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Technology Enhanced Faculty Mentorship (TEFM) Model to Improve Student Success

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Technology enhanced faculty mentoring, also known as blended mentoring, plays a critical role in improving under resourced nursing students' retention in higher education as evidenced by the implementation of a pilot mentorship project. The purpose of this phase II technology enhanced faculty (blended) mentorship project was to determine whether technology enhanced faculty mentorship improve increased retention and graduation rates, and student satisfaction on Bachelor of Science in Nursing students at a public research University. The project utilized a unique blended mentoring approach integrating face-to-face interactions with virtual mentoring. Like the first phase we used descriptive statistics instead of inferential statistics making our findings observational rather than inferential. The number of students who participated across the mentorship program were a total of 77 students in nine cohorts. The overwhelming majority of the first, second, third, and fourth cohorts successfully passed their semesters, graduated and passed their board (NCLEX) exams. Subsequent, more recent cohorts have also been largely successful with some students still successfully progressing in the program. In addition, the overall semester retention and graduation rate for all nursing students at the same level improved compared to the preceding years. The mentees also reported a 100% satisfaction rate per final survey conducted at the end of each semester.

Keywords: Mentorship, students, nursing education,technology

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Introduction

Expanding diversity within the nursing workforce is crucial. According to the American Association of College of Nursing (AACN, 2024), the racial and ethnic composition of the nursing workforce includes 67% White, 11% Black, 9% Asian, 9% Hispanic, 4% Pacific Islander or multiracial, and less than 1% American Indian or Alaskan Native nurses. Unfortunately, despite the efforts to promote the importance of diversity, inclusion, belonging, accessibility, and equity and many have agreed the need to graduate a diverse workforce, the nursing profession still does not fully reflect the diversity of the population it serves (Mathews et al., 2022; Campaign for Action. 2021; AACN, 2019). Alongside a general shortage in the nursing workforce, Black, Indigenous, and People of Color (BIPOC), as well as other historically underrepresented students and faculty, remain significantly underrepresented compared to national and student demographic trends (Atraga et al., 2022; Mathews et al., 2022). Colleges and universities providing mentorship support to low-income students can effectively increase retention rates among and increase the number of students from low-income backgrounds who graduate into health professions. Faculty mentors for students have been shown to improve students' ability to succeed in their educational program of choice (Gildehaus et al., 2019; Hannover Research Institute, 2014). Technology enhanced faculty mentoring (TEFM), also known as blended mentoring, involves the embedding of technology into the routine of the mentorship relationship. The purpose of this program development project was to determine whether TEFM improved the retention rates, graduation rate, and the overall satisfaction rate of underrepresented, academically at-risk nursing students at a public research university.

Literature Review

Underprivileged, and under resourced students, particularly those from underrepresented racial and ethnic groups, exhibit lower completion rates when compared to their privileged peers (Atraga, 2024; Mimirinis & Wright, 2024; Joseph et al., 2023). Underrepresented students encounter an ongoing epidemic of prejudice within higher education, placing them under an

undue burden and limiting educational journeys (Lomotey & Smith, 2023). Conversely, higher racial, ethnic, and gender diversity among faculty and peers along with mentorship support can provide these students with positive role models whose experiences resonate with their own (Atraga et al., 2022). In addition, curating faculty approachability can improve students' access to support resources when in need; it is known that students may feel reluctant to ask for help if faculty members seem unapproachable (Atraga, 2022; Gildehaus et al., 2019).

For nursing students from these groups, challenges include a lack of academic, psychosocial, economic, and cultural obstacles. They can also face a lack of institutional support, and insufficient mentoring that negatively impacts their academic progress and success in often rigorous and high stakes nursing programs (Atraga et al., 2022). This results in poorer academic performance and higher attrition rates in nursing schools, and even if successful, reduced access and opportunities in the nursing workforce (Atraga, 2024).

Technology Enhanced Faculty Mentoring

The integration of TEFM approaches to traditional face to face mentorship models provides flexibility to students and faculty, improves communication among them, and facilitates structure and process in the mentor-mentee relationship. The use of technology during mentoring allows flexibility because the mentee and mentor can communicate remotely or online, while periodic face-to-face mentoring provides a human connection that is important for the student. Enhancing mentoring with technology in the form of tablets or i Pads provides mentors and mentees with extra advantages, such as fitting mentoring into a busy schedule and better managing mentees' expectations (Atraga et al, 2022; Atraga, 2024). The tablets also provide the students with resources that they can use to enhance studying, learning, and access to content. Electronic mentoring, or E-mentoring, is a mentoring model in which guidance and support are provided electronically, such as through email, messaging, and videoconferencing, and has been used in peer mentorship programs and professional development initiatives with successful outcomes (Carvalho & Santos, 2022). TEFM is a blended mentoring approach that integrates traditional face-to-face mentoring with virtual and technology support to enhance individual and program performance and designed for the support of associate degree nursing (ADN) students and further tailored and refined for baccalaureate nursing students (BSN). Retention of underrepresented nursing students is a core outcome of mentorship in higher education and one of the main goals of TEFM program (Atraga, 2024; Emetu, 2022; Louissant et al., 2021; Lisberg & Woods, 2018).

Historically, the TEFM project approach to mentorship was originally implemented in an associate degree nursing (ADN program) in Massachusetts in 2018 with the intention of improving the poor retention and exam and course pass rates observed among under resourced students. Upon implementation and evaluation of the project, the pass rates among students increased by almost 100% across the two participating student cohorts (Atraga et al., 2022). The updated version of the project was implemented in a BSN program in Georgia in 2020 and has continued with the long-term vision of improving student performance in didactic and clinical course content and increasing diversity in the healthcare workforce as new cohorts of students' graduate (Atraga, 2024).

Project

The TEFM project was implemented at a public research university in a school of nursing in Georgia. The university mission is dedicated to fostering innovation, research, and student success, and the school of nursing provides a wide range of undergraduate and graduate nursing programs from ADN and BSN to Doctor of Philosophy. As of 2024, the university serves more than 50,000 students annually from every county in Georgia, every state in the nation, and more than 150 countries. Approximately 39% of students identify as African American (AA) or Black, 12% Asian, 13% Hispanic/Latino, and 5% multiracial. This has been an ideal setting for the TEFM project and a supportive foundation for the project, including internal funding to support technology and mentoring. As previously noted, this project was further tailored and refined based on the proven success of a similar program for AND nursing students who were at risk due to academic difficulties, being socioeconomic disadvantaged, being a first-generation college student, family responsibilities such as working full time to support their family, having limited access to resources, and being in an underrepresented group (Atraga et al., 2022). The TEFM project design and implementation for BSN students are as follows.

Methods: Design and Implementation

The TEFM project utilized blended mentoring and combined in-person and virtual interactions to maximize flexibility for students and faculty and accessibility for students. The project incorporated five components: 1) committee of staff, faculty, and administration from the department whose directive was to assess the needs of the program setting; 2) faculty mentors; 3) student mentees; 4) evaluation practices and processes; and 5) the electronic or digital technology and devices needed to facilitate the program.

First, a committee was created with a lens of diversity and balance in faculty expertise

and experiences. Faculty mentors who were volunteers and the mentorship program coordinator came together to assess the specific needs of the nursing student mentees. Forming the committee was the first and the most essential step. The committee typically included three faculty members, one administrator, such as a program chair or associate dean, one staff member, one graduate teaching assistant, and one representative from the information technology department. The role of the committee was first to identify the current student challenges that the mentorship program needed to address, such as low student retention, graduation, and licensure pass rates. The committee was also responsible for outlining implementation objectives tailored to these challenges. The staff member monitored student progress and technology distribution and returns. Additionally, the committee prepared the selection criteria for eligible mentors and mentees.

Then, potential student mentees were informed of the project during the BSN program orientation, communications from the project coordinator, and/or referrals from program faculty members, course coordinators, or directors. Students were encouraged to apply by submitting a needed admission essay and references. The prerequisites for applying to the mentorship program and being a mentee were as follows: 1) be enrolled full-time in the BSN program; 2) submit a brief 200 to 400 word essay outlining the current challenges they faced, their reasons for desiring for mentorship, and how they believed this mentorship program would help them succeed academically; and 3) provide a minimum of one letter of recommendation, but preferably 2 or 3 references, from current or past faculty, employer, or similar character reference. Exceptions were students who, for reasons related to their circumstances or limited resource access, could not provide letters of recommendation. Priority was given for students who were first year nursing students which poses the most significant learning curve and is the period during which students are most at risk of dropping out due to academic, social, cultural, and financial challenges (Atraga, 2024). We also prioritized students who had failed their first semester or year and had been re-admitted into their program.

Students who were accepted and entered the program were assigned a faculty mentor for the duration of their time in the nursing program. Applicants' essays were used to match them with mentors who could most closely resonate with their needs and experiences. Because of the resource limitations inherent to any institution, we could not guarantee that our pool of mentors had life experiences that matched the diversity of the mentees. Thus, we emphasized access to supplemental resources, and similar tools that could bridge the gaps between mentee needs and available mentors' knowledge and experience (Atraga, 2024).

Prior to beginning the program, mentees received an onboarding or orientation. The goals of this orientation were to make students feel comfortable with the mentorship project, understand the importance of their commitment to the mentee-mentor relationship, and ensure that all the mentees and mentors' expectations were clearly defined (Atraga, 2024). Then, the weekly meetings between mentees and mentors commenced. Faculty mentors met weekly at least once per week for 14 semesters for each cohort. During weekly meetings, faculty mentors discussed mentee progress, which was tracked using a weekly progress evaluation template called the Student Progress Evaluation Form. The progress evaluation form was developed by the project coordinator and includes checklists tracking the mentees' ability to follow the goals they have set with their mentor, track their ability to organize and use time effectively, and assess their ability to complete assignments and/or practice quizzes from their coursework in a timely manner. An example goal might be preparing for exams at least two weeks ahead of time and documenting that preparation in a calendar-based study plan. The progress evaluation was adapted during final exams to address subtasks or goals unique to midterms and final clinical evaluations. The evaluation form also included structured activities such as goal setting, academic discussions, ability to follow instructions and recommendations such as preparing for exams at least two weeks ahead and documenting on a calendar a study plan, including time spent studying. The progress evaluation also addressed midterm and final clinical evaluation items. There was also a final progress evaluation for the end of each semester, called the Student Final Evaluation, in which students evaluate the mentorship program (Atraga, 2024). Weekly meetings with mentees were instrumental to mentees' progress and faculty mentors reviewed the contents of the evaluation forms on an ongoing basis to assess each mentee's needs.

In addition, the TEFM which included a blended approach of both in-person and virtual, as well as goal setting and progress evaluation through both in-person methods and digital tools was facilitated by providing a mini-iPad to each mentee and faculty mentor. All mentees were trained to use the iPad at the beginning of the project. The iPad was explicitly to be used for mentoring and academic advancement, including downloading and accessing electronic course materials, participating in, and scheduling e-mentoring meetings, and keeping track of mentoring goals (Atraga, 2024). This technology played a vital role in facilitating virtual meetings, downloading learning resources and real-time communication.

Also, of note that through the application and acceptance process, students consented to participate in both the mentorship program and

its subsequent evaluation process. All data were de-identified to maintain the confidentiality of the mentees and other stakeholders. Applicants agreed to adhere to the guidelines set out by their assigned mentor for the duration of the program and agreed to return the program technology after each semester or upon leaving the program for any reason (Atraga, 2024). The project is qualified for exemption under 45CFR§46.104.

Results

A total of 77 students participated in the TEFM project across nine cohorts between Fall 2020 and Spring 2025. Among the participating students 9 (12%) were male and 68 (88%) were women. The participants' age ranges between 18 and 46 years old. In term of ethnicity, 74 % were Black 10.4% were Hispanic, 11.7 % were Asian and 3.9 % were others.

We observed that after the semester, the retention rate was 100% in all the cohorts with the exception of one of the students withdrew from the fifth cohort and two students failing one course each from the sixth cohort. In addition, overall semester retention and graduation rates improved compared to the preceding years. The mentees also reported an overall satisfaction rate. Mentees reported a satisfaction rate of 100%.

To provide further cohort details, the first, second, and third cohorts successfully passed their semesters, graduated and passed their board (NCLEX) exams. The outcomes observed in the fourth cohort were a true testament to the program's effectiveness as 10 of the students who joined the fourth cohort after failing the previous semester and participated in the mentorship program in the following semester. Those 10 students, the other 4 students who normally joined the mentorship program (14 students total) successfully passed their semesters, graduated and passed their board (NCLEX) exams for one exception. One of the students from the fourth cohort withdrew from the program due to personal reasons. Among the fifth cohort participants one of them passed their NCLEX exam, one just graduated this Spring 2025, and the third student is still successfully progressing in the program. All the 13 students who participated in the sixth cohort are successfully passing their semesters except for 2 students initially failing one of their courses due to being non-compliant with the expectations of the mentorship program. As a result, the mentorship coordinator met with these 2 students and advised them to adhere to the mentorship program. Since then, they are compliant and also successfully passing their semester. The number of students who joined the mentorship program in the seventh, eighth and ninth cohort are successfully passing their semester. In addition, the overall semester retention and graduation rate for all nursing students at the same level improved compared to the preceding years. The mentees also reported a 100% satisfaction rate.

Finally, we would like to inform readers that the ratio of the students who are joining the mentorship program are between 5 and 12 percent on average as compared to the number of students enrolled each semester. This indicates more enrollment in the mentorship program may lead to increased retention and graduation rate. The Likert scale survey result also indicated that all students who participated in the mentorship program agree on the effectiveness of the mentorship program. While we did not collect systematic qualitative data, we have received a number of student testimonials about the positive impact of the program on their lives and academics.

Then, faculty mentors met with individual mentees either face-to-face or virtually once per week for an average of 30 to 45 minutes for 14 weeks each semester. The meeting duration was up to two hours per week per student during the beginning of the semester while the mentees adjusted to novel courses and classroom environments, and at the end of each semester leading up to final exams. Although there were variations from semester to semester and according to each mentee's needs, an average of 275 to 300 hours was completed per 14-week semester.

Discussion

The purpose of this TEFM project was to improve the retention rates, graduation rate, and the overall satisfaction rate of nursing students in a BSN program who are academically at risk due to academic, financial, psychosocial, and cultural challenges. Over the five years of the project implementation, we have determined its sustainability and potential for broader implementation (Atraga, 2024). Undergraduate mentorship programs promote diversity, retention, and graduation of students with STEM degrees (Atraga, 2024). Although undergraduate programs implement mentorship programs, it is rare to find the kind of formal, faculty mentorship program that the TEFM implements. E-mentoring connects mentors and mentees across geographic and time barriers and augments opportunities for support among diverse students and professionals and positively received by the students.

The strengths for this program development project were to have a successful outcome by increasing the retention, graduation and the NCLEX pass rate. In addition, although there was a shortage of resources, the faculty, the administration at the school of Nursing and the college and the staff were incredibly supportive of this program to the best of their ability through small funding, technical support, and a course buyout. The limitations of this program development project were that the number of students who participated in the program are

extremely limited compared to the overall number of students enrolled at each level. In addition, when the faculty members were unavailable due to a busy schedule to participate in the recruitment and mentoring activities, the project coordinator assumed those responsibilities putting an undue burden on one person.

Therefore, we recommend conducting future project/research with a larger sample size using an inferential statistic to determine for any causal relationship. We also propose conducting a pre-and post-survey of mentees and faculty mentors to help compare the effectiveness of the pre-and post-program intervention. We also recommend that controlling the potential confounding factors that could negatively or positively impact on the outcome would benefit to make necessary adjustment and to further enhance the mentorship program on a larger scale.

Conclusion

The purpose of this TEFM project was to improve the retention, graduation, and the overall satisfaction rate of nursing students in a BSN program who are academically at risk due to academic, financial, psychosocial, and cultural challenges. This project was successful in its outcomes for nursing students, and it has also demonstrated student satisfaction and feasibility. Mentoring benefits not only nursing students, but students from any field of study. In this digital age, we must leverage the technology resources that are available to amplify the existing benefits mentorship can offer. While informal and peer-oriented mentorship strategies do exist, this formal faculty mentorship program the TEFM project outlines is rare.

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