lab</li> <li>• The college offers its own certified nurse aide (CNA) training</li> <li>• Participation in a CNA program is required of nursing students</li> <li>• Guaranteed admission to the nursing program with a 3.25 GPA in prerequisite coursework</li> </ul>	<p style="text-align: center;"><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• The prelicensure nursing sequence does not directly lead to the baccalaureate degree, and many students considering nursing school wish for this option</li> <li>• This college is not well-known within a state boasting numerous reputable college institutions</li> <li>• Tuition and fees could deter some students, as the cost is higher than a public institution or community college</li> <li>• Additionally, there is another two-year ADN program under the umbrella of this same healthcare system</li> <li>• The program is specifically geared toward students who can manage full-time coursework and clinical requirements. Classes and clinical experiences are held during the weekdays. Some qualified prospective students may need to work Monday through Friday, precluding them from attending this program.</li> <li>• The college has worked toward improving diversity among its faculty and students. Still, currently, the demographics do not reflect those of the community, nor the population served by the affiliated healthcare system.</li> </ul>
<p style="text-align: center;"><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Potential expansion of the program to include a night/weekend part-time option.</li> <li>• School to relocate closer to the main hospital in next 2 years</li> <li>• Four-year seamless 1+2+1 BSN</li> <li>• Student success coordinator position open</li> <li>• The upcoming merger of its parent organization with another central healthcare system including a medical school</li> <li>• Interprofessional education will be a focus with the addition of medical school to the system</li> <li>• The college is located within a major city experiencing exponential growth</li> <li>• Adoption of a clinical judgment model to help prepare students and faculty for NextGen NCLEX success</li> <li>• College seeks to increase the diversity of the faculty, staff, and student body</li> <li>• Pending legislation to assist nursing students with tuition</li> </ul>	<p style="text-align: center;"><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Open faculty positions, nationwide faculty shortage</li> <li>• Challenge competing with inpatient nursing compensation</li> <li>• Recent turnover in faculty and staff; other full-time faculty to retire within next 5-10 years</li> <li>• The recommendation for the baccalaureate degree to be the entry-level standard for nursing</li> <li>• Pending merger with the healthcare system hosting the school of medicine; that institution could decide to eliminate the program and replace it with a different model of instruction</li> <li>• Potential faculty resistance toward continuation of active learning throughout the program</li> <li>• Students may be resistant toward active learning, threatening attendance and participation</li> <li>• Enrollment in this ADN program has shown a downward trend over the past 2 years</li> </ul>

### ***Strengths***

The school of nursing is supported by the parent healthcare organization, where most of the graduates begin their careers. The college holds accreditation from the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) to award both associate and baccalaureate degrees, and the associate degree program is accredited by the Accreditation Commission for Education in Nursing (ACEN). All faculty are prepared at the master or doctoral levels and are dedicated to maintaining excellence in nursing education. Given the evidence backing its effectiveness in developing clinical reasoning and clinical judgment, faculty are strongly encouraged and motivated to include active learning in the curriculum.

The college also offers other health sciences degree and certificate programs, including Medical Laboratory Science and Radiological Technology. A Bachelor of Science in Nursing completion program (RN-BSN) is offered online for practicing nurses who wish to further their education. A state-of-the-art simulation lab welcomes students in the nursing and health sciences programs. The college offers its own certified nurse aide (CNA) training which provides a solid foundation for students pursuing a career in nursing. Completion of a CNA program is a requirement, as it offers the necessary hands-on patient care experience. Students who complete specific prerequisite courses at the college with a 3.25 grade point average or higher are guaranteed acceptance into the nursing program.

### ***Weaknesses***

The nursing program leading to licensure does not provide a direct path to obtaining a baccalaureate degree, which may be a drawback for students who desire this

option. This disadvantage is compounded by the competition among numerous prestigious schools of nursing within the state. Furthermore, the program's relatively high tuition and fees may dissuade potential students, especially those who could attend a less expensive community college. This nursing program lacks a part-time option for students who must work full-time. Additionally, classes and clinical experiences are conducted on weekdays, potentially excluding qualified individuals who work during this time. The college has made efforts to enhance diversity among both faculty and students, though the current demographics do not reflect those of the surrounding community or the healthcare system's patient population.

### *Opportunities*

The merger of the parent organization with another large healthcare system and its affiliated school of medicine may offer opportunities for this college. The nursing program is given priority access to limited clinical times and sites within the system, ensuring that students receive a broad and challenging experience. The college is located in a rapidly growing city and provides significant tuition assistance of up to \$10,000 to students who commit to working as a nurse within the system after licensure. Students who excel in the four key pre-nursing classes with a minimum grade point average of 3.25 are guaranteed acceptance into the nursing program. Some students are attracted to the option of completing the prelicensure program within 2 years and then working within the system while simultaneously completing the RN-BSN program, which may be finished in as few as 18 months. There could be potential to expand the program to include a part-time option on nights and weekends. Finally, with the upcoming merger, there are opportunities to enhance the diversity of the faculty, staff, and student body.

### ***Threats***

The stability of the nursing program could be jeopardized by the Carnegie Foundation's recommendation that nursing education should require a baccalaureate degree as the entry-level standard (Benner et al., 2010). However, the current shortage of nurses coupled with the high demand from the healthcare system for registered nurses makes this outcome unlikely. Another potential risk is the planned merger with the healthcare system that hosts the school of medicine, which could potentially opt to eliminate the program or introduce an alternate instructional model. Furthermore, the shortage of nursing faculty (American Association of Colleges of Nursing, 2021), coupled with several key faculty members from this program retiring or pursuing other opportunities, could pose a further threat.

The project itself faces specific threats, including student attendance at active learning events and their attitudes toward participation, which may endanger its success. Although the current course faculty supports the project, other faculty members may resist change and choose not to include active learning in intermediate and advanced nursing courses. Confounding factors also must be considered within the project, such as the introduction of a new textbook for this cohort. Unlike their peers who completed the course in Fall I after a long summer break, this cohort will begin just one week after the conclusion of NUR 110.

### **Available Resources**

The leader of this project received support from Keith Rischer, PhD., RN, whose extensive research and publications have focused on the use of unfolding case studies that align with Tanner's Model of Clinical Judgment. Dr. Rischer has created more than 100

unfolding case studies which are accessible to nurse educators to support their teaching. With the consent of Dr. Rischer, the project leader utilized his unfolding case studies template to develop a four-part comprehensive and unique unfolding case study tailored to the course material.

Several resources were required for the successful completion of this project. In order to deliver the content, it was necessary to have classroom space equipped with internet and audio-visual equipment. Additionally, a printer and paper were necessary to produce copies of the student versions of the unfolding case study. The assistance of the college audio-visual staff was needed to help set up the presentations. To create engaging presentation slides for the active learning activities, the web-based program Canva was utilized.

### **Desired Outcomes**

New graduate nurses must be able to identify changes in patient conditions and take necessary action to ensure safe and high-quality care. By introducing evidence-based interventions, students' critical thinking abilities can be enhanced, leading to the development of sound clinical reasoning and clinical judgment skills. The objective of this project was to use an evidence-based approach to instruction that has been shown to cultivate critical thinking abilities and prioritize safe nursing practice.

By improving clinical decision-making, student nurses will be better equipped to detect early warning signs of patient deterioration and take appropriate action. This project sought to bridge the academic-practice gap through an active learning methodology, facilitating the development of critical thinking skills among students enrolled in NUR 120. The goal of this project was to improve the critical thinking ability

of the Fall II cohort of students completing NUR 120, measured by the Clinical Application (critical thinking) component of the Thinking Skills subsection of the ATI RN Content Mastery Series® 2019 Proctored Fundamentals Test.

### **Team Selection**

The project was initiated after discussing the idea with the Department Chair of the nursing program and gaining her support. The college Provost was also involved in the preliminary planning stage. The NUR 120 faculty exhibited equal support for the project by consenting to pilot this alternative teaching method, shifting away from the traditional lecture-based approach. Five members of the college nursing faculty agreed to serve on the project committee, three of whom are doctorally prepared nurse educators. The committee members were selected based on their expertise in course content and their dedication to first-semester nursing students, with the intent that they would evaluate the proposed intervention and provide constructive feedback.

### **Cost/Benefit Analysis**

There were minimal expenses associated with the development and implementation of this project. The project leader invested a monthly sum of \$50 in Dr. Rischer's nursing community membership that provides access to professionally written unfolding case studies and the unique template based on Tanner's Clinical Judgment Model. This membership also includes webinars relevant to developing students' critical thinking and clinical decision-making skills. The assessment tool, the ATI RN Content Mastery Series® 2019 Proctored Fundamentals Test, has already been incorporated into the students' tuition and cost of attendance. There was a minimum printing cost associated with the project (under \$100). Furthermore, the project leader had access to

Canva for Education, a robust web-based graphic design program, free of charge, to design interactive and engaging instructional materials for the project presentations.

The leader of this project invested in materials throughout the duration of the doctoral program that centered on the design of unfolding case studies. This included acquiring books and participating in virtual workshops and webinars. The project leader authored an extensive, four-part original unfolding case study inspired by Dr. Rischer's clinical reasoning case study template based on Tanner's Clinical Judgment Model. Instead of conducting in-person lectures on the four major topics, course faculty posted the online lecture material that was available to previous NUR 120 cohorts. The college did not incur additional work-hour expenses, as the NUR 120 faculty had already completed these presentations and posted the material in the learning management system. All students and faculty had been granted free access to Lippincott Advisor, available on personal electronic devices to eliminate the potential cost of hard copy resources such as drug guides and laboratory handouts.

### **Scope of the Project**

This project was implemented in NUR 120 during Fall II of 2022. The cohort was comprised of 30 students in their first semester of nursing school. During this 7-week course, the project leader conducted four separate active learning sessions, each lasting 2 hours. Major course concepts from NUR 120 provided the foundation for the case study, which evolved over 4 weeks. Upon completion of the course, students took the required ATI RN Content Mastery Series® 2019 Proctored Fundamentals Test.

With permission from the college and Assessment Technologies Institute (ATI), the project leader reviewed scores from the NUR 120 Fall II 2022 cohort on the Clinical

Application Component of the Thinking Skills subsection of this exam. These scores were compared to those from the previous cohort (Fall I 2022). The intervention group showed a significant increase in the mean clinical application scores from their peers in the prior cohort. This may indicate that unfolding case studies were effective in promoting critical thinking skills among this group of students.

### **Objective and Mission Statement**

#### **Objective**

Active learning is crucial for achieving a lasting and meaningful comprehension of course material. Alternating between traditional classroom lectures and hands-on clinical instruction is an inefficient method for teaching students how to apply their knowledge as a nurse (Benner et al., 2010). The objective of this project was to implement an evidence-based active learning approach for teaching fundamentals of nursing concepts. Rather than relying on traditional lectures, students engaged in a dynamic, four-part unfolding case study based on the framework of Tanner's Clinical Judgment Model. The cumulative ATI RN Content Mastery Series® 2019 Proctored Fundamentals Test is a requirement for the successful completion of NUR 120. All students in both cohorts took this test at the end of the course. Scores from the Clinical Application Component of the Thinking Skills subsection were compared to those of the previous cohort.

- The project leader composed a complex, four-part unfolding case study relevant to course content and written at a level appropriate for fundamentals students. This intervention was completed prior to the submission of the project to the Institutional Review Board in June 2022.



- Instead of traditional lectures, students experienced active learning through collaborative unfolding case studies over 4 weeks.
- Each exercise reflected Tanner's Clinical Judgment Model: noticing, interpreting, responding, and reflecting (Tanner, 2006). The project leader outlined this clinical judgment model and explained how it aligns with the nursing process.
- Prior to class, students were encouraged to complete the assigned reading and listen to the recorded lectures focusing on the topic to be explored in class.
- The project leader provided a 15–20-minute review of concepts at the beginning of each class period. Students sat in groups of four and worked together as the project leader led the activity.
- A change in patient condition was introduced at the midway point of each class period. The students continued to work in small groups to complete the case study.
- Students discussed their findings and engaged with their peers throughout the remainder of the class.
- The Fall II 2022 cohort that experienced the active learning intervention demonstrated a significant improvement in scores on the Clinical Application component of the Thinking Skills subsection compared to the previous cohort (Fall I 2022).

### **Mission Statement**

The mission of this quality-improvement project was to examine how exposing first-semester nursing students to unfolding case studies affected their critical thinking abilities. The objective of this initiative was to familiarize these students with active

learning designed according to Tanner's Clinical Judgment Model. Developing students' critical thinking and clinical reasoning skills will have a positive impact on patient safety and ultimately improve patient outcomes.

### **Theoretical Underpinnings**

To ensure the successful implementation of a scholarly doctoral project involving change, it is advisable to employ a theoretical framework. Selecting an appropriate framework helps in conceptualizing the intervention (Zaccagnini & Pechacek, 2021). Learning theories may be divided into two main categories: behaviorist and constructivist. The behaviorist approach suggests that learning occurs through passive observation, while constructivists emphasize the importance of assimilation and accommodation in the learning process (Baumgartner et al., 2003). Adopting a constructivist approach involves introducing the topic, developing concepts, providing guided practice with reflection, and assigning independent tasks to the learner. Students learn by engaging in hands-on experiences, anticipating and inferring outcomes, and reflecting upon their results (Pelech, 2010).

The traditional classroom model of teaching involves lectures centered around the teacher and repetitive tasks that students complete independently. In contrast, constructivist teaching emphasizes the exploration of ideas and potential solutions, and then having students act upon what they have discovered. This approach, as noted by van Graan & Williams (2017), helps nursing students “develop interpretive, analytical, inferential, and explanatory skills to arrive at clinical judgment” (p. 280). Case-based learning, which is rooted in constructivism, guides students in exercising creativity, self-

initiation, and collaboration in the classroom (Kantar & Massouh, 2015; Kim & Kim, 2015; van Graan & Williams, 2017).

Malcolm Knowles is credited with developing the theory of andragogy, which is an educational approach that emphasizes self-directed, active learning based on the principles of constructivism (Knowles et al., 2015). Adult learners appreciate material that is immediately relevant and applicable. Unlike pedagogy, which is geared toward children who require guidance from instructors, andragogy is tailored toward adult learners who are capable of directing their own learning. This approach to teaching prioritizes the learning process over the content that is being taught (Pelech, 2010).

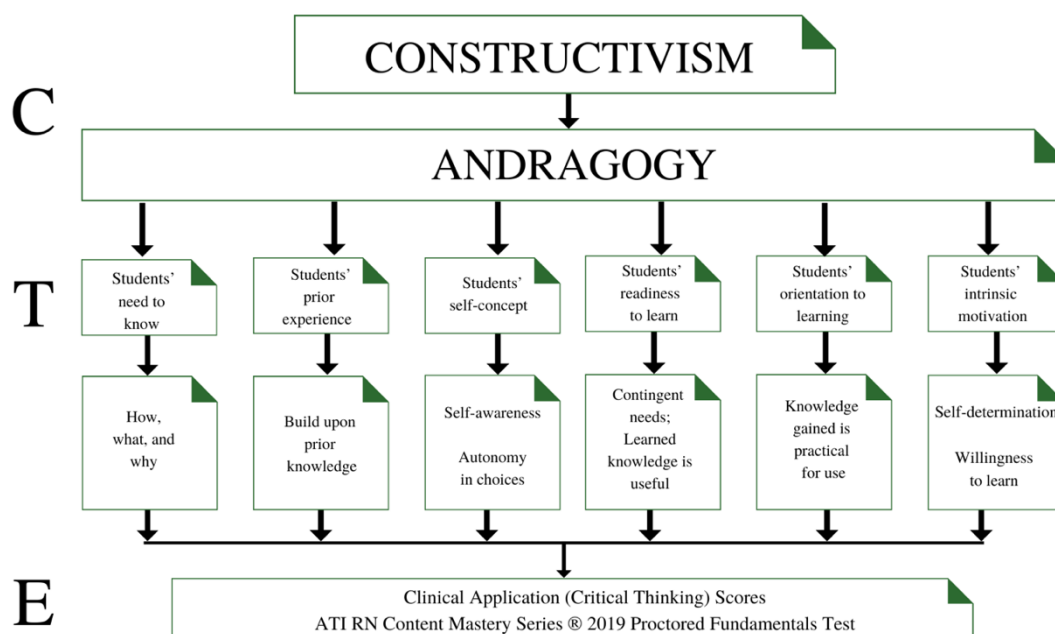
Andragogical teaching is built on several key principles. First, instructors acknowledge that adult learners need to understand the reason behind what they are learning. Second, adult learners prefer to learn through problem-solving and rely on their own experiences, including mistakes, to acquire knowledge (Pelech, 2010). The personal experiences of the student have a direct impact on their ability to learn. Instead of simply uncovering information, students actually generate knowledge by connecting new ideas with their prior learning (Pelech, 2010). By engaging in problem-solving using alternate thought processes, learners can acquire practical knowledge that can be applied within the clinical environment (Kantar & Sailing, 2018).

This doctoral project was developed, implemented, and assessed using a constructivist approach, specifically andragogy. Theoretical constructs such as students' need to know, collaborative experience, self-concept, readiness to learn, problem orientation, and intrinsic motivation were considered (Knowles et al., 2010). At the start of the course, students received a comprehensive explanation of the rationale and

methodology behind this evidence-based instructional method, which deviates from the traditional learning model. They also had the opportunity to ask questions. The course involved a realistic four-part unfolding case study that chronicled a patient's hospital experience, and students used their existing knowledge along with new concepts to appreciate the patient's journey. The instructor's role was that of a facilitator rather than a lecturer, allowing students to recognize their autonomy in making decisions. The constructivist approach, illustrated in Figure 2, was utilized to design, implement, and evaluate this project.

**Figure 2**

*Conceptual-Theoretical-Empirical Diagram*



### Work Planning

Sound project management skills are helpful to guide the planning process of an academic project. During this stage, a timeline, anticipated milestones, a work breakdown structure, and a budget were developed to help ensure positive project outcomes

(Zaccagnini & Pechacek, 2021). The work breakdown structure (WBS) was helpful to outline major tasks deconstructed into smaller steps while promoting efficiency and timely completion of the project. Tasks were divided into smaller subprojects, each assessed based on expected completion dates. The advantages of utilizing this system were the establishment of a foreseeable timeline, a coherent work sequence, and an effective communication tool for all stakeholders involved (Zaccagnini & Pechacek, 2021).

### **Project Timeline**

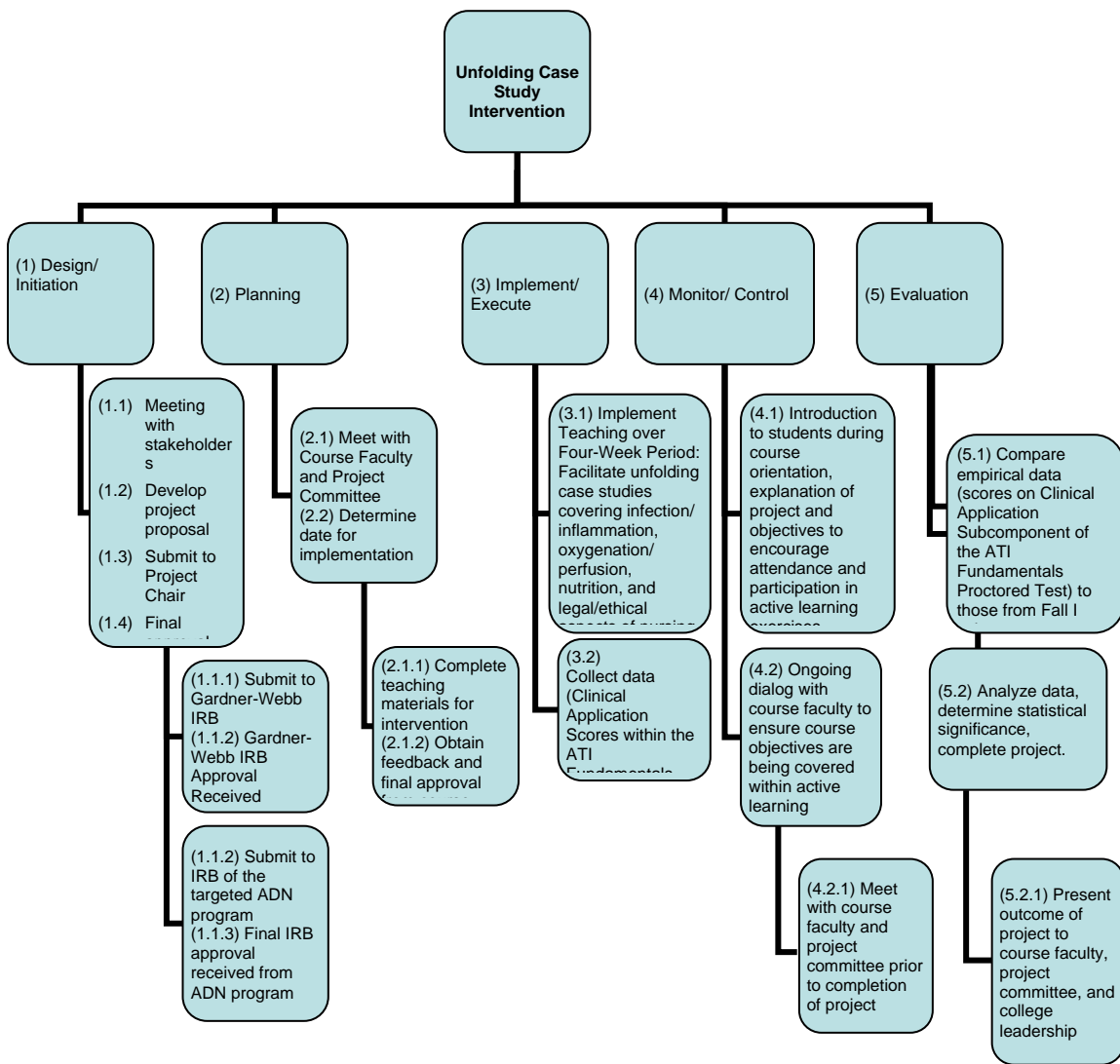
Planning for this project began in the summer of 2021. This project concluded in February 2023, after the implementation of the intervention and evaluation of outcomes. Project activities are outlined within the WBS in Figure 3, and milestones are noted in Table 1. The budget for this project is depicted in Table 2.

- **April 2022 – July 2022:** Dates for project implementation and topics for active learning were discussed between the lead faculty of NUR 120 and the project leader. Final decisions were made, and the Fall II calendar was updated to reflect days with active learning. The project leader received approval from ATI and Dr. Keith Rischer for the use of proprietary materials. Design of the course teaching content (including the four-part unfolding case study) was then initiated.
- **August 2022:** Teaching materials were completed and reviewed by the project committee and NUR 120 course faculty, who provided feedback to help ensure content validity. Suggested changes were discussed and implemented within the final teaching materials. The final project proposal along with all teaching materials was submitted to Gardner-Webb Institutional Review Board (IRB).

- **September 2022:** Having received IRB approval through Gardner-Webb, the project leader applied for IRB approval through the project site. This application included IRB approval from Gardner-Webb University along with the teaching materials developed for the intervention. Consideration was given to feedback from the project site IRB, and the materials and plan were edited accordingly. Final project site IRB approval was granted.
- **October 2022 – December 2022:** The project leader introduced herself to the target group of students during the course orientation. An explanation of the project, including the potential benefits of this learning style, was explained. Students were afforded the opportunity to ask questions during this time. Course faculty posted recorded lectures on the major concepts at the beginning of the Fall II session. Students met for in-person learning activities one day during each of these weeks to participate in the related active learning: infection/inflammation during the week of November 14, oxygenation/perfusion during the week of November 21, nutrition during the week of November 28, and legal/ethical aspects of nursing during the week of December 5.
- **December 2022 – February 2023:** Students in the Fall II 2022 cohort completed the ATI RN Content Mastery Series® 2019 Proctored Fundamentals Test. Statistical data were gathered and analyzed, and results were shared with course faculty and program leadership.

**Figure 3**

*Work Breakdown Structure*



**Table 1***Milestones*

Date	Milestone
6/22/22	Final decision on dates and topics for active learning. Course calendar updated.
8/26/22	Receive final approval on teaching materials from course faculty
9/12/22	Submit IRB application to Gardner-Webb
9/21/22	Receive IRB approval from Gardner-Webb
9/24/22	Submit the IRB application to the project site
10/10/22	Receive IRB approval from the project site
10/31/22	Fall II session of NUR 120 begins
11/18/22	UCS: Infection and Inflammation
11/22/22	UCS: Oxygenation and Perfusion
12/2/22	UCS: Nutrition
12/8/22	UCS: Legal and Ethical
12/15/22	ATI RN Content Mastery Series® 2019 Proctored Fundamentals Test
1/15/23	Data collection and interpretation
2/28/23	Complete project



**Table 2***Budget*

Direct Costs	
Printer/Ink/Paper for teaching materials	\$75
Weekly transportation to the project site	\$50
Resources on critical thinking/clinical judgment (textbooks) purchased for this project	\$100
TOTAL	\$225

**Project Evaluation**

The Assessment Technologies Institute (ATI) RN Content Mastery Series® 2019 Proctored Fundamentals Test consisted of 60 questions written in alignment with the NCLEX-RN test blueprint, reflecting the client needs categories of Safe and Effective Care Environment and Physiological Integrity (Assessment Technologies Institute [ATI], 2019). This comprehensive exam is designed to assess student understanding of basic nursing concepts, including foundations for practice, fundamental nursing care, support of physiological and psychosocial needs, and health assessment (ATI, 2019). This proctored computerized exam was administered to all students in the NUR 120 Fall II 2022 cohort on December 14, 2022.

According to the ATI Technical Manual (2019), item writers evaluated each test question and categorized them by the cognitive complexity described in Bloom's Taxonomy (Bloom et al., 1956; Anderson & Krathwohl, 2001). Questions written to the

“remember” or “understand” level of Bloom’s Taxonomy were designated as Foundational Thinking items. Those meeting the criteria for “apply”, “analyze”, “evaluate”, or “create” met the higher cognitive levels and were classified as Clinical Application questions, which test the student’s ability to apply the critical thinking skills of interpretation, analysis, evaluation, inference, and explanation to a clinical problem in order to formulate a correct clinical judgment (ATI, 2019).

The overarching goal of this quality improvement project was to enhance the critical thinking skills of students enrolled in the fundamentals of nursing course. In order to quantify the impact of this intervention, the scores of the Clinical Application (critical thinking) subsection of the Thinking Skills category were evaluated. This category was selected because it measures the higher cognitive levels of “apply”, “analyze”, “evaluate”, and “create” (ATI, 2019). Specifically, the scores from the Fall II cohort were compared to those of the Fall I 2022 cohort.

To ensure compliance with ethical and regulatory requirements, the project leader obtained written permission from ATI and gained Institutional Review Board (IRB) approval from Gardner-Webb University and the project site prior to accessing deidentified data. A comparison of the mean scores of the two cohorts was conducted to determine if a statistically significant difference existed. This data evaluation constituted the final implementation phase of the project. All data were submitted to Gardner-Webb University after statistical analysis.

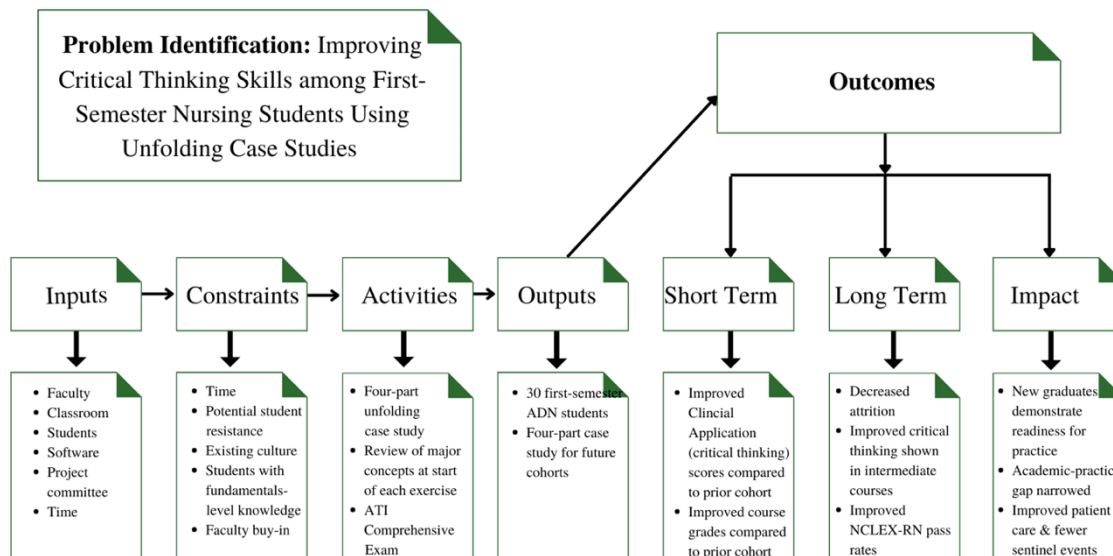
Further qualitative and quantitative analyses have been planned for December 2023 to evaluate the long-term effectiveness of the project. The project leader will consult with intermediate-level clinical instructors who will have taught students from

this intervention group to determine if there has been a noticeable improvement in critical thinking ability. Prior to entering the advanced nursing course, students in this nursing program take the Adult Medical Surgical test, which gauges the ability to apply nursing knowledge gained in the adult health coursework. It may be possible to compare the Clinical Application scores from the Fall II 2023 fundamentals of nursing cohort to those of the Fall I 2022 group of students.

Zaccagnini and Pechacek (2021) suggest that a logic model can be useful in illustrating the relationships among inputs, constraints, activities, outputs, and outcomes of a quality improvement initiative. To optimize patient care, bridge the gap between academia and practice, and prevent sentinel events, faculty members must ensure that pre-licensure nursing students develop the ability to think critically. Figure 4 details this process, outlining both short- and long-term outcomes, as well as the enduring effects of this intervention. Active learning through unfolding case studies should be introduced early in the prelicensure nursing curriculum to positively impact critical thinking. This will equip new graduates to provide safe, comprehensive, and high-quality patient care in a rapidly evolving healthcare environment.

**Figure 4**

## Logic Model

**Project Implementation**

Approval from the Institutional Review Boards was required from both the project leader's university and the project site. This took longer than expected and threatened the timely implementation of the project. However, approval was granted in time to initiate the project during the Fall II 2022 rotation.

Learners navigated clinical problems reflecting student learning outcomes and course objectives using the four steps of Tanner's Clinical Judgment Model. By participating in this four-part unfolding case study, students gained clinical reasoning skills that could be immediately applied to practice. Moreover, this challenge stimulated the students' intrinsic motivation and willingness to learn. The statistically significant increase in Clinical Application scores on the ATI RN Content Mastery Series® 2019 Proctored Fundamentals Test serves as empirical evidence of improved critical thinking

among the Fall II cohort compared to their peers who had learned via traditional teaching methods.

The project leader carefully designed each of the four parts of the unfolding case study to encompass major course concepts introduced in those respective weeks. The project was initiated during the third week of this 7-week course. Students were introduced to unfolding case studies, Tanner's Clinical Judgment Model, adult learning theory, and the importance of active learning for long-term retention. During this first session, the patient began her journey through a four-day hospitalization. Students encountered at least one change in patient status each week. The second part of the case study unfolded during the fourth week of the course and represented day two of the hospital stay. The patient's third and fourth days of hospitalization were explored during weeks 5 and 6 of the course.

This active learning approach was met with positive feedback from both students and NUR 120 faculty. Instead of the traditional seating arrangement, students formed groups of four facing one another, facilitating collaboration and enthusiastic sharing of ideas. As the patient encountered changes in status, students experienced the iterative steps of Tanner's Clinical Judgment Model (Tanner, 2006). Despite the lack of attendance requirement, a few students were absent during the sessions.

Lead faculty were present in all four sessions to evaluate students' participation and ensure adequate coverage of the course material. All students participated in the ATI RN Content Mastery Series® 2019 Proctored Fundamentals Test during the final week of the course. Lead faculty and the Program Chair ensured that test scores were deidentified

before being shared with the project leader. Data were evaluated, marking the completion of the project.

### **Interpretation of Data**

To ensure high-quality and safe patient care, nurses must be prepared to exercise critical thinking with clinical reasoning to formulate sound clinical judgment at the bedside (Alfaro-LeFevre, 2019). Both qualitative and quantitative data were reviewed at the conclusion of this quality improvement project. Process improvements were considered as part of a thorough evaluation of the project's success. This project yielded positive subjective feedback from students and faculty, and most importantly, resulted in a statistically significant improvement in the Clinical Application scores on the ATI RN Content Mastery Series® 2019 Proctored Fundamentals Test. Because the Clinical Application subsection is a measurement of the student's ability to utilize application and analysis skills, it reflects the critical thinking capability of the students (ATI, 2019).

### **Qualitative Analysis**

The project leader solicited informal feedback from NUR 120 faculty and students in the Fall II 2022 NUR 120 cohort. Each week, students expressed excitement about the upcoming classes and inquired whether the case studies would be used in subsequent intermediate courses. One student stated, "I like how you engaged us with the material...seeing the patient progress through her hospitalization helped me understand the material." Another commented, "Working together and building upon the prior week's content helped things click". At the conclusion of the project, several students expressed gratitude for making the class time "fun and collaborative" and "dynamic".

The NUR 120 lead faculty members attended each of the four sessions, and at the conclusion of the project, verbalized enthusiasm about the outcomes. They noted that active learning was an engaging and powerful tool to promote collaboration in the classroom. Both voiced appreciation for the creativity that went into the unfolding case studies and how the four-part series included all of the major course content. Faculty were encouraged by the students' positive attitudes toward active learning, noting that few students were absent from the active learning sessions, despite attendance not being required. The success of the intervention was acknowledged by the Program Chair, who has extended an invitation to the project leader to instruct the didactic component of the course utilizing the case study model while a lead faculty member takes a sabbatical in Fall 2023.

### **Quantitative Analysis**

Statistical analysis was utilized to assess the effectiveness of the unfolding case studies on the critical thinking skills of first-semester nursing students. An independent sample t-test was employed, with the independent variable being the unfolding case studies, divided into two categories: students who learned through traditional lecture (control group, Fall I 2022 cohort) and those who learned with the unfolding case studies (treatment group, Fall II 2022 cohort). The dependent variable, mean test scores on the Clinical Application Thinking Skills subsection of the Assessment Technologies Institute (ATI) RN Content Mastery Series® 2019 Proctored Fundamentals Test, was considered as continuous, or interval, data. Table 3 provides the means and standard deviations for each level of the independent variable in relation to the dependent variable. Table 4 presents the analysis results, which show a significant difference between the treatment

and control groups ( $t(51) = 2.44, p = 0.018$ ). Participants in the treatment group had a higher mean ( $M = 68.56, SD = 8.86$ ) compared to those in the control group ( $M = 62.68, SD = 8.95$ ) on the Clinical Application Thinking Skills subsection of the ATI RN Content Mastery Series<sup>®</sup> 2019 Proctored Fundamentals Test.

**Table 3**

*Group Statistics for Fall I and Fall II 2022 Cohorts*

Item	Treatment	<i>N</i>	<i>M</i>	<i>SD</i>
Test Scores	treatment	30	68.56	8.86
	control	25	62.68	8.95

**Table 4**

*Results from Independent Samples Test*

Item	<i>t</i>	<i>df</i>	Sig. (2-tailed)
Mean Test Scores	2.44	51	0.018

\* $p < 0.05$

### **Plans for Project Sustainability and Further Research**

Course faculty are enthusiastic about adopting active learning in response to the changes reflected in the Next Generation NCLEX-RN. The nursing faculty at this college adopted Tanner's Clinical Judgment Model as a guiding framework to be integrated throughout the curriculum. This project leader has suggested incorporating evolving case studies based on Tanner's Model in the intermediate and advanced courses. Ideas for future research include evaluating clinical reasoning along with critical thinking.



The ATI RN Content Mastery Series® 2019 Proctored Tests include Mental Health, Maternal/Newborn, Nursing Care of Children, and Adult Medical Surgical examinations (ATI, 2019). The ATI RN Comprehensive Predictor, administered at the end of the nursing program, evaluates readiness for the NCLEX-RN and guides remediation efforts. According to ATI (2019), all proctored exams gather data on students' ability to apply the nursing process and prioritize effectively (ATI, 2019).

The nursing process, a straightforward clinical reasoning framework, is introduced early in the nursing curriculum (Rischer, 2021). ATI (2019) defines priority setting as the student's capacity to exhibit nursing judgment by prioritizing responses to a clinical problem and establishing the hierarchy of care for multiple patients. Differences in critical thinking and clinical reasoning capability can be measured by comparing groups taught with unfolding case studies to those exposed to traditional lectures. In addition to comparing scores on standardized tests, feedback from clinical instructors in intermediate and advanced courses will be crucial in determining noticeable improvements in critical thinking and clinical judgment. The four-part unfolding case study designed for this quality improvement project will be utilized with the Fall I 2023 NUR 120 cohort. Although this will involve a distinct group of students, it will be intriguing to observe if the same unfolding case study intervention yields similar effects on other students in the same course.

### **Conclusion**

The impact of patient safety on healthcare outcomes cannot be understated. Medical errors by healthcare professionals, including nurses, are the third leading cause of death in the United States (Makary & Daniel, 2016). The crisis in competency among

newly graduated nurses is characterized by an inability to make sound decisions in the clinical setting (Huston et al., 2017; Kavanagh & Sharpnack, 2021; Kavanagh & Szweda, 2017). A radical change in nursing education is necessary to promote the development of sound clinical judgment and address the deficiencies in skills and abilities that lead to failure to rescue (Benner et al., 2010; Clarke & Aiken, 2003).

Clinicians providing direct care to patients are expected to follow evidence-based guidelines, and those educating the next generation of nurses cannot be exempt (Benner et al., 2010; Kavanagh & Sharpnack, 2021; Kavanagh & Szweda, 2017). The academic-practice gap is characterized by traditional methods of teaching that emphasize memorization of content over the development of clinical decision-making skills (Burns & Poster, 2008; Huston et al., 2017; Kavanagh & Sharpnack, 2021; Kavanagh & Szweda, 2017). Faculty must contextualize content to the bedside, emphasize clinical reasoning, and promote the formation of professional identity (Benner et al., 2010). Unfolding case studies based on Tanner's (2006) Clinical Judgment Model is a useful and engaging tool that promotes practice readiness by integrating classroom and clinical learning (Rischer, 2021). Realistic patient scenarios that include a change in status allow students to experience the iterative process of noticing, interpreting, responding, and reflecting in a safe and supportive environment (Rischer, 2021; Tanner, 2006).

## References

- Alfaro-LeFevre, R. (2019). *Critical thinking, clinical reasoning, and clinical judgment: A practical approach* (7th ed.). Elsevier.
- Aluisio, A. R., Daniel, P., Grock, A., Freedman, J., Singh, A., Papanagnou, D., & Arquilla, B. (2016). Case-based learning outperformed simulation exercises in disaster preparedness education among nursing trainees in India: A randomized controlled trial. *Prehospital and Disaster Medicine, 31*(5), 516–523.  
<https://doi.org/10.1017/s1049023x16000789>
- American Association of Colleges of Nursing. (2021). *The essentials: Core competencies for professional nursing education* [PDF].  
<https://www.aacnnursing.org/Portals/42/AcademicNursing/pdf/Essentials-2021.pdf>
- American Nurses Association (ANA). (2021). *Nursing: Scope and standards of practice* (4th ed.).
- Anderson, L., Krathwohl, D., Airasian, P., Cruikshank, K., Mayer, R., Pintrich, P., Raths, J., & Wittrock, M. (2001). *Taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives, complete edition*. Pearson.
- Assessment Technologies Institute, Inc. (ATI). (2019). *Technical manual for the RN Content Mastery Series (CMS)*<sup>®</sup>. [https://atitesting.com/docs/default-source/assessments/rn-assessments/rn\\_cp\\_2019\\_tech\\_temp.pdf?sfvrsn=b8f87197\\_2](https://atitesting.com/docs/default-source/assessments/rn-assessments/rn_cp_2019_tech_temp.pdf?sfvrsn=b8f87197_2)

- Baumgartner, L. M., Lee, M. Y., Birden, S., & Flowers, D. (2003). *Adult learning theory: A primer*. (Information Series ED482337). ERIC.  
<https://files.eric.ed.gov/fulltext/ED482337.pdf>
- Benner, P., Sutphen, M., Leonard, V., & Day, L. (2010). *Educating nurses: A call for radical transformation*. Jossey-Bass.
- Bloom, B. S. (1956). *Taxonomy of educational objectives, handbook 1: Cognitive domain* (2nd ed.). Addison-Wesley Longman Ltd.
- Bloom, B. S., Engelhart, M. D., Furst, E. J., & Krathwohl, D. R. (1956). *Taxonomy of educational objectives: The classification of educational goals*. David McKay.
- Bowman, K. (2017). Use of online unfolding case studies to foster critical thinking. *Journal of Nursing Education*, 56(11), 701–702.  
<https://doi.org/10.3928/01484834-20171020-13>
- Bristol, T. J. (2019). Next gen learning for the new National Council Licensure Examination for registered nurses. *Teaching and Learning in Nursing*, 14(4), 309–311. <https://doi.org/10.1016/j.teln.2019.06.009>
- Brooks, I., & Morphet, J. (2021). The defining characteristics of newly graduated nurses – A Delphi study. *Nurse Education in Practice*, 51, 102985.  
<https://doi.org/10.1016/j.nepr.2021.102985>
- Bucknall, T. K. (2000). Critical care nurses' decision-making activities in the natural clinical setting. *Journal of Clinical Nursing* 9(1), 25–35.  
<https://doi:10.1046/j.1365-2702.2000.00333.x>

- Burns, P., & Poster, E. C. (2008). Competency development in new registered nurse graduates: Closing the gap between education and practice. *The Journal of Continuing Education in Nursing, 39*(2), 67–73.  
<https://doi.org/10.3928/00220124-20080201-03>
- Bussard, M. E. (2017). Postdebriefing activities following simulation. *Teaching and Learning in Nursing, 12*(3), 220–222. <https://doi.org/10.1016/j.teln.2017.03.010>
- Cantrell, M., & Farer, D. (2019). Millennial nursing students' experiences in a traditional classroom setting. *Journal of Nursing Education, 58*(1), 27–32.  
<https://doi.org/10.3928/01484834-20190103-05>
- Caputi, L. J., & Kavanagh, J. M. (2018). Want your graduates to succeed? Teach them to think! *Nursing Education Perspectives, 39*(1), 2–3.  
<https://doi.org/10.1097/01.nep.0000000000000271>
- Carr, K. (2015). Using the unfolding case study in midwifery education. *Journal of Midwifery & Women's Health, 60*(3), 283–290.  
<https://doi.org/10.1111/jmwh.12293>
- Carter, J. T., & Welch, S. (2016). The effectiveness of unfolding case studies on ADN nursing students' level of knowledge and critical thinking skills. *Teaching and Learning in Nursing, 11*(4), 143–146. <https://doi.org/10.1016/j.teln.2016.05.004>
- Centers for Medicare and Medicaid Services. (2021, December 1). *Patient safety standards*. <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/QualityInitiativesGenInfo/ACA-MQI/Patient-Safety/MQI-Patient-Safety>

- Chang, M., Chang, Y.-J., Kuo, S.-H., Yang, Y.-H., & Chou, F.-H. (2011). Relationships between critical thinking ability and nursing competence in clinical nurses. *Journal of Clinical Nursing*, 20(21-22), 3224–3232.  
<https://doi.org/10.1111/j.1365-2702.2010.03593.x>
- Chen, R., Grierson, L. E., & Norman, G. R. (2015). Evaluating the impact of high- and low-fidelity instruction in the development of auscultation skills. *Medical Education*, 49(3), 276–285. <https://doi.org/10.1111/medu.12653>
- Clarke, S. P., & Aiken, L. H. (2003). Failure to rescue. *AJN, American Journal of Nursing*, 103(9), 13. <https://doi.org/10.1097/00000446-200309000-00004>
- Costello, M. (2017). The benefits of active learning: Applying Brunner's discovery theory to the classroom: Teaching clinical decision-making to senior nursing students. *Teaching and Learning in Nursing*, 12(3), 212–213.  
<https://doi.org/10.1016/j.teln.2017.02.005>
- del Bueno, D. J. (2005). A crisis in critical thinking. *Nursing Education Perspectives*, 26(5), 278–282.
- Densen, P. (2011). Challenges and opportunities facing medical education. *Transactions of the American Clinical and Climatological Association*, 122, 48–58.  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3116346/>
- Dickison, P., Haerling, K. A., & Lasater, K. (2019). Integrating the National Council of State Boards of Nursing Clinical Judgment Model into nursing educational frameworks. *Journal of Nursing Education*, 58(2), 72–78.  
<https://doi.org/10.3928/01484834-20190122-03>

- Dickison, P., Haerling, K. A., & Lasater, K. (2020). NCSBN Clinical Judgment Measurement Model clarification. *Journal of Nursing Education, 59*(7), 365–365.  
<https://doi.org/10.3928/01484834-20200617-02>
- Eckerson, C. M. (2018). The impact of nurse residency programs in the united states on improving retention and satisfaction of new nurse hires: An evidence-based literature review. *Nurse Education Today, 71*, 84–90.  
<https://doi.org/10.1016/j.nedt.2018.09.003>
- Englund, H. (2020). Using unfolding case studies to develop critical thinking skills in baccalaureate nursing students: A pilot study. *Nurse Education Today, 93*, 104542. <https://doi.org/10.1016/j.nedt.2020.104542>
- Facione, N. C., & Facione, P. A. (1996). Externalizing the critical thinking in knowledge development and clinical judgment. *Nursing Outlook, 44*(3), 129–136.  
[https://doi.org/10.1016/s0029-6554\(06\)80005-9](https://doi.org/10.1016/s0029-6554(06)80005-9)
- Forsgren, S., Christensen, T., & Hedemalm, A. (2014). Evaluation of the case method in nursing education. *Nurse Education in Practice, 14*(2), 164–169.  
<https://doi.org/10.1016/j.nepr.2013.08.003>
- Gholami, M., Changae, F., Karami, K., Shahsavaripour, Z., Veiskaramian, A., & Birjandi, M. (2021). Effects of multiepisode case-based learning (CBL) on problem-solving ability and learning motivation of nursing students in an emergency care course. *Journal of Professional Nursing, 37*(3), 612–619.  
<https://doi.org/10.1016/j.profnurs.2021.02.010>

- Gholami, M., Saki, M., Toulabi, T., Kordestani Moghadam, P., Hossein Pour, A., & Dostizadeh, R. (2017). Iranian nursing students' experiences of case-based learning: A qualitative study. *Journal of Professional Nursing, 33*(3), 241–249. <https://doi.org/10.1016/j.profnurs.2016.08.013>
- Gonzalez, L., Nielsen, A., & Lasater, K. (2021). Developing students' clinical reasoning skills: A faculty guide. *Journal of Nursing Education, 60*(9), 485- 493. <https://doi.org/10.3928/01484834-20210708-01>
- Hajrezayi, B., Shahalizade, M., Zeynali, M., & Badali, M. (2015). Effectiveness of blended learning on critical thinking skills of nursing students. *Journal of Nursing Education, 4*(1), 49-59.
- Harman, T., Bertrand, B., Greer, A., Pettus, A., Jennings, J., Wall-Bassett, E., & Babatunde, O. (2015). Case-based learning facilitates critical thinking in undergraduate nutrition education: Students describe the big picture. *Journal of the Academy of Nutrition and Dietetics, 115*(3), 378–388. <https://doi.org/10.1016/j.jand.2014.09.003>
- Haskins, J. (2019, June 6). *20 years of patient safety*. Association of American Medical Colleges. <https://www.aamc.org/news-insights/20-years-patient-safety>
- Hensel, D., & Billings, D. M. (2019). Strategies to teach the National Council of State Boards of Nursing Clinical Judgment Model. *Nurse Educator, 45*(3), 128–132. <https://doi.org/10.1097/nne.0000000000000773>
- Herron, E. K. (2017). New graduate nurses' preparation for recognition and prevention of failure to rescue: A qualitative study. *Journal of Clinical Nursing, 27*(1-2), e390–e401. <https://doi.org/10.1111/jocn.14016>



- Herron, E. K., Sudia, T., Kimble, L. P., & Davis, A. H. (2016). Prelicensure baccalaureate nursing students' perceptions of their development of clinical reasoning. *Journal of Nursing Education, 55*(6), 329–335.  
<https://doi.org/10.3928/01484834-20160516-05>
- Hong, S., & Yu, P. (2017). Comparison of the effectiveness of two styles of case-based learning implemented in lectures for developing nursing students' critical thinking ability: A randomized controlled trial. *International Journal of Nursing Studies, 68*, 16–24. <https://doi.org/10.1016/j.ijnurstu.2016.12.008>
- Huston, C., Phillips, B., Jeffries, P., Toder, C., Rich, J., Knecht, P., Sommer, S., & Lewis, M. (2017). The academic-practice gap: Strategies for an enduring problem. *Nursing Forum, 53*(1), 27–34. <https://doi.org/10.1111/nuf.12216>
- Institute of Medicine & Committee on Quality of Health Care in America. (2000). *To err is human: Building a safer health system*. National Academies Press.
- Institute of Medicine (US) Committee on the Robert Wood Johnson Foundation Initiative on the Future of Nursing, at the Institute of Medicine. (2011). *The future of nursing: Leading change, advancing health*. National Academies Press.  
<https://doi.org/10.17226/12956>
- Ironside, P. M., McNelis, A. M., & Ebright, P. (2014). Clinical education in nursing: Rethinking learning in practice settings. *Nursing Outlook, 62*(3), 185–191.  
<https://doi.org/10.1016/j.outlook.2013.12.004>
- Jessee, M. A. (2018). Pursuing improvement in clinical reasoning: The integrated clinical education theory. *Journal of Nursing Education, 57*(1), 7–13.  
<https://doi.org/10.3928/01484834-20180102-03>

Kantar, L. D., & Massouh, A. (2015). Case-based learning: What traditional curricula fail to teach. *Nurse Education Today*, 35(8), e8–e14.

<https://doi.org/10.1016/j.nedt.2015.03.010>

Kantar, L. D., & Sailian, S. (2018). The effect of instruction on learning: Case based versus lecture based. *Teaching and Learning in Nursing*, 13(4), 207–211.

<https://doi.org/10.1016/j.teln.2018.05.002>

Kavanagh, J. M., & Szweda, C. (2017). A crisis in competency: The strategic and ethical imperative to assessing new graduate nurses' clinical reasoning. *Nursing Education Perspectives*, 38(2), 57–62.

<https://doi.org/10.1097/01.nep.0000000000000112>

Kavanagh, J., & Sharpnack, P. (2021). Crisis in competency: A defining moment in nursing education. *OJIN: The Online Journal of Issues in Nursing*, 26(1).

<https://doi.org/10.3912/ojin.vol26no01man02>

Kaylor, S. K., & Strickland, H. P. (2015). Unfolding case studies as a formative teaching methodology for novice nursing students. *Journal of Nursing Education*, 54(2),

106–110. <https://doi.org/10.3928/01484834-20150120-06>

Kim, J., & Kim, E. (2015). Effects of simulation on nursing students' knowledge, clinical reasoning, and self-confidence: A quasi-experimental study. *Korean Journal of Adult Nursing*, 27(5), 604.

<https://doi.org/10.7475/kjan.2015.27.5.604>

Klenke-Borgmann, L., Cantrell, M. A., & Mariani, B. (2020). Nurse educators' guide to clinical judgment: A review of conceptualization, measurement, and

development. *Nursing Education Perspectives*, 41(4), 215–221.

<https://doi.org/doi:10.1097/01.NEP.0000000000000669>

- Knowles, M. S., Hilton, E. F., III, & Swanson, R. A. (2015). *The adult learner: The definitive classic in adult education and human resource development* (8th ed.). Routledge.
- Kovner, C. T., Brewer, C. S., Yingrengreung, S., & Fairchild, S. (2010). New nurses' views of quality improvement education. *The Joint Commission Journal on Quality and Patient Safety*, 36(1), 29–AP5. [https://doi.org/10.1016/s1553-7250\(10\)36006-5](https://doi.org/10.1016/s1553-7250(10)36006-5)
- Kulak, V., & Newton, G. (2014). A guide to using case-based learning in biochemistry education. *Biochemistry and Molecular Biology Education*, 42(6), 457–473. <https://doi.org/10.1002/bmb.20823>
- Lasater, K., Nielsen, A. E., Stock, M., & Ostrogorsky, T. L. (2015). Evaluating the clinical judgment of newly hired staff nurses. *The Journal of Continuing Education in Nursing*, 46(12), 563–571. <https://doi.org/10.3928/00220124-20151112-09>
- Laver, S., & Croxon, L. (2015). Narrative pedagogy with evolving case study: A transformative approach to gerontic nursing practice for undergraduate nursing students. *Nurse Education in Practice*, 15, 341–344. <https://doi.org/10.1016/j.nepr.2015.04.002>
- Levett-Jones, T., Hoffman, K., Dempsey, J., Jeong, S.-S., Noble, D., Norton, C., Roche, J., & Hickey, N. (2010). The 'five rights' of clinical reasoning: An educational model to enhance nursing students' ability to identify and manage clinically 'at risk' patients. *Nurse Education Today*, 30(6), 515–520. <https://doi.org/10.1016/j.nedt.2009.10.020>

- Li, S., Ye, X., & Chen, W. (2019). Practice and effectiveness of “nursing case-based learning” course on nursing student's critical thinking ability: A comparative study. *Nurse Education in Practice*, *36*, 91–96.  
<https://doi.org/10.1016/j.nepr.2019.03.007>
- Makary, M. A., & Daniel, M. (2016). Medical error: The third leading cause of death in the US. *BMJ*, i2139. <https://doi.org/10.1136/bmj.i2139>
- Massoth, C., Röder, H., Ohlenburg, H., Hessler, M., Zarbock, A., Pöpping, D. M., & Wenk, M. (2019). High-fidelity is not superior to low-fidelity simulation but leads to overconfidence in medical students. *BMC Medical Education*, *19*(1).  
<https://doi.org/10.1186/s12909-019-1464-7>
- McLean, S. F. (2016). Case-based learning and its application in medical and health-care fields: A review of worldwide literature. *Journal of Medical Education and Curricular Development*, *3*, JMECD.S20377.  
<https://doi.org/10.4137/jmeecd.s20377>
- Monagle, J. L., Lasater, K., Stoyles, S., N, & Dieckmann, N. (2018). New graduate nurse experiences in clinical judgment: What academic and practice educators need to know. *Nursing Education Perspectives*, *39*(4), 201–207. <https://doi.org/doi:10.1097/01.NEP.0000000000000669>
- Muntean, W. (2019). *Nursing clinical decision-making: A literature review* [PDF]. National Council of State Boards of Nursing. [https://ncsbn.org/public-files/Clinical\\_Judgment\\_Lit\\_Review\\_Executive\\_Summary.pdf](https://ncsbn.org/public-files/Clinical_Judgment_Lit_Review_Executive_Summary.pdf)

- National Council of State Boards of Nursing. (2021). *2020 NCLEX examination statistics* (Volume 80, June 2021) [Research brief]. National Council of State Boards of Nursing, Inc.
- Newton, G., Kulak, V., & Sharma, R. (2017). Does the use of case-based learning impact the retention of key concepts in undergraduate biochemistry? *International Journal of Higher Education*, 6(2), 110. <https://doi.org/10.5430/ijhe.v6n2p110>
- Next Generation Nursing (NGN) Frequently asked for educators*. (n.d.). National Council of State Boards of Nursing. Retrieved February 1, 2022, from <https://www.ncsbn.org/exams/next-generation-nclex/NGN+FAQS/ngn-faqs-for-educators.page>
- Oermann, M. H. & Gaberson, K. (2019). *Evaluation and testing in nursing education, sixth edition* (6th ed.). Springer Publishing Company.
- Palermo, C., Kleve, S., McCartan, J., Brimblecombe, J., & Ferguson, M. (2018). Using unfolding case studies to better prepare the public health nutrition workforce to address the social determinants of health. *Public Health Nutrition*, 22(1), 180–183. <https://doi.org/10.1017/s1368980018002811>
- Pelech, J. (2010). *The comprehensive handbook of constructivist teaching: From theory to practice* (2nd ed.). Information Age Publishing.
- Popil, I. (2011). Promotion of critical thinking by using case studies as teaching method. *Nurse Education Today*, 31(2), 204–207. <https://doi.org/10.1016/j.nedt.2010.06.002>
- Potter, P. A., Perry, A. G., Stockert, P., & Hall, A. (2022). *Fundamentals of nursing* (11th ed.). Elsevier.

- Rischer, K. (2015). *Think like a nurse: Practical preparation for professional practice* (2nd ed.). Bethany Press.
- Rischer, K. (2021). *Faculty guide to develop clinical judgment: Transforming nursing education through the use of clinical reasoning case studies*. Keith Rischer.
- Sanders, M. K., Barr, J. L., & Goldstein, L. A. (2020). Development and implementation of unfolding pediatric simulations. *Journal of Nursing Education*, 59(2), 107–110.  
<https://doi.org/doi:10.3928/01484834-20200122-10>
- Tanner, C. A. (2006). Thinking like a nurse: A research-based model of clinical judgment in nursing. *Journal of Nursing Education*, 45(6), 204–211.  
<https://doi.org/10.3928/01484834-20060601-04>
- The Joint Commission. (2017, September 12). *Sentinel event alert 58: Inadequate hand-off communication*. <https://www.jointcommission.org/resources/patient-safety-topics/sentinel-event/sentinel-event-alert-newsletters/sentinel-event-alert-58-inadequate-hand-off-communication/>
- The Joint Commission. (2022). *2022 National hospital patient safety Goals* [PDF].  
[https://www.jointcommission.org/-/media/tjc/documents/standards/national-patient-safety-goals/2022/simple\\_2022-hap-npsg-goals-101921.pdf](https://www.jointcommission.org/-/media/tjc/documents/standards/national-patient-safety-goals/2022/simple_2022-hap-npsg-goals-101921.pdf)
- Theobald, K. A., Tutticci, N., Ramsbotham, J., & Johnston, S. (2021). Effectiveness of using simulation in the development of clinical reasoning in undergraduate nursing students: A systematic review. *Nurse Education in Practice*, 57, 103220.  
<https://doi.org/10.1016/j.nepr.2021.103220>

- Thistlethwaite, J. E., Davies, D., Ekeocha, S., Kidd, J. M., MacDougall, C., Matthews, P., Purkis, J., & Clay, D. (2012). The effectiveness of case-based learning in health professional education: A BEME systematic review. *Medical Teacher*, *34*(6), e421–e444. <https://doi.org/10.3109/0142159x.2012.680939>
- van Graan, A. C., & Williams, M. J. (2017). A conceptual framework to facilitate clinical judgement in nursing: A methodological perspective. *Health SA Gesondheid*, *22*. <https://doi.org/10.4102/hsag.v22i0.1015>
- Weston, J., & Zauche, L. (2021). Comparison of virtual simulation to clinical practice for prelicensure nursing students in pediatrics. *Nurse Educator*, *46*(5), E95–E98. <https://doi.org/10.1097/nne.0000000000000946>
- Wyatt, T., Baich, V. A., Buoni, C. A., Watson, A. E., & Yuriscic, V. E. (2021). Clinical reasoning: Adapting teaching methods during the COVID-19 pandemic to meet student learning outcomes. *Journal of Nursing Education*, *60*(1), 48–51. <https://doi.org/10.3928/01484834-20201217-11>
- Yang, F., Wang, Y., Yang, C., Zhou, M., Shu, J., Fu, B., & Hu, H. (2019). Improving clinical judgment by simulation: A randomized trial and validation of the Lasater clinical judgment rubric in Chinese. *BMC Medical Education*, *19*(1). <https://doi.org/10.1186/s12909-019-1454-9>
- Yoo, M.-S., & Park, J.H. (2014). Effect of case-based learning on the development of graduate nurses' problem-solving ability. *Nurse Education Today*, *34*(1), 47–51. <https://doi.org/10.1016/j.nedt.2013.02.014>

- Young, A., Rose, G., & Wilson, P. (2013). Online case studies: HESI exit exam scores and NCLEX-RN outcomes. *Journal of Professional Nursing*, 29(25), S17–S21. <https://doi.org/10.1016/j.profnurs.2012.06.010>
- Yousey, Y. K. (2012). The use of unfolding case studies: Innovation in online undergraduate nursing education. *Journal of Nursing Education and Practice*, 3(4). <https://doi.org/10.5430/jnep.v3n4p21>
- Yu, D., Zhang, Y., Xu, Y., Wu, J., & Wang, C. (2013). Improvement in critical thinking dispositions of undergraduate nursing students through problem-based learning: A crossover-experimental study. *Journal of Nursing Education*, 52(10), 574–581. <https://doi.org/10.3928/01484834-20130924-02>
- Zaccagnini, M., & Pechacek, J. M. (2021). *The Doctor of Nursing Practice essentials: A new model for advanced practice nursing* (4th ed.). Jones & Bartlett Learning.
- Zamaripa, C. (2021). *Exploration of clinical judgment within junior level baccalaureate nursing students utilizing a Modified Lasater Clinical Judgment Rubric* [Doctoral dissertation, University of Northern Colorado]. <https://digscholarship.unco.edu/dissertations/810/>
- Zehler, A., & Musallam, E. (2021). Game-based learning and nursing students' clinical judgment in postpartum hemorrhage: A pilot study. *Journal of Nursing Education*, 60(3), 159–164. <https://doi.org/DOI: 10.3928/01484834-20210222-07>