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Developing Clinical Judgment through the Implementation of Information and  
Communication Technology, such as the Electronic Healthcare Record (EHR)

by

Sherri Carter

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

Boiling Springs, NC

2018

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## Abstract

Graduate nurses are expected to enter a technology-rich workforce with an understanding of the electronic health record (EHR) and how it is used to guide patient care. Limited access to EHRs in clinical settings may result in students entering professional practice with limited ability to understand the full potential of the EHR. Over a seven-week term, students enrolled in the Patient-Centered Care I course, during the 2018 Spring I term, participated in high-fidelity simulation and seminar activities that included an educational electronic healthcare record (EEHR). These activities were integrated into the course to guide students when making clinical decisions regarding patient-centered care. Of the 93 students, 14 participated in the pre-course self-assessment survey, and 10 participated in the post-course self-assessment survey. Only those students who took both the pre and post-course self-assessment were evaluated (11% response rate). This survey was not mandatory, however, the EEHR activities in the course were. Students used Lasater's Clinical Judgment Rubric to rate themselves in the dimensions of noticing, interpreting, responding, and reflecting. Overall, mean scores increased in three of the four dimensions of clinical judgment (noticing, interpreting, and reflecting). There was a significant difference under the criteria *focused observation*, for the dimension of *noticing*. There was marginal significance under the criteria *making sense of data*, for the dimension of *interpreting*, as well as marginal significance under the criteria *commitment to improvement* under the dimension of *reflection*.

*Keywords:* educational electronic health record (EEHR), electronic health record (EHR), clinical judgment, Lasater's Clinical Judgment Rubric, simulation, active student learning, experiential learning, and technology.

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## INTRODUCTION

Developing clinical judgment through the integration of technology, such as the educational electronic health record (EEHR), is an active learning strategy which mimics realism in nursing curriculum. The literature is rich with suggestions for academia to incorporate informatics into curriculum to ensure safe patient outcomes (Kennedy, Pallikkathayil, & Warren, 2009). EEHRs can, and should be incorporated into all aspects of learning, to include class lectures, seminar, simulation, and clinical. EEHR learning activities were developed to help students develop in the dimensions of noticing, interpreting, responding, and reflecting, all of which are necessary when exercising clinical judgment.

This project provided opportunities to develop clinical judgement in second semester nursing students in an associate degree nursing program (ADN), through the integration of information and communication technologies, such as the educational electronic health record (EEHR). The EEHR activities consisted of multiple patient scenarios, all of which actively engaged students when learning about medications and disease processes. Students were encouraged to use critical thinking skills when working through patient scenarios.

## SECTION I

### PROBLEM RECOGNITION AND SIGNIFICANCE

The ever-changing landscape regarding technology in healthcare cannot be dismissed by nursing programs. The National League of Nursing has recognized that graduates should be ready to interact with patients in a connected age of healthcare, and has encouraged faculty to create curricula that teaches students how to “track, trend, and integrate population-based data” (National League of Nursing, 2015). In response to national standards, faculty will be expected to analyze and redesign curricula to keep up with these rapid technology changes, while ensuring that students learn to use information technology as a tool for safe decision making. If nursing curriculum does not afford opportunities for students to exercise clinical judgment when utilizing the electronic health record (EHR), students will enter professional practice at a disadvantage. Navigating through an electronic health record (EHR) takes time to learn, and students need a learning environment that will help them move towards competency with the EHR. A survey of graduating senior nursing students was conducted and the results revealed that informatics competencies were lacking in the ability to use EHRs effectively (Nickolaus, 2015). The National League for Nursing (NLN) issued a call to action for nursing faculty to better prepare students to enter a workforce, rich with technology, by charging faculty to “teach with and about technology to better inform health care interventions that improve health outcomes and prepare the nursing workforce” (National League for Nursing, 2015, p. 4). Despite this call to action, state boards of nursing report schools are still lagging behind. A study was conducted by Meyer, Moran, Cuvar, and Carlson (2014), to evaluate how well state boards of nursing

have incorporated core competencies (provide patient-centered care, work in interdisciplinary teams, use evidence-based practice, apply quality improvements processes, and use of informatics) into their regulatory requirements, and the results were astonishing. Out of 50 states, eight states incorporated all five competencies, while other states incorporated some, and the competencies most excluded from state regulations were informatics (60% of states) and evidence-based practice (50%), with 30 states making no reference to technology or informatics in their curriculum regulations (Meyer et al., 2014). South Carolina, the state in which this project was implemented, is one of the 30 states mentioned above that have no regulation or rules regarding the inclusion of core competencies into curricular content (South Carolina Statehouse, 2011).

The National Council of State Boards of Nursing (NCSBN), presented the Next Generation (NGEN) NCLEX research project, which sought out to determine if the NCLEX was indeed measuring the knowledge and skills necessary for safe, patient-centered care (National Council of State Boards of Nursing [NCSBN], 2017). The research findings were in support that critical thinking and decision-making skills were necessary in entry-level nursing education, however, there was an identified need to measure competence in clinical judgment within high-stakes licensure exams (NCSBN, 2017). The NCSBN's research regarding the importance of clinical judgment as necessary in entry-level nursing education is grounded in the research. For example, adverse events for inpatients could have been prevented if clinical judgment would have been used when making decisions regarding patient care (NCSBN, 2017). Clinical judgment, as defined by the NCSBN is an "iterative decision-making process that uses nursing knowledge to observe and assess presenting situations, identify a prioritized

client concern, and generate the best possible evidence-based solutions in order to deliver safe client care (2017, p. 3).

Decisions made by those in healthcare, such as the DNP graduates, “know that the ability to take advantage of the EHR data to improve patient outcomes first requires the proper entry of process and outcome data in the record” (Lavin, Harper, & Barr, 2015). The Institute of Medicine (IOM) published a report regarding a call to action to create a culture of safety, and from this report, the Quality and Safety Education for Nurses (QSEN) was developed, which gave faculty an opportunity to build learning experiences from these competencies that reflect reality (Erickson, Greulich, Lucas, & Bristol, 2015). Competencies that stemmed from the QSEN categories (knowledge, skills, and attitudes) are vital to embed in learners. It will be imperative to ensure the right knowledge, skills, and attitudes regarding technology are part of nursing curriculum, because the right knowledge, skills, and attitudes will be what the student takes with them when they enter the practice environment. Practicing nurses often have negative attitudes regarding the EHR (Pobocik, 2014). When nurses have a negative attitude regarding the EHR, they may fail to exercise clinical judgment, which may result in negative patient outcomes.

### **Problem Statement**

Limited access to EHRs in clinical settings may result in students entering professional practice with limited ability to understand the full potential of the EHR. The purpose of this DNP project was to develop clinical judgement in medical-surgical nursing students through the integration of information and communication technologies, such as the educational electronic health record (EEHR). Over a seven-week term, high-fidelity simulation and seminar activities that included an educational electronic

healthcare record (EEHR) were integrated into the course to guide students when making clinical decisions regarding patient-centered care.

### **Justification of Project**

Having opportunities to interact with information and technology, such as an educational electronic health record (EEHR) in the learning environment, is an expectation of the American Association of Colleges of Nursing (AACN) and the National League for Nursing (NLN). To practice using technology, such as the EEHR in nursing education, affords opportunities for students to encounter realism (Bristol, 2012). Another important fact regarding teaching with technology software is that it stimulates all three domains of learning. Hainsworth and Keyes (2018) believe the use of technology software helps to promote cognitive development, change attitudes and build psychomotor skills (Hainsworth & Keyes, 2018). When students interact frequently with the EEHR, they are learning to use technology in a seamless manner when making clinical decision that impact patient care. Acute care settings often limit a student's access to a patient's EHR in clinical practice sites (TIGER Initiative, 2012). Limited access to the EHR has been identified for students in the clinical setting at this project site. This may be due to ties regarding reimbursement from the Center for Medicare and Medicaid Services, which could be affected if documentation is omitted or done incorrectly. This limited access can create barriers for students to exercise the knowledge, skills, and attitudes needed in critical thinking and decision-making that result in clinical judgment.

## Purpose

The purpose of this scholarly project was to develop clinical judgment in medical-surgical nursing students through the integration of information and communication technologies, such as the educational electronic healthcare record (EEHR). The EEHR activities were implemented in on-campus clinical orientation, seminar, and simulation classes over a seven-week course. A PICOT statement helps to develop a formulated question and is necessary in the utilization of evidence-based nursing (Schadewald & Pfeiffer, 2017). The PICOT acronym stands for population, intervention, comparison, outcome, and time (Schadewald & Pfeiffer, 2017), and was used to undergird this project.

- Population (P): The population was first year nursing students in a community college ADN program enrolled in the Patient-Centered Care I course.
- Intervention (I): Development of clinical judgment through implementation of an educational electronic healthcare record in four high-fidelity simulation activities, on-campus clinical orientation activities and seminar activities, in the Patient-Centered Care I course.
- Comparison (C): Compare understanding of clinical judgment before and after active learning activities with an educational electronic healthcare record.
- Observation (O): Students will have an increased understanding of clinical judgment after participating in active learning strategies with an educational electronic healthcare record.
- Time (T): Students will participate in multiple learning activities, involving the use of an educational electronic healthcare record to increase

understanding of clinical judgment that will last approximately 60 - 90 minutes each, over a seven-week course.

### **Goals and Outcome Objectives**

The main goal of this project was to use information and communication technology, such as the EEHR, as a clinical decision support tool to develop nursing students' clinical judgment. The following represented the project goals using White and Zaccagnini's (2017) "SMART" template which stands for: "specific, measurable, attainable, realistic, and timely" (p. 465).

#### **Goal**

Develop clinical judgment through information and technology support tools, such as the EEHR, through hands-on learning activities in class, seminar, and simulation.

#### **Objective**

Students in their first Patient-Centered Care course in the ADN program, will learn to use the EEHR when making clinical decisions regarding patient care over a seven-week course (*specific*). Lasater's Clinical Judgment Rubric has been tested and determined to be a reliable and valid tool, and was used in this project to determine the extent of clinical judgment exercised when using the EEHR as a support tool when making clinical decisions (*measurable*). These activities were part of regular class, seminar and simulation hours (*attainable and realistic*), and students participated in a variety of hands-on learning activities during class, seminar and simulation over a seven-week term in Spring II, 2018 (*timely*).

### **Summary**

Developing clinical judgment through EEHR technology will prepare new nurse graduates with a foundation that will prepare them for a technology-rich workforce. New graduates will understand how to use EEHR technology as a clinical decision support tool when providing patient-centered care. It is imperative that faculty incorporate EEHR learning activities into nursing curriculum, so new nurse graduates are equipped with the right knowledge, skills, and attitude regarding EEHRs.

## SECTION II

### NEEDS ASSESSMENT

A needs assessment survey, adapted from the Registered Nurses' Association of Ontario, Nurse Educator eHealth Resource, Section Eight: *Tools to Support Curricular Integration* (2009), was sent to all faculty in the nursing division. Information learned from the needs assessment was pivotal and required in-depth consideration prior to determining if the project idea should move forward (Roussel, Polancich, & Beene, 2016). The purpose of the assessment survey was to glean information regarding the use of student's use of technology throughout the nursing curriculum, and specifically if students were getting exposure to an educational electronic healthcare record in learning environments. Faculty were asked to answer each question on the survey with either yes, or no. If a faculty member left a question blank, it was counted as a "no" for categorizing purposes. The survey results are listed below (Figures 1 through 3). The needs assessment focused on the following areas:

- Foundational Information and Communication Technologies - students demonstrate basic skills with information and communication technologies (e.g. personal computers, hand-held devices, etc.).
- Information and Knowledge Management – use relevant information and knowledge to support the delivery of evidence-based practice.
- Information and Communication Technologies – Uses information and communication technologies in the delivery of patient care.

The data collected revealed students did use information and communication technology, which was sporadic throughout the curriculum; however, the use of an EEHR in

conjunction with simulation (active learning) was used scarcely, if any throughout the curriculum. After speaking with the department head in the fundamentals courses (Nursing 102/104), the use of the EEHR was only used in skills lab in Nursing 104, in the Fall of 2016. Faculty in the fundamental courses determined it was overwhelming for students to understand the EHR while learning the concepts of the documentation process, and decided against integrating it into the learning environment. This needs assessment identified a gap between the current condition and the ideal condition, which correlates with the definition of what a needs assessment is intended to discover (White & Zaccagnini, 2017). Students are not offered consistent opportunities throughout the curriculum to learn how to use the EEHR in learning environments, to include simulated environments to retrieve, chart and make clinical decisions regarding patient-centered care. Because students will have no exposure to the EEHR until their first patient-centered care course (Nursing 195), it has been determined that implementation of EEHR learning activities will start in this course.

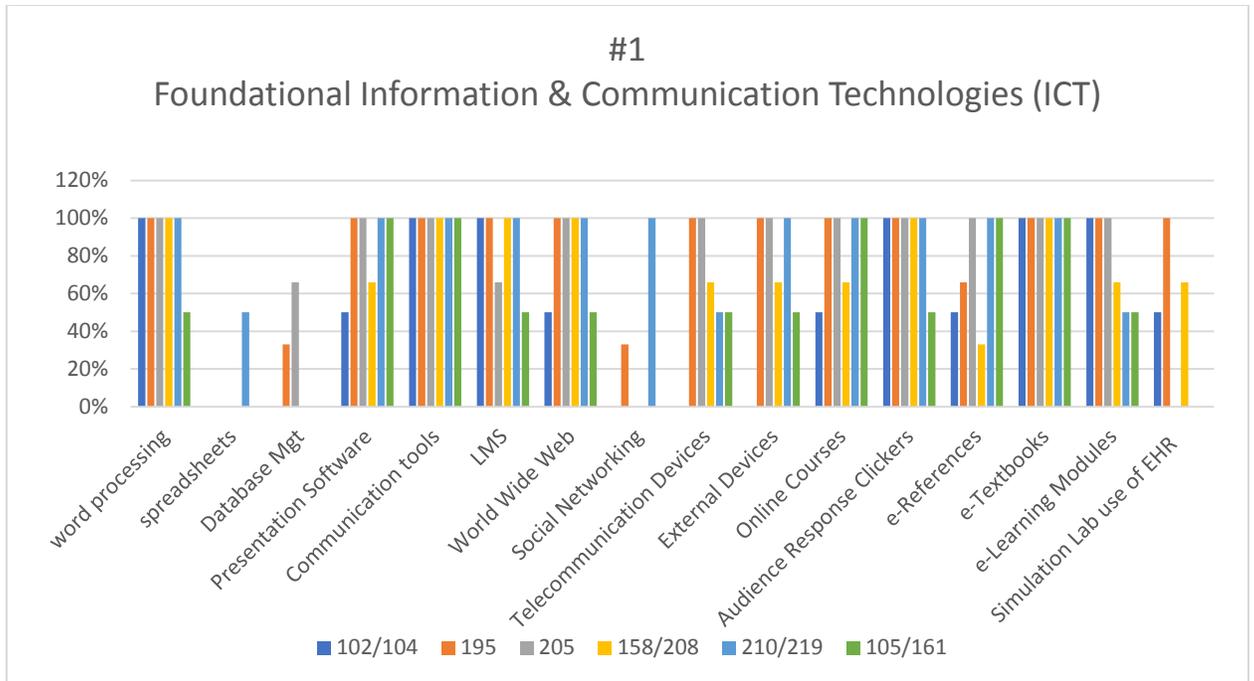


Figure 1. Foundational Information and Communication Technologies

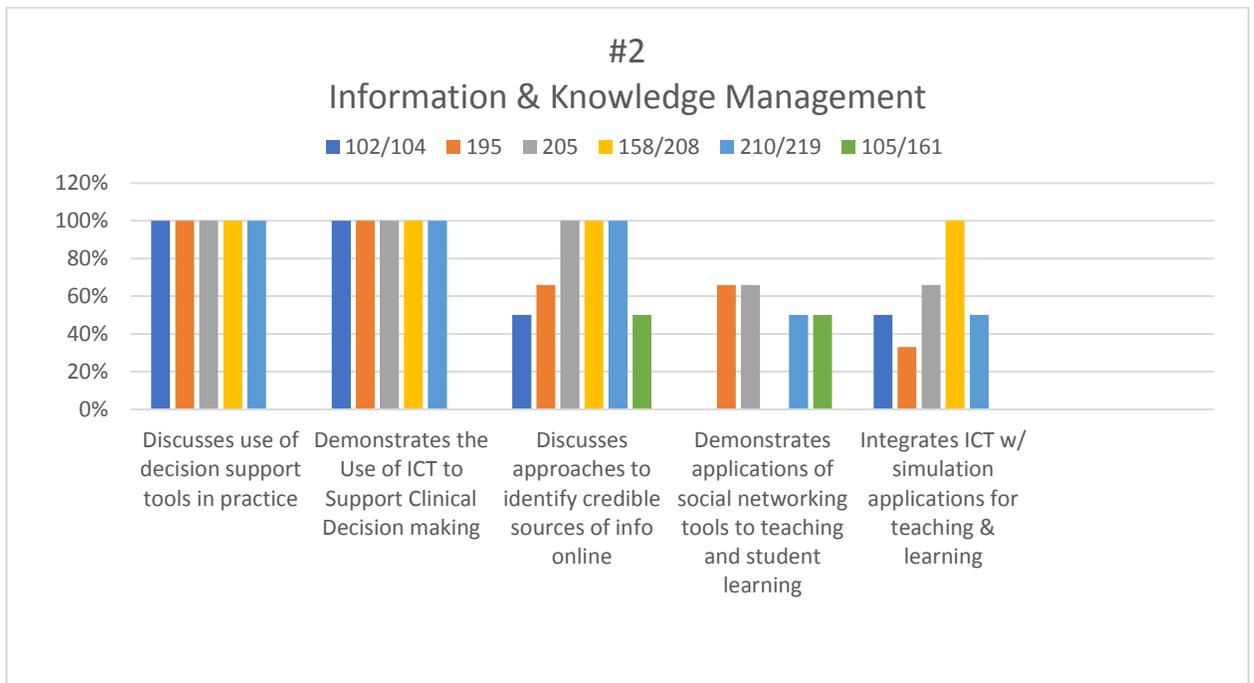
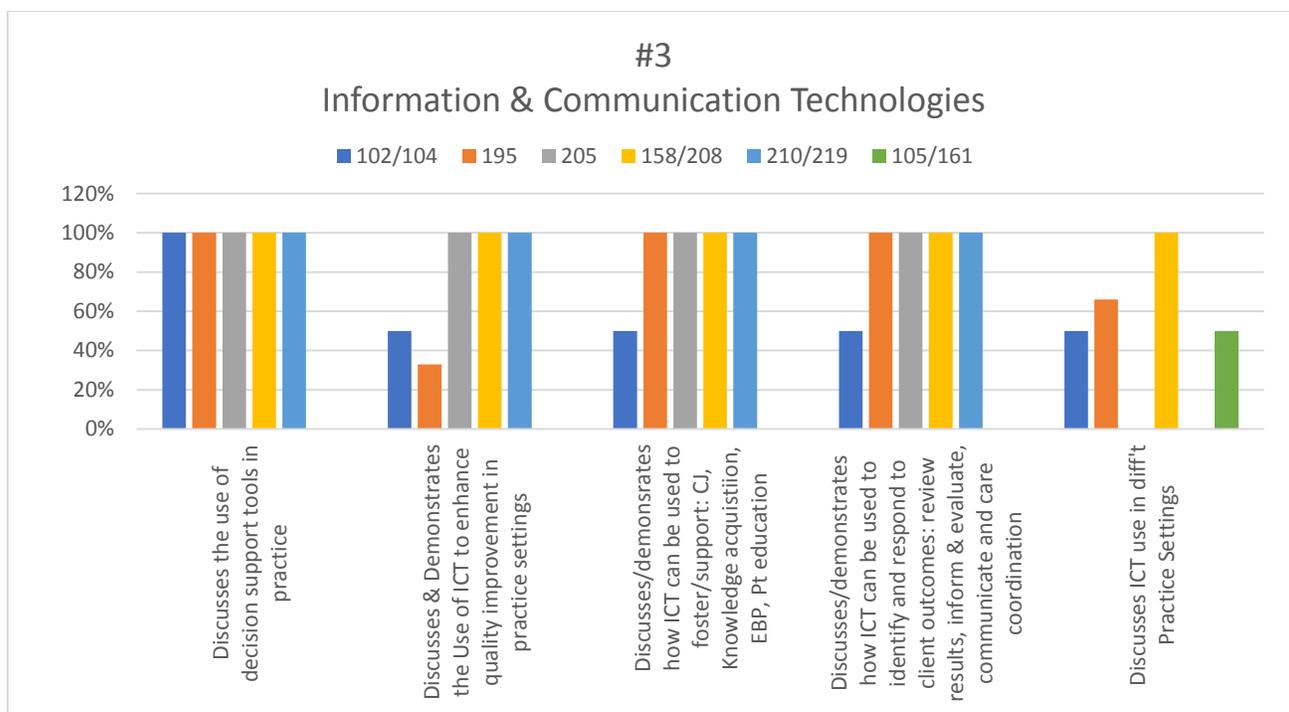


Figure 2. Information and Knowledge Management



*Figure 3.* Information and Communication Technologies

### Review of the Literature

A review of the literature was conducted to identify information and communication technologies, specifically the EHR, and its relationship in nursing curriculum when exercising clinical judgment. The data bases CINAHL, PubMed, ProQuest, the University's Bulldog OneSearch, and Google Scholar were searched using keywords: information technology, informatics, electronic health record, educational electronic health record, nursing clinical reasoning, nursing clinical judgment, nursing curriculum, nursing student. Reference lists of pertinent articles were also searched. The majority of articles were published from the late '90's to 2017. Most of the articles were narrative reviews, while some were descriptive and qualitative studies.

## **Educational Electronic Health Records**

The ability of a nurse to effectively use an EHR is imperative to patient safety, and to be able to use this piece of technology, requires a certain skill and knowledge set (Miller et al., 2014). A quantitative descriptive study was done to identify gaps between informatics knowledge and skills as self-reported by new/novice nurses, and informatics knowledge and skills as reported by the same new/novice nurses' managers. Miller et al. (2014) sought out to discover three research questions in this study and they are as follows:

To what extent do new/novice nurses believe they demonstrate the informatics knowledge & skills required to use EHRs effectively in acute-care settings, and to what extent do nurse managers believe new/novice nurses demonstrate the informatics knowledge and skills critical to use EHR effectively when initially hired in acute-care settings, and what gaps exist between new/novice nurses' reported informatics knowledge & skills and the knowledge and skills reported by nurse managers in acute-care settings" (Miller et al., 2014 p. 3).

New/novice nurses reported being most highly skilled in five areas: email, internet usage and search engines, word processing, lab result retrieval, keyboarding, and nursing-note documentation. When answering the second research question, nurse managers stated for four out of the 28 skilled areas, 75% agreed that new nurses demonstrated knowledge to a great extent when hired, while 21 of the 28 skilled areas, less than 50% agreed new nurses demonstrated skill when first hired. The results to the third research question revealed seven of the 28 strengths between novice nurses and their managers were agreed upon. However, new nurses thought in 13 of the 28 areas they were strong, which

managers did not agree they were strong in those areas. The ability of the nurse to use the EHR effectively by showing proficiency in critical knowledge and skills is imperative to providing safe patient care (Miller et al., 2014). This study showed gaps in 13 of the 28 knowledge and skills areas thought to be critical for nurses when using the EHR effectively, and resulted in nursing program administrators and healthcare administrators collaborating to determine which knowledge areas and skills should nursing programs implement, and which would be best addressed during on-the-job training (Miller et al., 2014).

The TIGER Initiative, in its document entitled *Transforming Education for an Informatics Agenda - TIGER Education and Faculty Development Collaborative*, recognized that the demands of an ever-growing electronic healthcare environment will challenge nursing education to redesign curriculum so that nurses entering the profession, would do so prepared to practice in a technology-rich culture (TIGER Initiative, 2012). The TIGER Education and Faculty Development Collaborative Team formed a work group which focused on Associate Degree Nursing (ADN) programs, and in their quest to solicit information from the Organization for Associate Degree Nursing (OADN) and clinical agencies, they discovered that many ADN programs lacked access to EHRs. Security and privacy concerns at clinical sites often resulted in students not being able to work in the patient's EHR, which impeded learning because students did not have opportunity to navigate and use EHRs, so there was a gap in understanding how EHRs guided nurses as they made clinical decisions resulting in safe patient care (TIGER Initiative, 2012). Another barrier to teaching about EHRs in nursing curriculum was limited resources for educational electronic healthcare records. Despite the barriers that

impede student learning regarding EHRs, several Examples of how informatics were being integrated into curriculum were shared, and how these tools helped students learn to critically think when delivering safe patient-centered care.

George, Drahnak, Schroeder, and Katrancha, (2016), stressed the importance of nursing students having the tools that will allow them to become competent in the use of the electronic healthcare record (EHR). Legislation has pushed healthcare into the digital age, so nursing students should show competence when using EHRs when providing patient-centered care. Concepts regarding the use of technology and EHRs are introduced early in the curriculum, with hands-on activities integrated later. It was noted that clinical environments present challenges for providing consistent and quality experiences with EHRs (George et al., 2016). Although EHRs may vary in their physical appearance, they all consist of the same “basic skeleton of functionality,” and it is for this reason that EEHRs are supported for use in instruction and learning in academia (George et al., 2016, pg. 153). A mixed-methods pilot study was done to evaluate competency and accuracy when finding information in an educational electronic healthcare record (EEHR), in conjunction with high-fidelity simulation, and reviews of student perceptions of their experience using EEHRs in the simulation environment. Students participated in a *Level IV Scavenger Hunt: Final Evaluation*, which consisted of 15 questions that helped to determine a student’s ability to navigate the EEHR, then results were gathered using a paired *t* test to compare time and accuracy (George et al., 2016). There was a significant difference between the fall and spring semester participants, but there was no statistical difference when comparing accuracy between groups at baseline, as well as on post-test time (George et al., 2016). However, it was noted that EEHRs in the simulation

environment encouraged experiential learning through reflection, which the instructor became an active participant in during debriefing (George et al., 2016). Benner's Continuum of Clinical Expertise of Novice to Expert is the framework that was used to carry students from passive to active learners. The student comments during debriefing, regarding the simulation experience, were supportive in moving learners from novice to competent, and student speed when using the EEHR in simulation increased, while maintaining accuracy in utilizing the EEHR (George et al., 2016).

Kennedy et al. (2009), in their case study design to yield descriptive data, studied beginning nursing student experiences and behaviors when learning the nursing process using an educational electronic health record (EEHR). In their literature review it was obvious that safe care must begin with innovation in curricula that supports informatics because information technology is the place for interpreting and using knowledge. Themes in the literature review revealed concepts such as "honing the data gatherer and data user roles with a modified electronic health record – an authentic learner-centered experience" (p. 96). Beginning nursing students were introduced to the concepts of documentation as well as the nursing process and low-level decision support (Kennedy et al., 2009). Students were assigned case studies with the objective of entering patient information into the EEHR. Over four class periods, students, along with their teacher navigated through the EEHR by setting up care plans. To further support improvement of this learning activity, faculty needed to capture student experiences and behaviors, therefore, two research questions were proposed: "What experiences and behaviors were reported and demonstrated when beginning nursing students entered, analyzed, and interpreted patient data from written case studies, and what experiences promoted and

what behaviors demonstrated an active and engaged learning process” (Kennedy et al., 2009, p. 96). Students viewed technological decision support and embedded information as helpful when making clinical decisions, and also saw the learning activity as fun, while learning to gather and use data while performing the nursing process. Students enjoyed “seeing, hearing and doing activities,” while faculty saw the learning activity as an opportunity to learn the nursing process, rather than just learning the EHR (Kennedy et al., 2009, p. 97).

Bristol (2012), discussed the educational electronic healthcare record (EEHR) as being at the center of all communication in the healthcare setting, and students need opportunities to interact with an EEHR on a continual basis. Educators should focus on four features (educationally enhanced, nursing focused, nursing intelligence, and intuitive design) when teaching with EEHRs, which can offer students opportunities for developing clinical reasoning skills (Bristol, 2012). As educators search for teaching tools to promote learning, the EEHR can provide realism and promote professional development in education. Students need a realistic EEHR to practice the management of data retrieval, data entry, communication and evaluation (Bristol, 2012).

A study was conducted by Meyer et al. (2014), to evaluate how well state boards of nursing have incorporated core competencies (provide patient-centered care, work in interdisciplinary teams, use evidence-based practice, apply quality improvements processes and use of informatics) into their regulatory requirements, and the results were astonishing. Out of 50 states, eight states incorporated all five competencies, while other states incorporated some, and the competencies most excluded from state regulations were informatics (60% of states) and evidence-based practice (50%), with 30 states

making no reference to technology or informatics in their curriculum regulations (Meyer et al., 2014).

Changing pedagogy through the incorporation of technology into teaching and learning environments was the pinnacle of Bessendowski and Petrucka's (2016) work of resetting nursing education with the goal of improved healthcare outcomes. The question Bessendowski and Petrucka focused on was if 20<sup>th</sup>-century instructional methods were appropriate for today's rapidly moving 21<sup>st</sup> century world (2016). In a 2015 survey that focused on faculty attitudes regarding technology, the majority of faculty did not feel tools of technology and social media were pertinent to their classes (Bessendowski & Petrucka, 2016). The authors discussed the challenges in resetting the vision that incorporates the inclusion of technology in every aspect of teaching, with one challenge resting on the fact that colleges were not designed to change curricula at the pace required by industry requirements. Grounded in Christensen's Theory of Disruption, the authors discussed how disruptive pedagogies such as the introduction of technology can be an alternative way of learning versus traditional instruction (Bessendowski & Petrucka, 2016).

Gardner and Jones (2012), discuss the profession of nursing and education as one that is transforming radically, and electronic medical records (EMR) must be used in curricula to prepare the nursing workforce. The academic EMR allows opportunities for students to apply knowledge and skills, which further develops critical thinking skills. Educators should use the developed competencies for novice nurses regarding the EMR as a guide in the development of nursing curriculum. Gardner and Jones discussed technology in the realm of being a standard for accreditation, as well as barriers of

implementing an academic EMR, which are mainly due to resistance from faculty (2012). Despite these barriers, EMRs improve patient safety, and when incorporated into nursing education, could increase time spent in direct patient care while decreasing time spent in the EMR. Students should also learn to use the EMR to search for evidence-based guidelines that could be used to provide patient-centered care (Gardner & Jones, 2012).

Electronic health records (EHR) should be used as one of the tools to support nurses' clinical judgment. Kossman, Bonney, and Kim (2013), described the EHR as a toolbox with "cognitive artifacts," known as tools and screens that serve to guide nurses in decision-making regarding patient care (p. 539). In this descriptive study, mixed method design, nurses from an ICU and medical/surgical floors, with at least six months' experience, were recruited to participate in an online survey. The online survey, which remained anonymous, consisted of seven cognitive artifacts of clinical judgment and team communication: "self-made work lists, EHR problem list, focused assessment forms, clinical practice guidelines, care plan, MAR, and summary note (Kossman et al., 2013, p. 540). Participants were asked to rate the use of the aforementioned cognitive artifacts for communication and clinical judgment, based on Tanner's Clinical Judgment Model and Lasater's operationalization of its four dimensions, as well as attributes specifically reflective of clinical judgment, such as "noticing, interpreting, responding and reflecting" (Kossman et al., 2013, p. 540-541). Focus groups interviews using open-ended questions regarding EHR generated tools to support clinical judgment and communication were asked of ways these tools might be better designed to support the work of the nurse, who used the EHR most often (Kossman et al., 2013). Quantitative data was analyzed using descriptive and inferential statistics, and qualitative data were

analyzed for identification of themes (Kossman et al., 2013). Significant differences ( $p < .05$ ) were noted in the following: significant association among cognitive artifacts and communication, overall clinical judgment, three of the clinical judgment dimensions (Noticing, Interpreting, and Responding). The overall findings of the study found nurses did use the aforementioned tools to support communication and clinical judgment, however, nurses rated their “self-made work lists” as more helpful than any EHR tool, except the MAR (Kossman et al., 2013). Another concerning observation of the results was the fact that the majority of study participants felt none of the cognitive artifacts were ‘extremely helpful’ (one of the answer choices on the online survey) to important pieces of a nurse’s work, specifically when anticipating patient problems or interpreting patient data (Kossman et al., 2013). Another concerning observation was there was not a significant difference on the last dimension of clinical judgment (reflection), which is critical when determining if an intervention is working, or the patient outcome has been met.

Lavin et al. (2015) discussed views shared by nurses of the Missouri Nurses Association through an experiential-reflective reasoning and action model, were working to understand staff nurses’ perspectives regarding health information technology, safety of the patient, and documentation in acute care settings. The authors discussed how the EHR is seen as a tool that gives useful data which results in patient safety, while at the same time, is noted by nurses as a source of frustration (Lavin et al., 2015). Nurses’ perspectives regarding medication safety in the EHR, specifically bar code data, discussed how the tool could be used for more than its current use (identify patients and report medication administration doses), and trending medications with relevant

laboratory values, would enhance the scope of what medication administration in the EHR previously accomplishes and would increase patient safety. The nurses interviewed gave specific examples of how this could be implemented. Another finding would be standardization of evidence-based care processes, to include patient education materials. When using “EHR-generated patient education materials,” it will show that nurses are meeting the standard of “patient education/health promotion” in the EHR (Lavin et al., 2015, p. 4). Discussion regarding real-time nursing documentation should be a standard of practice, mainly due to using clinical decision support tools, which rely on real time data. An example of this was entering vital signs on paper, then later entering those same vital signs into the computer, which could affect the early alert of trends in vital signs, which may trigger an alert of sepsis from the clinical decision support tool (Lavin et al., 2015). The discussion of the steps in the nursing process need to be more available in nursing documentation, because when documentation is poor in the EHR, more than likely improvements from human and technology aspects are needed (Lavin et al., 2015). It was noted that as more DNP graduates increase, standardization of care processes, including clinical decision-support tools will be more fully appreciated in clinical practice (Lavin et al., 2015). Some noted problems with documentation in the EHR such as the easy “cut and paste” method from day to day, which can result in negative patient outcomes and the noticing of new clinical findings. Efficiency concerns of EHR technology showed a fragmentation in clinical work, mainly due to interruptions in workflow (phone calls, patient call bells, and having to frequently transition from one screen to another when documenting). It was noted that the majority of a nurse’s time was spent on the collection, entering, and accessing data, which resulted in less available

time to spend on direct patient care (Lavin et al., 2015). The EHR tool is not always at fault when issues are noted. Documentation reflects the critical thinking of the nurse, meaning sound reasoning is necessary when interpreting and collecting data to form clinical judgment, without it, documentation will be lacking (Lavin et al., 2015). The article provides health information technology recommendations for all nurses across the United States. Recommendations that EHR interoperability should be foundational, and lack of it will lead to poor coordination of care (Lavin et al., 2015). Nurses need to play a more active role and voice concerns to EHR vendors so workflow in the EHR can be improved. Although the American Association of Colleges of Nursing (AACN) states informatics as one of the essentials in nursing programs, it still continues to remain an issue in practice settings.

### **Clinical Judgment**

According to Dickison et al. (2016), designing a theory-based assessment that measures a higher-order cognitive construct is challenging, but needed in nursing. Recognizing this need, a framework has been proposed and illustrates how to implement such a framework by using the construct of clinical judgment. Out of the three clinical judgment models, the information-processing model is chosen and offers practitioners a practical method of assessing cognitive theories, especially when using technology enhanced items (Dickison et al., 2016). Dickison et al. proposed looking at the nursing clinical judgment model from an information-processing perspective and include the following components: cue recognition, formed hypothesis, judgement of the formed hypothesis, take action, and evaluation of the outcome (2016). Because nursing clinical

judgment is a complex construct, it was decided that a multilayer assessment model would be used.

Laster, Johnson, Raver, and Rink (2014), used a mixed-methods study that focused on clinical judgment in a simulation environment regarding care of a perioperative older patient. The sample included a treatment and control group of 275 nursing students at five colleges of nursing, where the treatment group watched a video of an expert nurse who role modeled caring when similar to the simulated patient, and the control group did not watch the video. After four weeks of simulation, the students participated in the care of real perioperative patients. Students then completed questionnaires related to clinical judgment. The Tanner Model of Clinical Judgment was the theoretical framework used for evaluating clinical judgment, which included noticing, interpreting, responding, and reflecting (Lasater et al., 2014). Qualitative findings raised awareness regarding a link between confidence level and clinical judgment, and the impact of an expert nurse who role modeled clinical judgment. The findings supported that students did benefit from practicing clinical judgment in a safe environment and felt they could take what they learned and apply it in real patient situation (Lasater et al., 2014).

Nursing programs should work to develop clinical judgment in students to better prepare them to care for complex patients. A qualitative study by Lasater (2007a), examined student experiences in their first term course using high-fidelity simulation, and examined how this experience impacted student's development of clinical judgment. After the researcher organized the data collected from focused group discussions, 13

themes were identified. The study results concluded that high-fidelity simulation scenarios showed potential in the development of clinical judgment in nursing students.

Lasater (2007b), in a review of the literature discovered one instrument used to evaluate clinical judgment. Lasater, through a qualitative-quantitative-qualitative design, examined student experiences in one nursing program using high-fidelity simulation and its potential to affect the development of clinical judgment. Four areas were studied: students' perception of confidence level regarding clinical judgment, students' aptitude for critical thinking, qualitative observations of student's clinical judgment while participating in a simulation scenario, and students' experience with simulation, as expressed in a focused group discussion post-simulation (Lasater, 2007b). A clinical day a week was replaced with a day in the simulation lab. Students in the clinical group participated in interacting with a simulated patient while others watched the live simulation on video in a separate room. The study showed there is value for all students in debriefing. In debriefing, those who participated in, or observed the simulation scenario, learned through talking through the simulation experience. Students who simply observed without a purpose, may not experience the quality of learning as those who participated directly with the simulated patient, so to enhance learning for all students, observers are actively engaged in problem solving in debriefing (Lasater, 2007b). The purpose of this study was to describe how students responded to patient scenarios in a simulated environment using Tanner's Framework of Clinical Judgment, and develop a rubric that described levels of performance regarding clinical judgment (Lasater, 2007b).

Ashley and Stamp (2014), examined clinical judgment and reasoning skills in nursing students who were considered novice learners, and those who were more

advanced in the program. Tanner's Model of Clinical Judgment was used as a guide in interpreting study findings. A qualitative study was done with the objective of describing the way novice students think through simulation experiences. Interviews were conducted after simulation to understand what students were thinking when participating in the simulation activity. The authors identified five themes from the interviews: thinking like a nurse, assessment, looking for answers, communication, and magical/reflective thinking.

A systematic review of clinical judgment and reasoning in nursing was conducted by Cappelletti, Engel, and Prentice (2014). A total of 15 studies were analyzed and the results showed support of Tanner's original model, which describes how a nurse uses reasoning skills in situations that require clinical judgment, and specifically how the model can be used as a framework for instruction. In more recent literature, it has been noted that researchers in nursing have grown in knowledge by using a variety of tools to help nursing students. This model has been used in nursing curriculums to help students develop clinical judgment. Using a variety of educational strategies to teach Tanner's model has shown much promise, according to the authors' findings.

Based on a review of over 200 studies done by Tanner (2006), regarding research on clinical judgment, an alternative model of clinical judgment was presented. From the exhaustive literature review, Tanner states that five conclusions can be made: "Clinical judgments are most influenced by what nurses bring to the situation versus the objective data regarding the situation; clinical judgment is knowing the patient and their pattern of response; clinical judgment is influenced by the context in where the situation occurs along with the nursing unit culture; nurses use a variety of reasoning patterns and

reflection on practice which is often triggered by some breakdown in clinical judgment, however, it is critical in the development of clinical judgment and improvement in clinical reasoning” (p. 204). While Tanner’s model describes clinical judgement in seasoned, or expert nurses, Tanner discovered the model could also be used as a tool for nursing faculty to help students grow in the four areas of clinical judgment, which are noticing, interpreting, responding and reflecting (2006). When used in educational settings, the clinical judgment model could serve as a guide when in simulation, especially during debriefing, because students need help recognizing textbook knowledge when learning about a specific patient population (Tanner, 2006).

Lisko and O’Dell (2010) discussed the importance of preparing nurse graduates to think critically in practice and support this concept now, more than ever. The authors support Kolb’s Experiential Learning Theory in nursing curriculum because it offers students the ability to critically think, while traditional approaches may not be best at offering opportunities for students to learn to think critically. The experiential learning theory states that experiences are best understood through apprehension and comprehension (Kolb, 2014). Apprehension occurs when the learner participates in the actual experience, while comprehension occurs outside of the actual experience through abstract conceptualization (Lisko & O’Dell, 2010). Kolb’s Experiential Learning Theory and model are supported as a way to transform the way the learner thinks, and offers learners a new way to grasp and process experiences through four different learning styles. The first learning style is called *accommodating*, which supports those who learn through apprehension and active, hands-on learning strategies. The second style is the *diverging* learner, who learns through apprehension, but internalizes through reflection.

The third style is the *converging* learner, who learns through comprehension, and considers abstract ideas separate from the actual experience. The fourth style is the *assimilating* learner, who learns through comprehension, but also will internalize the learning experience (Lisko & O'Dell, 2010). Kolb's theory supports the middle-range theory and is a model that has been used immensely in learning, and is deemed reliable and valid. The authors discussed how one nursing program over the course of 13 weeks, integrated Kolb's theory into their nursing course, while offering a variety of learning activities to support various learning styles. At the end of the 13 weeks, faculty and students completed an evaluation of their experience.

In one study performed by Chmil, Turk, Adamson, and Larew (2015), the effects of an experiential learning simulation design on clinical nursing judgment development was done. In this quasi-experimental research design, two groups of students were compared in simulation. Those students chosen to participate in the study had no prior simulation education. The students chosen to go through simulation utilizing the experiential learning theory, saw a significant difference when compared to the students who went through the traditional simulation experience. Lasater's Clinical Judgement Rubric (LCJR) was used as the tool to determine if there was a significant difference between the two groups. The students who participated in the experiential learning simulation design had higher scores on the LCJR when compared to those students who were experiencing simulation through a traditional design method.

Kolb and Kolb (2009) described the concept of experiential learning theory (ELT) as a holistic theory of learning, and defines learning as "the process whereby knowledge is created through the transformation of experience, and results from the combination of

grasping and transforming experience (p. 298). ELT is noted to be exemplary in identifying learning differences amongst a variety of academic specialties, and has been described as an interdisciplinary theory. In nursing literature, 63 publications using ELT have been published (Kolb & Kolb, 2009). The ELT model depicts knowledge as being constructed through four learning modes, also known as the experiential learning cycle. The first stage of the ELT learning cycle, *concrete experience*, begins with a task where the learner must actually do something. Kolb describes this learning style as *experiencing*, and learners with this style learn best by becoming actively involved in a situation, then stepping back to reflect on the experience from different viewpoints. The experiencing style learner also loves hands-on activities, and in the more formal learning situations, enjoys activities such as role-playing, working in groups and brainstorming. The second stage of the ELT learning cycle, *reflective observation*, emphasizes reflection. Kolb describes this learning style as *reflecting*, and learners with this style learn best when stepping away from the task and review what has been done, and at this point, these learners use creative ideas to form some type of logic. The reflective style learner asks a lot of why questions, and thrive in learning environments that have deep discussions and interactions. The third stage of the ELT learning cycle, *Abstract Conceptualization* is about the learner attempting to make sense of the learning experience by making comparisons between what they did and what they know. Kolb describes this learning style as *thinking*. These learners are deep thinkers who want to make sense and interpret what has been learned. Learners with this style do not put a lot of energy into feelings, however, enjoy working alone in well-structured environments. The fourth and final stage of the learning cycle, *Active experimentation* is about the

learner planning how they will act upon what they have learned, and have been considered as solution finders. Kolb describes this learning style as *acting*. It is here where the learner must consider how they will put what they have learned into practice. Active learning styles excel best through real-life projects and hands-on activities.

### **Experiential Learning Theory**

A literature search on the theory of experiential learning to guide pedagogy in nursing was conducted. Of particular interest when performing the literature review was to find learning theories that increased nursing students' knowledge development regarding clinical judgment. While the literature shows evidence that offering learning opportunities to develop clinical judgment through technology is needed in order to send graduates into a technology-rich workforce, the literature was scarce in offering theoretical frameworks to underpin such a learning opportunity. According to Benner, when students enter into a nursing program, they have opportunities for learning that support the experiential learning theory, and is key to learning to critically think (Benner, Sutphen, Leonard, & Day, 2010). Educators understand that high-stakes learning environments, such as a clinical setting can be stressful for learners, particularly if they enter into the environment with little understanding of the complexity of their patient population. With that being said, students need learning opportunities in environments where they are free from worry regarding patient harm. Information and communication technologies, such as the EEHR in the learning environment has offered a creative alternative when teaching students about complex patient problems in a safe environment, coupled with reflective feedback from nursing faculty. John Dewey, a pioneer in the field of experiential learning theory, advocates that experiential learning

craves an environment where feedback is readily available and opportunities for reflecting on the experiences are planned (as cited in Benner et al., 2010).

Kolb's Experiential Learning Theory (ELT) relies on metacognition, which is defined as "the conscious awareness of learning" (Chmil et al., 2015, pg. 228). ELT is consistent with middle-range theories, meaning it allows for adaptation in a variety of disciplines, and the literature reveals 63 publications using ELT in nursing research (Kolb & Kolb, 2009; Lisko & O'Dell, 2010). The ELT model, as described by Kolb, portrays two modes of grasping an experience: Concrete Experience and Abstract Conceptualization, and two modes of transforming experience: Reflective Observation and Active Experimentation. Kolb describes these four learning modes as a spiral learning cycle where the learner is involved in experiencing, reflecting, thinking, and acting; a recursive process according to the situation being learned. Kolb's Experiential Learning Theory was used to guide the EEHR learning activities over a seven-week medical-surgical course:

- The first stage of the ELT learning cycle, *concrete experience*, begins with a task where the learner must actually do something. Kolb describes this learning style as *experiencing*, and learners with this style learn best by becoming actively involved in a situation, then stepping back to reflect on the experience from different viewpoints. The experiencing style learner also loves hands-on activities, and in the more formal learning situations, enjoys activities such as role-playing, working in groups and brainstorming.
- The second stage of the ELT learning cycle, *reflective observation*, emphasizes reflection. Kolb describes this learning style as *reflecting*, and

learners with this style learn best when stepping away from the task and review what has been done, and at this point, these learners use creative ideas to make sense of what was learned. The reflective style learner asks a lot of why questions, and thrive in learning environments that involve interactions and discussion.

- The third stage of the ELT learning cycle, *Abstract Conceptualization* is about the learner attempting to make sense of the learning experience by making comparisons between what they did and what they know. Kolb describes this learning style as *thinking*. These learners are deep thinkers who want to make sense and interpret what has been learned. Learners with this style do not put a lot of energy into feelings, however, enjoy working alone in well-structured environments.
- The fourth stage of the learning cycle, *Active experimentation* is about the learner planning how they will act upon what they have learned, and have been considered as solution finders. Kolb describes this learning style as *acting*. It is here where the learner must consider how they will put what they have learned into practice. Active learning styles excel best through real-life projects and hands-on activities.
- Kolb's theory focuses on learning as a continual process, cyclic in nature with no one learning style presiding over the over, and knowledge is created and then transformed into already known existing cognitive frameworks (Lisko & O'Dell, 2010). This model was beneficial as the learners at the project site had

a variety of learning styles, so taking this into context when implementing learning activities had an effect on the positive learning outcomes.

### **Strengths and Limitations of the Literature**

#### **Strengths**

The use of EEHRs as a clinical decision support tool for nurses shows promise throughout nursing curriculum. The literature does support the EEHR as a tool to help students process information that will result in positive outcomes. EEHRs should be taught in every nursing course so students can gain experience using technology and feel comfortable navigating the chart. While the existing literature is limited regarding the use of electronic health records and clinical judgment, the literature does discuss information and communication technologies, such as the EHR and the use of clinical reasoning that results in safe patient outcomes, which ultimately is the result of exercising clinical judgment.

The use of Tanner's Model of Clinical Judgment within the setting of simulation technology has been discussed and studied quite often in nursing. Lasater's Clinical Judgment Rubric has given faculty a valid and reliable tool to help measure clinical judgment in a variety of learning environments. Lasater's rubric has been used in a variety of ways as revealed throughout the literature. For example, students have been asked to self-assess themselves regarding each dimension of clinical judgment.

#### **Limitations**

The integration of information and communication technology, such as the EEHR in nursing curriculum throughout the United States has been lacking. State Boards of Nursing do not require the integration of technology, resulting in a large percentage of

nursing programs showing little proficiency in technology (Meyer et al., 2014). Study settings regarding clinical judgment development through the integration of technology, such as the EEHR are scarce. While the existing literature is limited regarding the use of electronic health records and clinical judgment, the existing literature does discuss information and communication technologies, such as the EHR and the use of clinical reasoning that results in safe patient outcomes, which ultimately is the result of exercising clinical judgment.

### **Gaps in Practice**

Acute care settings often limit a student's access to a patient's EHR in clinical practice sites (TIGER Initiative, 2012). Limited access to the EHR has been identified for students in the clinical setting at this project site. This limited access can create barriers for students to exercise the knowledge, skills, and abilities needed in critical thinking and decision-making that result in clinical judgment.

### **Identification of the Population and Setting**

#### **Setting**

The setting took place at a large two-year community college, located in southeastern South Carolina that offered an associate's degree in nursing. Learning took place in a 114,000-square foot nursing and science building, which included areas where hands-on training with high fidelity patient simulators could be taught (The Post and Courier, 2014). In this setting, students had opportunities to experience real-world patient situations in a controlled simulation environment. These simulation bays mimicked a real-patient care setting. The setting was also equipped with full-scale hospital beds, patient bedside monitors, smart pumps, electronic medication dispensing systems,

medical gases, EHR access, as well as integrated technology for observation and feedback from the nursing faculty.

### **Population**

The population consisted of students enrolled in the Patient-Centered Care I Course, also known as Nursing 195. There were 93 students enrolled in the course. Students in the Patient-Centered Care I course had successfully completed the following seven week courses: Nursing 102: Basic Nursing Skills, Nursing 104: Nursing Care Management I (where students participate in a nursing home clinical rotation).

### **Stakeholders**

Stakeholders are those persons who will have a vested interest in the project, and its outcome. Stakeholders are affected, directly or indirectly, and contribute to the failure or success of the project (White & Zaccagnini, 2017). As shown in Table 1, internal and external stakeholders for this project are listed.

Table 1

*Internal and External Stakeholders*

Project Stakeholders	Type	Invested Interest
Patient-Centered I Faculty	Internal	Desire to have students improve on using information technology resources, such as the EHR when making clinical decisions (exercise clinical judgment)
Dean of Nursing	Internal	Desire to see students improve on ATI clinical judgment (> than or equal to 71%), as well as improvement on student learning outcome for CJ (greater than or equal to 71%)
Students	Internal	Understanding of the use of information technology (EHR) and its value in making clinical decisions regarding expected patient outcomes. Student feedback through measuring instruments will be critical to the outcome and sustainability of the project. Students increase scores on clinical judgment questions on summative evaluations.
Site Accreditors	External	Desire to know if students are utilizing technology as a supportive tool when making clinical decisions regarding patient care. The systematic evaluation plan at the institution where the project was implemented must show evidence to the American Association of Colleges of Nursing (AACN) site accreditors of how information and technology is used in the curriculum, and also if clinical judgment is meeting the benchmark set by the nursing division.
Organization	External	Published data of program outcomes on the front page of the nursing website, as well as reports given to those individuals who have a vested interest in the college (e.g. donors, area hospitals, politicians)

## Organizational Assessment

Before deciding if the project could be implemented, a thorough assessment of the project site's strengths, weaknesses, opportunities and threats (SWOT) had to first be assessed, and was a necessary step to ensure success (White & Zaccagnini, 2017). (Figure 4).

<p style="text-align: center;"><b><u>Strengths</u></b></p> <ul style="list-style-type: none"> <li>• No financial cost to implement project as EEHR software was required by students when entering the program</li> <li>• No financial cost for faculty, as current faculty had ability to implement EEHR activities into their already existing content</li> <li>• Stakeholder support, specifically the practice partner, Dean of the school of nursing</li> <li>• Needs assessment survey results revealed a gap, or inconsistent use of EEHR activities throughout the curriculum</li> <li>• Facilities are state-of-the-art (simulation, cooperative learning lab, skills labs) for project implementation</li> </ul>	<p style="text-align: center;"><b><u>Weaknesses</u></b></p> <ul style="list-style-type: none"> <li>• Starting August 2018, students entering into fundamental courses, in an attempt to save up-front cost coming into the nursing program, were not required to purchase the EEHR software, (\$290 for a two-year subscription). Students were required to purchase the EEHR in their second semester, prior to entering their first Patient-Centered Care course (NUR 195). Because students struggle financially in nursing school, ensuring that students have purchased the EEHR software prior to entering the course was monumental.</li> <li>• Some faculty were not comfortable with activities involving technology (EEHR, Simulation, Teaching with technology in class/seminar).</li> </ul>
<p style="text-align: center;"><b><u>Opportunities</u></b></p> <ul style="list-style-type: none"> <li>• Raise awareness of technology and its use to provide safe patient care.</li> <li>• Improve clinical judgment scores on standardized tests as well as student learning outcome measurement for clinical judgment</li> <li>• Emailed Fundamental department head and associate dean of nursing asking them to announce that DocuCare software is mandatory when entering the Patient-Centered Care I Course (Nursing 195). Also, Department head of this course can send an email blast out to incoming students of these courses reminding them to purchase the required software prior to starting in these courses.</li> </ul>	<p style="text-align: center;"><b><u>Threats</u></b></p> <ul style="list-style-type: none"> <li>• Loss of simulation director (as of 8/1/17).</li> <li>• Faculty not having the right attitude regarding technology and its benefits in decision making.</li> <li>• Fundamental faculty may not announce the importance of purchasing required EEHR software prior to entering the Patient-Centered Care I Course, and students may not be financially prepared to purchase it at the start of the course.</li> </ul>

Note. This figure illustrates the strengths, weaknesses, opportunities, and threats to this project.

Figure 4. SWOT Analysis Diagram.

### **Assessment of Resources**

Upon entering the Patient-Centered Care I course (Nursing 195), students were required to purchase an educational electronic health record (EEHR) software. Some of the features in the EEHR include previous patient visits and hospitalizations, a list of healthcare providers, interdisciplinary notes, nursing assessments, provider orders, medication administration records, intake/output records, vital signs, and diagnostic test records (Wolters Kluwer, 2013). Virtual patient cases created by DocuCare®, compliment the other e-bundle resources, as well as the National Council Licensing Examination (NCLEX) candidate preparation and Quality and Safety Education for Nurses (Wolters Kluwer, 2013).

This software provided a realistic documentation and information platform, and mimicked what is often seen in a real patient's chart. As a standard requirement, and prior to entering the first nursing course, students were required to purchase a personal laptop. Some of the features in the EEHR included previous patient visits and hospitalizations, a list of healthcare providers, interdisciplinary notes, nursing assessments, provider orders, medication administration records, intake/output records, vital signs, and diagnostic test records. In 2014, over thirty-million dollars was spent to build a 114,000-square foot nursing and science building, where hands-on training with high fidelity patient simulators are taught (The Post and Courier, 2014). In the simulation environment, students are afforded opportunities to experience real-world patient situations in a controlled environment. These simulation bays, which mimic a real-patient care setting, consist of a full-scale hospital bed, patient bedside monitors, smart pumps, electronic medication dispensing systems, medical gases, EHR access, as well as

integrated technology for observation and feedback from the nursing faculty. There are four full-time faculty members in the Patient-Centered Care I course.

### **Project Purpose, Question, and Desired Outcomes**

What difference will this project make? This question, according to White and Zaccagnini (2017), described the expected outcomes which will impact the project. Through a review of the literature, it is evident that students should learn how to use an electronic health record (EHR) early in their education, as it serves as a necessary tool when making sound clinical decisions that result in safe patient outcomes. Safe patient outcomes are the result of being able to retrieve and interpret information from the EHR, which reflects clinical judgment in nursing.

The purpose of this project was to develop clinical judgment in medical-surgical nursing students through the integration of information and communication technologies, such as the EEHR. This was accomplished through hands-on learning activities in on-campus clinical orientation, seminar, and simulation. The desired outcome for this project was that students in their first Patient-Centered Care course in the ADN program, would learn to use the EEHR when making clinical decisions regarding patient care over a seven-week course. Lasater's Clinical Judgment Rubric has been tested and determined to be a reliable and valid tool, and was used in this project to determine the extent of clinical judgment exercised when using the EEHR as a support tool when making clinical decisions. Students participated in a variety of hands-on learning activities over a seven-week term in Spring I, 2018.

Through successful implementation, the steps to receiving the desired outcome for developing clinical judgement in second semester nursing students through the

integration of information and communication technologies, such as the educational electronic health record is shown using the Logic Model (Figure 5).

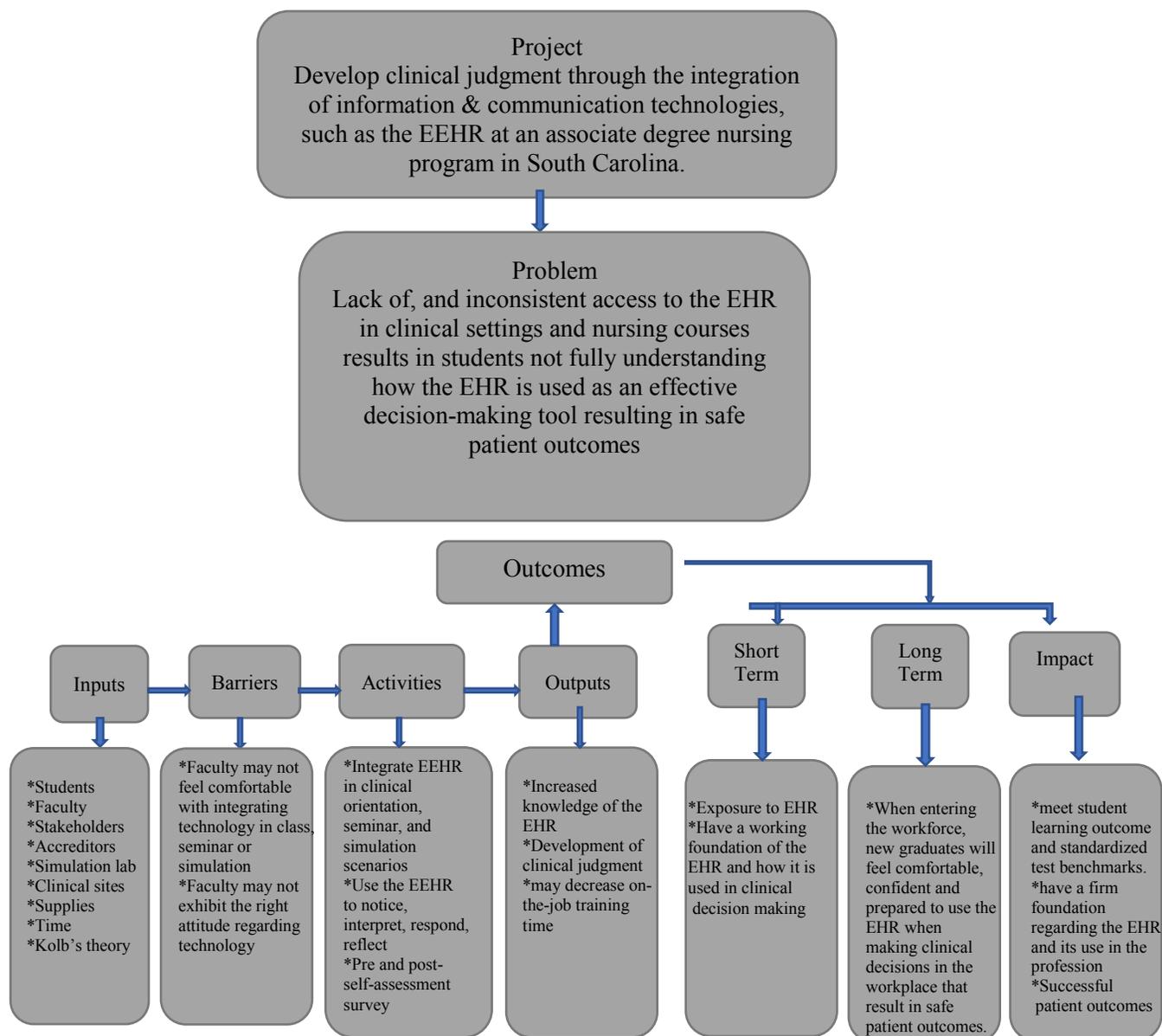


Figure 5. Logic Model for Clinical Judgement and EEHR Implementation

This model demonstrates the implementation plan for developing clinical judgment through the integration of information and communication technologies, such as the EEHR, in the nursing division at an associate degree nursing program in South Carolina, using the Logic Model format, adopted from *Project Planning and Management, a Guide for Nurses and Interprofessional Teams* (Harris, 2016). The impact of the project would result in students entering the workforce with a working knowledge of information and communication technology, such as the EHR and how this tool can aid in making clinical decisions that result in safe patient outcomes.

### **Team Selection**

The dean of nursing and the Patient-Centered Care I and II Course department head (project investigator) were selected because they had the “correct skills to conduct the project,” and their buy-in was necessary for successful project implementation (White & Zaccagnini, 2017 p. 459). If resources had not been available, it is these individuals who could offer solutions to ensure successful implementation of the project. Another reason they were chosen was their influence on others who may be directly and/or indirectly affected by the project implementation. Without their support, others may not have been so quick to accept the project. To ensure project success, leadership within the nursing division was imperative. Although not technically a committee member, the newly elected curriculum and integrity committee (C&I) chair, as well as the entire committee, was kept abreast of this DNP project. This committee reviews the use of technology throughout the curriculum, and ensures student learning outcomes (Communication) are being met. A simulation staff member was chosen on the team because of their expertise in integrating high-fidelity simulation scenarios, which was

necessary when implementing activities in the simulation lab. The four full-time faculty members for the Patient-Centered Care I course were included because these individuals implemented the learning activities within the course.

### **Definition of the Problem**

Students at the project site are very limited in their exposure to EHRs in the clinical setting and are not formerly taught how information and communication technologies, such as the EHR can serve as a tool when making clinical decisions that are the result of exercising clinical judgment. This project provided opportunities to develop clinical judgement in second semester nursing students through the integration of information and communication technologies, such as the educational electronic health record (EEHR).

### **Summary**

The literature is supportive of incorporating EEHRs into nursing curriculum while encouraging active learning experiences that will incorporate the right knowledge skills and attitudes regarding technology. Helping students develop clinical judgment through EEHR learning activities is necessary, since students do not have opportunities to fully embrace EHRs in the clinical environment. Kolb's Experiential Learning Theory was chosen as the theoretical framework for this DNP project because it offers students the ability to critically think, while a traditional learning environment may not offer the best learning environment for learning critical thinking skills. A logic model was used to describe the implementation steps for developing clinical judgment through the integration of information and communication technology, such as the EEHR into seminar and simulation learning environments.

A thorough assessment of the project site's strengths, weaknesses, opportunities, and threats (SWOT) were assessed prior to implementation, as well as internal and external stakeholders who had a vested interest in the project and its outcome.

### **SECTION III**

#### **THEORETICAL FRAMEWORK**

Kolb's Experiential Learning Theory (ELT) was used as the theoretical underpinning for this DNP project. As stated earlier, the literature did reveal evidence that offering learning opportunities to develop clinical judgment through technology is needed in order to send graduates into a technology-rich workforce, however, the literature was scarce in offering theoretical frameworks to underpin such a learning opportunity. According to Benner et al. (2010) when students enter into a nursing program, they have opportunities for learning that support ELT, and is described as the "hallmark of nursing education" (Benner et al., 2010, p. 132). Educators understand that high-stakes learning environments, such as a clinical setting can be stressful for learners, particularly if they enter into the environment with little understanding of the complexity of their patient population. With that being said, students need learning opportunities in environments where they are free from worry regarding patient harm. Information and communication technologies, such as the EHR in the learning environment has offered a creative alternative when teaching students about complex patient problems in a safe environment, coupled with reflective feedback from nursing faculty. John Dewey, a pioneer in the field of ELT, advocates that experiential learning craves an environment where feedback is readily available and opportunities for reflecting on the experiences are planned (as cited in Benner et al., 2010).

Kolb's Experiential Learning Theory relies on metacognition, which is defined as "the conscious awareness of learning" (Chmil et al., 2015, pg. 228). ELT is consistent with middle-range theories, meaning it allows for adaptation in a variety of disciplines,

and the literature reveals 63 publications using ELT in nursing research (Kolb & Kolb, 2009; Lisko & O'Dell, 2010). The ELT model, as described by Kolb, portrays two modes of grasping an experience: Concrete Experience and Abstract Conceptualization, and two modes of transforming experience: Reflective Observation and Active Experimentation. Kolb describes these four learning modes as a spiral learning cycle where the learner is involved in experiencing, reflecting, thinking, and acting; a recursive process according to the situation being learned. Kolb's ELT was used to guide the EEHR learning activities over the seven-week medical-surgical course:

- The first stage of the ELT learning cycle, *concrete experience*, begins with a task where the learner must actually do something. Kolb describes this learning style as *experiencing*, and learners with this style learn best by becoming actively involved in a situation, then stepping back to reflect on the experience from different viewpoints. The experiencing style learner also loves hands-on activities, and in the more formal learning situations, enjoys activities such as role-playing, working in groups and brainstorming. Students were given hands-on activities in a variety of learning environments (on-campus clinical orientation, seminar, and simulation). Some of the activities involved working in groups, while others afforded learning opportunities in a one-on-one setting.
- The second stage of the ELT learning cycle, *reflective observation*, emphasizes reflection. Kolb describes this learning style as *reflecting*, and learners with this style learn best when stepping away from the task and review what has been done, and at this point, these learners use creative ideas

to make sense of what was learned. The reflective style learner asks a lot of why questions, and thrive in learning environments that involve interactions and discussion. The learning activities offered time for reflection, mostly through debriefing encounters after simulation and in the seminar setting.

- The third stage of the ELT learning cycle, *Abstract Conceptualization* is about the learner attempting to make sense of the learning experience by making comparisons between what they did and what they know. Kolb describes this learning style as *thinking*. These learners are deep thinkers who want to make sense and interpret what has been learned. Learners with this style do not put a lot of energy into feelings, however, enjoy working alone in well-structured environments. This type learner presented to be the most challenging for this DNP project. Due to the large class size and instructional time allotted for each class, students were asked to work in groups of two to four while completing the EEHR learning activities.
- The fourth stage of the learning cycle, *Active experimentation* is about the learner planning how they will act upon what they have learned, and have been considered as solution finders. Kolb describes this learning style as *acting*. It is here where the learner must consider how they will put what they have learned into practice. Active learning styles excel best through real-life projects and hands-on activities.
- Kolb's theory focuses on learning as a continual process, cyclic in nature with no one learning style presiding over the over, and knowledge is created and then transformed into already known existing cognitive frameworks (Lisko &

O'Dell, 2010). This model was beneficial as the learners at the project site had a variety of learning styles, so taking this into context when implementing learning activities had an effect on the positive learning outcomes.

## **SECTION IV**

### **PLANNING**

#### **Project Proposal**

The purpose of this DNP project was to develop clinical judgement in medical-surgical nursing students through the integration of information and communication technologies, such as the educational electronic health record (EEHR).

#### **Timeline**

A detailed timeline was important to the success of completing this DNP project on time and was instrumental in ensuring that goals and deadlines were met. As shown in Table 2, a 12-month timeline for this DNP project is provided.

Table 2

*DNP Project Timeline*

Task	Start Date	Semester	Status
Problem Recognition	May 2017	Summer	Completed
Secure Capstone Project Chair (Dr. Waters)	May 2017	Summer	Completed
Submit DNP Project Proposal Approval Form to BB Dropbox	June 2017	Summer	Completed
Secure Practice Partner at Project Site	June 2017	Summer	Completed
Secure Capstone Advisory Committee	June – September 2017	Summer/Fall	Completed
Capstone Project Chair and Define Project Topic	June, 2017	Summer	Completed
Secure Practice Site for DNP Project	June, 2017	Summer	Completed
Expanded Literature Review for Problem Identified	June – December, 2017	Summer/Fall	Completed
Identify Sponsors & Stakeholders	June, 2017	Summer	Completed
Organizational Assessment to include SWOT Analysis	June, 2017	Summer	Completed
Assess Available Resources	June, 2017	Summer	Completed
Determine Desired & Expected Outcomes	July, 2017	Summer	Completed
Select Team Members	June – August, 2017	Summer	Completed
Cost/Benefit Analysis	June, 2017	Summer	Completed
Define Scope of Problem	June, 2017	Summer	Completed
Goals, Objectives & Mission Statement	July, 2017	Summer	Completed
Process/Outcome Objectives	July, 2017	Summer	Completed
Mission Statement	July, 2017	Summer	Completed
Theoretical Underpinnings	September, 2017	Fall	Completed
Project Management Tools (Project Timeline, Budget)/Work Planning	September, 2017	Fall	Completed
Develop Evaluation Plan, Logic Model Development, Quality Improvement Methods	September – October, 2017	Fall	Completed
IRB Approval	October 2017 – January 2018	Fall/Spring	Completed
Project Implementation	January – February, 2018	Spring	Completed
Data Interpretation	March – May, 2018	Spring	Completed
Dissemination / Utilization and Reporting of Reports	April – June, 2018	Summer	Completed

### **Budget**

Although there was no personal monetary cost to this project, there are a couple of observations that should be noted. Students were required to purchase a two-year subscription for the EEHR as part of their e-learning resources (\$290.00). This resource is paid in full at the time of purchase, and prior to entering into the Patient-Centered I Course. Faculty who facilitated the EEHR activities in the course already had prior experience with the software, so no special training was required for faculty. Although these activities were incorporated into the course in which faculty teach, it must be noted that faculty had never had experience building an EHR chart, so the project investigator's time was considered for building EHRs for simulation patients. The project investigator created a 10-minute Prezi presentation on the four dimensions of clinical judgement using Lasater's Clinical Judgment Rubric as a guide to be discussed in the first seminar.

### **Summary**

Planning for this DNP project included a detailed timeline over a one-year period. Having a timeline was instrumental in keeping up with deadlines and meeting goals that were imperative to project completion. Expenses for project implementation fell mainly on students, which consisted of the purchase of a two-year subscription to access the EEHR. The project investigator invested personal time into building EEHR charts for simulation learning activities. Overall, budget expenses for this DNP project were minimal, and the project investigator was able to implement using available resources from the nursing program.

## **SECTION V**

### **EVALUATION PLAN**

The objective for this DNP project was to help students develop clinical judgment through the integration of Communication and Information Technology, such as the EEHR. The course faculty had opportunity to pilot the learning activities and offer feedback prior to implementation. A debriefing meeting was held with the committee members after the statistical analysis was run to discuss results, as well as the benefits of continuing EEHR learning activities in the course.

#### **Quality Improvement**

Students had opportunity through learning activities to use the EEHR to develop clinical judgment. Through these opportunities, students should use EHR technology to make clinical decisions resulting in positive patient outcomes.

Quality improvement methods were implemented using Shewhart's PDCA/PDSA cycle, with the goal of improving the process of how students use technology in a way that develops clinical judgment. Shewhart's PDCA cycle consist of four steps: Plan, Do, Check/Study and Act (White & Zaccagnini, 2017). (Figure 6).

#### PLAN

**I plan to:** have students self-assess (rate) themselves and their development in clinical judgment before and after participating in EEHR learning activities in a seven-week nursing course.

**I hope this produces:** students who are developing clinical judgment when using an EEHR.

**Steps to execute:** At the beginning and end of the course, students will self-assess (rate) themselves in the four dimensions of clinical judgment using Lasater's Clinical Judgment Rubric, and the self-assessment scoring sheet.

#### DO

**What did you observe?** At first, students did not always think to seek out information regarding a patient problem in the EEHR. Students learned to use the EEHR over the seven weeks when making decisions regarding patient information.

During the last week in simulation and at the end of the seven-week course, students began to see the value of the EEHR as a tool to seek out patient information. Although not all students knew how to interpret the information to respond appropriately, faculty and students reflected on this deficit during debriefing.

#### CHECK/STUDY

**What did you learn? Did you meet your measurement goal?** Students did very well at *focused observation* (a criteria under the dimension of *Noticing*, and there was a significant difference).

While the other dimensions did not show a significant difference, there were two areas that did show marginal significance: The criteria *Making Sense of Data*, under the dimension of *Interpreting*, and the criteria *Commitment to Improvement*, under the dimension of *Reflecting*.

#### ACT

**What did you conclude from this cycle?** Speaking the language of clinical judgment (noticing, interpreting, responding and reflecting) to students throughout the EEHR learning process is critical if students are to understand how to process information regarding a patient's condition.

Figure 6. PDCA Cycle

### **Facilitators**

The buy-in of the faculty and the administration at the project site was a huge contributing factor to the success of implementation. The faculty gave creative input when designing the simulation EHR learning activities, which actually helped students to have a richer learning experience and mimicked realism. The dean at the project site was encouraging, supportive, and understood the importance of developing clinical judgment through technology. The dean valued this project and its outcomes and asked if this DNP work could be included on the agenda and discussed at the annual advisory council meeting for area stakeholders.

### **Cost/Benefit Analysis**

The benefit of such a project to the workforce is encouraging when considering the minimal cost of this project, which fell on the student. Although many of our students struggle financially while in nursing school, the purchase of this software should be seen as an investment towards their future, and not a burden or waste of money. Historically, students have been required to purchase an e-bundle when entering into the nursing program, which included an EEHR. Starting this past Fall 2017, students were required to purchase the EEHR prior to entering the first Patient-Centered Care I course, which is the beginning of their second semester. Because this was already required, there was no extra cost benefit to the student. No added cost incurred for faculty workload, because the activities were incorporated into their existing courses.

### **Summary**

The project investigator held a debriefing meeting with committee members to discuss implementation results. Quality improvement methods were used for this project

(Shewhart's PDCA/PDSA cycle), and were discussed with the committee members. The facilitators were supportive of the DNP work and saw the value of EEHR learning activities and its contribution to the workforce. Although the cost of the software may be seen as expensive by the student, a cost/benefit analysis supports EEHR software as an investment towards the student's future.

## **SECTION VI**

### **IMPLEMENTATION**

#### **Protection of Human Subjects**

Institutional Review Board (IRB) approval was sought at the project site and final approval was granted on October 7, 2017. After receiving approval from the project site, the IRB process began for the University. Permission was obtained from the review board at the university on January 24, 2018, and the project was deemed as exempt. While student participation was mandatory for all learning activities, the self-assessment survey was strictly voluntary. No identifying data was placed on the surveys, therefore deeming the survey anonymous. All data was interpreted for the group and at no time was data analyzed for a particular individual. Students were under no pressure to complete the self-assessment survey. At the beginning of the course, students were emailed a survey link, and again at the end of the course. Institutional Research (I.R.) at the project site was responsible for sending the emails to the students enrolled in the course. The email included a message which also served as the consent form (Appendix A). After reading the message, students had the option of clicking on the survey link. By clicking on the survey link, this served as the student's consent to participate in the study. The project investigator worked with the I.R. department to monitor and ensure integrity of the data.

On the first day of class, the project investigator gave each student a copy of Lasater's Clinical Judgment Rubric (Appendix B). The project investigator explained the concept of clinical judgment and how the use of technology can help develop clinical judgment. Students were also informed at this time about the voluntary self-assessment survey at the beginning of the course, and again at the end of the course.

### **Threats and Barriers**

A threat that should be mentioned was allowing students to self-assess themselves. As one study in the literature review mentioned, it is not uncommon for individuals to self-assess themselves above or higher than they really are (Miller et al., 2014). The fact cannot be denied that students at the project site, especially at the beginning of the course, may have rated themselves at a higher level than what they truly are. Nonetheless, the students were instructed to rate themselves at the beginning of the seven-week course, then again at the end of the seven-week course, after exposure to a variety of hands-on learning activities involving the EEHR.

Sample size may have had an impact on the survey results. Students were not required to take the self-assessment survey. Although faculty encouraged students to self-assess themselves, the majority of students chose not to. One of the reasons may be related to course duration. Students quickly come to understand that the seven-week course is demanding, so the priority to complete something that is not a course requirement may be low on their priority list. Another point regarding sample size was the fact that the pre-course assessment survey was not delivered to the student's email until the start of the third week of class. By this time, students were immersed in preparing for their first test, which from the student's perspective, may have been more important than completing the pre-course self-assessment survey.

Although there were a couple of barriers that were unforeseen at the time, the project facilitator and the faculty worked through them. A couple of weeks prior to implementation, one of the four full-time faculty members was unable to work during the spring term during implementation. This left three full-time faculty to teach their own

workload, and then some extra. Another barrier worth mentioning was the abnormally large class size. Just two weeks prior to the start of class, the department head learned that over 20 students who needed to re-take the course would be coming back into the course over the Spring I term. Because these students were repeaters, some of them did not have the EEHR software required for the course. Despite students being reminded the first day of class that the software was required in the course, students still chose not to purchase it for financial reasons.

### **Steps in Implementation**

#### **Preplanning**

Project planning began with a meeting with the Dean of Nursing at the project site where discussion took place regarding project specifics, as well as how the project would help students meet learning outcomes. Throughout the fall semester, the dean was kept abreast of the project planning details. An initial planning meeting with the Patient-Centered Care I faculty was held. Since some of the learning activities were already known to the faculty, the learning curve came from incorporating EEHRs into simulation scenarios. The project investigator met several times throughout the fall with each individual faculty member to discuss their assigned EEHR activities. Faculty experienced a learning curve regarding addition of technology (EEHR) to the simulation activities. To help decrease anxiety prior to implementation, the project investigator encouraged and worked with the faculty to trial the EEHR in simulation Fall II term, prior to implementation in Spring I term. Having a day to trial the scenarios prior to implementation helped faculty to feel comfortable with the technology, and allowed faculty to give feedback to the project investigator. A meeting was held with the newly

hired simulation director at the project site. This individual was very helpful with getting the simulation scenarios set-up, to include ensuring barcode scanners were available in each patient room and connected to the computer on wheels. The project investigator manually built the EEHRs for each patient simulation scenario and ensured that all medications were barcoded to match the patient armband.

### **Project Design**

Ninety-three students were enrolled in the Spring I, 2018, Patient-Centered I Course. Students were required to participate in a variety of learning activities involving the EEHR over a seven-week period. While these learning activities were required, participation in the project pre/post self-assessment surveys were optional. Four full-time faculty taught the course content, one of which was the project investigator, who also served as the facilitator. The newly added learning activities are described below:

1. Seminar and Clinical Orientation: During week one, a short presentation on clinical judgment created by the project investigator was presented to the class. After the presentation, the students had opportunity to ask questions and seek clarification as needed. During the third week of class, students were asked to self-assess themselves using Lasater's Clinical Judgment Rubric (LCJR) as a guide. This self-assessment survey was sent via an embedded link to their school email account.
2. Clinical Orientation: Students did not have any prior experience using the EEHR in previous nursing courses, so a learning activity was necessary to orient students to the EEHR. Students were given a code to log into the EEHR software and join the class created for them. The class consisted of noticing charts of the patients to

be used in a variety of learning activities throughout the course. The first activity consisted of teaching the components of the electronic health record: *Navigating the Chart of Vincent Brody* (an activity to learn the components of the electronic health record). (Appendix C).

- a. Activity Description: This activity presented the students with a variety of tasks to complete which helped to orient them to the educational electronic health record (EEHR). The tasks included:
    - i. finding assessment data
    - ii. locating healthcare provider notes
    - iii. identifying location of demographic information and other tasks.
  - b. Learning Objectives:
    - i. At the end of the learning activity, the learner will be able to demonstrate how to log into the EEHR
    - ii. At the end of the learning activity, the learner will be able to identify where pertinent patient information is located in the EEHR
    - iii. At the end of the learning activity, the learner will be able to demonstrate how to perform data entry in the EEHR
3. Clinical Lab: Medication administration using the EEHR (an e-MAR bar-code scanning activity). Appropriate actions the student should take are outlined under each medication scenario.
- a. Learning Objectives:
    - i. At the end of the medication administration activities, the learner will be able to: Select the correct patient in the EEHR.

- ii. At the end of the medication administration activities, the learner will be able to: distinguish pertinent information prior to administering medications (allergies, vital signs, labs, and other assessment findings.)
- iii. At the end of the medication administration activities, the learner will be able to Verify the rights of medication administration using bar-code scanning technology effectively
- iv. At the end of the medication administration activities, the learner will be able to: Evaluate medication administered for effectiveness
- v. Medication station #1: Anne Bullock
  - 1. Activity Description: This activity presents the student with the task of administering a 5-mg dose of enalaprit by mouth to a 90-year old patient. Appropriate actions the student should complete include:
    - a. Use the EHR to locate the patient's most current blood pressure. (Noticing)
    - b. Use learned knowledge of blood pressure parameters (Interpreting)
    - c. Make a clinical decision to administer or hold the scheduled medication (Responding)
    - d. Evaluate the effectiveness of the intervention (Reflecting)
- vi. Medication station #2 Skyler Hanson

1. Activity Description: This activity presents the student with the task of administering NPH and as part, subcutaneously (SQ), to an 18-year old patient. Appropriate actions the student should complete include:
  - a. Use the EHR to locate the patient's most recent glucose level. (Noticing)
  - b. Use learned knowledge of glucose parameters. A sliding scale will be imbedded into the e-MAR for the student to review and interpret (Interpreting)
  - c. Make a clinical decision to administer or hold the medications - sliding scale and scheduled (Responding)
  - d. Evaluate the effectiveness of the intervention (Reflecting)

vii. Medication 3: Jennifer Hoffman

1. Activity Description: This activity presents the student with the task of administering an inhaled combination medication – (fluticasone propionate-salmeterol), to a 33-year old patient. Appropriate actions the student should complete include:
  - a. Use the EEHR to locate scheduled time of administration. (Noticing)

- b. Use learned knowledge of nursing considerations and pharmacokinetics of drug (Interpreting)
- c. Make a clinical decision to administer or hold the scheduled medication after assessing the patient (Responding)
- d. Evaluate the effectiveness of the intervention (Reflecting)

viii. Medication 4: Mary Richard

1. Activity Description: This activity presents the student with the task of administering an intravenous medication—potassium 10 mEq to an 82-year old patient. Appropriate actions the student should complete include:
  - a. Use the EEHR to locate most current potassium level. (Noticing)
  - b. Use learned knowledge of lab values for potassium (Interpreting)
  - c. Make a clinical decision to administer or hold the scheduled medication after assessing lab values (Responding)
  - d. Re-evaluate the effectiveness of the intervention (Reflecting)

4. High-fidelity Simulation: Anne Bullock.

1. Activity Description: This high-fidelity simulation affords opportunity to provide care to a 90-year old patient who has fallen at the long-term care facility and brought to the emergency department (ED) for assessment and further work-up. The patient is admitted from the ED to the medical surgical unit where the student will provide care of the patient. Labs are drawn and a urinalysis is collected in the ED and results are pending. Student receives a report from the ED nurse via an Avatar that pops up on the monitor screen stating the patient is stable, A&OX3 and urinalysis results are not yet available. During the scenario, the student will communicate with the healthcare provider and new orders (to include an I/O catheterization for urine culture and sensitivity, Macrobid 50mg) will be initiated to treat the urinary tract infection. Appropriate actions the student should complete include:
  - a. Use Ms. Bullock's EEHR to locate pending labs, most recent set of vital signs and physician orders. Student should notice the urinalysis results are now available: pH is high, presences of leukocyte esterase, nitrates and blood in urinalysis. Student should also notice a change in patient's mental

status from what was given in report (alert & oriented to self). (Noticing)

- b. Use the resources in the EEHR, such as Lippincott Desktop Advisor, to interpret lab findings, as well as fundamental knowledge learned regarding level of orientation (Interpreting).
- c. Through recognizing abnormal urinalysis, as well as level of orientation of patient, student should prioritize and decide what interventions would be provided first. The healthcare provider should be notified and lab results findings communicated (Responding)
- d. Evaluate the effectiveness of the interventions provided (communicating with healthcare provider using SBAR, performing skills appropriately, providing patient-centered care, effective communication with patient, maintain safety of patient, provide evidence-based care, work with team members effectively, document new orders, document key assessment findings, document interventions provided, navigate the patient's chart effectively (Reflecting)

5. High-fidelity Simulation: Gaye Riley.

1. Activity Description: This high-fidelity simulation affords opportunity to provide care to a 72-year old patient who has been brought to the emergency department (ED) for complaints of shortness of breath, general malaise and persistent cough. Vital signs show an SaO<sub>2</sub> of 82%. Labs results are drawn (CBC, BMP and ABGs), and results are ready to be read. Student must be able to navigate the patient's chart to get information needed to care for the patient. During the scenario, the student will communicate with the medical provider and new orders will be initiated to treat the pneumonia. Appropriate actions the student should complete include:
  - a. Use Ms. Riley's EEHR to locate labs, most recent set of vital signs and physician orders (Noticing).
  - b. Use the resources in the EEHR, such as Lippincott Desktop Advisor, to interpret lab findings, (Interpreting).
  - c. Through recognizing abnormal findings, student should prioritize and decide what interventions would be provided first. Healthcare provider should be notified and lab results findings communicated (Responding)

- d. Evaluate the effectiveness of the interventions provided (communicating with healthcare provider, performing skills appropriately, communicating with patient, maintaining safety of patient, providing evidence-based care, working with team members effectively, documenting key assessment findings, documenting interventions provided, navigating the patient's chart effectively  
(Reflecting)

6. Seminar: Harry Hadley, a virtual simulation patient.

1. Activity Description: This virtual simulation activity affords opportunity to provide care to virtual patient, Harry Hadley. Mr. Hadley is a 78-year old patient with a feral cat wound, which has not responded to oral antibiotic therapy. Mr. Hadley has been instructed by healthcare provider to go to the emergency department (ED) for assessment and further work-up. Mr. Hadley will be admitted from the ED to the medical surgical unit. A 24-hour creatinine clearance has recently been collected on the patient and results are ready to be read, as well as a C-reactive protein, CBC and a serum creatinine. During the virtual simulation, the student will communicate with the pharmacist where new orders (Vancomycin every 24 hours versus every 12 hours) will be

initiated to treat the infection, while protecting the kidneys.

Appropriate actions the student should complete include:

- a. Use Mr. Hadley's EEHR to read admission history and locate current lab results as well as vital signs. Student should notice the creatinine clearance results are now available in the EEHR: creatinine clearance is low, creatinine level is high (Noticing)
- b. Use the resources in the EEHR (Lippincott Desktop Advisor) to interpret lab findings (Interpreting).
- c. Through recognizing abnormal labs, student should prioritize and decide what intervention would be provided first. Student should follow healthcare provider orders and consult pharmacist for vancomycin dose adjustment after reviewing creatinine clearance values and proceed with administering the medication based off of the new vancomycin orders (Responding)
- d. Evaluate the effectiveness of the interventions provided (performing skills appropriately, communicating with patient, maintaining safety of patient, providing evidence-based care, working with team members effectively, documenting key assessment findings, documenting interventions)

provided, navigating the patient's chart effectively  
(Reflecting)

### **Project Implementation**

This DNP project sought out to develop clinical judgment through the integration of information and communication technology, such as the EEHR, in second semester medical-surgical students in the Patient-Centered Care I Course over Spring I Term, 2018. Resources for this DNP project were made available from the project site as well as the student's purchase of the EEHR software, which was required for the course.

### **Instruments**

Lasater's Clinical Judgment Rubric (LCJR) along with Lasater's Self-Assessment Survey (Appendix B & Appendix D), was provided for students to self-assess each dimension of clinical judgment prior to and upon completion of participating in the EEHR learning activities. Permission by Dr. Lasater to use the tool was obtained (Appendix E). The LCJR is a valid and reliable tool, which has been used in nursing education numerous times since 2007, and describes clinical judgment performance, by levels. Katie Adamson, PhD, RN; Paula Gubrud, EdD, RN; Stephanie Sideras, PhD, RN; and Kathie Lasater, EdD, RN, ANEF (2012); published work in regard to others' research supporting the reliability and validity of the LCJR. In their article entitled *Assessing the Reliability, Validity, and Use of the Lasater Clinical Judgment Rubric: Three Approaches*, the authors summarized three different approaches examining the LCJR. In study one: interrater reliability was 0.889; in study two: the percent agreement method was used for assessing reliability and results ranged from 92% to 96%; study three used level of agreement to analyze reliability and results ranged from 57% to 100%. In another

article entitled *Reliability: Measuring Internal Consistency Using Cronbach's  $\alpha$* , Katie Adamson, PhD, RN and Susan Prion, EdD, RN, (2013) discuss at two different time points that Cronbach's alpha on the LCJR was 0.927 and 0.942. Authors support that the LCJR may be acceptable with an alpha = 0.90, however, when used to compare groups an alpha as low as 0.70 may be acceptable.

On the self-assessment survey, a Likert scale with responses ranging from one to four were used to score each dimension, as well as subcategories of each dimension (1=Beginning, 2=Developing, 3=Accomplished and 4=Exemplary). Higher numbers represented a higher level of clinical judgment.

### **Tools**

The following resources and instructional methods were used in this DNP project: classrooms, seminar rooms, clinical orientation lab, simulation lab, simulation scenarios, computers on wheels in simulation rooms used for accessing the patient's EEHR, EEHR software, bar-code scanning device, bar-code medications for each simulation scenario, patient bar-coded armbands for simulation, and clinical orientation activities. As part of the course requirements, students were required to purchase their own personal laptops and the EEHR software.

### **Process**

During the first seminar in the first week of class, a presentation on clinical judgment was given by the project investigator. Students were introduced to Lasater's Clinical Judgment Rubric and examples of each clinical judgment dimension were explained. Students on the first clinical orientation day during the first week of the course, participated in an activity where they learned about the EEHR and its significance

to clinical decision making. Next, students learned to navigate a patient's chart using the EEHR. Students then participated in four medication administration learning stations utilizing technology. On week three, students had opportunity to participate in the pre-course survey. Over the next several weeks, students continued to participate in a variety of learning activities incorporating the EEHR. On week six of the seven week course, students participated in a simulation day where each high-fidelity scenario had an EEHR. Students were invited to complete the post-assessment survey.

### **Project Closure**

New graduate nurses will be expected to utilize EEHR technology when providing patient-centered care. Nursing students need learning opportunities to develop clinical judgment through the use of technology, such as the EEHR. Due to limited access to EHRs at clinical sites, active learning opportunities were created in a first medical-surgical course to help students use EEHR technology as a clinical decision support tool. After a seven-week implementation of EEHR learning activities, the project closed with a sample size of 11 students who chose to participate in the non-mandatory pre and post self-assessment survey. A meeting was held with the project committee members to share implementation results. All committee members present were in full agreement that EEHR technology should be used in each nursing course. The simulation director at the project site is working to implement EEHRs into simulation scenarios. Implementation results were also shared with stakeholders at the project site's Annual Advisory Council Meeting. There was positive discussion from nurse leaders at this meeting regarding the results of this work and its benefit to patient care.

### **Summary**

The goal of this project was to develop clinical judgment through the integration of EEHR learning activities. Students enjoyed interacting with EEHR technology as they cared for a variety of virtual and simulated patients throughout the seven-week course. Students also saw value in learning the language of clinical judgment, and viewed it as a way to improve patient care.

## Section VII

### INTERPRETATION OF DATA

This section will present the statistical analysis regarding students' self-assessment of how EEHR technology had an impact in the development of clinical judgment. Lasater's Clinical Judgment Rubric, along with the self-scoring tool that was used in second semester medical-surgical students in an associate degree nursing program. Fourteen nursing students in this course participated in this voluntary self-assessment survey, however, only 10 completed the pre and post-course self-assessment survey.

#### Data Collection

Collecting data was an important step in the project work. The question to be answered investigated how integrating a piece of technology (EEHR) helped to develop clinical judgment in nursing students. The purpose of the evaluation tools chosen certainly helped to answer this question. The LCJR has been adapted from Tanner's Model of Clinical Judgment. While Tanner's model describes clinical judgement in seasoned, or expert nurses, Tanner discovered the model could also be used as a tool to help students grow in the four dimensions of clinical judgment, which are *noticing*, *interpreting*, *responding* and *reflecting* (Tanner, 2006).

Students were given an orientation in seminar regarding the project investigator's DNP work, to include a presentation on clinical judgment, accompanied by a printed hand-out on Lasater's Clinical Judgment Rubric (LCJR), and the procedure for collecting the data. In clinical orientation, students were given an introduction to the EEHR software. After the introduction, students participated in a learning activity to help learn

the components of the EEHR. Students were encouraged to complete the self-assessment survey (during week three and week six of the seven-week course), which was sent from Institutional Research at the project site. Students were instructed to read the email from Institutional Research, which included a link to the survey. By clicking the link, this served as the student's consent to participate. It was clearly communicated to students that the self-assessment survey was not mandatory, and at any time the student could withdraw from completing the survey.

If students decided to participate, they completed the self-assessment surveys when sent from Institutional Research. Differences in levels of student's clinical judgment scores from pre and post self-assessments were measured.

### **Data Analysis**

All data was collected and stored by Institutional Research at the project site. Analysis was completed utilizing Minitab statistical software. As shown in Tables 3, 4, 5 and 6, a paired t-test was used to examine overall group mean scores between the student's baseline understanding coming into the seven-week course regarding developing clinical judgment through the integration of EEHR technology, and then again, at the end of the seven-week course. The difference between the two was calculated. Descriptive statistics were evaluated, however, no demographic information was collected (See Appendix F).

Lasater's first dimension of clinical judgment is "*Noticing*," and is broken down into three subcategories: (a) *Focused Observation*, (b) *Recognizing Deviations from Expected Patterns* and (c) *Information Seeking*. Pre and post-course self-assessment mean scores for the first subcategory, *Focused Observation* were 2.10 and 2.60, ( $t=1.86$ ,

$p < 0.048$ ), which is statistically significant in this subcategory. EEHR technology helped students develop clinical judgment when performing Focused Observations.

Pre and post-course self-assessment mean scores for the second subcategory, *Recognizing Deviations from Expected Patterns* were 2.40 and 2.60. There was no significant increase in mean scores and the  $p$ -value was greater than 0.05, ( $t=1.00$ ). Pre and post-course self-assessment mean scores for the third subcategory, *Information Seeking* were 2.60 and 2.60, showing no difference in the mean scores, and the  $p$ -value was greater than 0.05 ( $t=0.00$ ).

Lasater's second dimension of clinical judgment is "*Interpreting*," and is broken down into two subcategories: (a) *Prioritizing Data* and (b) *Making Sense of Data*. Pre and post-course self-assessment mean scores for the subcategory, *Prioritizing Data* were 2.30 and 2.60. While there was an increase in mean scores, it was not statistically significant, and the  $p$ -value was greater than 0.05 ( $t=0.82$ ). Pre and post-course self-assessment mean scores for the second subcategory, *Making Sense of Data*, were 2.20 and 2.50. While there was not a significant difference between the mean scores, the results were marginally significant ( $t=1.41$ ,  $p$ -value = 0.09).

Lasater's third dimension of clinical judgment is "*Responding*," and is broken down into four subcategories: (a) *Calm, Confident Manner*, (b) *Clear Communication*, (c) *Well-Planned Intervention/Flexibility* and (d) *Being Skillful*. Pre and post-course self-assessment mean scores for the subcategory, *Calm, Confident Manner* were 3.00 and 2.60. There was a decrease in mean scores as well as the  $p$ -value showing no significant difference ( $t=-1.81$ ). Pre and post-course self-assessment mean scores for the subcategory, *Clear Communication*, were 2.60 and 2.60, showing no significant

difference in the mean scores, and the  $p$ -value was greater than 0.05 ( $t=0.00$ ). Pre and post-course self-assessment mean scores for the subcategory, *Well-Planned Intervention/Flexibility*, were 2.50 and 2.50, showing no significant difference in the mean scores, and the  $p$ -value was greater than 0.05 ( $t=0.00$ ). Pre and post-course self-assessment mean scores for the subcategory, *Being Skillful*, were 2.30 and 2.40, showing no significant difference in the mean scores, and the  $p$ -value was greater than 0.05 ( $t=0.43$ ).

Lasater's fourth dimension of clinical judgment is "*Reflecting*," and is broken down into two subcategories: (a) *Evaluation/Self-Analysis* and (b) *Commitment to Improvement*. Pre and post-course self-assessment mean scores for the subcategory, *Evaluation/Self-Analysis*, were 2.60 and 2.60, showing no significant difference in the mean scores, and the  $p$ -value was greater than 0.05 ( $t=0.00$ ). Pre and post-course self-assessment mean scores for the subcategory, *Commitment to Improvement*, were 2.50 and 2.80, while there was not a significant difference between the mean scores, the  $p$ -value ( $p=0.09$ ) showed marginal significance [NW1] ( $t=1.41$ ). (Table 3 - 6).

Table 3

*Mean Scores and Student Comments on Pre and Post Self-Assessment Scores for Noticing on Lasater's Clinical Judgment Rubric*

Noticing Dimension with Subcategories	Pre-test <i>M</i>	Post-test <i>M</i>	<i>P</i> -value
<b>Noticing</b>	2.37	2.60	
Focused Observation	2.10	2.60	0.048
Recognizing Deviations from Expected Patterns	2.40	2.60	0.172
Information Seeking	2.60	2.60	0.500

**Student Pre-survey Comments for Noticing: Focused Observation**

Overwhelmed by the amount of information in a patient's chart. Overwhelmed by new information. Practice in this area is needed due to being a beginning nursing student. Other comments regarding focused observation leaned more towards physical assessment and past clinical feedback regarding situational awareness upon entering a patient's room, not as much towards the EEHR.

**Student Post-survey Comments for Noticing: Focused Observation**

Time in practicing the skill to develop in this area was still needed. Students felt they were always developing. Looking at symptoms the patient presents with and the "whole" of the patient regardless of data. Observation skills are improving.

**Student Pre-survey Comments for Noticing: Recognizing Deviations from Expected Patterns**

Still learning what normal values are, still developing. Able to notice deviations, but some data is still missed. Do not always know what the next step may be. Some data can go undetected even when noticing a deviation. Unsure what to do with the data when it deviates from the expected: should it be monitored closely or reported.

**Student Post-survey Comments for Noticing: Recognizing Deviations from Expected Patterns**

Now able to recognize labs, vital sign, and assessment pieces that do not always fall within expected range. Always developing. Takes time to practice and develop any skill. Can now monitor for trends appropriately. Stronger now at connecting the pieces. Can notice abnormal details, struggle to monitor effects.

**Student Pre-survey Comments for Noticing: Information Seeking**

Seeks out information from nursing and family members. Able to find resources when needing additional information. Actively seek out information due to not having or knowing the information.

**Student Post-survey Comments for Noticing: Information Seeking**

Developing in seeking out resources and information to further investigate. Learning where to look for information. Can gather information. Am stronger in seeking out information but still learning. Always seeking out information not known. Confident about where to find information in the EHR.

Table 4

*Mean Scores and Student Comments on Pre and Post Self-Assessment Scores for Interpreting on Lasater's Clinical Judgment Rubric*

Interpreting Dimension with Subcategories	Pre-test	Post-test	P-value
	<i>M</i>	<i>M</i>	
<b>Interpreting</b>	2.25	2.55	
Prioritizing Data	2.30	2.60	0.217
Making Sense of Data	2.20	2.50	0.097

**Student Pre-survey Comments for Interpreting: Prioritizing Data**

Still learning to prioritize. Unknown as to what is most important. Struggle with prioritizing data, especially if it is an unfamiliar condition. Focus on areas not as relevant. Need improvement in prioritizing. Difficult to prioritize. Understand important information but getting to the point and being concise is a challenge.

**Student Post-survey Comments for Interpreting: Prioritizing Data**

Takes time to learn how to prioritize. Can look at data and focus on what is most important. Definitely improving on prioritizing, but need further experience. Am understanding how to do this. Learning what takes priority over other things.

**Student Pre-survey Comments for Interpreting: Making Sense of Data**

Making sense of data is easy, when the data is simple and not complicated. Unsure of difficult data and how to make sense of it. Overthinking data is a challenge. Connecting all the dots takes time.

**Student Post-survey Comments for Interpreting: Making Sense of Data**

Making sense of data by reading values and asking why the data is high, or low, and what could be the cause. Putting pieces together for better understanding. Can determine relevant data to what the problem is. More confident in ability to make sense of cues. Matching physical findings and objective findings well. Still developing.

Table 5

*Mean Scores and Student Comments on Pre and Post Self-Assessment Scores for Responding on Lasater's Clinical Judgment Rubric*

Responding Dimension with Subcategories	Pre-test <i>M</i>	Post-test <i>M</i>	<i>P</i> -value
<b>Responding</b>	2.60	2.53	
Calm, Confident Manner	3.00	2.60	0.948
Clear Communication	2.60	2.60	0.500
Well-planned Intervention/Flexibility	2.50	2.50	0.500
Being Skillful	2.30	2.40	0.339

**Student Pre-survey Comments for Responding: Calm, Confident Manner**

Calm in most situations. Leadership and confidence are on par for the level of schooling experienced. Still stressed over some situations, but becoming confident in performing nursing duties. To be a great nurse, must be confident in self and not cause others to be anxious. Have experience in healthcare. Experience in healthcare helps to maintain calm in high-stress times. Calm in most situations, deal with each situation appropriately for best outcome.

**Student Post-survey Comments for Responding: Calm, Confident Manner**

Still developing. Take the lead amongst my peers. Remain calm when speaking to patients. Even in stressful situations, keeping a straight face and problem solving is important. Having a calm demeanor is important, despite what is felt on the inside.

**Student Pre-survey Comments for Responding: Clear Communication**

Not comfortable giving directions to family members. Not comfortable communicating with other staff. Small talk communication is easy, but giving directions is difficult. Need to learn to speak up with talking with the patient and the interdisciplinary team. Listening clearly to what is being said helps to communicate better with peers. Sometimes the communication shared is not understood by others – working on this skill. Always room for improvement, especially when trying to be concise and to the point.

**Student Post-survey Comments for Responding: Clear Communication**

Am developing. Working on clear communication because learning all of this information is difficult to regurgitate back to others. Takes time and practice. Listening carefully so effective communication with peers can be accomplished.

**Student Pre-survey Comments for Responding: Well-Planned Intervention/Flexibility**

Make plans according to the data, realizing the plan can change. Can evaluate a client's progress and change interventions if not effective. Need improvement with being flexible. Due to lack of knowledge, it is hard to change interventions on the spot. Struggle with developing interventions that are best.

**Student Post-survey Comments for Responding: Well-Planned Intervention/Flexibility**

Still developing. Takes time and practice. Learning interventions needed. Understand interventions in the textbook, but unsure of what to do if those interventions do not work. More comfortable about planning interventions. Planning out interventions prior to doing them as to prioritize on what is most important in that moment.

**Student Pre-survey Comments for Responding: Being Skillful**

Accurate in skills but could improve speed. Hesitant in utilizing nursing skills. Like to see a procedure first before attempting it, more confident after seeing it performed. Able to see skills that I have learned and to apply. Skills are where they should be for the level of learning. Not sure what skillful implies for responding. Skill comes over time and will improve – just starting to learn and apply skills. Still developing and not always confident in them.

**Student Post-survey Comments for Responding: Being Skillful**

Developing. Learning this is a work in progress – not mastered. Still learning needed skills. Feel stronger every day regarding skills but still unsure. Still somewhat slow in some nursing skills. Felt skill level was good but has lots of room for improvement. Learning to use my skills and to apply.

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Table 6

*Mean Scores and Student Comments on Pre and Post Self-Assessment Scores for Reflecting on Lasater's Clinical Judgment Rubric*

Reflecting Dimension with Subcategories	Pre-test <i>M</i>	Post-test <i>M</i>	<i>P</i> -value
<b>Reflecting</b>	2.55	2.70	
Evaluation/Self Analysis	2.60	2.60	0.500
Commitment to Improvement	2.50	2.80	0.097

**Student Pre-survey Comments for Reflecting: Evaluation/Self Analysis**

Reflects on the clinical week and often seeking information from other nurses on how well a task was performed. Able to evaluate alternate choices. Always reflecting at the end of the day to see what could have been done better, or ways to improve. Overthink everything. Feedback helps to improve. Too hard on self. Takes time to self-reflect.

**Student Post-survey Comments for Reflecting: Evaluation/Self Analysis**

Come a long way as far as prioritizing tasks, communication and understanding this content. Takes time and practice to develop. Learned a ton in simulation and was a very beneficial way to evaluate self, also surprised self. Able to reflect at the end of the day to see what could be improved upon. Takes time to develop.

**Student Pre-survey Comments for Reflecting: Commitment to Improvement**

Most areas for improvement come from external evaluation. Can determine weaknesses, but could improve in making plans to fix them. Aware of the need for ongoing improvement, am making efforts to learn from this experience and to improve care. Very committed to improvement. Work hard to improve self. To be the best nurse, must be committed to better and improve self. Like feedback and constantly evaluating how to improve. Recognize need to improve, still seek external advice on what needs to be improved.

**Student Post-survey Comments for Reflecting: Commitment to Improvement**

Always developing. Room for improvement but looking forward to improving through program progression. Will continue to learn and grow with each lecture, clinical experience and hands-on practice. Very accepting of constructive criticism. Work hard to improve self each day. Committed to improving performance. Recognizing weaknesses, but still need to make plans to fix them. Committed to learning so as to improve in nursing skills. Very committed to improvement to be able to provide best outcomes.

## SECTION VIII

### UTILIZATION AND REPORT OF RESULTS

Ninety-three students participated in the Patient-Centered Care I course over Spring I term. Of the 93 students, 14 students participated in the pre-course self-assessment survey, for an average return rate of 15%. However, four students did not participate in the post-course self-assessment survey, which resulted in those four students being taken out of the descriptive statistics, which resulted in a return rate of 11%. Students enrolled in the course were required to participate in the EEHR learning activities but not required to participate in the pre and post course self-assessment surveys. Possible reasons for a low sample size were discussed in the threats and barrier section.

Overall group mean scores for each of the four clinical judgment dimensions (Noticing, Interpreting, Responding, and Reflecting) demonstrated to not be statistically significant. However, in three of the four dimensions of clinical judgment, it was noted there was an overall increase of total mean scores in post-course assessments, in comparison to pre-course assessment. Lasater's first dimension of clinical judgment (Noticing) had an increase in mean group scores, from 2.37 to 2.60. Lasater's second dimension of clinical judgment (Interpreting) also had an increase in mean group scores from 2.25 to 2.55. Lasater's third dimension of clinical judgment (Responding) actually showed a decrease in group mean scores from 2.60 to 2.53. Lasater's fourth dimension of clinical judgment (Reflecting) showed an increase in group mean scores from 2.55 to 2.70. This may be an indication that presenting the concept of clinical judgment in class, and providing EEHR learning activities throughout the seven-week course promotes

increased awareness and knowledge of the importance of both in the role of the professional nurse.

The results of this project suggested that students in their first medical-surgical course participating in EEHR activities to develop clinical judgment reported an increase and significant difference in the Focused Observation category within the clinical judgment dimension of Noticing. Student comments showed evidence that practice is needed in order to grow in knowledge of clinical judgment and the use of EEHR technology.

One observation that cannot go without mentioning is course success rates for Spring I term. Over Spring I term, faculty integrated Lasater's Clinical Judgment Rubric with EEHR technology into simulation, clinical orientation, and seminar, and the course success rate was 87%. This is a notable increase when comparing the 2016-2017 academic year, when the course success rates ranged between 55 – 75%. Also, it was noted that students who participated in EEHR activities during Spring implementation saw a 2.52% increase in answering clinical judgement questions correctly on summative evaluations, when compared to the fall cohort that did not participate in this DNP project (fall 73.57 and spring 76.09). Using innovative technological pedagogy to develop clinical judgment had a positive impact on student learning.

### **Application to Theoretical/Conceptual Framework**

Kolb's Theory of Experiential Learning was the theoretical framework used for this DNP project. The ELT model, as described by Kolb, portrays two modes of grasping an experience: Concrete Experience and Abstract Conceptualization, and two modes of transforming experience: Reflective Observation and Active Experimentation. Kolb

describes these four learning modes as a spiral learning cycle where the learner is involved in experiencing, reflecting, thinking and acting; a recursive process according to the situation being learned. Kolb's ELT was used to guide the EEHR learning activities over a seven-week medical-surgical course:

- The first stage of the ELT learning cycle, *concrete experience*, begins with a task where the learner must actually do something. Kolb describes this learning style as *experiencing*, and learners with this style learn best by becoming actively involved in a situation, then stepping back to reflect on the experience from different viewpoints. The experiencing style learner also loves hands-on activities, and in the more formal learning situations, enjoys activities such as role-playing, working in groups and brainstorming. Students in the Patient-Centered Care course experienced hands-on activities involving participating in the EEHR of their virtual and simulated patients over the seven-week course.
- The second stage of the ELT learning cycle, *reflective observation*, emphasizes reflection. Kolb describes this learning style as *reflecting*, and learners with this style learn best when stepping away from the task and review what has been done, and at this point, these learners use creative ideas to make sense of what was learned. The reflective style learner asks a lot of why questions, and thrive in learning environments that involve interactions and discussion. Students in the Patient-Centered Care I course enjoyed debriefing in simulation, where time was allowed to practice reflection in a nonthreatening environment from peers as well as faculty.

- The third stage of the ELT learning cycle, *Abstract Conceptualization* is about the learner attempting to make sense of the learning experience by making comparisons between what they did and what they know. Kolb describes this learning style as *thinking*. These learners are deep thinkers who want to make sense and interpret what has been learned. Learners with this style do not put a lot of energy into feelings, however, enjoy working alone in well-structured environments. This stage of the learning cycle may have been the most challenging, due in large to the fact that our class was very large in size, and students did not always work alone. Students worked in pairs, and at times, even in groups of three to four to move through activities in a timely manner.
- The fourth stage of the learning cycle, *Active experimentation* is about the learner planning how they will act upon what they have learned, and have been considered as solution finders. Kolb describes this learning style as *acting*. It is here where the learner must consider how they will put what they have learned into practice. Active learning styles excel best through real-life projects and hands-on activities. Students reflected on each activity to see how they could use it to improve their practices. Because reflection was done after learning activities in a group setting, students who portrayed this learning style was most verbal in talking out how they would take what they learned (even if it was a mistake they made in a EEHR activity), and use it moving forward. This was encouraging because students were committed to improve (which was the fourth dimension of clinical judgment, reflecting: commitment to improve).

It was important to remember that Kolb's theory values learning as a continual process, cyclic in nature with no one learning style presiding over the other. This model was beneficial as the learners at the project site had a variety of learning styles, so taking this into context when implementing learning activities was important.

### **Conclusion**

Nurses who enter the workforce must be prepared to practice in a technology-rich environment. Faculty must ensure that the right knowledge, skills, and attitudes are taught in nursing curriculum so new graduate nurses can function in such an environment. The literature is rich with suggestions for academia to incorporate informatics into curriculum to ensure safe patient outcomes (Kennedy et al., 2009). The National League of Nursing has recognized that graduates should be ready to interact with patients in a connected age of healthcare, and has encouraged faculty to create curricula that teaches students how to “track, trend, and integrate population-based data” (National League of Nursing, 2015). In response to national standards, faculty will be expected to analyze and redesign curricula to keep up with these rapid technology changes, while ensuring that students learn to use information technology as a tool for safe decision making. If nursing curriculum does not afford opportunities for students to develop clinical judgment when utilizing the electronic health record (EHR), students will enter professional practice at a disadvantage. Navigating through an electronic health record (EHR) takes time to learn, and students need a learning environment that will help them move towards competency when using an EHR. The National League for Nursing issued a call to action for nursing faculty to better prepare students to enter a workforce, rich with technology, by charging faculty to “teach with and about technology to better

inform health care interventions that improve health outcomes and prepare the nursing workforce” (National League for Nursing, 2015, p. 4). Despite this call to action, state boards of nursing report schools are still lagging behind. While the faculty in the Patient-Centered Care I course have embraced technology into their course content, other courses in the curriculum will need to do likewise if students are to continue to learn and grow in their knowledge of the EEHR. While this course provides a strong EEHR foundation, it is just that – a foundation. Future nursing courses at the project site must embrace EEHR technology into their content if students are to learn to use this technology as a decision-making support tool.

Recommendations for the project site would be to integrate technology into simulation activities as a starting point. Each seven weeks students participate in simulation activities, so integrating EEHR activities into simulation would ensure that students would have exposure to EEHR technology in each nursing course. This project has shown that students feel they are developing clinical judgement when using EEHR technology, and recognize the need to practice using technology as a clinical decision-making tool. Since clinical sites are limiting student access to EHRs, it will be more critical than ever to expose nursing students to technology before they enter such a technology-rich work environment.

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## Appendix A

### Recruitment Email/Consent Survey

#### **Project Title**

Develop clinical judgement in medical-surgical nursing students through the integration of information and communication technologies, such as the educational electronic health record (EEHR).

#### **Introduction**

As a student in the Patient-Centered Care I Course (NUR 195), you will be participating in several evidence-based learning activities over the seven-week term. These activities are designed to help develop clinical judgment through the integration of technology, such as the electronic healthcare record.

#### **What are the study procedures?**

While the course activities are mandatory, you may choose to fill out an online survey.

Students will be asked to rate themselves now using the Lasater Clinical Judgment Rubric (LCJR), and again at the end of the seven-week course, after having been exposed to a variety of hands-on learning activities involving the educational electronic healthcare record.

\* Before starting the online questionnaire, the Lasater Clinical Judgment Rubric will be distributed to use as a reference when completing the online questionnaire.

\* The questionnaire will have the student rate themselves in four categories as to what they think their perception of clinical judgment is:

##### Noticing

- focused observation
- recognizing deviations from expected patterns
- information seeking

##### Interpreting

- prioritizing data
- making sense of data,

##### Responding

- calm confident manner
- clear communication
- well-planned intervention/flexibility
- being skillful

##### Reflecting

- evaluation/self-analysis
- commitment to improvement

#### **What are the risks of participating in this research study?**

There are minimal risks for harm in participating in this study. Participation is voluntary and confidential. You may choose to withdraw your participation at any time with no repercussions.

**How will my personal information be protected?**

To ensure anonymity, there will be no identifying data collected on the measuring instruments.

**Whom do I contact if I have questions about the study?**

If at any time you have questions regarding the study, you may contact Sherri Carter (student evaluator) at 843-574-6448, or Dr. Nicole Waters (faculty research advisor) at Gardner-Webb University at 704-406-2302.

**Documentation of Consent**

I have read this consent form and agree to voluntarily participate in this study. I understand that by submitting the online questionnaire, I am providing my informed consent to participate in this study. Click here to begin the online questionnaire which will close at midnight on February 18<sup>th</sup>. [survey link]

## Appendix B

## Lasater's Clinical Judgment Rubric

## LASATER CLINICAL JUDGMENT RUBRIC

## Noticing and Interpreting

Effective NOTICING involves:	Exemplary	Accomplished	Developing	Beginning
<b>Focused Observation</b>	Focuses observation appropriately; regularly observes and monitors a wide variety of objective and subjective data to uncover any useful information	Regularly observes/monitors a variety of data, including both subjective and objective; most useful information is noticed, may miss the most subtle signs	Attempts to monitor a variety of subjective and objective data, but is overwhelmed by the array of data; focuses on the most obvious data, missing some important information	Confused by the clinical situation and the amount/type of data; observation is not organized and important data is missed, and/or assessment errors are made
<b>Recognizing Deviations from Expected Patterns</b>	Recognizes subtle patterns and deviations from expected patterns in data and uses these to guide the assessment	Recognizes most obvious patterns and deviations in data and uses these to continually assess	Identifies obvious patterns and deviations, missing some important information; unsure how to continue the assessment	Focuses on one thing at a time and misses most patterns/deviations from expectations; misses opportunities to refine the assessment
<b>Information Seeking</b>	Assertively seeks information to plan intervention: carefully collects useful subjective data from observing the client and from interacting with the client and family	Actively seeks subjective information about the client's situation from the client and family to support planning interventions; occasionally does not pursue important leads	Makes limited efforts to seek additional information from the client/family; often seems not to know what information to seek and/or pursues unrelated information	Is ineffective in seeking information; relies mostly on objective data; has difficulty interacting with the client and family and fails to collect important subjective data
Effective INTERPRETING involves:	Exemplary	Accomplished	Developing	Beginning
<b>Prioritizing Data</b>	Focuses on the most relevant and important data useful for explaining the client's condition	Generally focuses on the most important data and seeks further relevant information, but also may try to attend to less pertinent data	Makes an effort to prioritize data and focus on the most important, but also attends to less relevant/useful data	Has difficulty focusing and appears not to know which data are most important to the diagnosis; attempts to attend to all available data
<b>Making Sense of Data</b>	Even when facing complex, conflicting or confusing data, is able to (1) note and make sense of patterns in the client's data, (2) compare these with known patterns (from the nursing knowledge base, research, personal experience, and intuition), and (3) develop plans for interventions that can be justified in terms of their likelihood of success	In most situations, interprets the client's data patterns and compares with known patterns to develop an intervention plan and accompanying rationale; the exceptions are rare or complicated cases where it is appropriate to seek the guidance of a specialist or more experienced nurse	In simple or common/familiar situations, is able to compare the client's data patterns with those known and to develop/explain intervention plans; has difficulty, however, with even moderately difficult data/situations that are within the expectations for students, inappropriately requires advice or assistance	Even in simple of familiar/common situations has difficulty interpreting or making sense of data; has trouble distinguishing among competing explanations and appropriate interventions, requiring assistance both in diagnosing the problem and in developing an intervention

© Developed by Kathie Lasater, Ed.D. (2007). Clinical judgment development: Using simulation to create a rubric. *Journal of Nursing Education*, 46, 496-503.

January 2007

LASATER CLINICAL JUDGMENT RUBRIC  
Responding and Reflecting

<b>Effective RESPONDING involves:</b>	<b>Exemplary</b>	<b>Accomplished</b>	<b>Developing</b>	<b>Beginning</b>
<b>Calm, Confident Manner</b>	Assumes responsibility; delegates team assignments, assess the client and reassures them and their families	Generally displays leadership and confidence, and is able to control/calm most situations; may show stress in particularly difficult or complex situations	Is tentative in the leader's role; reassures clients/families in routine and relatively simple situations, but becomes stressed and disorganized easily	Except in simple and routine situations, is stressed and disorganized, lacks control, making clients and families anxious/less able to cooperate
<b>Clear Communication</b>	Communicates effectively; explains interventions; calms/reassures clients and families; directs and involves team members, explaining and giving directions; checks for understanding	Generally communicates well; explains carefully to clients, gives clear directions to team; could be more effective in establishing rapport	Shows some communication ability (e.g., giving directions); communication with clients/families/team members is only partly successful; displays caring but not competence	Has difficulty communicating; explanations are confusing, directions are unclear or contradictory, and clients/families are made confused/anxious, not reassured
<b>Well-Planned Intervention/Flexibility</b>	Interventions are tailored for the individual client; monitors client progress closely and is able to adjust treatment as indicated by the client response	Develops interventions based on relevant patient data; monitors progress regularly but does not expect to have to change treatments	Develops interventions based on the most obvious data; monitors progress, but is unable to make adjustments based on the patient response	Focuses on developing a single intervention addressing a likely solution, but it may be vague, confusing, and/or incomplete; some monitoring may occur
<b>Being Skillful</b>	Shows mastery of necessary nursing skills	Displays proficiency in the use of most nursing skills; could improve speed or accuracy	Is hesitant or ineffective in utilizing nursing skills	Is unable to select and/or perform the nursing skills
<b>Effective REFLECTING involves:</b>	<b>Exemplary</b>	<b>Accomplished</b>	<b>Developing</b>	<b>Beginning</b>
<b>Evaluation/Self-Analysis</b>	Independently evaluates/analyzes personal clinical performance, noting decision points, elaborating alternatives and accurately evaluating choices against alternatives	Evaluates/analyzes personal clinical performance with minimal prompting, primarily major events/decisions; key decision points are identified and alternatives are considered	Even when prompted, briefly verbalizes the most obvious evaluations; has difficulty imagining alternative choices; is self-protective in evaluating personal choices	Even prompted evaluations are brief, cursory, and not used to improve performance; justifies personal decisions/choices without evaluating them
<b>Commitment to Improvement</b>	Demonstrates commitment to ongoing improvement: reflects on and critically evaluates nursing experiences; accurately identifies strengths/weaknesses and develops specific plans to eliminate weaknesses	Demonstrates a desire to improve nursing performance: reflects on and evaluates experiences; identifies strengths/weaknesses; could be more systematic in evaluating weaknesses	Demonstrates awareness of the need for ongoing improvement and makes some effort to learn from experience and improve performance but tends to state the obvious, and needs external evaluation	Appears uninterested in improving performance or unable to do so; rarely reflects; is uncritical of him/herself, or overly critical (given level of development); is unable to see flaws or need for improvement

## Appendix C

## Navigating the Chart of Vincent Brody

**Navigating the Chart of Vincent Brody**

Overview	
<b>Estimated time to complete:</b> 30 minutes	
<b>Target group(s):</b> Patient-Centered Care I Students	
<b>Brief summary of assignment:</b>	
This activity presents the student with a variety of tasks to complete that will orient them to the electronic health record (EHR) in DocuCare. Appropriate actions the student should complete include finding assessment data, locating notes, identifying where demographic information can be found, and other tasks.	
Learning Objectives	
<b>At the end of this activity the learner will be able to:</b>	
<ul style="list-style-type: none"> <li> Demonstrate how to log into the Point and DocuCare</li> <li> Identify where pertinent patient information is located</li> <li> Perform data entry</li> </ul>	
Assignment	
<ol style="list-style-type: none"> <li>Log into thePoint and DocuCare, following all instructions given to you earlier in D2L (class code).</li> <li>After opening up Vincent Brody's electronic health record, locate the following information:</li> </ol>	
Data	Answer
Vincent Brody's Date of birth	
Admitting diagnosis	
Date of Admission	
List one diagnosis from previous visit	
List the IV medication currently infusing	
What medication is given via nebulizer	
Most recent complete blood count (CBC) – what was the WBC value	
What diet is ordered	
Most recent blood pressure	
Recent SpO2	
How often is incentive spirometry ordered	
List 2 findings from the history & physical (H&P)	

<b>Use your clinical decision support tool and decide which nursing dx would be appropriate for this patient</b>	
------------------------------------------------------------------------------------------------------------------	--

3. Chart the following data:

- **Blood pressure of 120/80 taken one minute ago**
- **Lung sounds: crackles in LLL**
- **Short of breath (4/10)**
- **Coughing up a moderate amount of yellow sputum**
- **On supplemental oxygen at 2L/min via nasal cannula**

4. Submit for review.

## Appendix D

LASATER CLINICAL JUDGMENT RUBRIC  
SCORING SHEET**USE THIS SCORING SHEET TO SELF-ASSESS EACH DIMENSION OF CLINICAL JUDGMENT**

NOTICING:	STUDENT EVIDENCE OF SELF-ASSESSMENT
<ul style="list-style-type: none"> <li>• Focused Observation:           E        A        D</li> <li>• Recognizing Deviations   from Expected Patterns:       E        A        D</li> <li>• Information Seeking:           E        A        D</li> </ul>	
<p>INTERPRETING:</p> <ul style="list-style-type: none"> <li>• Prioritizing Data:            E        A        D</li> <li>• Making Sense of Data:       E        A        D</li> </ul>	
<p>RESPONDING:</p> <ul style="list-style-type: none"> <li>• Calm, Confident Manner:    E        A        D</li> <li>• Clear Communication:        E        A        D</li> <li>• Well-Planned Intervention/   Flexibility:                   E        A        D</li> <li>• Being Skillful                E        A        D</li> </ul>	
<p>REFLECTING:</p> <ul style="list-style-type: none"> <li>• Evaluation/Self-Analysis    E        A        D</li> <li>• Commitment to Improvement   E        A        D</li> </ul>	

**E = exemplary, A = accomplished, D = developing, B = beginning**

## Appendix E

## Permission to Use

**From:** Kathie Lasater <lasaterk@ohsu.edu>  
**Sent:** Monday, September 18, 2017 1:14:36 AM  
**To:** Sherri Carter  
**Cc:** Sherri Carter  
**Subject:** RE: Lasater Clinical Judgment Rubric

Hello Sherri,

Thank you for your interest in the Lasater Clinical Judgment Rubric (LCJR). You have my permission to use the tool for your project. I ask that you (1) cite it correctly, and (2) send me a paragraph or two to let me know a bit about your project when you've completed it, including how you used the LCJR. In this way, I can help guide others who may wish to use it. Please let me know if it would be helpful to have an electronic copy.

You should also be aware that the LCJR describes four aspects of the Tanner Model of Clinical Judgment—Noticing, Interpreting, Responding, and Reflecting—and as such, does not measure clinical judgment because clinical judgment involves much of what the individual student/nurse brings to the unique patient situation (see Tanner, 2006 article). We know there are many other factors that impact clinical judgment in the moment, many of which are impacted by the context of care and the needs of the particular patient.

The LCJR was designed as an instrument to describe the trajectory of students' clinical judgment development over the length of their program. The purposes were to offer a common language between students, faculty, and preceptors in order to talk about students' thinking and to serve as a help for offering formative guidance and feedback (See Lasater, 2007; Lasater, 2011). For measurement purposes, the rubric appears to be most useful with multiple opportunities for clinical judgment vs. one point/patient in time.

Your plan seems very reasonable. I have one recommendation: ask your students to give you an example or rationale for why they rate themselves as they do. You will learn so much!

Please let me know if I can be of help,

Kathie

Kathie Lasater, EdD, RN, ANEF, FAAN  
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<http://www.nurseeducationtoday.com>

## Appendix F

## Lasater's Self-Assessment Survey 2018 Spring Term I

## LCJ Self Assessment 2018 Spring Term 1

NUR 195-001, NUR 195-002

	Pre-Course					Post-Course				
	Score	4	3	2	1	Score	4	3	2	1
Distributed:	93					93				
Responded:	10					10				
Response rate:	11%					11%				
<b>1) NOTICING</b>	<b>2.37</b>					<b>2.60</b>				
1a) Focused Observation	2.10	0 0%	1 10%	9 90%	0 0%	2.60	1 10%	4 40%	5 50%	0 0%
1b) Recognizing Deviations from Expected Patterns	2.40	0 0%	4 40%	6 60%	0 0%	2.60	1 10%	4 40%	5 50%	0 0%
1c) Information Seeking	2.60	0 0%	6 60%	4 40%	0 0%	2.60	2 20%	2 20%	6 60%	0 0%
<b>2) INTERPRETING</b>	<b>2.25</b>					<b>2.55</b>				
2a) Prioritizing Data	2.30	0 0%	3 30%	7 70%	0 0%	2.60	2 20%	2 20%	6 60%	0 0%
2b) Making Sense of Data	2.20	0 0%	2 20%	8 80%	0 0%	2.50	1 10%	3 30%	6 60%	0 0%
<b>3) RESPONDING</b>	<b>2.60</b>					<b>2.53</b>				
3a) Calm, Confident Manner	3.00	1 10%	8 80%	1 10%	0 0%	2.60	1 10%	4 40%	5 50%	0 0%
3b) Clear Communication	2.60	0 0%	6 60%	4 40%	0 0%	2.60	1 10%	4 40%	5 50%	0 0%
3c) Well-Planned Intervention/ Flexibility	2.50	1 10%	3 30%	6 60%	0 0%	2.50	0 0%	5 50%	5 50%	0 0%
3d) Being Skillful	2.30	0 0%	4 40%	5 50%	1 10%	2.40	0 0%	4 40%	6 60%	0 0%
<b>4) REFLECTING</b>	<b>2.55</b>					<b>2.70</b>				
4a) Evaluation/Self-Analysis	2.60	1 10%	4 40%	5 50%	0 0%	2.60	1 10%	4 40%	5 50%	0 0%
4b) Commitment to Improvement	2.50	0 0%	5 50%	5 50%	0 0%	2.80	2 20%	4 40%	4 40%	0 0%

Score Key:

4 = Exemplary

3 = Accomplished

2 = Developing

1 = Beginning

## Pre-Course

**NOTICING: (1a) Focused Observation**

I attempt to view all the data in clinical, but often get overwhelmed.

Sometimes miss things in the room

I am still overwhelmed by the amount of data while focusing particularly on the specifics of the patient.

I feel that I am able to focus observation but I do need more practice.

still fairly overwhelmed by all new information in a hospital room - what is hooked up where, where everything is, etc

I rated 1a as accomplished because I'm constantly observing things around me and my patients due to me missing important information inside a patient's room in NUR 104 really made me realize how serious situational awareness is.

I am a beginning nursing student.

I am a surgical vet tech and while I haven't really practiced on humans these are skills I use with animals.

I am a student and still learning how to properly observe a patient

I can focus in on important information and where to find it but can sometimes still be overwhelmed by the amount of information there is.

**NOTICING: (1b) Recognizing Deviations from Expected Patterns**

With knowing normal and expected values, I can often see a deviation, but some can go undetected.

Can see changes from baseline based on data

I am able to notice patterns and deviations, but some data is still missed and I don't always know what the next step may be.

Still need developing.

I feel confident in my ability to know what normal is and therefore find the deviations

I rated 1b as accomplished because initially I look for the normal patterns for my patient and compare first thing my findings with the nurses, techs, etc.

I am a beginning nursing student.

I am a surgical vet tech and while I haven't really practiced on humans these are skills I use with animals.

Still learning what 'normal' is

I can recognize when results or observations seem to deviate from a baseline. Sometimes I am unsure though when it is reportable or something to still monitor closely.

**NOTICING: (1c) Information Seeking**

When family is available, I seek them out as a resource to get more information about the patient.

Ask nurses any questions I have that may better help me care for patient and seek information about patient and their preferences

I definitely want to know more, and why the patient is in the hospital setting. I do find it a bit frustrating on how to ask the appropriate questions.

I feel that I am able to find resources when need additional information.

I am aware that I do not know everything or have all the information so I actively seek it

I rated 1c as accomplished because I like asking questions about things I don't understand and don't know. Whatever information given can help me grow as student.

I am a beginning nursing student.

I am a surgical vet tech and while I haven't really practiced on humans these are skills I use with animals.

I usually do not have a problem with asking questions
I dig after finding new information from resources but can still be slightly uncomfortable when talking to families and approaching them.
<b>INTERPRETING: (2a) Prioritizing Data</b>
I am learning to prioritize as a nurse, but often do not know what is the most important.
Sometimes still struggle prioritizing data for patient's condition if it is a condition I am not as familiar with
I am able to prioritize the data, but I do still find myself focusing on areas that are not as relevant.
I feel that I can prioritize data but I need more improvement.
It is still hard to know where the priorities lie
Because I still question what is the priority for my patient and how using certain lab data to help me figure out what is going on with the patient
I am a beginning nursing student.
As a veterinary technician, taking information and prioritizing it is something I have done for a while.
Having worked in healthcare for nearly 10 years I believe i know how to identify a 'sick' patients lab/ study results
Prioritizing information is tough sometimes. I understand the important information but getting concise and to the point can still be challenging
<b>INTERPRETING: (2b) Making Sense of Data</b>
In simple situations, I often can make sense of the data.
Can make sense of situations that are not complicated
I am able to make sense of the data and develop interventions based on the patients diagnosis, but I am still unsure of difficult situations.
There are certain things that I can make sense of and other things that I am still learning.
In many cases I can make sense of the data that lies before me
Because I feel like I could be over thinking a lot of data, instead of reading them as they are.
I am a beginning nursing student.
I am a surgical vet tech and while I haven't really practiced on humans these are skills I use with animals.
I am still learning how to properly connect the clinical dots
Connecting all the dots and how they fit together still takes time
<b>RESPONDING: (3a) Calm, Confident Manner</b>
I take charge as a leader in the clinical setting with confidence.
Able to stay calm and do what needs to be done in stressful situations
I am becoming more confident in performing nursing duties, but still get stressed over some situations.
Making sure that I research information so that I can be confident in what is being done.
I think my leadership and confidence are on par for where I am in school
Because in order for me to be a great nurse I know I have to be confident in myself and I try hard to be naturally calm person because I don't like to be anxious or cause others to be anxious.
Have experience working in healthcare facility.
I am a surgical vet tech and while I haven't really practiced on humans these are skills I use with animals.
My experience allows me to remain calm during a time of high stress

I am calm when it comes to most situations. Must deal with each situation singularly and appropriately for best outcome
<b>RESPONDING: (3b) Clear Communication</b>
Am not always comfortable giving directions to family members.
Can communicate well with patient and family, but could practice more with other staff
I am partly successful in giving directions with communication. Communication is easy for me as far as small talk, but giving directions can sometimes be difficult for me.
Listening carefully to what is being said and being able to clearly communicate with my peers.
I feel like I can communicate well
Because I have a soft low voice and I know I need to work on speaking up when comes to my patient and talking with the interdisciplinary team.
Have experience working in healthcare facility.
Sometimes i feel i am perfectly clear when communicating but other people are unsure of what I'm talking about...I'm working on this skill
n/a
I feel I am very confident in communication. There is always room for improvement especially when being concise and to the point
<b>RESPONDING: (3c) Well-Planned Intervention/ Flexibility</b>
I make plans according to the data at the preset day, knowing that changes may occur.
Can evaluate client's progress and change interventions if they are not effective
I develop interventions based on what I find to be the most relevant and key problem at the time of care.
Still needs improvement with being flexible.
Because of a generalized lack of higher knowledge it is hard to change interventions on the spot
Because I prepare myself well to be ready for changes that can and probably will occur. Every person is different and I'm willing to do what is in the best interest of my patient.
I am a beginning nursing student.
After a while I tend to get stuck and am used to doing it certain ways.... I am trying to be more flexible.
n/a
Sometimes I still struggle developing my interventions that would be the best possible ones for day of care
<b>RESPONDING: (3d) Being Skillful</b>
Still learning about passing medications.
Accurate in skills but could improve speed
I am definitely a little hesitant in utilizing nursing skills. I like to see a procedure performed first before attempting. I am confident in myself after seeing it preformed.
Able to use my skills that I have learned and to apply hands on.
I think my skills are on par for where I am in school
I feel skill comes over time and as I continue in my nursing career I know that my skill will improve. Right now I'm just starting to learn and apply my skills.
I am a beginning nursing student.
I'm not sure what being skillful implies for responding
I have extensive practice in skills within my scope of practice

Still developing my skills, and not always confident in them
<b>REFLECTING: (4a) Evaluation/Self-Analysis</b>
Reflects on clinical week, is often seeking information from other nurses on what I can be doing or how I did with a task
Able to evaluate alternate choices and their outcomes
Stating the obvious.
Able to reflect at the end of the day to see what I could have done better or improve on.
If there is one thing I do it is overthink everything I did during the day!
After each clinical day I think back to what I could do differently and why I would do it differently.
I am a beginning nursing student.
I like feedback and am constantly evaluating how to improve my actions
I sometimes am too hard on myself
It takes time for me to self-reflect and effort. I do not mind criticizing myself but emotionally after a day or recognizing when I have done something well.
<b>REFLECTING: (4b) Commitment to Improvement</b>
I seek most areas for improvement from external evaluation.
Can determine weaknesses but could improve in making plans to fix them
I am definitely aware of the need for ongoing improvement and I am making effort to learn from this experience and I want to improve my care.
Very committed to improvement so that I am able provide the best outcome.
I work hard to improve myself each day
I want to be the best nurse I can be and I can only get there by committing myself to be better and improve throughout my journey.
I am always trying to improve myself.
I like feedback and am constantly evaluating how to improve my actions
I always welcome criticism
I recognize my need for improvement but still seek external advice sometimes on what most needs improvement

### LCJ: 2018 Spring Term 1 Comments

Reason(s) for Rating

Post-Course

<b>NOTICING: (1a) Focused Observation</b>
Always developing at this stage
I focus on what symptoms the patient has presented with and look at the patient as a whole regardless of ranges or numbers.
It takes time and practice to develop any skill.
I RECOGNIZED WHAT WAS WRONG UPON ENTRY
I think my clinical focus and observation skills are good
I feel like I am stronger but still have a lot to learn

Notice most things, but miss some subtle details
If knowing the diagnosis, I can pick out things to look for but going in blindsided, I am still learning what priority is.
developing
I feel like I have improved in focused observation.
<b>NOTICING: (1b) Recognizing Deviations from Expected Patterns</b>
Always developing at this stage
I am able to recognize labs, vital signs, and assessment pieces that don't match up to what is within range or expected.
It takes time and practice to develop any skill.
i didn't understand
I can monitor for trends appropriately
I am stronger at connecting the pieces and looking deeper
Can see most abnormal details, can struggle to continue with assessments to monitor effects
I feel I recognize abnormal vital signs & lab levels well.
developing
I feel like after today, I feel comfortable about it.
<b>NOTICING: (1c) Information Seeking</b>
Always developing at this stage
I am developing in seeking out resources and information from patients to further investigate the entire picture
It takes time and practice to develop any skill.
I am learning where to look for information
I can gather information
I feel like I am stronger but still have a lot to learn
Always seek information I do not know
I feel confident on where to find what on the EHR.
developing
I feel more confident about finding the information I need.
<b>INTERPRETING: (2a) Prioritizing Data</b>
Always developing at this stage
It is important to prioritize and take steps towards helping patients reach where they need to be in their diagnosis.
It takes time and practice to develop any skill.
i am learning what takes priority over other things
I can look at data and focus on what is most important
I feel that I am stronger at prioritizing data
Can see what is most important standard deviation
I am definitely improving on prioritizing but I need further experience to consider myself accomplished.
developing
I have more understanding in this.
<b>INTERPRETING: (2b) Making Sense of Data</b>

Always developing at this stage
I can make sense of data by reading values and why or why not they are high or low. Also, what could be the cause?
It takes time and practice to develop any skill.
i am putting the pieces together to understand better
I can determine which data is relevant to the problem at hand
I feel more confident about my ability to make sense of the cues
Can identify interventions for most problems
I am able to match physical findings & objective findings to diagnosis fairly well for this well.
developing
I have improved in making sense of data.
<b>RESPONDING: (3a) Calm, Confident Manner</b>
Always developing at this stage
Even though in some situations it can be stressful I try to problem solve and keep a straight face and try to figure out the issue.
It takes time and practice to develop any skill.
when speaking to the patient i remained calm
I think my leadership and confidence are on par for where I am in school. I tend to take lead in situations with my peers.
I am still unsure with my interactions with my patients but feel stronger every day
Can stay calm
I felt I remained a calm demeanor despite what I felt on the inside!
developing
I can display calmness but Im still working on confidence.
<b>RESPONDING: (3b) Clear Communication</b>
Always developing at this stage
I am working on this, just learning all of this information can be difficult to regurgitate back to others.
It takes time and practice to develop any skill.
spoke loud and clear for all to understand me
I feel like I can communicate well
I communicate with my patients well but want to improve and feel stronger every day
Able to assign jobs and listen to others
I felt my communication with my peers was good.
developing
Listening carefully to what is being said and being able to clearly communicate with my peers.
<b>RESPONDING: (3c) Well-Planned Intervention/ Flexibility</b>
Always developing at this stage
I tend to plan out each intervention prior to doing it so that I can prioritize what is most important to do in that moment and other tasks can wait.
It takes time and practice to develop any skill.
im learning interventions needed
I am getting better at monitoring for changes and changing interventions

I am flexible and plan my interventions well but can ALWAYS be better
Understands textbook interventions for most processes, but unsure what to do if those interventions do not work
I felt my flexibility was good.
developing
I feel more comfortable about planning interventions.
<b>RESPONDING: (3d) Being Skillful</b>
Always developing at this stage
I have not mastered all of the skills previously learned but it is a work in progress
It takes time and practice to develop any skill.
i am learning the skills needed
I think my skills are on par for where I am in school
I am still unsure with my skills with my patients but feel stronger every day
Still somewhat slow in some nursing skills
I felt my skill level was good but has tons of room for improvement!
developing
Able to use my skills that I have learned and to apply hands on.
<b>REFLECTING: (4a) Evaluation/Self-Analysis</b>
Always developing at this stage
I think I have come a long way so far such as prioritizing tasks, communication, and understanding this material.
It takes time and practice to develop any skill.
after watching the video i could see what was done incorrectly and improve the next time
If there is one thing I do it is overthink everything I did during the day!
I am constantly evaluating myself and welcome evaluations from others
Can identify alternatives
Today was very beneficial to evaluate myself. I learned a TON & surprised myself with some things.
developing
Able to reflect at the end of the day to see what I could have done better or improve on.
<b>REFLECTING: (4b) Commitment to Improvement</b>
Always developing at this stage
There is always more room for improvement and I am looking forward to improving more and more as I progress throughout the program
I will continue to learn and grow with each lecture, clinical experience and hands-on practice.
i was very accepting of the constructive criticism
I work hard to improve myself each day
I am constantly committed to improving my performance
Can recognize weaknesses but still need to make plans to fix them
I am very committed to learning all I can to improve my nursing skills.
developing
Very committed to improvement so that I am able provide the best outcome.

**Link to Clinical Judgement Presentation**

<https://prezi.com/view/AVrgLhtvqzq3ZtZw8rRE/>