



Research article

Improving student success and retention in first-year nursing through embedded tutor support

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ABSTRACT

Background: Nursing students from diverse or equity backgrounds are less likely to possess the required skills to ensure success in their studies. This research explores the impact of embedded support on student learning in a first-year foundational subject, *Contexts of Nursing*, in an undergraduate nursing degree.

Methods: The Embedded Tutor Program offers specialised tutoring support for first-year undergraduate students. Embedded tutors, with backgrounds as registered nurses and academics, provided online one-on-one feedback to students on draft assessment tasks. Outreach contact was provided to students at risk of failing. A Pearson's Chi-squared test was used to assess the impact of tutor support on grade distribution and a paired student *t*-test was used to assess the difference in cumulative marks for students from equity backgrounds. Statistical significance was set at $p < 0.05$. Feedback provided by students, tutors and staff in an online anonymous survey was thematically analysed.

Results: There was a significant grade shift for the 267 students who met with an embedded tutor ($p < 0.05$). Students who were a member of an Australian Government identified equity group had a significant increase in their cumulative mark if they met with a tutor of 9–17% ($p < 0.05$). This improvement in cumulative mark was maintained for students with cumulative equity factors. The overwhelming majority of students who were identified as at risk of failing and met with a tutor following outreach support received a passing grade. Students reported growing skills and confidence in academic literacy was a key benefit of the program.

Conclusion: A shared approach to delivering education has a positive effect on the experience of learning. The combined efforts of the subject convenor, embedded tutors, and extended student service roles within the University resulted in outcomes that were positive for student learning. Determining student capacity for learning extended beyond a student's consideration of grades or their progression in the program to include the development of self-efficacy.

1. Introduction

The International Council of Nurses (2021) estimates a global shortfall of 13 million nurses impacting the delivery of safe, quality care to entire populations. In Australia, one strategy to address the current and ongoing deficit of registered nurses has been to increase the number of undergraduate nursing students (Grealish et al., 2018). The retention and academic success of these students is a national and global priority (Glew et al., 2019). In Australia, the retention of undergraduate nursing students is impacted by complex factors. Nursing students are more likely to be from multiple equity groups and require assistance with

developing skills such as academic literacy to succeed at university (Tomaszewski et al., 2020). The profile of undergraduate nursing students at Charles Sturt University, a regional Australian university, is consistent with the Australian national profile. A key strategy to improve retention rates within the Bachelor of Nursing degree at Charles Sturt is the Embedded Tutor Program. This program provides one-to-one support with subject-specific assessment task preparation from registered nurses who are experienced sessional academics. The aim of this study was to evaluate the impact of embedded tutor support on first-year nursing students' success and progression.

Economic and social progression have led to increased access to

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higher education (Cantwell et al., 2018). To expand the economic sustainability of Australia, recommendations from the Bradley Review of Higher Education included an increase in students from under-represented backgrounds including regional, rural and remote, low socioeconomic status (SES), and individuals with First Nations backgrounds (Bradley et al., 2008). Student diversity has been steadily increasing at Australian universities, including a 20 % increase in students from a low socio-economic status group from 2013 to 2019 (National Centre for Student Equity in Higher Education, 2023). A greater participation from a more diverse population, however, has not been matched with equivalent student success rates.

Student attrition rates are as high as 50 % in some higher education institutes (National Centre for Student Equity in Higher Education, 2023). Some have offered reasoned explanations for this including admission policies, student diversity, dissatisfaction with program of study, and a lack of social and academic integration (Shcheglova et al., 2020). Transitioning to the first year of higher education presents challenges where a student may experience culture shock and isolation. Consequently, there are targeted efforts to investigate ways to improve student experience, engagement, and progression, particularly in first year (Linden et al., 2022).

In Australia, the attrition rates of pre-registration nursing students range from 10 to 40 %, which is consistent with international figures (McVeigh et al., 2021; Middleton et al., 2021). Within the context of burgeoning admission rates to nursing programs and an associated increase in the diversity of the student population, disparity in academic literacy levels exists within the first-year cohort. Nevertheless, nursing programs must support students so that graduates can demonstrate the high-order literacy and language skills that are an accreditation and registration requirement of a registered nurse (Australian Nurse and Midwifery Accreditation Council, 2019).

2. Background

Nursing students from diverse backgrounds are less likely to possess the required skills to ensure success in their studies (Glew et al., 2019). Research findings highlight that groups such as first-in-family, (Connelly et al., 2019) and students from culturally diverse and lower socioeconomic backgrounds are overrepresented among those requiring support (Glew et al., 2019). The cumulative effect of membership to multiple diversity groups manifests as disadvantage in several areas including poor outcomes in higher education (Tomaszewski et al., 2020). When examining these determinants and the impact that they have on undergraduate nursing student retention and success, it has been shown that access to student support, engagement with support services, and interpersonal support networks are high contributing factors (Gray et al., 2019).

One barrier, however, to providing this support has been attributed to students at risk of failing being the least likely to seek support (Ramjan et al., 2018). Recommendations highlight the need for supportive programmes with responsive, approachable, and accessible tutors (Court, 2014; Linden et al., 2022; McKeivitt, 2016; Teakel et al., 2023). Supporting students to develop an understanding of their learning needs and skill deficits is important while feeling empowered, encouraged, and supported as an individual and as a learner (Everett et al., 2013). There is a need to identify students who are at risk of failing, secondary to an academic or literacy deficit and provide targeted support in a timely manner (Tertiary Education Quality and Standards Agency, 2017).

Tutor support in higher education has been shown to effectively support students and improve their experience and grades (Burgess et al., 2018; Court, 2014; McKeivitt, 2016). Best practice tutoring principles employed in the context of higher education integrate various educational theories and frameworks, including social constructivism. Social constructivism (Vygotsky, 1978) emphasises that learning is a collaborative process between students, peers, and educators. Learning

concepts are transmitted by the use of language and understood through the lens of prior experience in the context of the culture in which the learning occurs (Akpan et al., 2020). A key concept in Vygotsky's work is the 'zone of proximal development', defined as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem-solving under guidance or in collaboration with more capable peers" (Vygotsky, 1978, pg. 86). Eun (2019, p. 23) articulates the zone of proximal development as "a dynamic region of sensitivity to instruction" (p. 23). A contemporary re-conceptualising of the zone of proximal development acknowledges the 'voices' of the learner and the guide, but also acknowledges a third voice - institutional and historical forces (Eun, 2019). To facilitate the learning of the student in the zone of proximal development, the embedded tutor must teach the student to understand and respond to the third voice, which is both the discipline of nursing and the aims and intent of the university, which are embodied in the assessment task (Eun, 2019). The third voice is an intrinsic component of the cultural context of which learning occurs and encompasses the "intellectual tools, the patterns of discourse, and the values and goals that are set within the [zone of proximal development]" (Eun, 2019, p. 25).

With a social equity approach for student admission, we recommend continuing to support learners to develop skills essential for completion of assessments to increase overall retention. As such, this research explores the impact of embedded tutor support on student learning in a key first-year subject, *Contexts of Nursing*, in a nursing program. The aim of this study was to evaluate the impact of embedded tutor support on first-year nursing students' success and progression. The retention and success of nursing students is a global priority. The significance of this study lies in its evaluation and the potential broad implications for nursing education.

The cross-faculty Embedded Tutor Program was established in 2021. The tutor program provides timely, subject-specific tutor support in first year undergraduate subjects with the aim of improving assessment results. In this study, embedded tutors were introduced into a key first year foundational subject in the Bachelor of Nursing degree. Foundational subjects lay the groundwork for overall understanding in future subjects by focussing on building academic literacy skills and imparting key professional knowledge. These subjects are important in scaffolding learning that is built on later in the degree.

3. Methods

3.1. Setting

Charles Sturt University is a regional university and one of the largest providers of online and blended delivery in Australia. The Bachelor of Nursing degree is delivered face-to-face at six regional campuses and offers a completely online enrolment pattern with approximately 1200 students commencing each year. Approximately 85 % of undergraduate students at Charles Sturt University are members of at least one equity group. For students enrolled in the Bachelor of Nursing, 64 % are from a regional, rural, or remote area, 28 % are from a low SES postcode and 58 % are the first in family to attend University. The nursing program also has a high proportion of Australian First Nations students at 5.4 %, compared to the University average of 3.5 %.

3.2. Education intervention

The embedded tutors (tutors) were registered nurses and experienced sessional academics. Tutors were provided with training specific to the role. Their training consisted of collaborative meetings and self-paced online modules. Training involved the use of the online booking platform, Calendly (Calendly LL, Atlanta, Georgia), and online meeting software, Zoom, appropriate referral of students to support services and providing high-quality academic support. The tutors worked closely with the Retention Team, the subject convenor, and the teaching and

marking teams.

Students booked an appointment with a tutor using the online scheduling tool, Calendly. Calendly was embedded within the learning management system and facilitated via Zoom. Students were requested to email their draft assessment to a tutor upon making an appointment. Tutor support was available for feedback on a draft of both assessment tasks, worth 40 and 60 % of the total subject mark, respectively.

3.2.1. Outreach support for at risk students

Students who were identified as at risk of failing the subject were individually contacted and encouraged to access tutor support in the preparation of future assessments. Students who had previously failed the subject were contacted at the start of the session and who failed the first assessment were contacted before the second assessment was due. The outreach contact comprised of an email or a supportive phone call and a follow-up email with a link to prioritised tutor appointments.

3.3. Data collection

The individual assessment item grades and the cumulative mark (out of 100) for the subject over three semesters were downloaded from the learning management system grading platform (Grade Centre). Feedback from students and tutors who participated in the program was collected via emailing a link to a voluntary online survey at the end of the period in which the tutors were available. The survey was ten questions in which students were asked to indicate their level of confidence before and after the tutor session on a sliding scale, and to rate their level of agreement on a 5-point Likert scale ranging from 'strongly disagree' to 'strongly agree' regarding their experiences with an embedded tutor. Students and tutors were also invited to respond to three open-ended questions about their experiences of the Program. Subject conveners were invited to share any reflections and feedback via email to the research team. The inclusion criteria to participate in the study were students who were enrolled in the Bachelor of Nursing during the survey period and actively participated in the tutor program. Students who did not meet these criteria were excluded from the study. All tutors were invited to participate in the survey.

3.4. Analysis

All analyses were performed using GraphPad Prism version 9.3.1 (GraphPad Software, La Jolla, California, USA). All zero grades awarded to students who did not submit any assessments were removed prior to analysis. A Pearson's Chi-squared test was used to determine the statistical significance between the grade distribution of students who met with the tutor to students who did not meet with the tutor. A paired student *t*-test was used to assess the difference in cumulative marks for students from equity backgrounds. A z-score test for two population proportions was conducted to determine the difference in pass rate for students contacted through outreach who met with a tutor and those who did not. Statistical significance was set at $p < 0.05$. As recommended by Corbin and Strauss (1990) thematic analysis was conducted on the open-ended survey responses using an inductive approach. Survey responses were deidentified, and as recommended by Yin (2016) after being compiled, the data was then dissembled to expose new orders and groupings. Interpretation of the data in this form led to it being reassembled and interpreted as concluding results and presented as themes.

3.5. Ethical consideration

Ethics approval was received from the Charles Sturt University Human Research Ethics Committee (HREC Protocol No H21170 & H22085).

4. Results

Across the three semesters, 1919 students received a substantive grade in this first-year foundational subject. A total of 267 students (14 %) attended 341 one-on-one tutor sessions. Of the students who met with a tutor, 99 students (37 %) had sent a draft assessment. However, 115 students 43 % did not have a draft prepared before attending the session; 61 students (23 %) indicated they had thought about the assessment and 53 students (20 %) admitted not having started the assessment prior to attending the tutor session. In addition, 53 students (20 %) came with a complete draft of their assessment and 11 students (4 %) were meeting with a tutor to discuss feedback on a previous assessment. In total, 29 students attended more than one tutor session. Of those students who did attend, there was a significant grade shift to the right with a student 24 % more likely to receive any passing grade if they met with a tutor (Fig. 1 left). Students who met with a tutor showed less FL (fail) and PS (pass), and more CR (credit), DI (distinction) and HD (high distinction) grades. The most pronounced increase was a 47 % increase in the incidence of credit grades (achieved a cumulative mark of 65–74 % overall) if a student met with a tutor.

Students who were a member of one of the equity groups that were monitored in this study had a significant increase in the cumulative mark if they met with a tutor (Fig. 2, $p < 0.05$). The cumulative mark of the 91 students who were First in Family to study at university who met with a tutor was 12 % higher than those who did not. The 58 students from low SES background and 110 students who live in a regional, rural or remote postcode had an increase in cumulative mark of 14 % and 9 %, respectively. The 7 students identified as living with a disability also had an increase in cumulative mark of 17 % compared with those who did not meet with a tutor. The 16 students who identified as First Nations had a non-significant increase of 15 %, and the Embedded Tutor Program was thought to complement the First Nations tutor program offered at the University.

It was more common for a student to have two equity factors (35 % of students) than none (15 % of students) or one (27 % of students) (Fig. 3). A further 20 % of students had three equity factors and 3 % of students had four or five. The lower cumulative marks of students who did not meet with a tutor was more evident with the increased number of equity factors a student had (Fig. 3B). In contrast, students with cumulative equity factors who met with a tutor maintained comparable cumulative marks to students with no, or 1 equity factors.

4.1.1. Outreach support for at risk students

Outreach contact was provided for 230 students who were at risk of failing. Of the 59 students who then met with a tutor, 97 % increased their performance and passed the subject in comparison to the students who did not meet with a tutor of which only 58 % passed the subject (Fig. 4).

4.2. Analysis of open-ended feedback

Analysis of feedback on the embedded support revealed three themes titled: *I like what you are doing - can I have more?*; *Growing confidence in academic literacy, and*; *Sharing the load*. Direct quotes have been provided to provide context.

4.2.1. I like what you are doing - can I have more?

Students agreed that they would like to have the tutor support increased – with some restraining this recommendation to first year and others commenting that “it would be of great benefit to student success... if the program was available for all subjects” (ST-B). Many students appreciated that the service was “easy to book in” (ST-D) and leading into assessments, they “really liked how [tutor] wrote the notes, discussed the

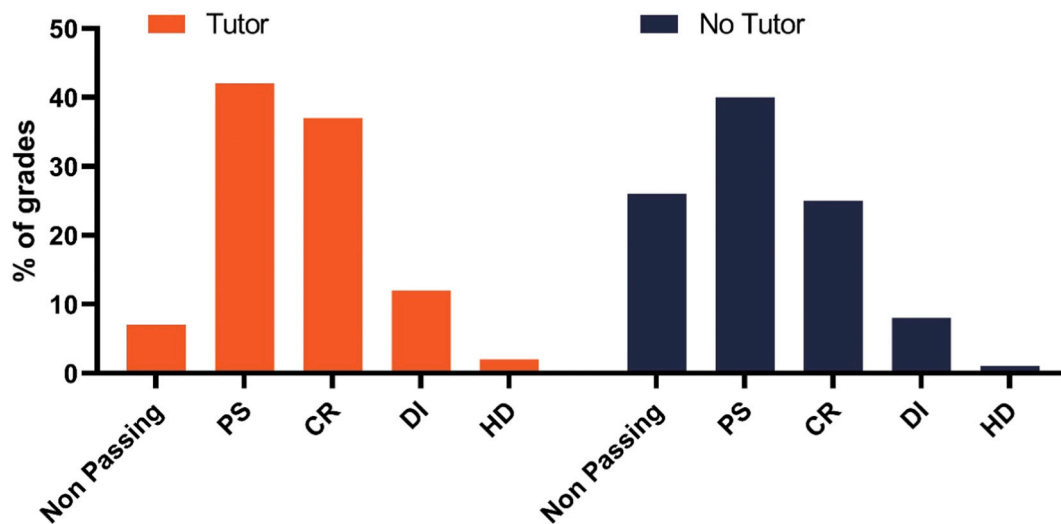


Fig. 1. Grade distribution of the students who met with a tutor and those who did not. There was a significant increase in the number of passing grades for students who met with a tutor ($p < 0.05$).

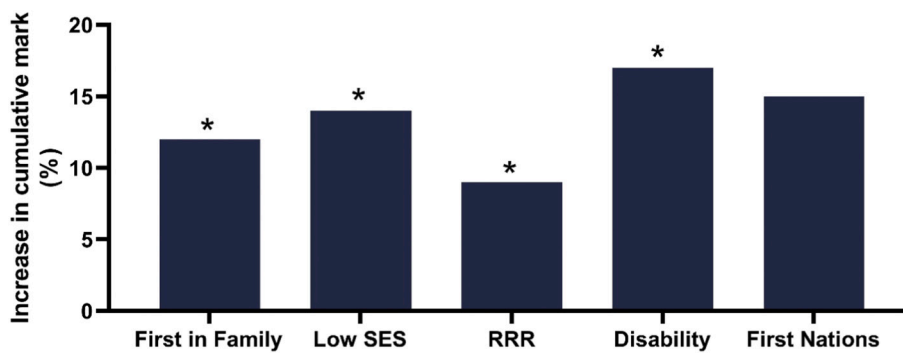


Fig. 2. The percentage increase in cumulative mark for students from the five equity groups monitored (* $p < 0.05$). Tutor support was more beneficial for students from equity groups. The exception was students who identify as First Nations, however, these students had access to a First Nations dedicated tutor program.

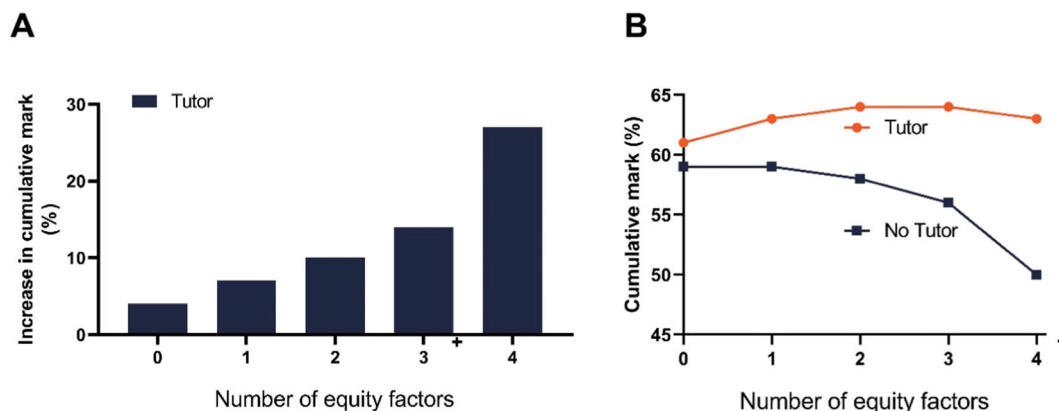


Fig. 3. Intersectionality of equity group status. A) The difference in cumulative mark if a student met with a tutor based on the number of equity factors. B) The cumulative subject mark of students with cumulative equity factors (member of 0–4+ equity groups) who met with a tutor (circle) and who did not meet with a tutor (square).

aspects, and emailed me feedback after. It was extremely helpful” (ST-C). Subject convenors appreciated that the tutors were able to provide individualised feedback to students during their one-on-one sessions: “The quality and volume of individualised feedback provided to students improved their work substantially. I would be so grateful for the opportunity for students to access this support again” (UC-A). From the perspective of

the subject convenor the feedback was observably more effective than approaches and resources that were previously in place to offer generic descriptors of the assessment requirements in asynchronous videos and hosted drop-in sessions.

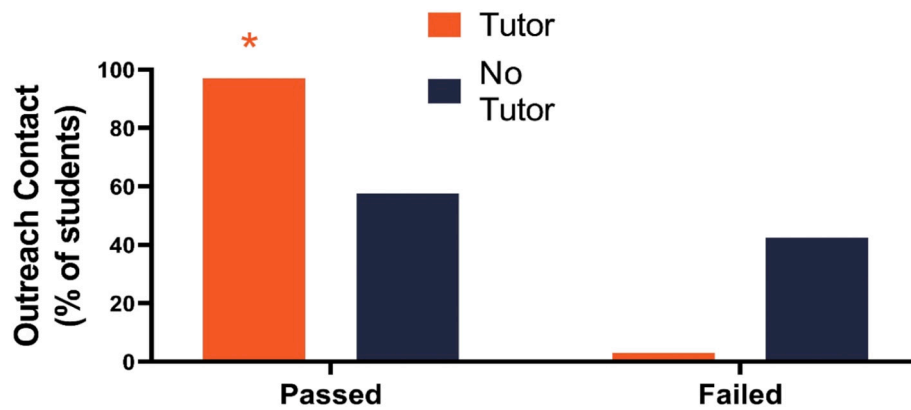


Fig. 4. Student outreach to offer tutor support. Students who met with a tutor following successful contact from the student outreach team were more likely to pass the subject ($p < 0.05$).

4.2.2. Growing confidence in academic literacy

Grades were not the only focus of the students when discussing their academic progression and experiences of first year learning with the assistance of embedded tutors. Some students commented on how “*The embedded tutor program enabled me to progress my skills and confidence in my assessment*” (ST-A). Some students shared stories of their personal learning history offering a glimpse of where they saw themselves as a first-year nursing student. A mature age student described their journey and how the Embedded Tutor Program supported them to develop confidence: “*[Tutor] had guided me on what information was relevant to the question and what was not. I have not done any form of study since I left school 20 years ago. It was hard to begin with but since getting help from this program, it has pointed me in the right direction and made me feel more confident in my essay writing*” (ST-E).

4.2.3. Sharing the load

Tutors and subject convenors worked closely to provide students with both formal in class learning to less scripted activities and more individualised support with an embedded tutor. A subject convenor commented on the value the embedded tutors had in the delivery of the large first year subject: “*In a subject of this size with such a diverse student cohort, I found the presence of this support invaluable*” (SC-B). Tutors acknowledged the benefits of being part of a student-centred team and gave examples of where they have referred students back to the subject convenor and to additional support services including Academic Skills, Library Services, Disability Services, and the First Nations tutoring support program. The following is an example of this approach: “*This was the second session with [student]. She had taken my advice and contacted Academic Skills. She had made a vast improvement on this paper compared to our first session last week. A great example of how the embedded tutoring system can help a student*” (ET-A).

5. Discussion

The aim of this research was to determine the effectiveness of embedded tutors in improving success and student progression of first year nursing students. Undergraduate nursing students from equity groups who sought tutor support, performed significantly better than students from the same equity groups who did not access tutor support. Membership in one or many equity groups in this research did not negatively impact student success if students sought tutor support. Students’ comments reflect their increased confidence in academic literacy after meeting with a tutor.

Kirui and McGee (2021) concluded that nursing students from equity groups encounter more academic challenges compared to students that do not belong to equity groups. With a view to increase retention and success of nursing students from diverse backgrounds in a North

American context, Murray et al. (2016) reported that the implementation of retention strategies increased graduate’s first-time pass rate of NCLEX-RN exams. It is unclear, however, what specific resources were initiated for these students. Teakel et al. (2023) submit that students from multiple equity groups are more likely to benefit from draft assessment feedback, highlighting the inclusivity and positive impact of the support.

A shift to the right was observed in the overall grades awarded to nursing students who met with a tutor, with an overwhelming representation of those who were on a trajectory to fail (<50 %) receiving a pass grade after accessing this support. The integration of embedded tutor support in nursing programs is an approach increasingly being utilised to improve academic literacy (Beccaria et al., 2019; Glew et al., 2017; Schrum, 2015). Beccaria et al. (2019) highlighted the effectiveness of “just in time” online feedback, particularly in improving essay writing skills and fostering deeper learning approaches among nursing students. A key finding of their work was that nursing students who accessed the online writing support were more likely to adopt deeper rather than surface learning approaches (Beccaria et al., 2019). Glew et al. (2017) emphasised the role of structured literacy programs in building confidence and academic capabilities, particularly for students from diverse linguistic backgrounds. Schrum’s work revealed that the introduction of a retention specialist in nursing programs significantly improved retention and academic performance, by providing individual and group tutoring and addressing personal, academic, and environmental factors (Schrum, 2015). Strategies to increase nursing student academic success were investigated by Ghasemi et al. (2018), who suggested that student interest in subject content influenced motivation which could be correlated with academic engagement and success.

The findings of this research clearly demonstrate that this shared approach to subject delivery has a positive effect on the student experience in first year nursing. The combined efforts of the subject convenor, embedded tutors and extended student service roles within the University proved outcomes that were positive for student learning. There was an overwhelming support for the Embedded Tutor Program from all stakeholders including students. Christensen et al. (2019) highlighted similar findings where nursing students reported increased sense of achievement and satisfaction after engaging with additional support. With a view to offer pastoral and academic support, Christensen et al. (2019) reported on an interprofessional approach to nursing student learning. Acknowledging the need for content experts, the approach consisted of a team including a nursing academic, a student counsellor, and an academic skills advisor, however, the impact on students’ academic grades were not captured in their study.

Here, we demonstrate that our approach to embedding support in a nursing program has extended the students’ capacity for learning beyond consideration of grades or student progression in the program

alone, but to also include the development of self-efficacy and improved confidence in their ability to complete their studies. Timely draft assessment feedback from a tutor has been demonstrated to improve academic performance (Court, 2014; Linden et al., 2022; McKeivitt, 2016; Teakel et al., 2023). Confidence is identified as a key factor (Court, 2014; Teakel et al., 2023).

5.1. Limitations and strengths

The tutor program is offered across a number of disciplines. However, this study presents outcomes in a single discipline and potentially neglects to account for broader educational needs. Limitations to the program include a restricted number of tutor sessions due to limited tutor availability and/or a shortage of qualified tutors. In addition, the training for tutors and the increased need for effective communication has increased program oversight. The identified limitations inform strategic planning and innovative solutions. The strengths of this approach to supporting students includes the ability to support students from equity backgrounds without identifying those students as at-risk based on equity factors. It is acknowledged that students who are more highly motivated may present more often or more prepared to the tutor sessions (Ghasemi et al., 2018). This research did not track individual progression prior to this subject and did not survey students for their academic motivation levels. It is recommended that further research should consider examining these variables as measurements of study results. The outreach program ensures that those who are determined as being at risk have the opportunity. The coordinated outreach that is integrated into the program ensures that students who are at risk of failing are identified in a timely manner, proactively contacted and provided with appropriate options for support.

6. Conclusion

This study provides evidence that a collaborative team-based approach to the provision of specialised tutoring support for first-year undergraduate nursing students can make a significant impact. Students who were a member of an Australian Government identified equity group had a significant increase in their cumulative mark if they met with a tutor. This improvement in cumulative mark was maintained for students with multiple equity factors. The overwhelming majority of students who were identified as at risk of failing and met with a tutor following outreach support received a passing grade. In addition to improving grades, the development of self-efficacy was indicated by students reporting growing skills and confidence in academic literacy was a key benefit of the program. With implications for nursing education, findings from this research could support broader national and international strategies for adoption and contribute to addressing the ongoing global nursing shortage.

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CRedit authorship contribution statement

Pauletta Irwin: Conceptualization, Formal analysis, Methodology, Project administration, Writing – original draft, Writing – review & editing. **Deborah Magee:** Conceptualization, Data curation, Formal analysis, Writing – original draft, Writing – review & editing. **Shannon Weiley:** Conceptualization, Writing – original draft, Writing – review & editing. **Sarah Teakel:** Conceptualization, Data curation, Formal analysis, Methodology, Writing – original draft, Writing – review & editing. **Kelly Linden:** Conceptualization, Data curation, Formal analysis, Methodology, Writing – original draft, Writing – review & editing.

Declaration of competing interest

All authors declare no competing interests directly or indirectly related to the content of the article submitted for publication.

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