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SELF-REGULATED LEARNING PROMPTS IN THE ENHANCEMENT OF CRITICAL
THINKING SKILLS

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At the

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Patricia A Pawlak

ABSTRACT

Critical thinking has been recognized as an essential concept in nursing curricula, as well as an important outcome for nursing students. The process of journaling has been used as an educational tool within nursing education to evaluate the critical thinking skills in nursing students. Despite its vigorous use, there is no specific format or conceptual model that is used consistently in nursing education to guide the journaling process or to evaluate if critical thinking is or has indeed occurred. This study will introduce the concept of using self-regulated learning (SRL) theory to prompt Basic BSN students in the development of critical thinking skills through the act of journaling. Self-regulated learning was used to format and apply journaling prompts to guide the Medical-Surgical II clinical rotation of Cleveland State University nursing students. The hypothesis was that students who use the self-regulated prompts will show a higher level of critical thinking skills as compared to the students who did not use the self-regulated prompts. A convenience sample of students were recruited and randomly assigned into groups. Journal reflections were scored and evaluated using the Lasater Clinical Judgement Rubric for the presence of cognitive, metacognitive and motivational critical thought processes. A t-test analysis was conducted to measure the difference between the two BSN groups for level of critical thinking. The results of this study did not show a significant difference between the two groups, but is a step in developing a more

conceptually consistent method of guiding and evaluating the journaling process in order to show the presence of critical thinking.

Keywords: Self-regulated learning, critical thinking, critical thinking skills, journaling

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CHAPTER I

INTRODUCTION

Critical thinking is considered to be a nursing program outcome and a core competency for baccalaureate students since the late 1980's when the focus of nursing education changed from a curricular process to student outcomes (Catherine & Seldomridge, 2006). Nursing programs began the task to find ways to develop and assess critical thinking skill competencies in their students. With a core competency of demonstration of critical thinking as an outcome measure or general education requirement for most state nursing programs, a problem arose in that critical thinking has had multiple definitions since the inception of the concept into nursing education (Burbach, Matkin, & Fritz, 2004, Kupier, Murdock, & Grant, 2010). Critical thinking can be defined as a "purposeful, self-regulatory judgement which results in the interpretation, analysis, evaluation and inference as well as, explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which a judgement was based" (Burbach et al., 2004, p. 482). One can surmise that critical thinking can be problem solving skills, a path for complex decisions or a collection of ideas, assumptions, inferences, arguments, opinions, beliefs or conclusions. However it is defined, since the

concept of critical thinking was introduced, the profession has struggled to find a definitive way to conceptualize and measure it to show that a student has achieved it.

This continues to be a concern today as “only 35 percent of new RN graduates, regardless of educational preparation and credentials, meet entry level expectations for clinical judgment and a majority are unable, or have considerable difficulty, to translating knowledge and theory into practice” (Del Bueno, 2005, p. 278). Clinical judgment is defined as the “application of information based on actual observation of a patient combined with subjective and objective data that lead to a conclusion” (“Clinical Judgement,” 2016, definition 1). Critical thinking skills is what leads to the translation of this information and it is the process of translation that educators are looking for when evaluating their students for critical thinking. The National Council for State Boards of Nursing discussed one study that found “less than 50% of employers answered, ‘Yes definitely’, when asked if new graduates are ready to provide safe and effective care” (Spector & Echternacht, 2010, p. 18). These types of statistics can support the argument that nursing has not yet found a concrete way to develop and assess critical thinking skills in nursing students. Good critical thinking skills leads to good clinical judgment.

Nursing students are expected to display critical thinking in classroom activities, oral presentations, written assignments, and during simulation experiences. As students progress through a nursing program, they should be able to use theory and educational clinical experiences to problem solve increasingly complicated patient situations (Benner, Hughes, & Sutphen, 2008). One educational tool that has been adopted by the nursing profession to aid in the development of critical thinking skills is the process of reflective journaling. Reflective journaling helps students focus on their thoughts and feelings

which may result in a changed outlook about a clinical situation or experience.

Reflection that shows critical thinking should contain responses that show the processes of thinking ahead, thinking-in-action and thinking back to a clinical experience ("What is critical thinking," n.d.).

While there is sufficient data in nursing literature that shows the reflective process to be a valuable tool in the development of critical thinking skills, a problem arises related to the apparent lack of conceptual clarity surrounding the use and evaluation of journaling in nursing education (Kinsella, 2010). The use of reflection in the journaling process is open to many interpretations and is often used by educators in many different forms or formats, as well as in various clinical settings. This lack of consistency among nursing educators creates a gap in knowledge about how students are learning and critically thinking about their clinical experiences in their journaling responses.

While there is no consistent method to implement or teach reflective journaling to enhance critical thinking, there is also no consistent or proven method to evaluate journaling responses for the presence of critical thinking. Two decades ago, James and Clarke (1994) identified this problem and argued that nurse educators have no means by which they can measure journal reflections for critical thinking or to assess that critical thinking has indeed taken place. Many studies have used standardized instruments such as the California Critical Thinking Dispositions Inventory (CCTDI), the Watson-Glaser Critical Thinking Appraisal (WGCTA) or the California Critical Thinking Skills Test (CCTST) to evaluate journaling responses for the presence of critical thinking. These types of instruments have led to inconsistent findings. Nursing programs have gravitated to utilizing qualitative measurements for critical thinking such as portfolios, narratives

and reflective assignments to show student growth and clinical reasoning. Academia must strive to find a reliable and consistent tool to evaluate for the presence of critical thinking skills, for without empirical support, nurse educators cannot only prove that critical thinking can be taught, but that it can also be learned and demonstrated in the management of the patient (Riddell, 2007). The profession of nursing has struggled to conceptualize the concept of critical thinking and therefore has struggled for a philosophical means in which to show that students can be taught and learn to think critically (Raymond-Seniuk & Profetto-McGrath, 2011).

Prompts used to incite or encourage a student's response to clinical situations are usually not the same, or standardized, for all journal assignments in clinical rotations. Where some educators will ask or prompt many questions to elicit critical thinking, other educators may prompt less. The use of standardized prompts for journaling assignments may better lead nursing education in the development and use of a consistent, standardized critical thinking tool. This tool may provide the quality and consistency desired in nursing education to show the presence of critical thinking in journal responses from students.

One theory that has been used across the educational spectrum to assess critical thinking is the theory of self-regulated learning (SRL). Students, in general, "can be described as self-regulated to the degree that they are metacognitively, motivationally, and behaviorally active participants in their own learning process" (Zimmerman, 1989, p. 329). Critical thinking requires cognitive, metacognitive and motivational concepts to be demonstrated in reflections to show that learning has occurred. The goal of self-regulation in nursing is to prompt students to develop strategies that will lead to good

outcomes for their patients and not just be a means to attain a learning goal or objective. This type of learning is not limited solely for use in nursing school, but can be used throughout one's professional nursing practice as new situations present. It is possible that incorporating SRL prompts into already existing formats for journaling at colleges of nursing can begin to form a consistent method for instruction, evaluation and development of critical thinking skills in nursing students. Journal entries can be measured with available instruments for the presence of critical thinking based on cognitive, metacognitive and motivational criteria rather than on the presence of nuances, beliefs, assumptions and inferences. This study was conducted to determine if SRL prompts used in the reflective journaling practice of nursing students would improve or enhance critical thinking skills when compared to those reflective journaling practices of students who do not use SRL prompts.

CHAPTER II

LITERATURE REVIEW

The significant literature over the past ten years that has influenced the use of a consistent method to promote critical thinking from the journaling process is vague and empirically limited. A study conducted to by Marchigiano et al. (2011) showed that a sample of 51 nursing students felt more confident in planning and predicting patient outcomes using a journaling format (mean = 2.29, SD = 0.692) over utilizing a care plan format (mean = 3.41, SD = 1.13). While this was an important finding, the format for the journaling prompts were not revealed in the study. A review of nursing literature shows that “the use of guidance can help students develop their reflective journaling skills and thereby increase their clinical reasoning skills” (Lasater, 2009, p. 40). Clinical reasoning is a specific term used in the critical thinking process. Critical thinking “is an ‘umbrella term’ that includes many aspects of reasoning inside and outside of the clinical setting” (“What is critical thinking,” n.d., p. 9). By developing the journaling skills of students, educators will be able to assess the writings for the presence of reasoning that shows the development of critical thinking skills. The lack of an operational use of the

journal format again shows the vague and variable ways journaling is used to develop critical thinking skills.

Nursing students know that critical thinking is a competency they must attain in order to be successful in a nursing program, to pass the NCLEX exam for licensure, and to adequately function as a new graduate nurse. While critical thinking is a valued educational outcome, the concept is not always clear among educators as “gaps may exist between faculty understandings and their abilities to incorporate critical thinking into curricula, identify clinical experiences that enhance critical thinking skills, or use teaching strategies that effectively develop students’ abilities” (Mundy & Denham, 2008, p. 95). The concept of critical thinking can be equally as vague for students. A qualitative study conducted by Hong and Chew (2008) concluded that there was a lack of clarity and understanding of the concept of reflective journaling as an educational tool among students. Although students felt they had benefitted and learned from the journaling process, there was no way to quantify what they had learned. This further demonstrates the need for a conceptual basis for the effective teaching and utilization of tools, such as prompts, in the journaling process to allow students a means to demonstrate their critical thinking skills.

After an intense review, a pattern related to Albert Bandura’s theory on social cognitive thought began to appear in nursing literature in the form of Barry J. Zimmerman’s (1989) self-regulated learning theory. Self-regulation is a cognitive learning theory from the 1960’s that stated people learn from observation, imitation and modeling. It has been broken down and used in various formats and among different educational settings. Self-regulated learning and the strategies used to promote learning

are “the processes directed at acquiring information or a skill that involve agency, purpose, and instrumentality perceptions by learners” (Zimmerman, 1989, p. 329).

Zimmerman’s SRL focuses on three components: cognition, metacognition, and motivation. Reflective journaling is a tool often used by nurse educators to evaluate the critical thinking skills of students. The various formats used in the journaling process make it difficult to conceptually evaluate whether or not critical thinking has occurred or is actively taking place. The use of the concepts defined in SRL can be used to format the journaling exercise.

Most of the work being done on SRL has been performed by one nurse researcher, Dr. RuthAnne Kuiper. Her use of SRL and the development of a SRL Model specific to nursing for the analysis of critical thinking through journaling have yielded good results. Kuiper’s work has shown that reflection, supported by SRL prompts, has yielded results that show a higher level of critical thinking in students.

Kuiper (2005) used a coded verbal analysis to evaluate SRL prompts among students in a clinical preceptorship. Results showed a higher order of critical thinking in behavioral ($p = 0.002$), metacognitive ($p = 0.010$), and environmental ($p = 0.030$) thinking and self-monitoring (Kuiper, 2005). The use of prompts for journaling based on SRL was also shown to be effective in another descriptive study that focused on students in a clinical practicum (Kuiper et al., 2010). Prompted journal entries were analyzed using retrospective verbal protocol (RVPA) to examine statements from the students for the presence of SRL processes. Results supported a higher level of critical thinking in self-efficacy ($p = 0.008$), thinking ($p = 0.000$), environment ($p = 0.013$), reactions

($p = 0.013$), time issues ($p = 0.000$), personnel ($p = 0.022$) and self-confidence (Kuiper, Murdock, & Grant, 2010).

Kautz and Kuiper (2005) also conducted a study on 23 baccalaureate nursing students in a medical surgical clinical rotation over a 10 week period. The Outcome-Present State-Test (OPT) Model of Clinical Reasoning combined with the use of SRL prompts were given to students to promote metacognitive or critical thinking from clinical experiences. A OPT worksheet was used to analyze journal responses. Results showed a greater use of self-observation, self-judgment, knowledge of work and personal resources at a confidence level of $p = 0.0000$ (Kautz, Kuiper, Pesut, Knight-Brown, & Daneker, 2005). These studies and the results they have shown continue to support the use of a set framework of prompts that allows for the development of a higher level of critical thinking among nursing students.

CHAPTER III

METHODS

The research question for this study was: Do Basic BSN students who use self-regulated learning prompts in the journaling practice show a higher level of critical thinking when compared to the Basic BSN students who do not use self-regulated prompts? The hypothesis to be supported was that with the use of journaling prompts as a concrete method for the implication and evaluation of critical thinking, the students who use the prompts for the journaling assignment will score higher in critical thinking than those who did not use the prompts. This randomized controlled pilot study used journaling prompts that have been designed to address the three concepts of SRL theory: cognition, metacognition, and motivation. For the concept of cognition, the prompts are designed to recall information, use problem solving strategies and incite self-observation of performance using critical thinking skills. For the concept of metacognition, the prompts are designed to incite the students to reflect on skills and activities used in the clinical area, and the planning, monitoring and continued evaluation of clinical performance. For the concept of motivation, the prompts are designed to incite

metacognitive evaluation of goals, self-efficacy and confidence, use of knowledge, and thinking strategies. The journaling responses of students will be examined for the presence of increased critical thinking skills when prompted by these concepts.

3.1 Subjects

The target population was Basic BSN students in the Junior Medical-Surgical II clinical rotation. This was a convenience sample with an age range from 21 years to 32 years and consisting of both male and female genders. The sample consisted of 45 reflective journal entries from 13 students enrolled in the Medical-Surgical II course students during the Fall semester of 2015. Journal entries were reviewed and assessed for the level and presence of critical thinking. Only completed journal entries were used for evaluation and each journal entry was assessed on its own merit.

To be included in this study, all subjects had to be enrolled in the Junior Medical-Surgical II rotation at the school of nursing. All students would be performing journaling exercises in the evaluation of their clinical experiences. Excluded from this study were accelerated BSN students. In analyzing critical thinking skills, accelerated students already have a degree background, may be older with more life experiences and may have already worked in a medical related field. While subjects within the sample may have some medical field experience, they do not have advanced or developed nursing knowledge or problem solving skills. Medical related jobs would be highly task oriented and would not require the level of critical thinking being evaluated in this study. This study did not exclude any individual based on race, gender, religion, socioeconomic status or special educational needs.

3.2 Setting

This study was conducted at a State University located in Cleveland, Ohio. This is an urban university with an approximate total enrollment of 17,000 students (Cleveland State University website, 2013, para. 4). The school of nursing offers undergraduate and graduate programs in professional nursing, as well as bridge programs for RN to BSN and accelerated nursing programs for those students who have already obtained a Bachelor's degree in another field. Clinical experiences are provided through various institutions throughout the Cleveland area in order to meet the educational and clinical requirements of the nursing program.

3.3 Procedures

After IRB approval was obtained from Cleveland State University to conduct the study, students were recruited by this researcher via a short explanation of the study prior to the beginning of their clinical rotation. All participants gave written consent that allowed for their journals to be used in the study. This convenience sample of nursing students were randomly assigned to an odd numbered (1) journaling intervention group and an even numbered (2) control group. The students were assigned by drawing a clinical instructor's name, and that instructor's clinical group was placed in either the intervention group or the control group. The students were assigned to a clinical instructors' group prior to that instructor being assigned to the intervention or control group. Group 1 received SRL prompts as guidance for their weekly journal entries while control Group 2 performed weekly entries based on the University's current journaling practice that does not include SRL prompts. All of the students involved in the study had all personal information removed from the journal entry and were assigned a correlating

reference student number identifier. Journal entries were marked 1 through 45 and then given to the researcher for evaluation.

3.4 Variables

3.4.1 Independent variable. Prompts can be conceptually defined as: a way to “move or induce into action, to occasion or incite: to inspire” (Dictionary.com, 2014). Journaling prompts can guide student nurses to reflect critically on performance or problem solving. Journaling prompts that address the concepts of SRL covering cognition, metacognition and motivation were supplied to the students via a handout from the instructor for journaling exercises. Entries were submitted based on that instructor’s syllabus for the clinical course. The operational use or format for the journaling prompts can be seen in Table I.

Table I.

Operational Use of SRL Prompts

<p><i>Cognition prompts:</i></p> <ul style="list-style-type: none">• What problems or difficulty did you encounter in clinicals this week?• What strategies did you develop to help solve clinical issues or problems? Did you use theory to help guide your strategy?• What tools did you use in the clinical environment to help improve learning?• What did I do to prepare for clinicals? <p><i>Metacognition prompts</i></p> <p>Could I have been better prepared for clinicals this week? I should have.....</p> <ul style="list-style-type: none">• During your clinical day, did you ever stop and re-evaluate your performance or strategies for completing your assignment? If so, what did you do? If not, after reflection, what could you have done better?• Did you meet all the goals or expectations you set for yourself for your clinical experience?• How would you evaluate your clinical experience? For example: I learned.....I accomplished.....I changed.....I didn’t like..... <p><i>Motivational prompts:</i></p> <ul style="list-style-type: none">• My impression of my performance in clinicals this week was.....• I showed confidence in my performance by.....• Did you encounter a difficult task this week? How did you accomplish this task? <p>Did anyone help you learn something new during your clinical experience?</p>

3.4.2 Dependent variable. Critical thinking skills have had multiple definitions and various ways that they have been analyzed and evaluated in nursing education. For this study critical thinking skills were conceptually defined as “the intellectually disciplined process of actively and skillfully conceptualizing, applying, synthesizing, or evaluating information gathered from, or generated by, observation, experience, reflection or communication, as a guide to belief or action” (Banning, 2006, p. 458). Critical thinking skills were operationally defined through the Lasater Clinical Judgment Rubric which is based on Tanner’s (2006) Clinical Judgment Model. This rubric describes dimensions of clinical judgment through the acts of noticing, interpreting, responding and reflective behaviors. Additionally, the rubric describes four levels of clinical judgment development for students: beginning, developing, accomplished, and exemplary. For this study, all students were evaluated on those four levels and total score.

Numerical scores were generated by assigning values to each level: beginning = 1, developing = 2, accomplished = 3, and exemplary = 4. The scores can range from a score of 4 to a score of 16. Validity and reliability data for this rubric as an instrument for measurement has been generated from use in previous research in an effort to continue to develop strategies that will reliably evaluate critical thinking skills in nursing students (Lasater, 2011).

An evaluation of the Lasater rubric conducted by Adamson et al. (2011), showed validity in the accuracy and consistency when evaluating student performance. The use of the rubric also allowed educators to differentiate between known levels of student ability, as well as to identify that students who desired to increase their domain specific nursing knowledge, demonstrated improved clinical judgment when evaluated by the

Lasater rubric (Adamson, Gubrud, Sideras, & Lasater, 2011). Reliability in this review showed high interrater reliability from an $r = 0.57$ to an $r = 1.0$ (Adamson et al., 2011).

3.5 Data Collection and Management

Data were collected weekly, over a 10 week period, of the clinical rotation in the Fall Semester of 2015. Journals were copied by the clinical instructor and given to thesis advisor for removal of personal information and the assignment of a correlating student number. Only the researcher and advisor had access to study data. Scores for the data generated by journal responses were entered onto a data collection sheet and entered into a computer for evaluation in a secure, on campus site. The scores of their reflections were documented under the students correlating number. The researcher did not contact clinical instructors for questions regarding specific clinical situations or for insight on a student's performance while on the clinical site. This was necessary to avoid developing bias about the students that would alter the evaluation of journal responses for critical thinking skills.

3.6 Statistics

SPSS computer software, version 22, was used to analyze data. An independent t-test analysis of results was conducted to detect differences between the two BSN student groups. This research had a set level of significance of $p = 0.05$. Measures for central tendency were conducted for the scores of prompted and unprompted students across the dimensions of clinical judgment as defined in the Lasater rubric. The Lasater instrument is designed for an interval level of assessment and is a Likert-type scale which will yielded interval type data.

CHAPTER IV

RESULTS

This study was conducted to determine if the use of self-regulated journaling prompts would show a higher level of critical thought when compared to students who did not use prompts in the reflective assignment. For this study, 45 journals were randomly selected and evaluated for the presence of critical thought. There were 30 journal entries in the control group and 15 journal entries in the intervention group. The intervention group received prompts designed after Self-Regulated Learning Theory and the control group performed journal entries designed at the instructor's discretion. All journal entries were assessed based on the Lasater Clinical Judgement Rubric. All scores were entered into SPSS software for t-test evaluation.

Noticing scores that assessed for observational skills, the recognition of patterns or deviations in the clinical situation and the use of clinical information or data showed no significant difference ($t = -1.29$, $p = .333$) between the control and intervention group. Interpreting scores that assessed for the ability to prioritize and interpret data showed no significant difference ($t = -.305$, $p = .067$) between the two groups.

Responding scores that assessed for confidence, communication and interventions

showed no significant difference ($t = -.876, p = .200$). Reflection or behavior scores that assessed the students ability to evaluate their performance and site area of improvement also showed no significant difference ($t = -.235, p = .067$) between the two groups. Finally a total score for the journal entry was calculated based on the scores for each section of the rubric. The total scores for the journal reflection showed no significant difference ($t = -.718, p = .633$) between the control and intervention group.

Table II

T-Test for Equality of Means

LASATER RUBRIC SCORES	t	Sig. (2-tailed)	P Value
NOTICING	-1.29	.204	.333
INTERPRETING	-.305	.762	.067
RESPONDING	-.876	.386	.200
REFLECTION	-.235	.815	.067
TOTAL SCORE	-.718	.477	.633

CHAPTER V

DISCUSSION

This study hypothesized that using self-regulated learning prompts for journaling assignments would show a higher score in critical thinking skills than those who did not use prompts. Statistical analysis did not provide significant differences between the intervention group and the control group in the four dimensions of the Lasater rubric (Noticing, interpreting, responding, reflection) as well as the total score for critical thought. Thus, the study hypothesis was not supported.

While this study did not show significant differences, it is not without merit. Peter A Facione, in his report on the Delphi study for critical thinking, outlined that further research on critical thinking instruction and assessment should focus on three areas: curriculum, tools for assessment and the instructors whom teach and evaluate critical thinking. It is the areas of curriculum building and tools for assessment in which this study strived to explore and continue to build nursing knowledge.

The Lasater rubric was used to evaluate critical thinking in this study. Facione (1990) recommended that “different tools for evaluation should be used depending on which

aspect of critical thought is being targeted and where the students are in their learning cycle” (p. 36). The tools used in academia should continue to help measure and conceptualize critical thinking in nursing students as this study attempted to show with the use of the Lasater rubric. Non-significant findings may indicate that the Lasater rubric was not sensitive enough to detect or measure critical thinking ability.

It has been mentioned in previous studies that a student’s critical thinking ability may be correlated with age, maturity and cumulative grade point average (Burbach et al., 2004, Ip et al., 2000). Ip et al. (2000) discusses that the ability to think critically is likely to develop with age and possibly be a part of the normal process of cognitive development. Some students may just be more adept at critical thinking than others. Critical thinking can also be affected by personal factors such as the student’s personal life, willingness to take part in the reflective process, honesty, persistence in the field of study and flexibility. This study did not use age or grade point average as a variable and cannot account for the students personal factors that may have contributed to the responses in the journaling exercise.

It is important to highlight that one outlier came from the control group in which journal responses were consistently scored high. It was also evident from the format of the journal entry that the student was responding to some formalized prompts created by the nurse educator. In her article discussing reflective practice, Ruth-Sahd (2003) supports this phenomenon by stating that nurse educators have a responsibility to foster the reflective practice in their students. For nurse educators, the reflective process used in the journaling activity should be valued and relevant in their own practice in order to foster that activity in their students. It is also important that nurse educators explain the

purpose of the reflection process and “create an environment in the classroom and clinical setting that is safe so reflective practice will increase” (Ruth-Sahd, 2003, p. 492).

Facione (1990) has stated that the ideal instructor will teach critical thinking skills and apply subject content with those skills to help students elaborate, transfer and generalize those learned skills into a variety of different contexts. Facione (1990) also states that the instructor should create a classroom and school environment which is supportive of critical thinking and provide experiences that cause the student to ask questions, discuss justifications and articulate objections.

It should not be assumed that a student knows how to reflect or understand what type of content, clinical judgement or learning should come out of the journaling process. Facione (1990) reminds us that it is important to remember that assessments which focus on skills only can give an incomplete picture of someone’s strength as a critical thinker. A nurse educator committed to fostering critical thinking in students may have designed prompts that elicited a better expression of critical thinking. The outlier in this study may be a significant finding in that it demonstrates how a journaling assignment designed to display critical thinking, can indeed make a difference. Critical thinking instruction should not be “limited to facts only, but should help students explore issues that have a moral, ethical or policy dimensions” (Facione, 1990, p. 36).

Studies previously conducted that showed insignificant critical thinking results have suggested that nurse educators “might better select clinical opportunities to build on the students' strengths, and guide and support them in promoting their critical thinking ability” (Ip et al., 2000, p. 89). Incorporating clinical assignments that are a good fit for the student and requiring thought provoking prompts to guide the journaling process

supports this statement and addresses a lack of consistency among nurse educators to promote critical thinking ability. A student who is having difficulty in neurological assessment would benefit more from having a new stroke patient than to assign them to the same small bowel obstruction they had on the previous clinical day. Challenging assignments as well as the use of consistent journaling prompts also reinforces the argument that “explicit teaching of higher-level reasoning and critical thinking does not depend on what is taught, but rather how it is taught” (Burbach et al., 2004, p. 484).

5.1 Limitations

The results of this study may have been different if a larger sample size was used and if it could have been conducted over a longer period of time with a larger sample size. Random sampling procedures also contributed to a control group that was almost double in size to that of the intervention group. Increasing the size of the sample and the length of time may indeed yield different results. The time frame and number of assignments may not have been enough to produce significant changes in the intervention group. There were instances where a complete set of journal assignments was lacking. A full set of entries may have resulted in a positive progression in critical thinking skills resulting from the interventional prompts. Results of this study may have also been affected by the tool used to evaluate the journal responses. As there is no definitive tool used to assess critical thinking, further studies should be conducted to find the optimum tool for evaluation. Current literature does not show one method or tool to be more accurate or reliable than another. Facione (1990) reminds us that the tools used for evaluation should always include validity, reliability and fairness. The development of tools to evaluate this skill must also be current and reflect the current knowledge and definitions of critical

thinking in the nursing profession (Paul, 2014). There are other models and tools that are used to assess critical thinking in nursing students, but many are theoretical formulations and are yet without empirical support. Again, study results may have been limited by the individual teaching styles of the nurse educator in the control group.

5.2 Recommendations for Further Research

For future research purposes, it is suggested that the study be conducted over a longer period of time with a larger number of students. The use of journaling prompts was hypothesized to effectively increase critical thinking skills when used consistently in journaling exercises during a clinical rotation. It may help the significance to provide the intervention to the whole cohort over a semester and then compare the progress of those students to the same cohort without the use of the intervention. In light of previous studies that showed insignificant results, it would be prudent to incorporate age and grade point average as variables.

It is recommended that future research also utilize the use of other tools for assessment of critical thinking. Some assessment tools may be more sensitive to critical thinking than others. Future studies that can use the same instructor for the control and intervention groups would also allow the researcher to control for the teaching style and commitment to critical thinking of the nurse educator.

As the nursing profession strives to attain the best practices in standards of care, it is imperative that we continue to evaluate how the reflective practice of journaling contributes to the development of critical thinking skills. The nursing profession must continue to strive for definitive definitions of critical thinking and continue to find ways to develop and evaluate critical thinking skills. “Unclear conceptualizations may block

meaningful evaluation of critical thinking skills” and “diverse definitions mean that forms of evaluation may also differ (Mundy & Denham, 2008, p. 95). It is almost certain that research into this nursing phenomenon will continue.

5.3 Implications for Nursing Practice and Education

While self-regulated prompts may not have made a significant difference in this study, a strong implication to nursing practice and education would be the continued research into the development of standardized prompts for the journaling process among nursing students. Educators that utilize prompting in a consistent manner within a curriculum can add clarity and consistent evaluation of critical thinking skills among students. In order for future nurses to be able to deliver safe and competent care, the nursing profession must continue to strive for the best-practices in developing critical thinking among nursing students. Continued study in the area of critical thinking and how it is developed through the act of journaling will further attempt to address the lack of conceptual clarity and consistency. While academia continues to use journaling as a means to develop critical thinking among nursing students, it is essential for the nursing profession to provide empirical evidence to support the activity, as well as, the tools used for evaluation.

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Appendix A

Lasater Clinical Judgement Rubric

Table 1 Lasater Clinical Judgement Rubric		4	3	2	1
Effective Noticing Involves: Focused observation	Exemplary Focuses observation appropriately; regularly observes and monitors a wide variety of objective and subjective data to uncover any useful information	Accomplished Regularly observes/monitors a variety of data, including both subjective and objective; most useful information is noticed; may miss the most subtle signs	Developing 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	Beginning Conducted 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	
Recognizing deviations from expected patterns	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	
Information seeking	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 seeks 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: Prioritizing data	Exemplary 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	Developing Makes an effort to prioritize data and focus on the most important, but also attends to less relevant/useful data	Beginning Has difficulty focusing and appears not to know which data are most important to the diagnosis; attempts to attend to all available data	
Making sense of data	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 or familiar/common situations has difficulty interpreting or making sense of data; has trouble distinguishing among competing explanations and appropriate interventions; requires assistance both in diagnosing the problem and in developing an intervention	
Effective Responding Involves: Calm, confident manner	Exemplary Assumes responsibility; delegates team assignments, assess the client and reassures them and their families	Accomplished Generally displays leadership and confidence, and is able to control/calm most situations; may show stress in particularly difficult or complex situations	Developing Is tentative in the leader's role; reassures clients/families in routine and relatively simple situations, but becomes stressed and disorganized easily	Beginning Expects in simple and routine situations, is stressed and disorganized; lacks control, making clients and families anxious/less able to cooperate	
Clear communication	Communicates effectively; explains interventions clearly/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	
Well-planned Intervention/Flexibility	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	
Being skillful	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	
Effective Reflecting Involves: Evaluation/self-analysis	Exemplary 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	Developing Even when prompted, briefly verbalizes the most obvious evaluations; has difficulty imagining alternative choices; is self-protective in evaluating personal choices	Beginning Even prompted evaluations are brief, cursory, and not used to improve performance; justifies personal decisions/choices without evaluating them	
Commitment to Improvement	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	

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