Supporting At-Risk Nursing Students to Increase Final Course Grade

Stephanie Merritt

University of Missouri - Kansas City

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Abstract

The number of students who start but do not complete a nursing program is a problem at the local and national levels. High attrition rates place nursing programs at risk for disciplinary actions from accrediting bodies and impact the local workforce. The primary purpose of the mixed methods evidence-based quality improvement project was to determine if student success strategy sessions improve final course grades in at-risk second and third-semester nursing students in an urban associate degree community college program in the Midwest. A convenience sample of 62 at-risk students participated in student success strategy sessions to assist in overcoming educational barriers. Data were analyzed and an association was found between workshop participation and final course grades. Using Jeffreys' Nursing Student Toolkit, a correlation between factors that support student success and an increase in final course grades was statistically significant. Results support the premise that students value strategies that support their success. An overall retention rate of 94% was achieved, and the at-risk student pass rate for the course was 90.3%. With an increase in nursing student retention, more nursing students will graduate and be prepared to take and pass the NCLEX-RN, providing more nurses to fill vacant registered nurse positions in healthcare settings.

Keywords: at-risk students, barriers, student success, support strategies, nursing students, associate degree program, community college, attrition, retention, Nursing Student Toolkit

Supporting At-Risk Nursing Students to Increase Their Final Course Grade

Nursing schools currently operate at capacity, based on the availability of clinical sites and qualified nursing faculty (American Association of Colleges of Nursing, 2017). Students entering a nursing program must complete an accredited program, be prepared to pass the NCLEX-RN, and to continue their nursing education. In 2016, the National League for Nursing reported that 77% of associate degree programs were unable to admit all qualified applicants, making it imperative to retain those nursing students who are admitted into a nursing program (National League for Nursing [NLN], 2016). Increasing pressure on schools of nursing by accrediting agencies, boards of nursing, hospitals, and the schools themselves to increase the completion rates of students admitted to a nursing program (Accreditation Commission for Education in Nursing, 2018; Oklahoma Board of Nursing [OBN], 2018; Walker, 2016). While all nursing schools admit at-risk (see Appendix A) students, community colleges tend to admit more students at risk of not being successful (Lewis, Milner, & Willingham, 2018).

Local Issue

Two issues need to be addressed in the urban associate degree (AD) nursing program, retention rates and NCLEX-RN pass rates. Educational barriers (see Appendix A) that impact student success are the premise for the evidence-based quality improvement (EBQI) project to increase retention. In 2018, the project site was required to submit a report to the OBN, indicating that retention rates were below acceptable standards along with a plan to improve student retention (personal communication, February 11, 2019). The greatest attrition of students occurs in the second and third semesters and NCLEX-RN pass rates were close to 80% (personal communication, February 11, 2019). While this EBQI project is designed to increase

retention rates in the middle two semesters, it is postulated that the NCLEX-RN rates will also increase as a long-term result of the EBQI intervention.

Diversity Considerations

Current enrollment in the urban AD nursing program is 14% male and 86% female, with approximately 60% of students identifying as Caucasian and the balance identifying with more than one race or ethnicity (Personal Communication, March 29, 2019). The literature consistently states that minority populations have an increased risk for attrition (Barbe, Kimble, Bellury, & Rubenstein, 2018; Jeffreys, 2015). While socioeconomic data is not available for the urban AD nursing population, students frequently state that they need to work while attending school. For the EBQI project, minority status was not considered a risk factor unless the student identified their status as an educational barrier to success.

Students were invited to the pre-semester workshop two months prior, allowing them time to plan to attend. All other student success strategy sessions (S^4) were offered when students were already on campus for scheduled classes (see Appendix A). Each S^4 activity lasted an hour or less to not interfere with a student's busy schedule.

Problem Statement

Nursing student attrition is higher in the second and third semesters of an urban associate degree program than in the first and fourth semesters of the program, significantly contributing to an overall attrition rate that is reportable to the program's accrediting bodies.

Intended Improvement and Purpose Statements

Due to a decrease in retention rates, an intervention was developed to increase student success in the second and third semesters of a nursing program where attrition is highest. The EBQI project was designed to increase student retention through persistence as measured by an

increase in final course grades. Determining the impact of S^4 activities on the final course grade provided insight into how to best meet a student's needs.

The primary purpose of the EBQI project was to determine if S^4 activities improved final course grades in at-risk second and third-semester nursing students in an urban associate degree community college program. The secondary purpose of the mixed methods project design was to determine the correlation between a student's perception of S^4 activities and final course grade.

Facilitators and Barriers

Three groups were identified as facilitators and barriers for the project: administration, faculty, and students. The new Dean of Nursing supports the project but has not agreed to long-term implementation, the Provost served as a mentor for the project, and several faculty assisted with identifying at-risk students and volunteered their time to assist with the pre-semester workshop. Two faculty stated they valued student equality above equity and did not support the project. Some students asked for help to prepare for the next semester; however, not all students perceived value in extra support and did not engage in S^4 activities. Time was also a barrier, as implementation began prior to the start of the semester. The cost of the project expenses related to S^4 activities and the dissemination of results was $5,041.26 (see Appendix B). Funding from the project site and a vendor covered project expenses.

Inquiry

In an urban associate degree program, do at-risk students who attend student success strategy sessions, compared to at-risk students who do not attend student success strategy sessions, have a higher final course grade by the end of the semester?

Search Strategies

The literature search focused on the past ten years. Sentinel work beyond 10 years was included as well as literature that included a student success program with AD students (see Appendix C). The search used the engine Google Scholar and the databases of CINAHL, Medline, and Pub Med. MeSH terms for nursing students in an associate degree, diploma, and bachelor's degree programs were used. Keywords included attrition, at-risk student, success, student success, barriers, and retention. Exclusion criteria included the terms accelerated, admission, and the MeSH term for online learning (see Appendix D).

The synthesis of evidence included 43 articles. Using Melnyk and Overholt's (2015, adapted) levels of evidence, five level I studies met the criteria as evidence-based practice guidelines (EBPG). Five studies were level III, of which three were systematic reviews (SR) of the literature, and ten level IV studies. Two level V studies contained one SR and one mixed method design. Level VI had 17 studies, eleven quantitative and six qualitative studies. Five level VII studies were identified.

Evidence by Themes

The evidence includes four main themes: identification of at-risk students, barriers to student success, support strategies to promote success, and student success. A synthesis of the evidence supports the premise that identifying at-risk students early in the nursing program is important as this leads to the identification of barriers which students need to overcome (Custer, 2016; Jeffreys, 2007, 2015). Once a barrier has been identified, the implementation of an individualized support strategy maximizes the probability of success (Jeffreys, 2015).

At-risk Students

At-risk students may have difficulty completing a nursing course or program (Jeffreys, 2015; Schrum, 2015). Three sub-themes emerged within the literature: students are not

academically prepared for the rigor of a nursing program, psychosocial factors put students at-risk for attrition, and demographics put students at-risk for attrition. Attrition increases in direct proportion to the number of risk-factors (Harris, Rosenberg, & O'Rourke, 2014).

Academic preparation. A poor academic history places a student at-risk due to a lack of academic preparation and decreased self-efficacy (Bandura, 1982; Freitas & Leonard, 2011; Horton, 2015). Students who repeat a course in the middle semesters have a 40 to 50% chance of completing a program (Harding, Bailey, & Stefka, 2017). Those who withdraw for personal issues have a higher chance of completing a nursing program than do students who fail or withdraw for academic reasons (Harding et al., 2017; Hopkins, 2008; Lewis et al., 2018).

Psychosocial factors. At-risk students usually do not seek faculty support when warranted (Custer, 2016; Hoeve, Castelein, Jansen, & Roodbol, 2017; Pitt, Powis, Levett-Jones, & Hunter, 2012). Students who possess an internal motivation to be a nurse are more likely to complete a nursing program (Hoek, Portzky, & Franck, 2019; Hoeve et al., 2017; Rose, 2011). An increased perception in the ability to succeed, along with the ability to meet one's own needs supports the probability of success (Hoeve et al., 2017).

Demographic factors. Students who are at-risk based on demographics often include English language learners (ELL) and minority students (Barbe et al., 2018; Ferrell & DeCrane, 2016; Horton, 2015). While the evidence is inconsistent regarding the effect of gender and success, when gender is considered, male students are at higher risk for attrition than female students (Freitas & Leonard, 2011; Pitt et al., 2012; Powers, Herron, Sheeler, & Sain, 2018). Age is not a significant factor in predicting attrition or retention (Barbe et al., 2018; Freitas & Leonard, 2011; Walker, 2016).

Barriers to Success

Barriers to student success are actualized risk factors that result in attrition. Academic and personal barriers are the two prominent sub-themes in the literature. Faculty also have barriers when trying to support student success. These faculty barriers include higher than average workloads, insufficient time to support students academically, and a lack of seasoned qualified faculty (Custer, 2016; Jeffreys, 2015).

Academic. Once a barrier is identified, an intervention is required to promote academic success (Custer, 2016; Jeffreys, 2007, 2015). When a student returns to a nursing program, additional support is needed to overcome barriers and to promote success (Custer, 2016; Jeffreys, 2007, 2015; Lewis et al., 2018). Institutional support of faculty who address student barriers is essential along with official interventions which will provide students with resources to increase their opportunity for success (Custer, 2016).

Personal. Common barriers include lack of funds to pay for an education and living expenses, life events and family responsibilities, conflicts with work schedules, inability to critically think through patient problems, and the psychosocial issues resulting from the increased stress of school (Custer, 2016; Diefenbeck, Michalec, & Alexander, 2016; Fontaine, 2014; Pitt et al., 2012). A student's goal commitment, as well as perceived faculty support, influences persistence (Shelton, 2012). Students who can meet their own needs have increased self-efficacy, but working full time to meet those needs may become a barrier (Freitas & Leonard, 2011; Wood & Newman, 2017).

Support strategies

The third theme, support, has three sub-themes: individualized student support, faculty support of students, and a strategies support course to promote persistence and retention of at-risk students. Support strategies are designed to address risk factors before they become a

barrier. Support strategies also address any barriers the student may have that will impact academic success and persistence in a nursing program.

Individualized Student Support. Risk factors must be identified early to prevent them from becoming a barrier (Schrum, 2015) followed by individualized interventions that are paramount to supporting a student's academic success (Mooring, 2016; Schrum, 2015; Watts, 2011). Individualized support occurs through tutoring and advising (Mooring, 2016; Watts, 2011), positive faculty-student interaction (Mooring, 2016; Watts, 2011) and programs that support classroom instruction (Lewis et al., 2018; Schrum, 2015).

Faculty Support. Successful students have a higher perception of faculty support while at-risk students have additional stress when they feel they do not meet faculty expectations (Crombie, Brindley, Harris, Marks-Maran, & Thompson, 2013; Shelton, 2012). A strong faculty-student relationship supports student success (Ferrell & DeCrane, 2016), while inconsistent faculty support is a determinant for minority students (Ferrell & DeCrane, 2016; Wood & Newman, 2017). A faculty position designed to support students in a culturally competent manner academically, using a variety of success strategies, supports student success (Charbonneau-Dahlen, 2015; Jeffreys, 2015; Mooring, 2016; Schrum, 2015).

Strategies Support Course. A strategies course taught by experienced faculty with students contributing to the remediation process increases student retention (Custer, 2016; Ferrell & DeCrane, 2016; Schrum, 2015). When more than one barrier is addressed with students engaging in multiple support strategies using enactive learning, students experience an increase in self-confidence (Fontaine, 2014; Mooring, 2016; Myles, 2018; Schrum, 2015; Tabi, 2016; Walker, 2016). Increasing the student's self-efficacy will support the student when difficult content is encountered later in the semester (Bandura, 1977, 1982, 1993, 2001). Both faculty and

students find value in a strategies course as it supports students through educational barriers (Fontaine, 2014; Walker, 2016).

Student Success

The definition of success and educational factors that increase success are the sub-themes of student success. All reviewed evidence involves some manner of success. However, the focus of this sub-topic has been narrowed to the two identified themes.

Definition. Concepts that discuss the overall ability to succeed or progress in a nursing program include decreased attrition or increased retention (Fontaine, 2014; Hoeve et al., 2017; Jeffreys, 2015; Mooring, 2016; Shelton, 2012). Increased grade point average or exam grades (Beauvais, Stewart, DeNisco, & Beauvais, 2013; Bryer, 2012; Raman, 2013; Schrum, 2015), persistence or progression (Fontaine, 2014; Jeffreys, 2015; Mooring, 2016; Shelton, 2012), and program satisfaction (Chen & Lo, 2015) refer to success during a nursing program.

Educational Factors. Interventions to support student success need to be strongly supported by both the faculty and institution to be effective (Freitas & Leonard, 2011; Hopkins, 2008). A preponderance of evidence indicates that faculty support increases student success (Chen & Lo, 2015; Fontaine, 2014; Jeffreys, 2015; Mooring, 2016; Raman, 2013; Shelton, 2012; Walker, 2016). The utilization of institutional support systems such as peer tutoring, counseling, advising, a writing center, and social activities also contributes to student success (Barbe et al., 2018; Diefenbeck et al., 2016; Hopkins, 2008; Pitt et al., 2012).

Theory

Jeffreys' (2007, 2015) theoretical framework guided faculty in identifying and supporting at-risk students through barriers leading to an increased persistence in the nursing program. The underpinnings of the Nursing Universal Retention and Success Model (NURS) are based on

Bandura's (1977, 1982) self-efficacy theory (Jeffreys, 2015). Using the NURS model, at-risk students were identified by faculty to mitigate barriers, thereby increasing student success (see Appendix A) with the outcome of success defined as an increase in the final grade for a nursing course. The student success strategy sessions (S^4) are built on the premise that increasing student self-efficacy will assist the student in overcoming educational barriers and increase persistence, leading to an increase in final course grades (Jeffreys, 2015). The NURS model was used to support persistence in a nursing program leading to student success (see Appendix E). The NURS model instruments (Jeffreys, 2012) have been used to predict attrition (Barbe et al., 2018) and to study student retention strategies in an AD program (Fontaine, 2014; Schrum, 2015), supporting the need for more than one intervention (Beauvais et al., 2013).

Methods

IRB, Ethical Issues, and Funding

Institutional Review Board approval for human subjects' research was required by the project site and was received on April 15, 2019 (see Appendix F). Conflict of interest with student inclusion was diminished as faculty other than the student investigator identifying the at-risk students using the following criteria: failing exam average or an academic history of a failed nursing course. All students who completed surveys signed an informed consent (see Appendix G). The risk to confidential records was mitigated through the use of a student project code, and records were stored in the web application Research Electronic Capture (REDCap; Harris, Taylor, Thielke, Payne, & Gonzalez, 2009) a password protected computer, or locked file drawer. REDCap is a secure and compliant electronic capture platform designed to gather and store research data (Harris et al., 2019; Harris et al., 2009). Each student was emailed an invitation to participate in the project, but participation was not required to attend S^4 workshops.

The student investigator is a member of the faculty team; therefore, another faculty assumed grading responsibilities, diminishing any ethical concerns. The project was 100% funded without stipulations through a donation of lab supplies by a simulation supply company and the project site's Foundation. It was established there were no conflicts of interest.

Setting and Participants

The S^4 activities were offered in the same building as the nursing classes, with an informal atmosphere to encourage student engagement. Previously identified second and third semester at-risk students were invited to attend all S^4 activities. Students who had a passing exam average and no other identified educational barriers were excluded from the workshops. Because the focus of the workshops was to increase a final course grade, to be eligible, students also needed to be enrolled in a course where a final grade was awarded. Using a convenience sampling method, 61 students were identified prior to the start of the semester to be at-risk for attrition with one student deemed as ineligible for the project due to not being enrolled in a theory course, for a total of 60 students who were invited to attend the pre-semester S^4 workshop.

EBQI Intervention

The EBQI project consisted of a series of workshops starting prior to the beginning of the semester and continuing throughout the semester based upon identified educational barriers of at-risk students. At-risk students identified during the semester were encouraged to participate in the workshops and were invited to participate in the project. Students were allowed to join the project through week eight of the semester.

After final grades were submitted for the spring semester, faculty identified the at-risk students who were invited to participate in the EBQI project. The term educational barrier was used instead of *at-risk* to prevent a negative connotation with S^4 attendance (see Appendix H).

An RSVP was requested for workshop attendance, and follow-up emails were sent over the following two months to continue recruitment and remind students of the upcoming workshop. The all-day pre-semester workshop occurred two weeks prior to the start of the fall semester, and the project continued with S^4 workshops throughout the rest of the semester (see Appendices I and J).

The pre-semester workshop started at 8:30 a.m., and the student investigator facilitated all activities except the informed consent and surveys which were facilitated by another faculty. After attendance was taken and agenda reviewed, all students had the opportunity to sign the informed consent and complete the Demographic Data Sheet – Prelicensure (DDS-P), and Student Perception Appraisal – Revised – 1 (SPA-R1) pretest, (see Appendix A; Jeffreys, 2012a). Tips on how to succeed in nursing school were followed by the college retention specialist sharing how to access available college resources. Medication administration skills were reviewed in the classroom, and then students practiced these skills in the lab with faculty support. Lunch was served and faculty socialized with students during this time as an intentional removal of an educational barrier by increasing faculty and student interactions. Students then participated in a communication simulation, practicing communication skills such as bedside report and nurse-to-patient communication. Course simulation expectations were discussed in the debriefing. Snacks were provided during the final activity, creation of a personalized time-management schedule (see Appendix K).

During the semester, S^4 activities included test-taking skills, critical thinking skills, dosage review, self-care, and test prep workshops. Open lab practice times were also available for students. Each at-risk student was invited to meet with the student investigator or a retention-focused faculty member within the first six weeks of the semester to identify additional

education barriers as well as to support the student through these barriers. The individual student meetings continued throughout the semester as requested by students or suggested by faculty.

At the end of the semester, all students who participated in the EBQI project were asked to complete the Student Perception Appraisal-Revised-2 (SPA-R2) post-test and Enrichment Program Satisfaction Survey (EPSS; see Appendix A; Jeffreys, 2012a). The final surveys were presented and collected electronically through REDCap, and a nominal gift card was offered as a token of appreciation to all students who participated in the project. After final grades were posted for the semester, archival final grade data was gathered for statistical analysis (see Appendix L).

Change Process and Evidence-Based Practice Model

Diffusion of Innovation theory was used to guide evidence-based practice (EBP) changes that occurred with the EBQI project (Kaminski, 2011). Faculty made independent decisions on supporting student success, and the Diffusion of Innovation theory allows for the EBP change to be adopted by individuals at different times while stressing the importance of communicating with peers throughout the adoption process (Kaminski, 2011). The Iowa Model guides the change process (Gawlinski & Rutledge, 2008). Due to the versatility of this model, both internal and external influences can be used as the impetus of change based on the evidence (Gawlinski & Rutledge, 2008). Administration has asked for a proposal to create a new faculty position that will focus on supporting student success as student feedback and the faculty's response to the project was predominantly positive. Thus, the sustainability of the EBQI intervention is expected.

Study Design and Validity

A mixed method, quasi-experimental design with a comparative and a correlational predictive component was used to evaluate the effectiveness of the project. The comparative design addresses the relationship between the final course grades of at-risk students who participated in the S^4 activities and those who did not participate. Factors that affect a student's ability to be successful were compared to final course grades. With a correlational predictive design, the data indicates that the variables of a pre-semester workshop and S^4 activities throughout the semester are associated with the student's self-perception of their ability to be successful (Shen et al., 2017). The qualitative data was obtained from the EPSS survey and addressed the student's perception of the S^4 activities (Jeffreys, 2012a).

Internal Validity. Internal validity was protected by nursing faculty other than the student investigator, identifying the at-risk students and awarding final course grades. A threat to internal validity was the inclusion of students who were repeating a nursing course as it is assumed that their final course grade will be higher due to previous exposure to course content. Student attrition from the project is also a threat to the internal validity.

External Validity. Jeffreys' (2015) Nursing Universal Student Retention (NURS) model guided the project, adding to the evidence in the literature and increasing transferability to other nursing programs. Limiting the project's focus to educational barriers with individualized interventions provides insight into ways faculty can support students. However, as the student population for each nursing program is unique and interventions are specific for each student, transferability may be impacted.

Outcomes

The primary outcome was for at-risk students who attended S^4 activities to have a higher course grade than those at-risk students who did not attend S^4 activities. Two secondary

outcomes were analyzed: students who participated in the S^4 activities have implemented more academic skills to achieve a higher final course grade and students perceived that S^4 opportunities improved their grades in the course.

Instruments

Attendance at S^4 activities was recorded using a sign-in sheet and final course grades were obtained from the school's Institutional Research and Assessment department. The Student Perception Appraisal- Revised (SPA-R; Jeffreys, 2012a) assessed the helpfulness of individual faculty advisement. Secondary outcomes used the SPA-R and Enrichment Program Satisfaction Survey (EPSS; Jeffreys, 2012a) questionnaire to determine if the outcomes were met.

The tools that were developed by Jeffreys (2012; 2012a; 2015) and used with her NURS model have demonstrated reliability and validity. SPA-R is reliable with a reported Cronbach alpha of .82 and established internal validity from doctoral-prepared experts (Jeffreys, 2007a). The EPSS has an internal validity established by doctoral-prepared experts and has a Cronbach alpha of .87 (Jeffreys, 1998, 2001, 2007a).

Permission has been obtained from Springer Publishing to utilize the NURS Toolkit (see Appendix M; Jeffreys, 2012a). Participants completed the SPA-R pre-test and ERS tools at the first S^4 session they attended along with an informed consent. An invitation with the survey links to the SPA-R post-test and EPSS was emailed to students after their final exam.

Data Quality

Using Gpower 3.1 statistical computer-based program calculating for a large effect, an independent two-tailed t-test requires 52 participants for a power of 0.80 with an alpha of 0.05 (Faul, Erdfelder, Buchner, & Lang, 2013; Statistics Solutions, 2016). With 60 students initially identified for the project, power was reached. No benchmark data is present for an increase in

final course grade based upon an S^4 activity, thus no comparisons can be made to existing studies.

Analysis

Descriptive statistics were used to describe participant's demographics, final course grades, and S^4 activities. A Pearson correlation was used along with ANOVA and MANOVA analysis to compare final course grades of students who participated in the S^4 activities to those students who did not participate and the impact the workshops had on those grades. A Pearson correlation was also used to compare student factors that impact grades and the final course grade. Descriptive statistics and qualitative content analysis evaluated the student's perception of the S^4 activities. When using a correlation design, an effect size provides information as to the strength of the relationship between the variables (Bosco, Aguinis, Singh, Field, & Pierce, 2015). A disadvantage is that this design does not allow for a cause and effect relationship to be determined between the variables (Curtis, Comiskey, & Dempsey, 2016; Shen et al., 2017).

Results

Setting and Participants

The EBQI project began two weeks prior to the start of the semester and ended during the final week of the semester. All S^4 workshops took place in the same building as the nursing classes and usually immediately following a nursing class. Individual student meetings took place at the student's campus of choice. Participants who were previously identified as at-risk students were individually invited to attend the workshops. Demographics indicated at-risk students were predominately female and had a mean age of 30 years, which is similar to the larger student cohort (see Appendix O). Over 48% of students identified their race as White or Caucasian, 17.7% as Hispanic, 8.1% as Black or African American, 6.5% as Asian, 4.8% as

American Indian or Alaskan Native, and 4.8% reported more than one race. Another 9.7% of students identified as being a non-resident alien (see Appendix O). While cohort data was limited for first-generation college students, it was noted that 16 of 37 students who responded to this question stated they were a first-generation student (see Appendix O).

Initially, 60 of 151 (39.7%) students were identified as at-risk and eligible to participate in the project. Two additional students were identified by other faculty in the first month of the semester. Of the 62 students, 26 students had a previous nursing course failure, and six were repeating the same course. A total of 21 (33.8%) of the 62 at-risk students were failing at the mid-point of the semester. Two of the 21 students withdrew from classes due to failing grades, and six of the 21 students failed the semester. Of the total 151 semester two and three students, seven failed a theory course of which one had not been identified as an at-risk student. The number of identified at-risk students in semesters two and three was 56.5% and 43.5%, respectively. However, workshop participation by semester was 59.5% for semester two students and 40.5% for semester three students with an overall workshop participation of 67.7% for identified at-risk students (see Appendix O).

Intervention Course

The project started with the identification of at-risk students at the end of the previous semester. Prior to the beginning of the semester, the first S^4 workshop was held to prepare students for the start of the semester, 30 students attended. Throughout the semester, 12 more students engaged in workshops, totaling 42 (67.7%) students who participated in at least one S^4 workshop. Each student received a personal email invitation to attend each workshop.

Workshops were held either before or after required classes. Seven of the ten S^4 workshops occurred in the first eight weeks of the semester, and three took place in the last four

weeks of the semester. Between one and 28 participants attended the other workshops with the extra lab practice being the least attended and prep for the final exam having the highest attendance. Test-taking skills and critical thinking practice had the next highest participation rates at 27 and 20 respectively (see Appendix P). The project ended during the final week of the semester with an invitation for all S^4 workshop participants to complete two online surveys. Of the 42 students who participated in workshops, 37 (88%) completed the surveys at the start of the semester and 31 (73.8%) completed all of the surveys.

Outcome Data

Final Course Grades and Workshop Participation. To analyze the relationship between S^4 workshops and a student's final course grade, several tests were conducted. The mean final course grades were calculated for students' in semesters two and three, revealing that semester three students had higher grades than semester two students. Using a one-way ANOVA, there was a statistically significant difference between the semester and workshop participation (F (3,58) = 4.422, p = .007), finding that students in semester two participated more than students in semester three. A Tukey post hoc analysis of second semester attendance revealed that students attending between four and six workshops was significantly different than attending between one and three workshops with attendance at more than six workshops having no statistical difference (see Appendix P).

In the analysis of failing, course grades, and students semester, ANOVA tests revealed a significant difference between failing half-way through the semester and final course grade (F (1,39) = 24.091, $p < 0.001$) as well as the semester a student was enrolled (F (1,60) = 21.416, $p <$ .001). A Tukey post hoc could not be run with either test due to insufficient cases in one group. A MANOVA was completed and supported the hypothesis that failing at eight weeks and

attending both the first and last workshops was related to a student's final course grade with an observed low power of 0.670 (p = .019) due to a small sample size (see Appendix P). Based on the statistical analysis, students who were in the third semester of the program had higher grades than those students who were in the second semester of the program which skews the results of students who attend workshops.

Student Factors That Promote Success. The secondary outcome explored the impact on the student's perception of skills that promote student success of those students who participated in the workshop and their final course grade. A Pearson correlation was utilized to evaluate the student's pretest and posttest responses to five items on the Student Perception Appraisal survey (SPA-R). Statistically significant ($p < 0.05$) results support the student's perception that nursing skills lab attendance and academic performance are factors that students perceive will help them to be successful. A Pearson correlation test was utilized to analyze the relationship between student's posttest responses from the SPA-R, on factors that support success to final course grades. Personal study skills, personal study hours, and academic performance correlated with an increase in final course grades ($p = 0.001$). The factor, nursing skills lab, correlated with an increase in final course grades ($p < 0.05$; see Appendix Q).

Workshop Satisfaction. Workshop satisfaction was evaluated using three Likert item survey questions and an open-ended question (see Appendix R). Student responses were overwhelmingly positive with 96.8% of students agreeing or strongly agreeing that they were satisfied with the workshops, thought the workshops were informative, and faculty were helpful. Student comments revealed three main themes: new ways to study (mentioned four times), mental well-being (mentioned seven times), and increased workshop frequency (mentioned five times). Thirteen of the 21 students who made comments stated that the workshops helped or

were beneficial. Students stated that multiple sessions facilitated a comfortable learning environment as they provided information and reduced stress. Students also indicated that they appreciated the enthusiasm and encouragement from faculty. One student stated that the pre-semester workshop "not only provided critical information but helped to relieve stress." Another student stated that they "strongly encourage students to go to workshops like these." These comments support the supposition that the S^4 workshops were perceived as beneficial by students and supported their success in nursing courses.

Discussion

Most Important Successes

The greatest achievement of the EBQI project is student success. With 41% of students being identified as at-risk, the semester ended with a 94% overall pass rate and a 90.3% pass rate for those students who were identified as at-risk. At-risk students were properly identified with only one at-risk student not being identified.

The analysis of the data also indicated that once a student self-identified as at-risk, they were more likely to participate in the workshops. If a student attends both the first and last workshops, their final course grade was higher and attending between one and three workshops resulted in higher grades than attending four to six workshops. A possible reason for this is that students who attended fewer workshops were more self-aware of their educational barriers and what was required to overcome those barriers; thus, third semester students required fewer workshops to be successful in their courses (see Appendix P).

Students who participated in the project repeatedly stated how much they appreciated the extra support and attributed their success to the project. They consistently expressed appreciation for faculty support throughout the semester as well. The ultimate success is the

possible creation of a permanent retention specialist position. The retention specialist would work with identifying and supporting at-risk students prior to them starting the nursing program and through the first three semesters of nursing course work.

Study Strengths

The timing and the place of the workshops were most important when considering attendance as students required the workshops to be presented at their convenience. If a workshop was held at a time the students were not on campus, attendance declined, even if the students had previously chosen that as the best time for them to attend. Another strength was cost. Students did not have any costs associated with participation in the workshops, and the topics with the highest attendance were workshops where the students perceived the topic would help them be successful. Not including the pre-semester workshop, *Test-taking Tips* and *Final Exam Prep* had the highest attendance with *Critical Thinking Skills* third (see Appendix P). The evidence supports the premise that students valued the workshops.

The culture of the organization is shifting from equality to equity, making a concerted effort to support all at-risk students. The site's Foundation provided funds to support the project, also contributing to the project's success. The Dean of Nursing presented success tips in both the pre-semester workshop and the self-care workshop, showing support for the project and the importance of the workshops.

Results Compared to Evidence in the Literature

The literature has a preponderance of evidence that at-risk students need support to be successful in a nursing program (Charbonneau-Dahlen, 2015; Fontaine, 2014; Harris et al., 2014; Schrum, 2014) and students who participated in the workshops stated they perceived that the workshops were beneficial in supporting them through their educational barriers. The evidence

also states that students associated faculty interactions with program satisfaction (Chen & Lo, 2015; Walker, 2016). Students who participated in the workshops indicated that they were satisfied with the workshops and the faculty who assisted with the workshops (see Appendix R). An unanticipated finding, although not statistically significant, was the correlation between pretest and posttest analysis of the factor *Faculty Advisement* which indicated at-risk students did not perceive faculty support as a factor for them to be successful (see Appendix Q).

While the data indicates that the S^4 workshops support student success, no single workshop or combination of workshops was best for all students (see Appendix P). Results support the findings by Myles (2018), Fontaine (2014), and Walker (2016), which state that there is not a specific factor that will support student retention. However, Schrum (2015) found that students who utilized a retention specialist were more likely to progress in a program.

Limitations

Internal Validity Effects

While no exam or final grades were influenced by the student investigator, working with the students in both a faculty role and as a student success coach may inadvertently affect internal validity. Students who interacted with the student investigator outside of the S^4 workshops may have been more likely to attend the workshops. Paper data was transcribed within a month and was managed using the electronic data capturing tools in Research Electronic Data Capture (REDCap) hosted at the University of Missouri-Kansas City (Harris et al., 2009; Harris et al., 2019). The data was then transferred into the Statistical Package for Social Sciences (SPSS) program for analysis (see Appendix N). Initial survey data was entered into REDCap by the student investigator and verified twice for accuracy. Although the data was verified twice the potential for input error remains. Data also required analysis via two different

data sets, another source of possible error. Qualitative data were coded by two individuals and then compared for consistency, decreasing the possibility of investigator bias. End of course surveys were managed electronically to control for participation bias.

A threat to the internal validity of the project is the need for individualized interventions. Due to time constraints, workshops were generalized towards at-risk students and only 12 of the 42 students who participated in the project opted for individualized assistance. Once a student had confidence in their ability to succeed, they may have chosen not to attend some of the workshops. Conversely, students who had not previously engaged in the workshops may have engaged only after their grades were in jeopardy which would decrease the overall grade point overage of those participating in the project. Attrition is the final threat to internal validity; two students withdrew from their courses, and ten students did not complete all of the surveys.

External Validity Effects

Students themselves were an impact on the external validity of the project. At-risk students are often not self-aware enough to know what they do not know, and one goal of a retention specialist is to assist the student's progress to a level of conscious incompetence and eventually to a level of conscious competence. The method used to support each student through the process varies, impacting the transferability of the project results. While students perceive a benefit from test taking skills or knowledge acquirement skills, they do not perceive the need to care for themselves (see Appendix P). Until a student becomes aware of which education barrier most impacts them, learning is impeded (Billings & Halstead, 2016).

Sustainability Effects and Plans to Maintain Effects

Administration is considering the addition of a nursing retention specialist position, although, a job description has not been developed at this time. The evidence states that at-risk

students need faculty support to be successful (Chen & Lo, 2015; Ferrell & DeCrane, 2016). The current culture of the project site leans towards supporting at-risk students; nevertheless, this climate may change when funding requirements become challenging. Current faculty do not consistently support at-risk students individually due to large class sizes, strengthening the need for a dedicated retention specialist. If the project is not funded long-term, any gains obtained from the project will be lost.

Efforts to Minimize Study Limitations

The greatest resource supporting the EBQI project was time. The student investigator developed and implemented all of the workshops in the project. To continue student success strategy sessions in upcoming semesters, another faculty has agreed to assist in presenting the S^4 workshops. The increase of the number of faculty willing to support at-risk students and bring additional creativity to workshop development. A future study is planned to measure faculty's impact on supporting at-risk students to identify ways to utilize faculty's workload efficiently. The study will continue to engage faculty in supporting at-risk students actively.

As the findings were analyzed using correlational statistics and not cause and effect statistics, the best way to support student success has not been identified (Curtis et al., 2016; Shen et al., 2017). With each student barrier being unique and the subsequent intervention individualized to the student, cause and effect statistical analysis were unable to be utilized to obtain statistically significant results. Survey participation was 75.6%, possibly due to the presentation of the surveys prior to the pre-semester workshop and then with post-project surveys being presented electronically. The sizeable survey participation supported the ability to have accurate statistical results.

Interpretation

Expected and Actual Outcomes

It was expected that only 30 students would initially be identified, and of those, only a third would participate in the EBQI project. A significantly larger number of students were identified as at-risk (62), possibly as a result of the lack of admission criteria with this cohort. The initial student engagement with the pre-semester workshop was also overwhelming as 48.4% of the eligible identified students attended the first workshop (pre-semester). It was expected that not all at-risk students would engage in all of the workshops and that some would not engage at all. Only 20 (32.3%) students who did not engage in any workshops, leaving 67.7% of at-risk students who attended at least one workshop. Those who did engage attended an average of 4.47 S^4 activities (see Appendix O). One possible explanation for the high engagement rates is that the student investigator presented the opportunity of educational support workshops before the end of the spring semester and followed this announcement with individual invitations. Another supporting factor for student engagement is that the student investigator was also a faculty member who engaged with students regularly, inside and outside of the classroom.

It was unexpected that correlational tests between final course grades and workshops, without any other variables considered, would show a negative association. As the results were explored, it became clear that students in semester two had lower final course grades than semester three students and because there were more semester two students who engaged in the S^4 workshops than semester three students, the results were skewed. Once the data was separated by semester, ANOVA and MANOVA analysis indicated statistically significant correlations to support an increase in final course grades based upon workshop participation.

Intervention Effectiveness

Students who needed to be supported through their educational barriers engaged in more workshops if they also engaged with the faculty on an individual basis. The importance of workshop convenience was also noted as attendance increased if the workshop was immediately before or after a scheduled class and the topic was perceived as beneficial to the student's success. The pre-semester workshop was an all-day workshop where lunch was provided along with lab supplies and a nominal gas card, contributing to the success of the project as barriers were removed regarding attendance and students were able to infer the site and faculty's investment into their success in the nursing program. When talking with students, they indicated that they would have attended even if lunch was not provided. The provision of lab supplies did support the attendance of students, along with the opportunity to work with course faculty to reduce their anxiety as they prepared to start a new semester.

Intervention Revision

Workshops containing subject matter that the students are currently learning will increase attendance regardless of provided supplies and food. When workshops contain content the students are learning in their courses, the extra educational support will likely increase final course grades in those courses. As more faculty engage in the workshops to support student success, students' educational barriers will be mitigated more cohesively. Finally, an end of semester gathering of students who participated in the project will be held to celebrate their success. The invitation will be extended to the next group of at-risk students to encourage participation in S^4 workshops, and this will promote available resources in supporting students through their educational barriers.

Expected and Actual Impact to Health System, Costs, and Policy

Cost savings will come from tuition and fees of students who do not need to repeat a course. Tuition for a three-credit-hour course costs $426 (Community College Review, 2020). A cost that cannot be quantified is the number of nurses who can enter the workforce. The more nursing students who can progress through a program and graduate on time, the more potential nurses are available to fill the open positions in the workforce. A third impact has to do with accreditation. As retention rates increase, the school of nursing is no longer in danger of losing its accreditation and will no longer need to write reports to the state board of nursing.

The movement towards the creation of a retention specialist is only one policy change. Another change would be the requirement of at-risk students to attend S^4 workshops. On an organization level, as the college moves towards increasing support for at-risk students across the organization, the student investigator has been invited to participate in the decisions that are made to support these students.

Conclusion

Usefulness of Intervention

The implementation of S^4 activities in the nursing program supported the student's engagement in course requirements, thus increasing their final course grade. The workshops were specific for the identified educational barriers of at-risk students. While workshop participation varied from student to student, the need for these activities is substantiated by the results of the DNP project and the student's positive responses to retention activities. Barriers to student attendance were present; however, by timing the S^4 workshops to the student's needs and availability, these barriers were mitigated. Students who are successful in their entry to practice degree and have the self-confidence to succeed have an increased probability of continuing their nursing education (Cristan, 2019; Kenny, Kidd, Nankervis, & Connell, 2011; Shelton, 2012).

Further Study of Intervention

The results of the evidence-based intervention will provide support for the need of faculty workload time to be allocated towards student retention activities. Structured activities designed to assist students in overcoming educational barriers can be incorporated into the educational process. Although all but one at-risk student was identified, the large number of at-risk students indicates that the development and implementation of improved admission criteria will support the admission of students who are prepared for the rigors of a nursing program. With the addition of a stress-scale survey, additional risk factors could be studied along with the S^4 workshops to better support students through their barriers. An additional outcome to be studied is the ability to pass the NCLEX-RN on the first attempt as a result of the S^4 activities. Another area of study to improve this outcome of student success is faculty support of at-risk students. At-risk students need faculty to support them through their barriers to be successful (Chen, 2015; Schrum, 2015).

Dissemination

The synthesis of evidence was presented at a state-wide nursing organization conference in October 2019. The results of the project will be presented at the same conference in 2020 as well as locally to all nursing faculty at the next faculty assembly. A manuscript on the project and results will be created for submission to the journal Teaching and Learning in Nursing. The EBQI project was able to demonstrate the impact of S^4 activities on final course grades, adding to the evidence they need to support at-risk students through their educational barriers for them to be successful.

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Appendix A

Definition of Terms

At-risk student	A nursing student who is at-risk of not successfully passing the current or subsequent semester courses
DDS – P	Demographic Data Sheet - Prelicensure; 25-item tool to gather demographic data on students who participate in the EBQI project (Jeffreys, 2012a)
Educational barrier	Any risk factor that prevents a student from being successful in a course; types of risk factors include: personal, academic, institutional, environmental, and professional integration
EPSS	Enrichment Program Satisfaction Survey; eight-item questionnaire that assesses specific and general program satisfaction using a five-point Likert scale and includes a comment section (Jeffreys, 2012a)
ERS	Educational Requirements Subscale; ten-item questionnaire designed to measure the degree of confidence in successfully completing educational tasks based on a ten-point Likert scale (Jeffreys, 2012a)
NURS	Nursing Universal Retention and Success model developed by M. R. Jeffreys to guide nursing programs to increase student success
S^4 activities	Student success strategy sessions; seminars, workshop, and individual support to assist students in overcoming educational barriers
SPA-R	Student Perception Appraisal - Revised; 27-item pre and post-test questionnaire that evaluates academic, environmental, professional integration, and socialization variables based on a six-point Likert scale (Jeffreys, 2012a)
Success	A broad term to describe many different constructs; for EBQI project, success is an increase of final course grade due to S^4 activities

Appendix B

Cost of the EBQI Project
Appendix B

Item	**Item Description**	**Quantity**	**Unit Cost**	**Anticipated Cost**	**Actual Cost**
Nursing Student Retention (NURS) toolkit by M. R. Jeffreys	An educational license be purchased for use. The toolkit contains the measurement tools (questionnaires) that will measure the outcomes from the intervention (workshop).	One-year license	$350.00	$350.00	$350.00
Workshop simulation supplies	Medication administration practice supplies: IV 500 ml solution and IVPB 50 ml solutions with tubing, IV push medication equipment, subcutaneous injection equipment, IM injections equipment, PO medication equipment.	Anticipated 65 kits; actually needed 31 kits	$24.16	$1,570.40	$748.96
Copies	Copies of measurement tools, medication administration procedures, and paperwork for S^4 workshops.	1500	$0.10 / page	$150.00	$150.00
Food for workshop	Lunch and afternoon snacks for the workshop for students and volunteer faculty	40	$20.00	$1300.00	$800.00
Gift cards (gas card) for students	Nominal gift card from a local gas station to assist with workshop transportation costs and for post survey participation	Anticipated 65; actually needed 72	$10.00	$650.00	$720.00
Volunteer faculty gift card	Gift card for faculty who volunteer their time for the workshop	10	$20.00	$200.00	$200.00
Faculty Salaries	One primary faculty to manage workshop (8-hrs) and five faculty to assist in the simulation lab (4-hr); other workshops (9) includes preparation and implementation.	55 hours	$29.46 / hour	$1,296.24	$1,620.30
Dissemination of project results	Present synthesis of evidence poster at the Oklahoma Nurses Association annual conference. Costs include poster, travel, hotel, and conference fee. Poster - $87.00 Hotel - $150 per night for 2 nights; Gas & tolls - $100 Conference fee after discount - $115.00	1	$452.00	$452.00	$452.00
Total				**$5,968.64**	**$5,041.26**

Appendix C

Review of Evidence Table

Do at-risk students who attend student success strategy sessions, compared to at-risk students who do not attend student success strategy sessions, have a higher final course grade by the end of the semester in an urban associate degree program?

First author, Year, Title, Journal	**Purpose**	**Research Design[1], Evidence Level[2] & Variables**	**Sample & Sampling, Setting**	**Measures & Reliability (if reported)**	**Results & Analysis Used**	**Limitations & Usefulness**
At-risk						
Hopkins (2008). Early identification of at-risk nursing students: A student support model. Journal of Nursing Education.	Identify at-risk students and factors that support their success in an AD program.	Single quantitative descriptive study. Level 6 evidence. Variables: academic and nonacademic	383 AD students. Sampling not reported. Small, private US college	Nursing entrance test (NET). Internal reliability of 0.92.	Able to predict success but not able to predict failure. Correlation and regression analysis.	Low variance with predicting student success. Able to predict student success.
Freitas (2011). Maslow's hierarchy of needs and student academic success. Teaching and Learning in Nursing.	Identify factors that impact nursing student success in an AD program.	Well-designed Cohort study. Level 4 evidence. Variables: physical and psychosocial needs, ability to meet those needs, GPA, demographics.	190 entry level AD nursing students. Convenience sample. Test-taking seminar.	Researcher created survey, Likert 1-4. $p \leq 0.05$ on reported results, $\alpha \leq 0.05$ and 0.01.	Inability to meet own psychosocial needs. Factor analysis of questionnaire, ANOVA and descriptive statistics of scales, correlational analysis of ability and importance.	Survey was created for this study. Identification of needs that put a student at risk for attrition, AD program.
Pitt (2012). Factors influencing nursing students' academic and clinical performance and	Integrative review to identify factors that impact	Systematic review of qualitative and quantitative studies. Level 5 evidence.	44 articles. Sampling included articles	Whittemore and Knafl's Framework to guide review. Reliability data not reported.	Review supports the underpinning of Jeffreys' NURS model and these	Heterogeneity of sample populations from the articles reviewed.

attrition: An integrative literature review. Nurse Education Today.	attrition, theory and clinical success in nursing students.	Variables: nursing student, academic and clinical performance, attrition, English only, undergraduate nursing programs.	from 1999 forward. Setting included 8 databases		factors affect attrition. Bowling's checklist to analyze articles.	Direct support of DNP inquiry and use of NURS model.
Harding (2017). Factors influencing nursing student success after readmission. Teaching and Learning in Nursing.	Factors that support student completion.	Single quantitative descriptive study. Level 6 evidence. Variables: dismissal data, demographics, program completion, NCLEX-RN pass rate.	107 AD nursing students. Convenience sample. Northeast Ohio.	Not reported. Not reported.	First semester failures don't complete, poor academic/skill/clinical performance lowers GPA. Frequencies for variables.	One school. Repeating a nursing course is a risk for not completing a program.
Hoeve (2017). Dreams and disappointments regarding nursing: Student nurses' reasons for attrition and retention. A qualitative study design. Nurse Education Today.	Discover why students chose to persist in a nursing program and what caused students to consider withdrawing from a program.	Well-designed cohort study. Exploratory descriptive qualitative design. Level 4 evidence. Variables: withdrew from a nursing program, considered withdrawing, never considered withdrawing.	17 third- and fourth-year BSN students from four universities who considered withdrawing. Purposive sampling. Netherlands.	Private interview with student and 2 interviewers. Transcripts were cross-checked by researchers prior to analysis.	Three themes: reason for choosing nursing, conceptualization of nursing, and reasons for attrition and retention. Difference between groups analysis.	International study, BSN students. Describes reasons students persisted in a nursing program.
Barbé (2018). Predicting student attrition using social determinants: Implications for a diverse nursing workforce. Journal of Professional Nursing.	Based on demographics, who is most likely to succeed in a nursing program.	Single quantitative study. Level 6 evidence. Variables: demographics, academics, social determinants.	164 BSN students. Convenience sample. Nursing school in southeast US.	Student Perception Appraisal – revised Likert 1-5, Educational Requirements Subscale Likert 1-10, Self-esteem scale (SES) Likert 1-4. Cronbach's alpha of 0.88 for the self-esteem scale, others not reported.	Text-book costs, decreased confidence in study skills, and first semester failure are risks for attrition. Chi-square test for independence, demographics, t-	Small study at one school. Used Jeffreys' toolkit which will be used in DNP inquiry.

					tests for course grades / GPA.	
Lewis (2018). The incidence of student repeaters in pre-licensure nursing programs in North Carolina. Teaching and Learning in Nursing.	A description of the number of students who repeat nursing courses in AD and BSN programs in North Carolina.	Quantitative non-experimental study. Level 6. Variables: AD, BSN, and accelerated BSN programs, number of students who repeat a nursing course.	40 nursing programs. Convenience sample. North Carolina.	Survey questions as printed in the article. No reliability information reported.	Students who repeat nursing courses impact the outcomes of nursing programs and increase resource usage. Frequency of the number of students repeating courses.	Limited to North Carolina schools. Demonstrates the need to support repeat students as an at-risk student in a nursing program.
Powers (2018). The lived experience of being a male nursing student: Implications for student retention and success. Journal of Professional Nursing.	Identify risk factors of male nursing students based on male student experiences.	Qualitative study. Level 6 evidence. Variables: Male nursing student, facilitators and barriers to success.	11 previously enrolled male nursing students. Purposive sample. Southeast US.	Not reported Not reported	Themes: Faculty are gender biased, male students are singled out, reaction to doing manly stuff, clinical limitations. Giorgi's methods to analyze data.	Small sample size, educational level not reported. Impact of being a male student in a nursing program.
Barriers						
Jeffreys (2007). Tracking students through program entry, progression, graduation and licensure: Assessing undergraduate nursing student retention and success. Nurse Education Today.	Assess which characteristics students have who will persist in a pre-licensure program.	Well-designed cohort study. Level 4 evidence. Variables: persistence, graduation, passage of the NCLE-RN, academic entry characteristics.	112 first semester nursing students. Convenience sample. AD program in Northeastern United States.	Grades, retention characteristics, and attrition characteristics. Pearson's reliability ranged from 0.23-0.41 depending on variable measured with $p = 0.00 – 0.04$. T-test $p < 0.05$.	Program entry GPA is correlated with first semester completion; course grade of "B" correlated with passing NCLEX-RN. Correlational analysis compares licensure with retention, t-test compares graduation and characteristics.	Single cohort study. Identifies the impact of grades on attrition, retention, graduation, and passing the NCLEX-RN.

Custer (2016). Remediation 101: Strategies for nurse educators. Teaching and Learning in Nursing.	Identify strategies for nurse educators to implement remediation and barriers to remediation.	Evidence from the opinion of an expert. Level 7 evidence. Variables: Barriers and strategies to implement remediation	N/A	N/A	Barriers: institutions, faculty and students. Strategies: intervene early, remediation, evaluate, challenging learning environment. No Analysis used.	Did not state how articles were chosen for this article. Directly applies to DNP inquiry.
Diefenbeck (2016). Lived experiences of racially and ethnically underrepresented minority BSN students: A case study specifically exploring issues related to recruitment and retention. Nursing Education Perspectives.	Examine the relationship between race / ethnicity as barriers to success.	Qualitative study. Level 6 evidence. Variables / themes: Family oriented, school based, sustaining / promotive.	12 BSN students. Convenience sample. Public university.	Open-ended questions completed by email. Discussed findings at the beginning and end of each analysis.	Barriers to success: financial issues, life events, proximity to home, interactions with faculty, desire to help others. Multistep coding process.	Small sample size, one institution. Identifies barriers to success for a minority population group.
Support						
Bandura (1982). Self-efficacy mechanism in human agency. American Psychologist.	Self-efficacy influences a person's thought patterns, actions, emotions, and coping behaviors.	EBPG – meta-analysis of all relevant RCTs. Level 1 evidence. Variables: self-efficacy, thoughts, behaviors, emotional reactions.	N/A	N/A	Describes how life events impact self-efficacy both in personal and group situations. N/A	Does not have a nursing focus. DNP inquiry utilizes Bandura's theory in the development of interventions.
Bandura (1993). Perceived self-efficacy in cognitive development and functioning. Educational Psychologist	Analysis of different ways cognitive development is impacted	EBPG – meta-analysis of all relevant RCTs. Level 1 evidence. Variables: self-efficacy, cognitive development.	N/A	N/A	Low self-efficacy causes difficult task avoidance and weak goal commitment. N/A	Does not have a nursing focus. DNP inquiry utilizes Bandura's theory.

	by self-efficacy.					
Watts (2011). Supporting undergraduate nursing students through structured personal tutoring: Some reflections. Nurse Education Today.	Effect of personal tutoring to support student success.	Evidence from the opinion of an expert. Level 7 evidence. Variables: peer tutors	No sample, sampling or setting.	No measures or reliability.	Personal tutors can be a constant support person. No analysis.	International viewpoint. Undergraduate program, increase retention with personal tutoring.
Crombie (2013). Factors that enhance completion rates: What makes students stay. Nurse Education Today.	Explore what variables cause students to stay in a nursing program.	Qualitative study. Level 6 evidence. Variables: persistence, four different nursing specialty areas.	28 second year nursing students. Convenience sample ensuring equal representation. Large acute trust hospitals in London, England.	Focus group interviews. Reliability established through 2 interviewers completing read and re-reading of transcripts.	Students don't think their views are considered for clinical placement, perceived did not meet staff's expectations, exited program due to clinical placement. Transcripts were analyzed through Thematic analysis.	Student perspective, one small cohort of students. Identifies student views on the purpose they chose to exit a nursing program.
Fontaine (2014). Effects of a retention intervention program for associate degree students. Nursing Education Perspectives.	Evaluate the effect of a retention program on increased persistence in an associate degree nursing program.	Quantitative descriptive study. Level 6 evidence. Variables: orientation, learning community, academic planning, nurse mentor, counseling, peer tutoring, career counseling, student satisfaction and retention.	137 AD grant students. Sampling not stated. One school of nursing.	Satisfaction questionnaire, self-report Likert 1-4, post data only. Statistically significant results will be at $p < 0.05$.	Peer tutoring and comprehensive orientation were most helpful. Retention rate increased by 10%. Younger students persist more than older students. Frequencies for variables.	One cohort of students in one school. Will help determine which interventions have the greatest impact on nursing student retention. AD program.

Charbonneau-Dahlen (2015). Hope: The Dream Catcher-Medicine Wheel Retention model for diverse nursing students. Journal of Theory Construction & Testing.	Compare the impact of hope on Native American nursing students and non-Native American nursing students.	Descriptive cross-sectional quantitative study and qualitative comments for methodological triangulation. Level 4 evidence. Variables: Hope, Native American status, demographics.	50 nursing students, half were Native American. Not stated. Midwest nursing program.	Hope Hearth Scale, Likert 1-4. Cronbach's alpha of 0.89 to 0.91.	Students need hope. Correlational analysis of demographics and hope; ANOVA for marital status, year in school and hope; frequency analysis of questionnaire and Native American status.	Small sample size is from one BSN school. Many students in the DNP inquiry identify as Native American.
Schrum (2015). Nursing student retention in an associate degree nursing program utilizing a retention specialist. Teaching and Learning in Nursing.	Factors that affect attrition were compared with the use of a retention specialist.	Descriptive correlational study. Level 4 evidence. Variables: personal, academic, and environmental factors, attrition, retention specialist services.	168 nursing associate degree (AD) nursing students from four cohorts. Convenience sampling. Urban US nursing school.	Data from retention specialist. None reported.	Use of the retention specialist decreased attrition. ANOVA Scheffe test for hours worked outside of class ($F = 8.9$, $df = 3$, $p = 0.000$). Frequencies and Chi-square for use of retention specialist ($p = 0.000$).	One urban school. Lack of diversity. Attrition due to family crisis. Use of retention specialist. Identifies variables that impact student success.
Ferrell (2016). S.O.S. (students' optimal success): A model for institutional action to support minority nursing students. Journal of Cultural Diversity.	Use qualitative data from successful minority nursing student to develop a program to promote minority student success.	Qualitative study Level 6 evidence. Variables / themes: Institution, commitment expectations, involvement, individualized support.	31 second and third semester AD and BSN students. Convenience sample. Two nursing programs in the Midwest US.	Minority student nurse questionnaire (MSNQ). Two investigators reviewed the audit trail.	Address cultural competence, help students be successful, faculty support is important, clear program expectations, frequent and timely feedback. Qualitative concept development process.	Small sample size. Demographics match inquiry demographics (second and third semester AD students).

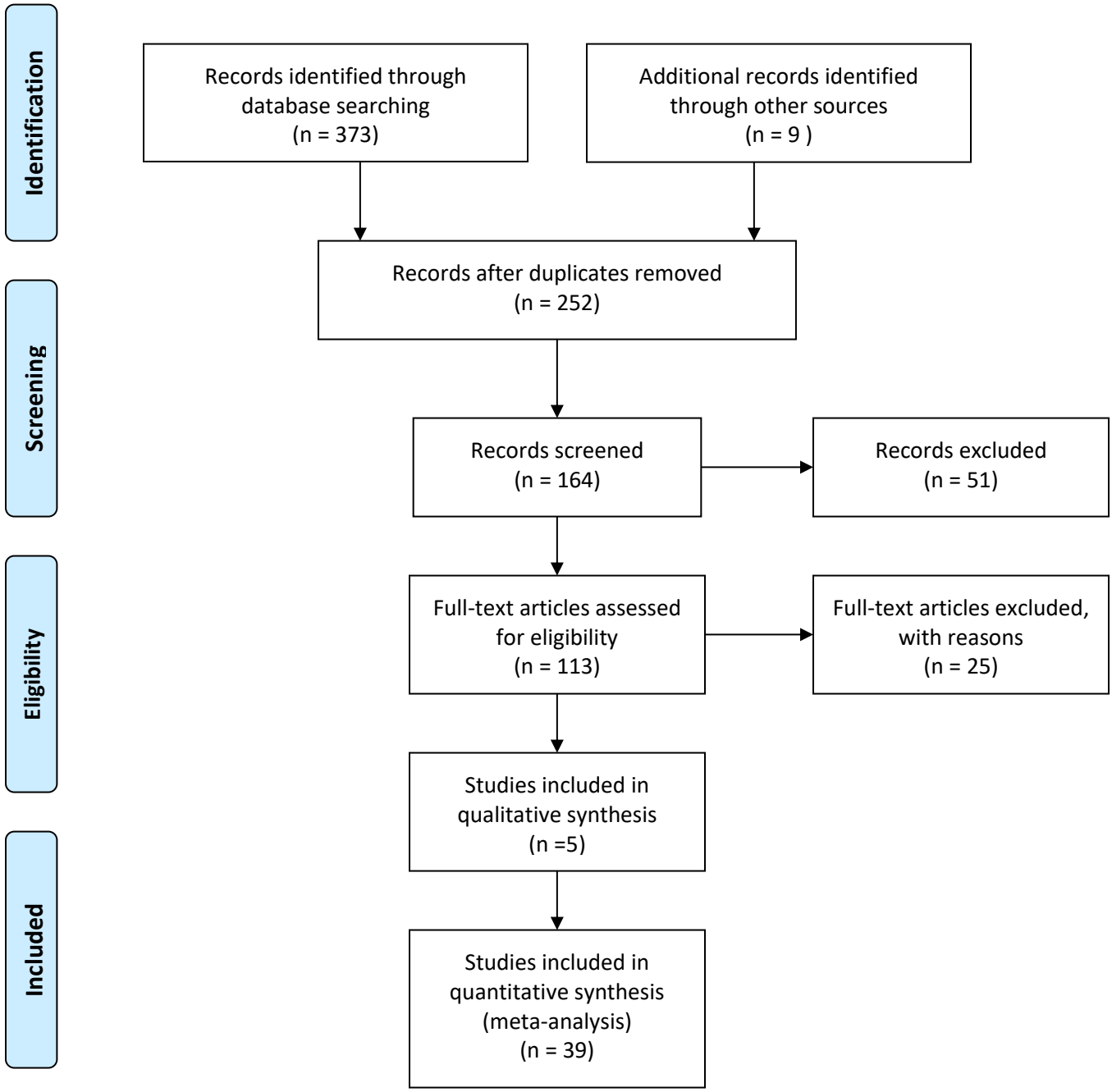
Mooring (2016). Recruitment, advising, and retention programs – Challenges and solutions to the international problem of poor nursing student retention: A narrative literature review. Nurse Education Today.	Systematic review from two databases, CINAHL and Health Source plus articles by theorists, Tinto and Benda.	Systematic review of quantitative studies. Level 3 evidence. Variables/search word: student retention, nursing education, articles after 2000. Exclusion criteria: employment retention and non-nursing articles.	Not reported, 82 articles in reference list. Sampling and setting not defined.	Five-step approach: problem identification, literature search, data analysis, theme emergence, and synthesis of results.	Themes include student retention theory, causes of attrition, recruitment changes, aggressive academic advising, and curriculum integration. Analysis criteria not defined.	Used 2 databases, did not report article elimination process. Realistic use as it directly applies to the literature review and the inquiry.
Walker (2016). A bridge to success: A nursing student success strategies improvement course. Journal of Nursing Education.	Effect of a student success improvement course on student success.	Single quantitative descriptive study, one group pre-test, post-test design. Level 6 evidence. Variables: retention, age, outside of class work hours, perceived stress, self-efficacy.	59 full-time nursing students. Convenience sample. Rural nursing school.	General self-efficacy scale (GSE). Perceived stress scale (PSS) five-point Likert. Cronbach alpha of 0.78 with PSS Likert scale and 0.76-0.90 with GSE.	Self-efficacy was increased and perceived stress decreased after taking the course. Retention affect was small. Chi-square analysis and frequencies for variables.	Small sample size, one setting. Mandatory student success course. Realistic use.

Student Success						
Shelton (2012). A model of nursing student retention. International Journal of Nursing Education Scholarship.	Determine the relationship between the variables, persistence and academic success.	Quantitative cohort design. Level 3 evidence. Variables: background demographics, internal psychological processes, external supports, persistence, academic performance.	458 Nursing students from nine AD programs grouped into 3 cohorts. Sampling not reported. New York and Pennsylvania AD nursing programs.	Self-report questionnaire, student background Likert 1-7, academic self-efficacy Likert 1-5 and perceived faculty support Likert 1-5. Cronbach's alpha is 0.86, 0.74 and 0.96 respectively, $p \leq 0.05$.	Financial resources predicted success and persistence; students who persist perceive faculty as supportive. Frequencies for demographics and background variables, chi-square (nominal), ANOVA (ordinal) of groups and background variables.	No limitations reported. Faculty support needed to promote persistence, AD nursing program.
Raman (2013). Nursing student success in an associate degree program. Teaching and Learning in Nursing.	Examine factors that increase student success in an associate degree program.	Well-designed cohort study. Level 4 evidence. Variables: faculty support, self-efficacy, commitment to nursing, math ability.	104 nursing students. Convenience sample. First semester students in the second year of an AD program in northeast US.	Adapted questionnaire, five-point Likert. Cronbach's $\alpha = 0.809 – 0.904$.	Faculty and peer support increases success. Factor analysis for construct validity, Pearson correlational of variables, stepwise regression predicts GPA	One AD program. Aligns with DNP inquiry to provide student and faculty support to increase student success.
Jeffreys (2015). Jeffreys's Nursing Universal Retention and Success model: Overview and action ideas for optimizing outcomes A-Z. Nurse Education Today.	Explain barriers to success and best practice to assist students in overcoming these barriers.	EBPG – meta-analysis of student success concept. Level 1 Variables: profile characteristics, student affects, academics, environment, outside factors, professional integration, academic and psychological outcomes.	N/A	N/A	Further development of the NURS model. N/A	Educator interventions are for current students. Conceptual framework developed from qualitative and quantitative studies.

Myles (2018). Remediation: Using data to prescribe interventions for nursing students. Teaching and Learning in Nursing.	Description of the impact of remediation strategies on at-risk students.	Single quantitative descriptive study. Level 6 evidence. Variables: remediation intervention, NCLEX-RN pass rates,	Not reported. Convenience sample. Last semester of a nursing program.	Mid-curricular and end-of-program assessments, NCLEX-RN pass rates. Not reported; assessments are nationally normed.	The implementation of targeted remediation interventions increased NCLEX-RN pass rates. Frequency date for NCLEX-RN pass rates, description of med-curricular assessments.	No data on sampling information and program type. Detailed remediation strategy.

Appendix D

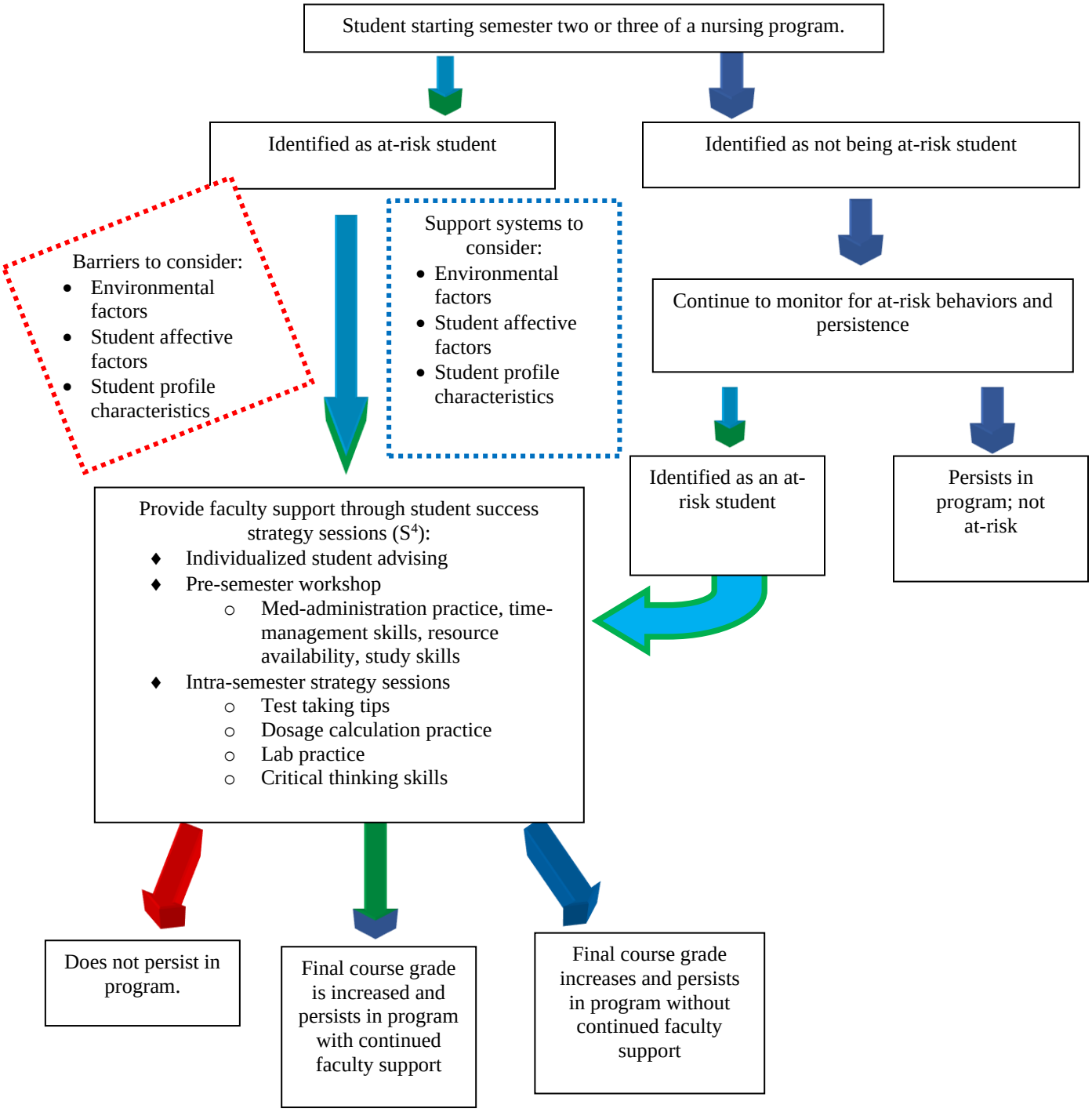
PRISMA 2009 Flow Diagram



Appendix E

Theory to Application Diagram

Diagram of faculty support to increase at-risk student persistence and increased grades based upon Jeffrey's (2012) Nursing Undergraduate Retention and Success (NURS) model and Bandura's (1977) social learning, self-efficacy theory.



Appendix F

Institutional Review Board Letter of Approval

Institutional Review Board
Fri 5/24/2019 2:50 PM

- Stephanie Merritt;
- Institutional Review Board

Human Subjects Review
Proposal Title: Retention program for at-risk students in an urban associate degree nursing program
IRB #: 19-011

Dear Researcher:

Your research proposal has been approved through an expedited review by the Institutional Review Board. You are authorized to begin your research and implement this study as of the date of this email. This authorization is valid for one year from today. After this authorization runs out, you are required to submit a continuation or renewal request for IRB approval.

This approval is granted with the understanding that the research will be conducted within the published guidelines of the *Project Site* Institutional Review Board and as described in your application. Any changes or modifications to the approved protocols should be submitted to the IRB for approval. Please use the IRB number provided above in all your communications regarding this study.

Thank you for sending us your application for research involving human subjects. By doing so, you safeguard the welfare of our students and federal funding of our college.

Sincerely,
Jennifer

Jennifer, Ph.D.
Co-chair, Institutional Review Board

Appendix G

Informed Consent

TITLE OF STUDY
Student Success Interventions to Support Student Success in an Associate Degree Program.

PRINCIPAL INVESTIGATOR
Stephanie Merritt, MS, RN
DNP Student - UMKC
School of Nursing

PURPOSE OF STUDY
You are being asked to take part in an evidence-based quality improvement (EBQI) project. Before you decide to participate in this project, it is important that you understand why the EBQI project is being done and what it will involve. Please read the following information carefully. Please ask the researcher (Stephanie Merritt) if there is anything that is not clear or if you need more information.

The purpose of the EBQI project is to assist students with educational barriers in order to support and potentially increase their educational success in the nursing program.

STUDY (EBQI Project) PROCEDURES
1. Students will be invited to attend a pre-semester success workshop.

2. This all-day workshop will be provided to students having barriers to success. It will be held on August 6, 2019. Lunch and snacks will be provided along with minimal financial assistance towards your transportation costs.

3. Throughout the semester, additional student success strategy sessions will be open to students who have educational barriers. Examples include test-taking tips, dosage review, and practice lab opportunities. These student success strategy sessions usually last less than 60 minutes.

4. Individualized educational support will also be offered to support student success.

5. Final course grades will be evaluated to determine the effectiveness of the student success interventions.

RISKS
All student records will be kept confidential and will be identified using a unique number for each student.

There are no known risks for taking part in this study, but in any research, there is some possibility that you may be subject to risks that have not yet been identified. You may decline to answer any or all questions and you may terminate your involvement at any time.

BENEFITS
- Opportunity to prepare for fall semester 2 and 3 courses
- Potential to increase your final course grade as a result of your participation in these student success support opportunities.

- Opportunity to meet and interact with a few semesters 2 and 3 faculty prior to the start (and pressures) of the fall semester
- Educational support activities
- Methods of success will be shared with students to fit their individual learning needs.
- No cost to attend workshop, student success sessions or individualized meetings with faculty
- Participation is voluntary and students may choose to not participate at any time without penalty.

CONFIDENTIALITY
For the purposes of this research study, your comments will not be anonymous. Every effort will be made by the researcher to preserve your confidentiality including the following:

- Assigning code names/numbers for participants which will be used on all research notes and documents
- Keeping notes and any other identifying participant information in a locked file cabinet.

Participant data will be kept confidential except in cases where the researcher is legally obligated to report specific incidents. These incidents include, but may not be limited to, incidents of abuse and suicide risk.

COMPENSATION
Lunch and nominal funds to defray transportation costs will be provided for your attendance at the all-day workshop attendance.

CONTACT INFORMATION
If you have questions at any time about this study, you may contact the researcher whose contact information is provided on the first page. If you have questions regarding your rights as a research participant, or if problems arise which you do not feel you can discuss with the Primary Investigator, please contact the Institutional Review Board.

VOLUNTARY PARTICIPATION
Your participation in this study is voluntary. It is up to you to decide whether or not to take part in this study. If you decide to take part in this study, you will be asked to sign a consent form. After you sign the consent form, you are still free to withdraw at any time and without giving a reason. Withdrawing from this study will not affect the relationship you have, if any, with the researcher. If you withdraw from the study before data collection is completed, your data will be destroyed.

CONSENT

Participation in the Nursing Student Success Project

I have read and understand the provided information and have I had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this study.

Participant's signature _____ Date _____

Investigator's signature _____ Date _____

Appendix H

Recruitment Email Invitation

Dear Student (I will insert each student's name here)

You are invited to participate in a pre-semester workshop to prepare students for the fall second and third semester nursing courses. You were identified by semester one faculty to participate in this workshop as it may increase your preparedness for semesters two and three course work. This pre-semester workshop is part of a Doctor of Nursing Practice (DNP) research study to assist students with educational barriers to foster success in the second and third semester course work. Participation is optional, and your decision to participate will not impact your theory, clinical or lab assignments for the nursing courses in which you have enrolled.

Participation in the pre-semester workshop involves:

- A 7-hour time commitment at the workshop – August 6, 2019
    - The workshop will be held at the Southeast Campus
    - All workshop supplies will be provided at no charge to you
    - Lunch will be provided at no charge to you for your participation
- Topics to be covered include
    - Study tips – strategies to learn information other than just reading
    - Student resources at the project site
    - Time-management – what to expect and your schedule for the first two weeks of class
    - Refresher of med administration skills
    - Introduction to simulation
    - Q&A opportunities
- Meet some of the faculty from first, second and third semester courses

Please RSVP to stephanie.merritt@tulsacc.edu if you plan to attend and for more information regarding the workshop. Please include any dietary needs (allergies, vegan, etc…) with your RSVP.
For more information about this study, please contact the principal investigator, Stephanie Merritt, at stephanie.merritt@tulsacc.edu.

Thank you,

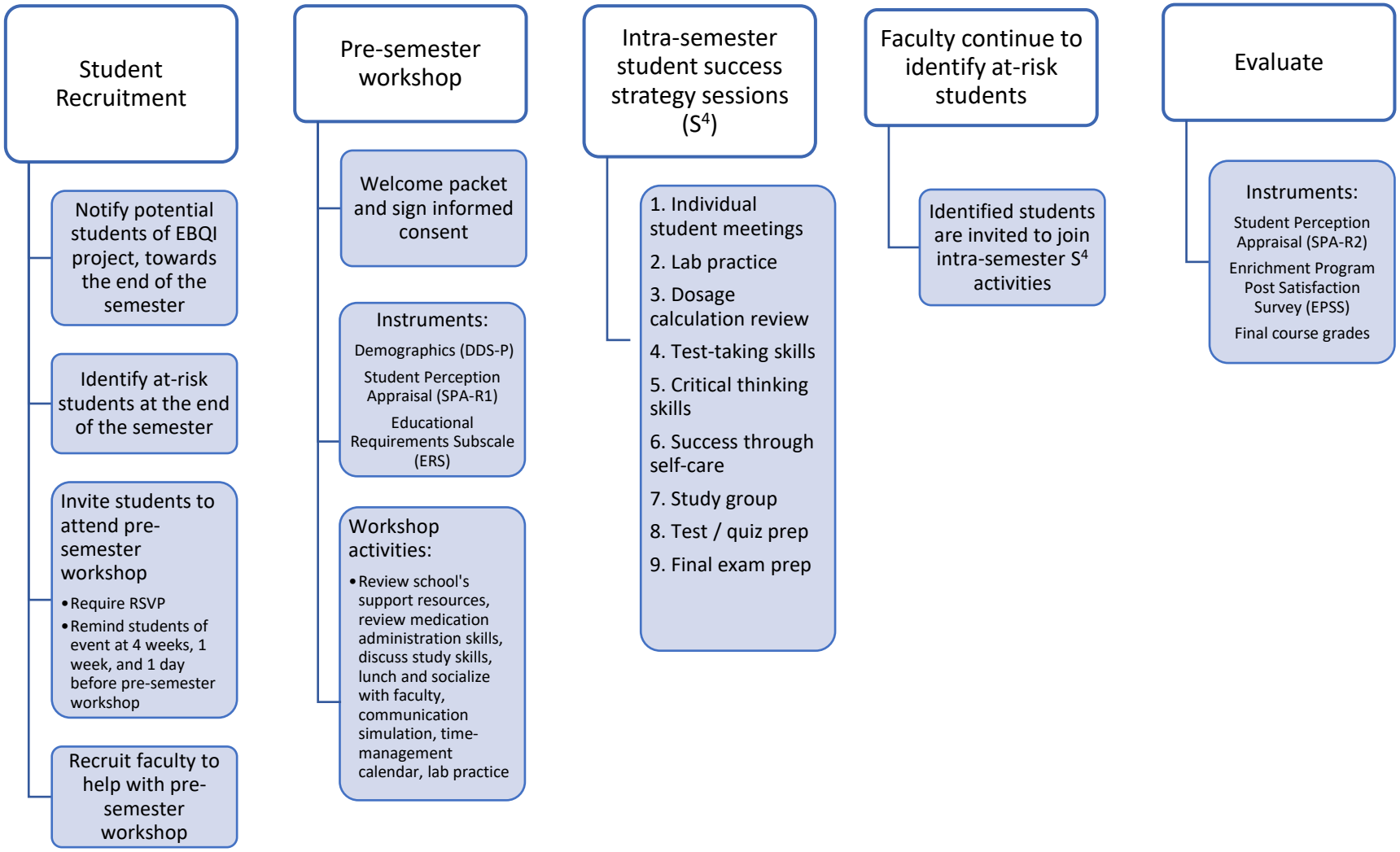
Stephanie Merritt, DNP Student, MS, RN
Principle Investigator
DNP Student, University of Missouri – Kansas City (UMKC)

UMKC
UNIVERSITY OF MISSOURI
KANSAS CITY

Study Title: Supporting Nursing Students to Increase Their Final Course Grade

Appendix I

Intervention Flow Diagram



Appendix J

Project Timeline

Funding	•January 28, 2019 - August 2019 •Project Funding continued until all funds were secured
Recruitment	•Started once IRB approval is obtained, through the 8th week of a 16-week semester
S^4 Activities (includes workshop)	•August 6. 2019 - December 6, 2019
Gather Data	•August 6, 2019 - January 17, 2020
Evaluate and Analyze Data	•January 2, 2020 - March 15, 2020
Review Results	•March 16, 2020 - April 15, 2020
Disseminate Data	•October 2-3, 2019 - Poster Presentation of Integrative Review •May 2020 - present results to faculty •Jan - May 2020 - Submit 2 articles for Publication

Appendix K

Educational Program Outline

Pre-semester workshop

- Welcome – informed consent and surveys
- Actions that promote success
    - Be on time for class and clinical
    - Submit all assignments on time
    - Keep a schedule of all required activities
    - Ask if you have a question
- Student resources available at the college
- Review medication administration skills
    - Practice medication administration skills in the lab
- Study skills review
- Lunch and socialization with faculty
- Communication simulation
    - Bedside report
    - Communication with faculty
- Time-management

Other student success strategy sessions throughout the semester: Test-taking skills, dosage review, critical thinking skills, skills lab practice, individual student success meetings, test reviews, success through self-care

Appendix L: **Logic Model for DNP Project**

Student: Stephanie Merritt

Inquiry, PICOTS: Do at-risk students who attend student success strategy sessions, compared to at-risk students who do not attend student success strategy sessions, have a higher final course grade by the end of the 16-week semester in an urban associate degree program?

Inputs	**Interventions**	**Outputs**	**Outcomes -- Impact**		
	Activities	*Participation*	***Short***	***Medium***	***Long***
Evidence, sub-topics 1. At-risk nursing students 2. Barriers 3. Support 4. Student success **Major Facilitators or Contributors** 1. Current Dean of Nursing 2. Faculty 3. Out of sequence students **Major Barriers or Challenges** 1. New Dean of Nursing – to be named prior to the start of the project 2. Faculty who do not agree with student support measures 3. At-risk students who are reluctant to seek or accept help 4. Time – IRB approval needed prior to the end of the semester	**EBP intervention which is supported by the evidence in the Input column** Offer student success strategies **Major steps of the intervention** 1. Identify at-risk students who will be enrolled in second or third-semester courses 2. Invite at-risk students to attend pre-semester workshop 3.Pre-semester workshop – obtain informed consent and complete surveys 4. Meet individually with students 5. Offer student success sessions during the semester 6. Obtain final grade as archival data; administer post-test and evaluative surveys.	**The participants (subjects)** At-risk students enrolled in the second or third semester of an AD nursing program **Site** Midwest community college **Time Frame** August 6 – December 15, 2019 **Consent or assent Needed** 1. Project site IRB and informed consent **2.** UMKC - IAA **Other person(s) collecting data** No **Others directly involved in consent or data collection** Yes – faculty or administrative assistant	**(Completed during DNP Project)** **Outcome(s) to be measured** Primary: Increased final course grade Secondary: Correlation between student success factors and final course grade; Student satisfaction and perceived value of S^4 activities **Measurement tool(s)** 1. Demographics – NURS Tool Kit (NTK) 2. Student Perception Appraisal – Revised 2 - Pretest – NTK 3. Educational Requirements Subscale – NTK 4. Enrichment Program Satisfaction Survey – NTK 5. Student Perception Appraisal - Revised 2 – Posttest – NTK 6. Final course grade as submitted by course faculty 7. S^4 attendance record **Statistical analysis to be used** 1. ANOVA and MANOVA 2. Descriptive statistics 3. Pearson correlation	**(after student DNP)** **Outcomes to be measured** Success in future nursing courses	**(after student DNP)** **Outcomes that are Potentials** Time to complete the AD program NLCEX-RN first time pass rate

Rev. 7/09, 1/2015 http://www.uwex.edu/ces/lmcourse/interface/coop_M1_Overview.htm Logic-Model Worksheet content revisions by Lyla Lindholm for DNP Project. Not to be placed on web for public use. For UMKC DNP coursework only

Appendix M

Permission for Tools

Email:

springer@newgen.co
Mon 4/15, 2:53 AM Merritt, Stephanie (UMKC-Student);ndicicco@springerpub.com
Dear Customer,

Please find attached the Nursing Student Retention Toolkit. Could you please confirm receipt of the file.
Thank you

Regards,

Newgen Team
Getting too much email from springer@newgen.co? You can unsubscribe

---

On Sat Apr 13 02:08:02 2019, smerritt@mail.umkc.edu wrote:

Yes. Thank you!!!

Get Outlook for iOS

From: Merritt, Stephanie (UMKC-Student)
Sent: Friday, April 12, 2019 3:32:17 PM
To: Nicole Dicicco; springer@newgen.co
Subject: Re: Nursing Student Retention Toolkit

Nicole, in a previous email you said I could have 15 months access with this license. Is that still ok?

Stephanie

Get Outlook for iOS

From: Nicole Dicicco <ndicicco@springerpub.com>
Sent: Friday, April 12, 2019 3:30:36 PM
To: springer@newgen.co

Cc: Merritt, Stephanie (UMKC-Student)
Subject: Nursing Student Retention Toolkit

Hi Ashita,

Please send the Nursing Student Retention Toolkit to Stephanie Merritt at smerritt@mail.umkc.edu with a one-year license.

Please let me know if you have any questions. Thank you.

Nicole

Nicole DiCicco | Director of Customer Service

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ndicicco@springerpub.com

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Appendix N

Data Collection SPSS Template, Variables

SPSS File: Final Course Grades and Workshop Participation

	Name
1	paricipant_c...
2	num_Theory...
3	semester
4	gpa_ave_th...
5	Grades_atte...
6	Grade_No_...
7	Failing_8we...
8	participated...
9	presemester
10	indiviual_me...
11	test_taking_...
12	critical_thin...
13	selfcare
14	extralab
15	studygroup
16	dosage
17	test_prep
18	finalexam_p...
19	Num_works...
20	Workshop_r...
21	Wrkshp_sm...
22	first_and_last

SPSS File: All Project Data, Variables

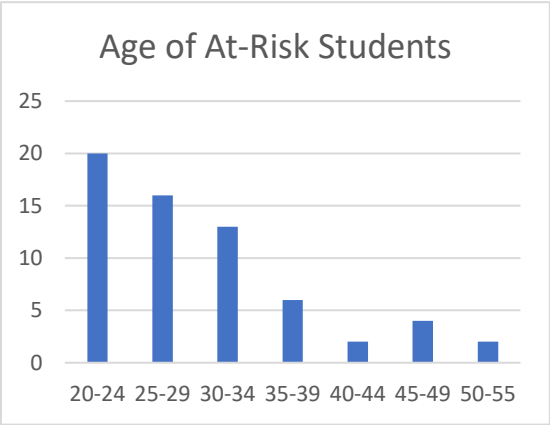
	Name
1	paricipant_c...
2	num_Theory...
3	semester
4	gpa_ave_th...
5	ed_backgro...
6	first_attend_...
7	sex
8	age
9	race
10	English_1st...
11	fluent_other...
12	born_US
13	work_hrs_O...
14	study_skills...
15	post_study_...
16	faculty__Ad...
17	Post_facult...
18	study_hours...
19	post_study_...
20	skills_lab_pre
21	post_skills_...
22	academic_p...
23	post_acade...
24	attend_lecture

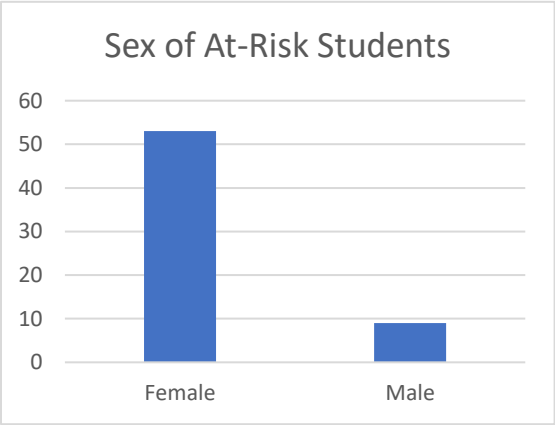
	Name
25	attend_lab
26	attend_clinica
27	reads_all
28	complete_c...
29	review_notes
30	paper_comp..
31	study_adeq...
32	passing_cli...
33	Pass_with_B
34	satisfied_wit..
35	nursing_cou..
36	overall_satis..
37	Overall_Sati...
38	Faculty_hel...
39	Peermentor...
40	workshops_...
41	comments
42	participated...
43	presemester
44	indiviual_me..
45	test_taking_..
46	critical_thin...
47	selfcare
48	extralab

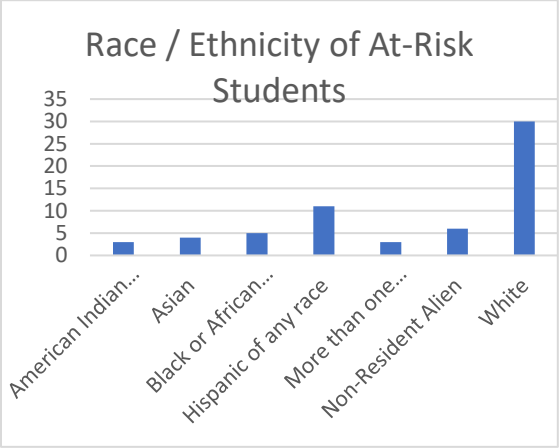
	Name
49	studygroup
50	dosage
51	test_prep
52	finalexam_p...
53	Num_works...
54	

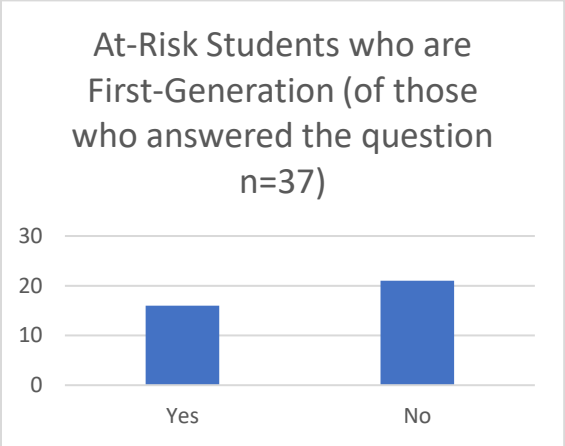
Appendix O

Demographics of At-Risk Students









Semester Enrolled

	Second		Third		Total
	Frequency	Percent	Frequency	Percent	
All At-Risk Students	35	56.5	27	43.5	62
Participated in Workshops	25	59.5	17	40.5	42

Workshop Participation

	Participated in Workshops		Did Not Participate Workshops		Total
	Frequency	Percent	Frequency	Percent	
At-Risk Students	42	67.7	20	32.3	62

At-Risk Student Data

	Yes		No	
	Frequency	Percent	Frequency	Percent
Repeated a Nursing Course	26	41.9	36	58.1
Withdrew from Courses	2	3.2	60	96.8
Failed a Course	7	11.3	55	88.7
Failing Mid Semester	21	33.9	41	66.1
Participated in Workshops	42	67.7	20	32.3

Appendix P

Statistical Analysis Results for Final Course Grades and Workshop Participation

Final Course Grade Based on Workshop Participation

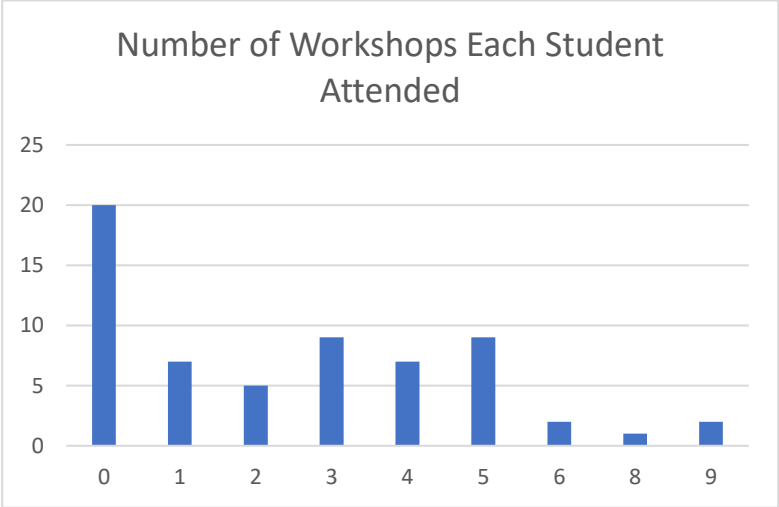
		Final Grade of students who Attended Workshops	Final Grade of students who did not Attended Workshops	Number of At-Risk Students
N	Valid	41	19	60
	Missing	1	1	2
Mean		80.0432	81.6011	
Median		80.2400	82.3200	
Mode		83.54	76.84[a]	
Std. Deviation		4.01783	2.80661	

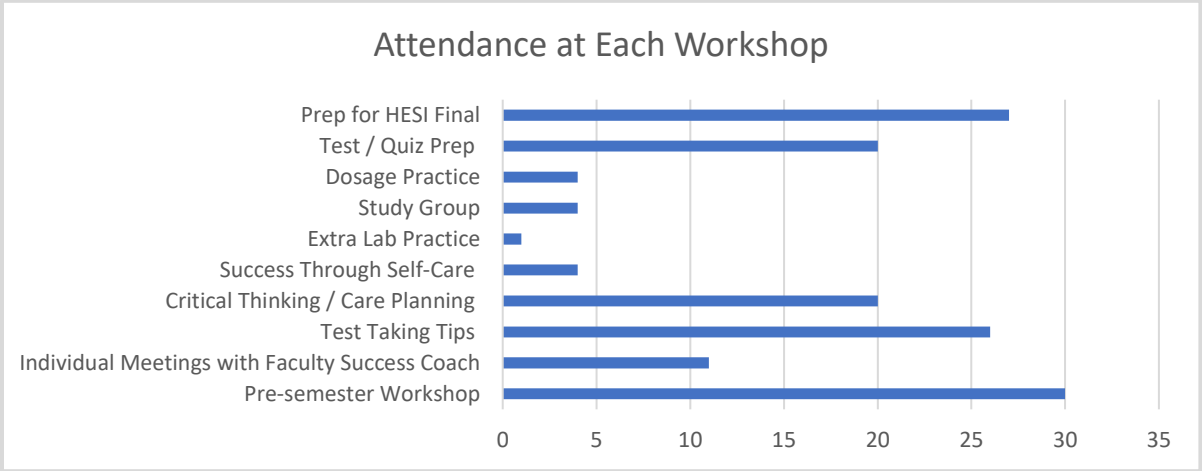
Final Course Grade Based on Semester Enrolled

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
2nd semester	25	78.9908	3.99212	.79842	77.3429	80.6387	70.73	86.26
3rd semester	16	81.6875	3.58032	.89508	79.7797	83.5953	76.21	89.60
Total	41	80.0432	4.01783	.62748	78.7750	81.3114	70.73	89.60

Workshop Attendance by Student

Workshops Attended	Number of students	Percent of Students
None	20	32.3
1	7	11.3
2	5	8.1
3	9	14.5
4	7	11.3
5	9	14.5
6	2	3.2
8	1	1.6
9	2	3.2
Total	62	100





ANOVA: Semester Enrolled & Workshop Participation

			Sum of Squares	df	Mean Square	F	Sig.
Semester Enrolled[a] Workshop Participation by Range: 0-3, 4-6, 7-10	Between Groups	(Combined)	2.837	3	.946	4.422	.007
	Within Groups		12.405	58	.214		
	Total		15.242	61			

[a] Analysis between the semester a student is enrolled (second or third) and how many workshops they participated in.

Post hoc Tukey HSD

Dependent Variable: Semester Enrolled

(I) Workshop Participation by Range	(J) Workshop Participation by Range	Mean Difference (I-J)*	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
no attendance[a]	1-3 workshops	-.190	.143	.545	-.57	.19
	4-6 workshops	.310	.149	.171	-.08	.70
	7-10 workshops	.476	.342	.510	-.43	1.38
1-3 workshops	no attendance	.190	.143	.545	-.19	.57
	4-6 workshops	.500*	.149	.007	.11	.89
	7-10 workshops	.667	.342	.220	-.24	1.57
4-6 workshops	no attendance	-.310	.149	.171	-.70	.08
	1-3 workshops	-.500*	.149	.007	-.89	-.11
	7-10 workshops	.167	.345	.962	-.75	1.08
7-10 workshops	no attendance	-.476	.342	.510	-1.38	.43

	1-3 workshops	-.667	.342	.220	-1.57	.24
	4-6 workshops	-.167	.345	.962	-1.08	.75

* The mean difference is significant at the 0.05 level.

[a] No attendance is defined as not attendance at the pre-semester workshop and the final exam prep workshop.

ANOVA: Failing at Week 8 – Semester Enrolled & Final Course Grade

			Sum of Squares	df	Mean Square	F	Sig.
Semester Enrolled[a] * Failing at Week 8	Between Groups	(Combined)	4.015	1	4.015	21.461	.000
	Within Groups		11.226	60	.187		
	Total		15.242	61			
Final Grade Attended Workshops * Failing at Week 8	Between Groups	(Combined)	246.563	1	246.563	24.091	.000
	Within Groups		399.154	39	10.235		
	Total		645.717	40			

[a] Semester enrolled is either second or third semester.

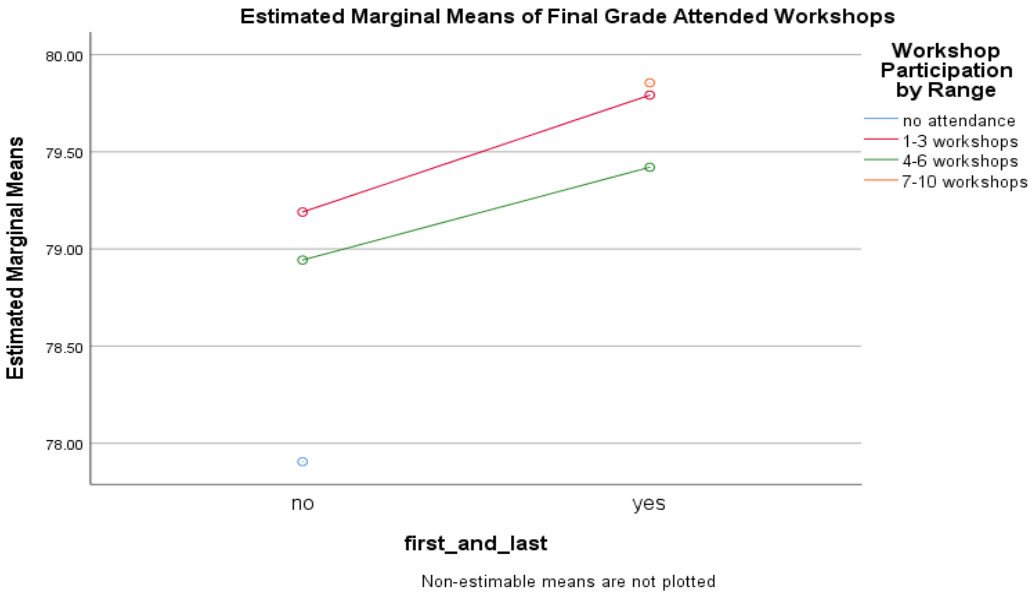
MANOVA: Workshop Attendance, Semester Enrolled, & Final Course Grades

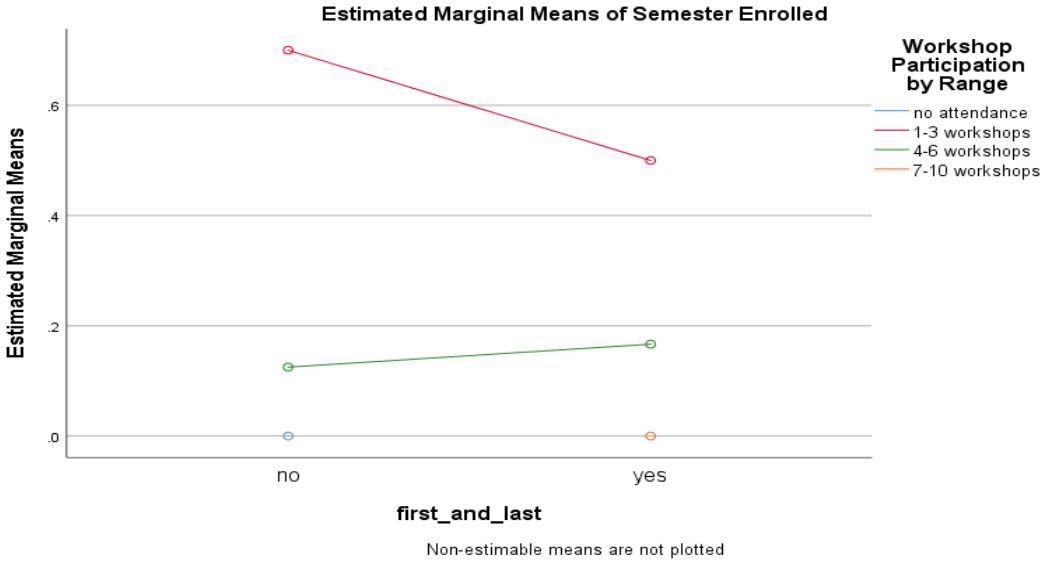
Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[c]
Attended First and Last Workshops	Final Grade Attended Workshops	2.055	1	2.055	.204	.655	.007	.204	.072
	Semester Enrolled	.044	1	.044	.381	.542	.013	.381	.092
Workshop Range: 0-3, 4-6, 7-10	Final Grade Attended Workshops	21.435	3	7.145	.708	.555	.066	2.124	.182
	Semester Enrolled	1.718	3	.573	4.931	.007	.330	14.793	.870
Failing at 8weeks	Final Grade Attended Workshops	134.827	1	134.827	13.360	.001	.308	13.360	.942
	Semester Enrolled	.532	1	.532	4.580	.041	.132	4.580	.544
Attended First and Last Workshops * Workshop Range: 0-3, 4-6, 7-10	Final Grade Attended Workshops	.027	1	.027	.003	.959	.000	.003	.050
	Semester Enrolled	.103	1	.103	.888	.354	.029	.888	.149
Attended First and Last Workshops * Failing_8weeks	Final Grade Attended Workshops	62.021	1	62.021	6.146	.019	.170	6.146	.670
	Semester Enrolled	.206	1	.206	1.774	.193	.056	1.774	.252
Workshop Range: 0-3, 4-6, 7-10 * Failing_8weeks	Final Grade Attended Workshops	38.933	2	19.467	1.929	.163	.114	3.858	.368
	Semester Enrolled	.465	2	.232	2.002	.153	.118	4.004	.381
Attended First and Last Workshops * Workshop Range: 0-3, 4-6, 7-10 * Failing_8weeks	Final Grade Attended Workshops	.757	1	.757	.075	.786	.002	.075	.058
	Semester Enrolled	.118	1	.118	1.014	.322	.033	1.014	.164
	Semester Enrolled	3.483	30	.116					

a. R Squared = .531 (Adjusted R Squared = .375)

b. R Squared = .643 (Adjusted R Squared = .524)

c. Computed using alpha = .05


Estimated Marginal Means of Final Grade Attended Workshops
Estimated Marginal Means
80.00
79.50
79.00
78.50
78.00
no
yes
first_and_last
Non-estimable means are not plotted
Workshop Participation by Range
no attendance
1-3 workshops
4-6 workshops
7-10 workshops


Estimated Marginal Means of Semester Enrolled
Estimated Marginal Means
.6
.4
.2
.0
no
yes
first_and_last
Non-estimable means are not plotted
Workshop Participation by Range
no attendance
1-3 workshops
4-6 workshops
7-10 workshops

Appendix Q

Student Factors

Student Factor Paired Samples Correlation

		N	Correlation	Sig.
Pair 1	Study Skills Pretest & Study Skills Posttest	32	.198	.277
Pair 2	Faculty Advisement Pretest & Faculty Advisement Posttest	32	.049	.790
Pair 3	Personal Study Hours Pretest & Personal Study Hours Posttest	32	.285	.114
Pair 4	Skills Lab Pretest & Skills Lab Posttest	32	.508	.003
Pair 5	Academic Performance Pretest & Academic Performance Posttest	32	.464	.008

Student Factors and Final Grade Correlations

		Final Grade	Study Skills Posttest	Faculty Advisement Posttest	Personal Study Hours Posttest	Skills Lab Posttest	Academic Performance Posttest
Final Grade	Pearson Correlation	1	.562**	.265	.547**	.429*	.553**
	Sig. (2-tailed)		.001	.150	.001	.016	.001
Study Skills Posttest	Pearson Correlation	.562**	1	.200	.663**	.506**	.416*
	Sig. (2-tailed)	.001		.281	.000	.004	.020
Faculty Advisement Posttest	Pearson Correlation	.265	.200	1	.204	.435*	.282
	Sig. (2-tailed)	.150	.281		.272	.014	.124
Personal Study Hours Posttest	Pearson Correlation	.547**	.663**	.204	1	.602**	.622**
	Sig. (2-tailed)	.001	.000	.272		.000	.000
Skills Lab Posttest	Pearson Correlation	.429*	.506**	.435*	.602**	1	.240
	Sig. (2-tailed)	.016	.004	.014	.000		.194
Academic Performance Posttest	Pearson Correlation	.553**	.416*	.282	.622**	.240	1
	Sig. (2-tailed)	.001	.020	.124	.000	.194	

Appendix R

Workshop Satisfaction

Workshop Satisfaction

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
Overall Satisfied	31	1	5	1.32	.791	3.656	.421
Faculty Helpful	31	1	5	1.29	.783	3.878	.421
Workshops Informative	31	1	5	1.26	.773	4.130	.421

Overall Satisfied

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	24	38.7	77.4	77.4
	Agree	6	9.7	19.4	96.8
	Unable to Evaluate	1	1.6	3.2	100.0
	Total	31	50.0	100.0	
Missing	System	31	50.0		
Total		62	100.0		

Faculty Helpful

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	25	40.3	80.6	80.6
	Agree	5	8.1	16.1	96.8
	Unable to Evaluate	1	1.6	3.2	100.0
	Total	31	50.0	100.0	
Missing	System	31	50.0		
Total		62	100.0		

Workshops Informative

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	26	41.9	83.9	83.9
	Agree	4	6.5	12.9	96.8
	Unable to Evaluate	1	1.6	3.2	100.0
	Total	31	50.0	100.0	
Missing	System	31	50.0		
Total		62	100.0		