Student Nursing Skill Achievement through Self-Regulated Learning

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Abstract

Background: One of the challenges for nursing faculty is to teach nursing skills in a way that promotes active learning. Students need to learn the skill and perform it in a clinical setting.

Purpose: The purpose of this study was to compare novice nursing students' self-regulation of learning scores before and after self-assessment of skill achievement using recorded skill performance.

Methods: The Motivated Strategies Learning Questionnaire (MSLQ) was used for a pretest and posttest before and after learning four nursing skills.

Results: A paired-sample t-test displayed no significant differences in the mean MSLQ scores in metacognitive self-regulation, rehearsal, and effort before and after student self-assessment of nursing skill achievement. The MSLQ construct peer learning demonstrated a significant difference on the pre-test compared to the post-test.

Conclusions: This study did not find significant results however, it laid the groundwork for future studies on best practices to learn nursing skills.

Keywords: Feedback; Learning strategy; Motivation; Self-efficacy

Introduction

One of the chief responsibilities of nursing faculty is to teach nursing skills to students in a way that promotes self-regulated learning through feedback and self-reflection [1]. Students need to move from dependent learning strategies that rely solely on the instructor to independent learning strategies where the student seeks out opportunities for intellectual growth. The move from an instructor-dependent environment can be facilitated by an instructional environment that encourages student participation and engagement. Additionally, students need to develop self-evaluation skills that will enable them to modify their learning and adapt to academic challenges [2].

Background

Self-regulated learning theory, as discussed by Bandura [3], closely mirrors how students are taught to critically analyze nursing problems. It is the person's ability to comprehend and control one's learning environment. In the nursing process, nurses assess, diagnose, plan, implement, and evaluate identified patient problems [4]. This process is cyclic and ongoing as patient problems are resolved and new ones are identified. Self-regulated learning theory is also a cyclic process; there is a planning or forethought phase, a performance phase, and an evaluation or self-reflective phase [5].

In the forethought phase, students regulate their learning process by setting educational goals and developing a strategic plan to achieve those [5]. One aspect of learning that self-regulated learners possess is motivational control. Students with motivational control can set goals, adjust to the emotional demands of learning, and have positive thoughts about their overall abilities [6]. Students with these learning skills are less likely to blame difficulties they encounter during the learning process on others as compared to unskilled learners [2,6]. Skilled learners can adjust their study skills to meet the academic demands and challenges they encounter as they apply theory-based content to clinical scenarios [2].

In the performance phase, students shift their focus to self-control and self-observation learning strategies [5]. Faculty can play an important role in the development and encouragement of self-regulated learning through teaching strategies. One way to motivate students is by providing them options when learning. Offering students choices when picking out an assignment is one way to provide autonomy and motivate students in the educational setting [6]. By letting the student pick their assignment, the instructor provides the student incentive to complete the task. A second way to increase engagement in learning is to foster a feeling of community in the learning setting. Group work that encourages students to work toward a common goal sets the stage for a collaborative environment [6]. As students work together to achieve an outcome, relationships are formed, and classroom satisfaction is increased.

Self-Reflection, the last phase of the cycle, involves self-judgment and self-reaction to learning goals [5]. Ongoing assessments throughout the educational process leading to an increase in self-regulated learning [6,7]. Students who receive consistent feedback that encourages growth can make corrections and regulate learning. Feedback is especially important for students that have insufficient study skills or difficulties with a learning approach [8]. Feedback is essential from instructors; however, peer feedback can also be helpful to the learner. Higher-ability learners can help other students see gaps in thought processes and provide guidance in making necessary corrections.

The last component of self-regulated learning is the ability to self-assess one's performance and diagnose any deficiencies [6,7,9-14]. For some students, self-regulated learning comes more naturally while others need guidance on the process [3]. In a study of students in an accelerated second-degree baccalaureate nursing program, students in their third trimester reported higher self-regulatory learning processes compared to second-trimester students [15]. This study demonstrates that this skill can be learned by students and fostered by faculty.

Students can self-assess progress using reflection as a mechanism for evaluating performance [12,14]. Students need to be encouraged on a routine basis to evaluate learning goals by assessing their progress on learning objectives. In a study from Salalah Nursing Institute, students found the reflective practice to be useful when it was used as a teaching strategy [10]. Students in this study felt reflective practice motivated them toward self-directed learning [10]. Reflection can be as simple as a journal where students are encouraged to document learning or involve a formalized assessment of their progress.

Self-assessment with video recording during skill performance is an alternate way for faculty and students to evaluate skill competence [16]. While each student creates his/her video recording, his/her lab partner can provide feedback on the performance. This feedback can assist students to create a video that demonstrates the competence of the designated skill. In a study of sophomore nursing students who participated in video-assisted peer learning, communication skills and motivation to learn were significantly higher in the intervention group than in the control group. When the peers work together to create and video record each other's skills, both students become engaged in the process. By providing feedback, peers can use self-reflection to modify their own weaknesses, skills, and problem-solving techniques [17].

Problem-based learning is a teaching strategy used in medical education to enhance self-regulated learning. Demiroren et al. found a positive correlation between self-regulated learning and problem-based learning in second and third-year medical students [8]. This study indicated that responsibility for learning, self-efficacy, and teamwork skills are all related to the development of self-regulated learning skills. Dunn, Osborne, and Link conducted a study of undergraduate nursing students in a pathophysiology course and found ability, effort, and luck were attributes of success and had an influence on self-regulated learning [18].

The benefits of self-regulated learning have been documented; however, faculty are just beginning to scratch the surface of possibilities in nursing education [6,7,9-11]. As students step into their emerging role as a nurse and transition to practice, they need to develop self-regulated learning as they will be required to continually learn new skills and transfer those skills to the clinical setting (Figure 1).
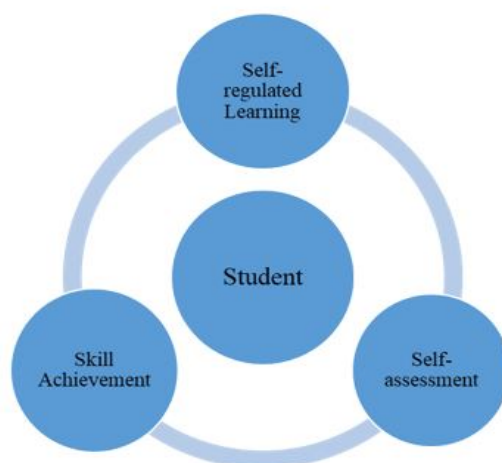

Figure 1: Nursing Skill Competence.

Research Design

The quantitative research design chosen was a pre-experimental, one-group design. The investigator was interested in examining self-regulated learning before and after an intervention that is part of an existing evaluation strategy. Subjects completed a pre and post-self-regulated learning questionnaire that measured learning and motivation skills.

Description of Sample/Sample Size

The participants in this study were first-semester sophomore-level nursing students in a generic fundamental of nursing course in a Bachelor of Nursing program (BSN). Students served as a convenience sample by virtue of enrollment. The sample size (N=17) was determined by the number of consenting students enrolled in the course. The average enrollment for the course is 25-30 students each fall. Additional inclusion criteria included the following: students were 19 years or older and enrolled in the course for the first time. No specific demographic data were collected to maintain the anonymity of the participants. The exclusion criteria included any student that was repeating the course or previously learned the nursing skills.

Description of Setting

The setting for this course was a small private liberal arts college in the Midwest. Approximately 1,400 students from across the United States and internationally attend this university and participate in a variety of academic schools. The diversity of this university includes Hispanic, African American, African, and Caucasian students.

Data Gathering Procedures

Data collection occurred in two phases. The first phase took place when the subjects completed the pre-test MSLQ survey on self-regulated learning. This occurred during week two of the semester before participants learned the designated skills (Foley placement, nasogastric placement, sterile gloving, and enema insertion).

The intervention for the study occurred after students learned the four skills in the nursing skill laboratory. Once students had learned and practiced the skill, student pairs created videos of each other performing the skills. Students recorded their videos until they were satisfied with their performance. During this process, students could provide feedback to each other while they created the video. Students were also encouraged to evaluate their own video performance prior to submitting it to the clinical instructor for completion of the task.

Prior to meeting with the clinical instructor, the student, and instructor separately evaluated the videos using a clinical skills rubric. After both parties reviewed and evaluated the video performance separately, the student and instructor discussed the student's performance and compared rubric findings.

The last phase of the study was the post-test completed by students that consented to the study. The post-test was the same MSLQ that served as the pre-test. The researcher was looking for any changes in student responses between the pre and post-test. The student's self-regulated learning scores and self-assessment scores on the clinical skill rubric were analyzed for any patterns or relationships.

Data Instruments

MSLQ: The original Motivated Strategies for Learning Questionnaire (MSLQ) is a self-report instrument containing 81 items that measure 9 learning strategy scales and 6 motivation subscales. The underlying theory of the MSLQ is the social cognitive view of motivation and learning strategies. A second theory underlying the MSLQ is motivation and cognition as a dynamic state in student performance.[19]

The MSLQ, well-established in numerous research studies, has been used to obtain feedback on students and to help guide decisions about course adjustments. The tool was first developed in the 1980s to evaluate the "Learning to Learn" course at the University of Michigan. The MSLQ has been specifically used for correlational studies on college student learning carried out with over 2000 students during a five-year period. The MSLQ, designed for the course level, does not have established norms. Cronbach's Alpha was used to measure the internal consistency for the 15 scales measured on the MSLQ. For the motivation scales, Cronbach's Alpha range goes from 0.62-0.93 and the learning strategy scales range from 0.52-0.79 [19]. An alpha rating of 0.8 is considered to indicate a high internal consistency value [20].

The MSLQ can be used in its entirety or can be broken up into modular parts to suit the needs of the researcher. The 81 items MSLQ has two major parts, motivation and learning strategies. The construct for motivation includes expectancy, value, and affect. Expectancy refers to a student's self-beliefs related to self-efficacy and control beliefs for learning. Value components relate to student engagement in an academic task. Undervalue components, there are three subscales: intrinsic goal orientation, extrinsic goal orientation, and task value. The last construct under motivation on the MSLQ is affect and relates to testing anxiety [19].

The second part of the MSLQ scale pertains to learning strategies with the subscales of cognitive strategies, metacognitive, and resource management. The strategies under this construct include rehearsal, elaboration strategies, and organizational strategies. Rehearsal strategies are the most basic and refer to repeating a process over and over to help recall information. Elaboration and organization strategies are more complex and include paraphrasing, summarizing, outlining, and creating tables [19].

Metacognitive control, the second general category under learning strategies, relates to strategies that help students regulate their own learning. This subscale includes regulating learning activities, monitoring performance, and planning by setting goals [19].

The last category under learning strategies is resource management which includes time management, study environment, effort regulation, help-seeking, and peer learning. These categories represent managing one's study time efficiently, persisting with studies even when difficult, and working with peers to achieve educational goals [19]. Four sub-components (rehearsal, metacognitive self-regulation, effort, peer learning) of the learning strategy scale were used for this study. The instrument has a 7-point Likert scale ranging from 1= "not at all true of me" to 7= "very true of me" [21].

Human Subject Protection

Prior to initiating data collection, approval from the Institutional Review Board (IRB) was obtained. Approval for the research was granted from the College of Saint Mary and the university where the study occurred.

Several ethical standards were considered when conducting this research. The first consideration was to ensure voluntary participation in the research process. Voluntary participation was important in this study to avoid any participant feeling coerced into participation [22]. Participants were also allowed to discontinue the study at any time without consequences to the final grade in the course. Informed consent was obtained by the researcher at the beginning of the study and the purpose of the study was provided before consent was obtained.

The second consideration was maintaining confidentiality. Confidentiality is protecting the participant from having identifying information disclosed during the research process [22]. For this study, no demographic information was obtained due to the small sample size and lack of relevance to the study. A second way confidentiality was maintained was through numerically coded MSLQ results that the researcher did not have access to throughout the study. The researcher had a faculty member, not involved with the course, administer the MSLQ and kept the results locked in a separate office. The faculty member that administered the MSLQ coded the MSLQ with a number that correlated to a specific student. At no time did a student's name appear on the MSLQ. To keep the skills checklists confidential and anonymous, the research assistant removed names from the skills checklist and entered the scores into a spreadsheet that correlated to a participant's number. Participants were only identified by a number in the spreadsheet and the faculty score was matched to student scores by the research assistant. The post-MSLQ was also numbered, coded, and placed in a color-coded folder. No student names appeared on the MSLQ or folders. The researcher did not have access to the results of the MSLQ and did not complete data analysis until the conclusion of the course and final grades were submitted. The results of the MSLQ were shredded at the conclusion of the study.

Data Analysis Plan

The MSLQ was used to answer the question, "Is there a difference between a student's self-regulated learning scores as measured by the MSLQ before and after self-assessment of skill achievement as measured by the MSLQ?" For this study, each student completed a pre and post MSLQ and the intervention was the self-assessment of their skill video. The intent of the study was to see if there was a difference in the post-MSLQ score after self-assessment of skill achievement by video-recorded performance.

Results and Discussion

A paired samples t-test was conducted to evaluate the impact of self-assessment of skill achievement on students' MLSQ scores. The MSLQ utilizes a seven-point Likert scale with a rating system where one equals "not at all true of me" to seven "very true of me". There are several individual constructs within the 81-item MSLQ. The four constructs used for this study include meta-cognitive self-evaluation, rehearsal, effort, and peer learning.

Construct-Meta Cognitive Self-Regulation

The first construct evaluated was meta-cognitive self-regulation. This construct measured regulating activities a student did to improve performance [21].There was not a significant difference in the means between the pre-test (M=58.35, SD= 10.67) to post-test (M=59.29, SD= 10.75) for the metacognitive self-regulation construct t(16)= -.51, p=0.62. These findings indicated there was not a significant change in the student mean scores from the pre-test to the post-test given after the intervention.

Construct-Rehearsal

The second construct evaluated was rehearsal. As defined in the MSLQ tool, rehearsal is the activation of information in the working memory. Rehearsal helps with attention and the encoding process of new information [21]. For the construct rehearsal, there was not a significant difference in the means from the pre-test (M= 22.18, SD= 3.59) to the post-test (M= 21.71, SD= 2.87) MSLQ scores t(16)= .64, p=0.53. Findings suggest there was no difference on the MSLQ scores between the students' pre-test and post-test for the construct rehearsal.

Construct-Effort

Effort was the third construct evaluated for the study. Effort describes how the student applies consistent use of learning strategies to meet goals [21]. There was not a significant difference in the means on the MSLQ scores from the pre-test (M= 23.24, SD= 4.25) to post-test (M= 22.76, SD= 3.90) for student effort t(16)= .49, p=0.63. Findings suggest there was not a significant change in effort as measured by the MSLQ from the pre-test to the post-test and the mean scores decreased in the post-test.

Construct-Peer Learning

The last construct examined in the study was peer learning. Peer learning as defined in the MSLQ, is the collaboration between peers to clarify and reach insights on course content [21]. There was a statistically significant difference between the mean scores on the MLSQ pre-test and post-test. The mean pre-test scores (M= 14.41, SD= 3.73) were higher than the mean post-test scores (M=10.88, SD= 2.83, t(16)=4.41, p< .001). Although the findings were significant, the researcher hypothesized that the mean scores would be higher on the post-test when compared to the pre-test. The opposite held true, the pre-test had higher mean scores than the post-test. This indicates the treatment had no significant positive change in the construct of peer learning. The treatment did, however, have a negative change on peer learning. Students may not realize the benefit of working with a peer to create a video.

Implications/Recommendations for Education

The creation of videos of skill performance moves the student away from rote learning or memorization of steps to higher-level thinking. Grealish and Ranse in a study of first-year nursing students, found students learn best when they are engaged in the work and given a specific task to complete [23].

As the popularity of simulation continues to grow in nursing, video is a great tool that can be incorporated into the debriefing process. Students would have a chance to see themselves perform during the simulation and self-evaluate areas for improvement [16]. Mort and Hansen add that students who watch video recordings of themselves performing skills can build competence and interpersonal skills [24]. One respondent in a study by Musilino stated the use of video allowed them to accurately see themselves and refine the skill [25].

Limitations of this Study

The first limitation was in sampling. A convenience sample was chosen from an entry-level nursing course in a small Midwestern private university. The semester the study was conducted there were 17 potential participants, it would have been better to have at least 30 students in the study.

Another limitation was the use of a fundamentals nursing course. This course is the first nursing course in the curriculum at the university. The selection of a specific course can limit generalizability outside of the study. Results found in a beginning-level nursing course may not transfer to an upper-level course.

A third limitation was the location of the study. A small private university has demographics that might be different from a larger public university. The size of this university is approximately 1400 students including undergraduate and graduate numbers. A typical public university may have over 20,000 students in one undergraduate program. Class sizes also tend to be smaller compared to larger universities. A second feature of the location is a Midwestern state. Students from the Midwest may have different viewpoints on education and learning compared to other US regions. Students from the Midwest may also have demographic differences from some of the more ethnically diverse regions. All these limitations can affect the ability of the researcher to accurately generalize the results to other settings [26]. Finally, the four nursing skills were taught in three weeks. Findings may be different if the nursing skills were taught and practiced over a longer period.

Future Research

Several opportunities for further research stem from this foundational work. The first possibility would be to use a different tool in place of the MSLQ. While the MLSQ has been used by several other researchers, it may not be specific enough for clinical measurement. The MSLQ questions tend to steer the participant toward theory/classroom-type statements. Future studies may utilize a revised tool to reflect questions more specific to clinical practice.

Another opportunity for future research would be to use multiple sites. This study used only one cohort from one site. Generalizability could be increased by including nursing programs from small and larger nursing schools plus expanding the study outside of the Midwest regions.

A third opportunity would be to include an upper-level nursing course. This could be accomplished by using videotape technologies and self-evaluation strategies in all nursing courses that teach clinical skills. A longitudinal study would be one way to evaluate changes in the study group over time and would allow the researcher to evaluate the transfer of skills from the practice lab into the clinical setting [27].

A qualitative or mixed methods study might be beneficial to get rich student feedback that cannot be collected in a quantitative study. The student's experience in his/her own words would add another dimension to the results to provide additional clarification. Lastly, virtual reality might be a possible way to engage students and increase self-regulated behaviors.

Summary

Faculty in nursing schools face the challenge of teaching nursing skills in an approach that will lead to competence. Students are challenged to take this learned skill and apply it in a clinical setting. This study explored aspects of self-regulated learning before and after making a video recording of four nursing skills. Findings suggest the students did not change their views on self-regulated learning strategies after making video recordings of themselves performing a skill.

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