Position Paper: Foster Academic Integration for Improved Pass Rates in First-Year Units

Charanya Ramakrishnan[a]

School of Computing, Macquarie University, Australia

Keywords: Retention, Attrition, Higher Education, Academic Integration.

Abstract: High attrition rates in higher education are a significant concern for universities. To address this issue, universities implement retention programs that promote social and academic integration to mitigate dropout rates, primarily focusing on first-year students. This position paper advocates for a unit-level approach to enhance the effectiveness of academic integration and foster positive student experiences. The proposed retention plan outlines key initiatives such as assessment restructuring, improving student-staff relations, introducing a "HELP" lifeline, supporting at-risk students, and offering consultation hours for repeating students. These strategies are a work in progress intended for a trial in a first-year programming unit, considering potential counter-arguments and their impact on students' academic journeys. The purpose of this study is to analyse the effectiveness of the proposed retention plan on pass rates and academic integration. The expected outcomes of this study are to improve pass rates and to measure the degree of academic integration through student feedback surveys.

1 INTRODUCTION

Transitioning to higher education poses an array of challenges for many students. Shifting from a structured high school environment to a self-managed one can be overwhelming. Navigating university processes and systems, integrating into social circles, and forming connections presents an immense undertaking. Understanding multiple unit timetables, managing assessment deadlines, and comprehending course content complicate an already demanding academic journey. The Universities Australia report "Higher Education Facts and Figures" shows that only about seventy-five per cent of students who start their higher education complete it (Universities Australia, 2022). Retention initiatives are created with an aim to tackle high dropout rates and are directed primarily towards first-year students who contribute to the highest attrition rates (Chrysikos et al., 2017; Williford and Schaller, 2005). The initiatives focus on improving social and academic integration, identified as the two significant factors contributing to students' academic performance (Liu and Liu, 2000; Tinto, 1975).

This position paper proposes a new retention plan to improve academic integration for first-year stu-

dents. The proposed retention plan will be tested in a large programming unit offered by Our University's School of Computing to increase pass rates and evaluate the level of academic integration. The trial will use quantitative and qualitative methods to assess the effectiveness of the proposed retention plan. The study aims to document the results and determine whether the proposed retention plan effectively achieves its intended outcomes.

The paper covers four main aspects: firstly, it examines the context of retention in higher education and the literature emphasising the significance of social and academic integration; secondly, it highlights the challenges within the first-year programming unit and provides a comprehensive understanding of the issues at hand; thirdly, it presents the proposed retention plan; Lastly, the paper explores the counter-arguments and limitations associated with the proposed plan. The paper outlines a position on the retention plan and explains the rationale behind supporting its implementation. Currently, the work is in the early stages of trial and development. It is important to note that the scope of this paper is limited to students who learn in a face-to-face environment.

[a] https://orcid.org/0009-0009-7704-5868

565

2 RETENTION IN HIGHER EDUCATION

The meaning of retention may vary depending on the context in which it is used. Retaining students in a particular School or Faculty is the primary focus of retention in the context of a School or Faculty. For a university, retention means keeping the students enrolled within the institution. For a government, it means a student completing their education. For the scope of this paper, retention refers to students continuing their education every year until the completion of their degree (Adusei-Asante and Doh, 2016). The reason for emphasising graduation is because graduating with a degree directly correlates with being employable (Hershbein and Kearney, 2014). Despite research and empirical data pointing to that, we have students dropping out of universities. Universities have a social responsibility to help students graduate and a financial motive to address the attrition rates (Lawrence, 2017).

Research on retention is a widely researched topic in higher education (Tinto and Pusser, 2006). Students face various challenges that include but are not limited to social, emotional, economic, and health (McInnis, 2001). Studies have shown that the primary reason students drop out is a lack of sense of belonging, and integration is the key to connecting students (Bean and Eaton, 2001; Tight, 2020; Tinto, 1975; Tinto, 2004). Research has identified two types of integration that help decrease university attrition rates: *social integration* and *academic integration*(Braxton et al., 2000; Liu and Liu, 2000; Tight, 2020; Wolf-Wendel et al., 2009; Zepke and Leach, 2005). This section provides insights into social and academic integration, including the factors that impact integration. It also discusses the proposed retention plan, which aims to improve academic integration.

2.1 Social Integration

Social integration is the extent of how connected a student feels to the university environment they are in (Gail Thomas and Hanson, 2014; Leese, 2010). If the students feel connected to their peers and the academic community and empowered by their social connections, they are more likely to persist and avoid dropping out of their degree. On the other hand, if students feel disconnected and isolated in their university, it tends to increase the attrition rates (Bean and Eaton, 2001; Pedler et al., 2022). Positive experiences play a pivotal role in fostering student persistence, while negative experiences often lead to students discontinuing their degree programs. Many universi-

ties adopt high-impact practices for student success, such as orientation week seminars, student groups and learning communities to foster robust social connections (Kuh et al., 2008; Scott et al., 2008).

2.2 Academic Integration

Academic integration is the extent of how empowered a student feels in their academic journey. The factors affecting academic integration include students' academic performances, growing confidence in their subject area, engagement with the units and the faculty, and an overall positive experience in their learning journey (Astin, 2014; Scott et al., 2008; Zepke and Leach, 2010). Creating a positive academic environment conducive to student success relies significantly on the pivotal role played by academic staff, and this involves their decisions in designing curriculum and assessments, creating engaging, supportive and inclusive learning spaces, and offering support beyond the classroom (Chrysikos et al., 2017; Lakhal et al., 2020). It is also worth noting that studies have found that academic integration programs by themselves have been unsuccessful, and the initiatives or programs that work must also collaborate with the social integration initiatives (Pan et al., 2008).

2.3 Factors that Impact Integration

There are a multitude of metrics that could impact their degree of social and academic integration, such as their socioeconomic status, age, ethnicity, and gender (Samoila and Vrabie, 2023). Research also indicates several decision-making factors contributing to students' decision to complete their degree. These include students' background before entry into higher education, their initial goals and career aspirations, their experience with the university, integration into the university community and the collective impact on their altered objectives and career goals (Liu and Liu, 2000).

2.4 Unit-Level Retention Plan

This paper proposes a new retention plan as an academic integration initiative at the unit level. Although universities usually create and manage social and academic integration programs in partnership with faculties and schools, no research currently exists on an individual unit-level retention plan. Developing academic integration initiatives at the unit level can enhance students' learning experience, foster a sense of empowerment, and facilitate better integration with peers. The creation of academic integration initiatives

at the unit level enables us to address the issue of academic integration at its foundation by focusing on the classroom environment where learning begins.

The proposed retention plan includes the following: redesigning the assessment structure, creating engaging and inclusive learning and consultation spaces, increasing the student-staff contact hours, providing extra support for students repeating the unit, and providing students with opportunities to learn and attempt assessments with extended deadlines. This plan will complement the existing student support systems of the university, such as the PASS (Peer Assisted Study Sessions), which have been shown to have a positive result in retention outcomes (Dawson et al., 2014; Van der Meer et al., 2017).

3 UNDERSTANDING THE PROBLEM

The selected unit is an Introductory Programming unit with nearly two thousand students yearly across two semesters. Universally, the failure rate in an introductory programming unit is at 28% (Bennedsen and Caspersen, 2019). Historically, this specific unit has also experienced similar high fail rates and was identified for process improvement. Students who fail a first-year unit are at a higher risk of dropping out of university, thus leading to a low retention rate (Ajjawi et al., 2020; Chrysikos et al., 2017). This makes the selected unit a prime candidate for implementing the proposed retention plan. It is also essential to understand the challenges present within this unit to understand the implementation of academic integration. This section outlines the unit's challenges which include assessment structure, low student-staff contact hours, and low attendance in the SGTAs. SG-TAs (Small Group Teaching Activities) are practical lessons commonly known as tutorials or workshops with less than ideally thirty students in a classroom in this particular unit.

3.1 Structure of Assessments

The unit had one major programming assessment due at the end of the semester, with a checkpoint assessment at the halfway mark and fortnightly module exams, each assessing students on a separate topic area: the module exams served as hurdle assessments, requiring students to pass them collectively to pass the unit. The number of module exams could be deemed overwhelming, and there existed a misalignment in the difficulty levels between the checkpoint

assessment and the major work. Overall, the assessment workload was identified as substantial for a first-year introductory unit. A heavy assessment workload could overwhelm students and contribute to adverse retention outcomes (Smith, 2019).

3.2 Student-Staff Contact Hours

The learning activities for this unit consisted of two hours of lectures and two hours of SGTAs. Besides the four contact hours with the staff, there were only a few scheduled contact hours between students and staff unless students initiated appointments to seek clarification for their doubts. Increased contact hours with staff help with academic integration (Scott et al., 2008). Providing more staff contact hours with students was identified as an area for improvement.

3.3 SGTA Format

During the SGTAs, students worked on a worksheet with questions to work on at their own pace and clarify any doubts with the teaching staff. Although a structured approach was provided to students to address the tasks, attendance rates were notably low in the SGTAs. Research shows that student attendance and participation in learning activities result in better student performance (Cabo and Satyanarayana, 2018). Students exhibited a lack of self-motivation to engage with the tasks, presenting challenges for teaching staff to effectively interact with all the students, given the individualised pace at which each student worked. In the SGTAs designed for self-study with a guide on the side, the teaching staff encountered difficulties in handling repetitive questions, allocating time efficiently, and instilling motivation for successful task completion. Restructuring the format of the SGTA was also identified as an area of improvement.

4 THE RETENTION PLAN

Research indicates that academic failure in one or more units increases the chance of dropping out of the degree fourfold (Ajjawi et al., 2020). Implementing a retention plan in every unit can facilitate better academic integration. This plan involves applying learning design principles, such as integration, balance, gradual, and engaging content, to promote student retention (Weller et al., 2018). It also recognises that creating supportive learning environments, active learning spaces, and facilitating student-staff interactions are essential to enhance student experience

(Coates, 2006).

This section outlines five areas of student support initiatives within the proposed retention plan, as illustrated in Figure 1.
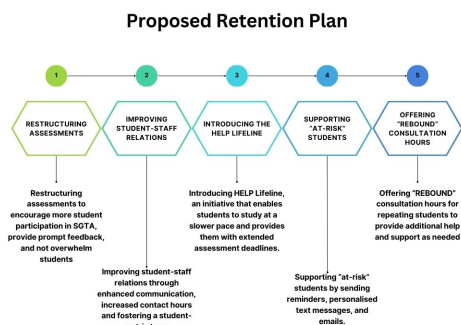
Proposed Retention Plan

Figure 1: The Proposed Retention Plan.

4.1 Restructuring Assessments

The major work assessment has been divided into two programming assessments, encouraging students to attempt an assessment earlier in the semester for early feedback. It also aims to help students understand the fundamental concepts to motivate early progress.

The module exams are restructured into three instead of six, with the first exam earlier in the semester, which also serves as an early intervention assessment and provides feedback before the census date, which is a date that the students can drop out of a unit before to avoid any academic penalties.

A weekly submission assessment has been introduced to encourage students' attendance in the SG-TAs and active participation in the unit. Students submit their responses to a worksheet during SGTAs each week, each worth one per cent of the unit total. The worksheet has approximately eight questions the teaching staff would collaboratively explore with the class, fostering an interactive and engaging learning space. In the last 15 minutes of the SGTA, teaching staff would randomly select two questions from the worksheet for the assessment submission.

4.2 Improving Student-Staff Relations

Establishing positive student-staff relations is crucial in ensuring a positive academic experience for the student (Thomas, 2002; Weller et al., 2018). Regular announcements will be posted weekly to maintain student engagement with the unit. To further enhance student-staff interaction, ongoing consultation hours will be allocated in the budget, providing students with additional contact hours with the teaching

staff. Midway through the semester, catch-up sessions will be offered to assist students in understanding any missed or unclear unit content, all contributing to cultivating positive student-staff relations.

A highly motivated teaching team has been created, and the expectations have been clearly defined. Regular weekly review meetings are planned to set the SGTA expectations for the teaching staff for the upcoming week. They are also aimed at collecting feedback based on the previous week's experiences and addressing any challenges encountered by the staff, thereby fostering a sense of community among the team members. The weekly meetings can be very insightful for the retention staff to obtain insights on issues related to low attendance or engagement, students' expectations, and performance in the SGTAs and the unit overall.

4.3 Introducing the HELP Lifeline

The HELP lifeline is a unique initiative that sets this retention plan apart. Students experiencing anxiety or feeling overwhelmed can use the **"HELP"** lifeline, which is an acronym for "Helping Every Learner Persist". This lifeline allows them to defer the submission of assessments, including exams worth 10% or more, to a later date. The unit convenor and the retention staff set the delayed deadlines at the beginning of the semester so that students can plan their studies accordingly. This flexibility enables them to prepare better, attempt assessments by the delayed deadlines, and study the unit at a slower pace with low penalties. However, choosing to use HELP lifeline for any assessment imposes a maximum attainable score of 60% of the assessment score, and no extensions or special considerations (requests to extend the deadline) apply to the delayed deadlines. For example, if a student scores 15 out of 15 in an assessment by choosing the HELP lifeline, the maximum score the student can receive is 60% of 15, which is 9 out of 15. The university's assessment policy allows a late submission for up to 7 days and a 5% late submission penalty per day. The delayed deadline provides the students the option to make a decent attempt at the assessment with a maximum of 40% penalty. The reasoning behind choosing the capped score of 60% of the assessment score is to provide a consistently high penalty if students score high while still giving them a chance to pass the assessment if they scored just 50% of the assessment mark.

4.4 Supporting At-Risk Students

For the trial run of this retention plan, at-risk students are identified as those who have missed an assessment and have not applied for special consideration within seven days of an assessment that is worth 10% or more by the due date. At the mid-semester break, students who have failed one or more assessments worth 10% or more will also be classified as at-risk students. The retention staff will contact these students and remind them about the HELP lifeline, the mid-semester catch-up sessions, and the ongoing consultation hours. The contact will be through text messages and personalised emails instead of a group email for a more personalised approach.

4.5 Offering REBOUND Consultation Hours

When students repeat the unit a second time, the pass rates are significantly lower than those who take the unit for the first time. (Snead et al., 2022). The proposed retention plan includes special consultation hours known as **"REBOUND"** are exclusively for students repeating the unit to help them understand the course content better, have a more tailored approach to the group's queries and guide them through the practice questions for mastering the content.

5 COUNTERARGUMENTS

Research on student retention has been ongoing since the late 1960s. However, given the dynamic nature of the educational landscape, understanding retention is a complex and relatively narrow construct, primarily focused on the university context and less so on broader perspectives such as the students' lives before and after the degree (Tight, 2020). Numerous factors influence students' decisions to persist, many of which are beyond the control of universities and their retention programs (Sternberg, 2013). Having a retention plan in place may entail significant administrative overheads. Furthermore, considerations include the fairness of the capped assessment score of 60%, students' capacities to achieve learning outcomes satisfactorily, the sustainability of these initiatives, and, crucially, whether students will cultivate a sense of responsibility. This section outlines my observations, experiences, and doubts in implementing retention initiatives in first-year units.

5.1 Administrative Overheads

Developing effective retention initiatives is a time-intensive process that involves several key stages. Firstly, a substantial amount of time is required to establish a well-structured plan. After formulating this plan, a significant amount of time and effort is essential to the setup and management of two teams: the teaching team, all dedicated to creating engaging and welcoming learning spaces, and the retention team, responsible for overseeing retention activities, including the unit lecturer and staff involved in implementing retention strategies. Secondly, the initiative demands dedicated time for the identification of at-risk students and efforts to engage with them. Personalising the retention approach involves the additional effort of sending out emails and text messages. Finally, towards the end of the semester, considerable time is required to manage any extra or additional attempts effectively, including grading the attempts and finalising overall marks.

In first-year units, the challenges amplify where the units are large, and the logistical complexities of organising the resources may be exerting. Given changes in lecturers, management, and university policies, sustaining this retention initiative will be challenging. Mentoring new teaching and retention teams every semester will impact how this process is sustained.

5.2 Fairness

Utilising the HELP lifeline caps the assessment score at 60% of the maximum attainable value. The goal is to encourage students to meet the established deadlines and to discourage complacency with the retention process. However, if a student utilises the HELP lifeline and achieves a perfect score of 100%, their marks will be reduced to 60%. This capped score raises questions about fairness between two students who have both met the learning outcomes, but one has chosen to study at a slower pace. While this policy may provide a chance for delayed assessments for some students, it can also create a false expectation of the same pattern throughout their degree. Not opting to take the HELP lifeline in time might disadvantage students. For instance, if a student submits their assessment five days after the deadline and scores 12 out of 15, they will receive a penalty of 3.75 marks, with a 5% penalty per day. This would result in a final score of 8.25. However, if the same student uses the HELP lifeline, they will receive a score of 9 out of 12. Making these options clear to the students is critical for this proposed retention plan to work.

5.3 Responsibility

While the university can provide pathways for social and academic integration, students may become complacent about these processes. Post-pandemic, there has been a 38% (Gao et al., 2023) increase in the number of special considerations, and the introduction of extended deadlines may lead to a surge in special considerations. However, it is not feasible to provide special considerations for these extended deadlines due to the complexity of the process, which may not be fair to students who cannot meet the deadline due to situations like last-minute illnesses. The university serves as an environment where students transition from high school to becoming workforce-ready. Essential life skills such as time management, financial management, building social circles, and understanding responsibilities through making mistakes, failing, and learning from them are integral aspects of their journey into adulthood during their years at university. Introducing the HELP helpline raises questions about whether we might be depriving students of the valuable experience of failure and whether the focus is shifting towards ensuring students pass units rather than emphasising the learning journey.

6 POSITION STATEMENT

Upon reviewing the literature on retention, several key insights have become evident. Student outcomes are notably enhanced through social and academic integration, creating an environment where students feel at ease with the university's procedures and the academic setting. Student outcomes are also associated with receiving extra academic support, specifically in the context of staff-student solid relations and a deep commitment from staff towards improving students' academic outcomes (Zepke and Leach, 2005). Prioritising student engagement, ensuring easy access to staff, personalised consultations, and fostering academic integration are crucial elements to see tangible improvements in student successes, ultimately contributing to better retention rates (Maher and Macallister, 2013). This section provides an overview of the justification for the retention plan and the future direction of this research.

6.1 Justification for the Retention Plan

The Australian government is currently exploring ways to ensure that all its citizens can fully benefit from educational opportunities (Council, 2019). In 2023, in Australia, among individuals aged 15-74 years, only 32% had a bachelor's qualification (Norton, 2023). Another report from the same year showed that having a parent with a bachelor's degree or higher doubles a young person's chances of attaining a bachelor's degree compared to those with parents who have less than a high school education (Coelli, 2023).

Students are more likely to persist when motivated by self-efficacy, a sense of belonging, and an engaging curriculum, which universities and educators can foster (Tinto, 2017). As a provider of education, universities have a moral obligation to create an environment that encourages student success, a societal obligation to produce more graduates, and a financial incentive to aid students in achieving their goals (Scott et al., 2008). Studies indicate three primary motivations for individuals who choose teaching as their career: intrinsic motivation of personal satisfaction, altruistic motivation to serve the community and the country, and extrinsic motivation for fame and money (Alexander et al., 2020). Implementing a retention plan can increase altruistic motivation for educators as it could create inter-generational benefits, especially for first-generation prospective graduates and students from diverse equity backgrounds.

6.2 Implementation of the Retention Plan

As mentioned earlier, a trial of this plan is planned to be implemented in the upcoming semester for a cohort of over 1200 first-year students in the introductory programming unit. The trial will involve collecting qualitative and quantitative data through student surveys at the beginning and end of the semester and student grade results for analysis. The main focus of the trial is to gain insight into the viewpoints of students interested in utilizing the HELP Lifeline and the REBOUND consultation hours. The data points for analysis will include the type of study (domestic/international), the week of enrolment, gender, the attempt number (first-timers/repeating), and whether they are first-generation students.

If this trial run proves successful, the plan may be extended to other first-year units next year. Currently, the assessments for the programming unit have been restructured, and a team has been created to focus on building the retention plan. In future research, the aim is also to investigate the progress of the students in subsequent units to evaluate the efficacy of this retention plan.

7 CONCLUSION

Addressing high attrition rates in higher education is crucial to ensuring that students receive the best possible education experience. By focusing on social and academic integration efforts, universities can create a more inclusive and supportive social and academic community to better cater to the needs of different students. The proposed unit-level retention plan that concentrates solely on advancing academic integration efforts presents an excellent opportunity for students to enhance student engagement, improve curriculum design, and foster stronger student-staff relationships. With access to necessary support services such as HELP Lifeline and REBOUND consultation hours for repeating students, students can choose to study at a slower pace. The plan has the potential to mitigate dropout rates and improve retention rates for universities, thereby contributing to the social responsibility of helping students graduate. Further research to record the trial outcomes of implementing this proposed plan is essential to obtain insights into students' expectations regarding academic integration at the unit level. The research outcomes will help adapt integration strategies to cater to present-day students' needs.

REFERENCES

Adusei-Asante, K. and Doh, D. (2016). Students' attrition and retention in higher education: A conceptual discussion.

Ajjawi, R., Dracup, M., Zacharias, N., Bennett, S., and Boud, D. (2020). Persisting students' explanations of and emotional responses to academic failure. *Higher Education Research & Development*, 39(2):185–199.

Alexander, C., Wyatt-Smith, C., and Du Plessis, A. (2020). The role of motivations and perceptions on the retention of inservice teachers. *Teaching and Teacher Education*, 96:103186.

Astin, A. W. (2014). Student involvement: A developmental theory for higher education. In *College student development and academic life*, pages 251–262. Routledge.

Bean, J. and Eaton, S. B. (2001). The psychology underlying successful retention practices. *Journal of College Student Retention: Research, Theory & Practice*, 3(1):73–89.

Bennedsen, J. and Caspersen, M. E. (2019). Failure rates in introductory programming: 12 years later. *ACM inroads*, 10(2):30–36.

Braxton, J. M., Milem, J. F., and Sullivan, A. S. (2000). The influence of active learning on the college student departure process: Toward a revision of tinto's theory. *The journal of higher education*, 71(5):569–590.

Cabo, C. and Satyanarayana, A. (2018). Promoting students' social interactions results in an improvement in performance, class attendance and retention in first year computing courses. In *2018 IEEE Frontiers in Education Conference (FIE)*, pages 1–8. IEEE.

Chrysikos, A., Ahmed, E., and Ward, R. (2017). Analysis of tinto's student integration theory in first-year undergraduate computing students of a uk higher education institution. *International Journal of Comparative Education and Development*, 19(2/3):97–121.

Coates, H. (2006). *Student engagement in campus-based and online education: University connections*. Routledge.

Coelli, M. (2023). Connecting the dots: exploring young australians' pathways from education and training into work.

Council, E. (2019). Alice springs (mparntwe) education declaration.

Dawson, P., van der Meer, J., Skalicky, J., and Cowley, K. (2014). On the effectiveness of supplemental instruction: A systematic review of supplemental instruction and peer-assisted study sessions literature between 2001 and 2010. *Review of educational research*, 84(4):609–639.

Gail Thomas, B. and Hanson, J. (2014). Developing social integration to enhance student retention and success in higher education: the grow@ bu initiative. *Widening participation and lifelong learning*, 16(3):58–70.

Gao, C. X., Clarke, E., Nicholas, J., Teo, S. M., Koppe, C., Peter, G., Lum, A., Barth, T., Farish, S., Rudd, M., et al. (2023). Changes in rates of special considerations in higher education applications pre and during the covid-19 pandemic in victoria, australia.

Hershbein, B. and Kearney, M. (2014). Major decisions: What graduates earn over their lifetimes. *Washington: Hamilton Project*.

Kuh, G. D. et al. (2008). Excerpt from high-impact educational practices: What they are, who has access to them, and why they matter. *Association of American Colleges and Universities*, 14(3):28–29.

Lakhal, S., Mukamurera, J., Bédard, M.-E., Heilporn, G., and Chauret, M. (2020). Features fostering academic and social integration in blended synchronous courses in graduate programs. *International Journal of Educational Technology in Higher Education*, 17:1–22.

Lawrence, E. M. (2017). Why do college graduates behave more healthfully than those who are less educated? *Journal of Health and Social Behavior*, 58(3):291–306.

Leese, M. (2010). Bridging the gap: Supporting student transitions into higher education. *Journal of further and Higher Education*, 34(2):239–251.

Liu, R. and Liu, E. (2000). Institutional integration: An analysis of Tinto's theory.

Maher, M. and Macallister, H. (2013). Retention and attrition of students in higher education: Challenges in modern times to what works. *Higher Education Studies*, 3(2):62–73.

McInnis, C. (2001). Researching the first year experience: Where to from here? *Higher Education Research & Development*, 20.

Norton, A. (2023). Mapping australian higher education 2023.

Pan, W., Guo, S., Alikonis, C., and Bai, H. (2008). Do intervention programs assist students to succeed in college? a multilevel longitudinal study. *College student journal*, 42(1):90–99.

Pedler, M. L., Willis, R., and Nieuwoudt, J. E. (2022). A sense of belonging at university: Student retention, motivation and enjoyment. *Journal of Further and Higher Education*, 46(3):397–408.

Samoila, M. E. and Vrabie, T. (2023). First-year seminars through the lens of vincent tinto's theories of student departure. a systematic review. In *Frontiers in Education*, volume 8, page 1205667. Frontiers.

Scott, G., Shah, M., Grebennikov, L., and Singh, H. (2008). Improving student retention: A university of western sydney case study. *Journal of Institutional Research*, 14(1):9–23.

Smith, A. P. (2019). Student workload, wellbeing and academic attainment. In *Human Mental Workload: Models and Applications: Third International Symposium, H-WORKLOAD 2019, Rome, Italy, November 14–15, 2019, Proceedings 3*, pages 35–47. Springer.

Snead, S. L., Walker, L., and Loch, B. (2022). Are we failing the repeating students? characteristics associated with students who repeat first-year university mathematics. *International Journal of Mathematical Education in Science and Technology*, 53(1):227–239.

Sternberg, R. J. (2013). Research to improve retention. *Inside Higher Ed*.

Thomas, L. (2002). Student retention in higher education: the role of institutional habitus. *Journal of education policy*, 17(4):423–442.

Tight, M. (2020). Student retention and engagement in higher education. *Journal of further and Higher Education*, 44(5):689–704.

Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of educational research*, 45(1):89–125.

Tinto, V. (2004). Student retention and graduation: Facing the truth, living with the consequences. occasional paper 1. *Pell Institute for the Study of Opportunity in Higher Education*.

Tinto, V. (2017). Reflections on student persistence. *Student Success*, 8(2):1–8.

Tinto, V. and Pusser, B. (2006). Moving from theory to action: Building a model of institutional action for student success. *National Postsecondary Education Cooperative*, 1(51):89–125.

Universities Australia (2022). Higher education facts and figures. *Universities Australia*.

Van der Meer, J., Wass, R., Scott, S., and Kokaua, J. (2017). Entry characteristics and participation in a peer learning program as predictors of first-year students' achievement, retention, and degree completion. *AERA Open*, 3(3):2332858417731572.

Weller, M., van Ameijde, J., and Cross, S. (2018). Learning design for student retention. *Journal of Perspectives in Applied Academic Practice*, 6(2).

Williford, A. M. and Schaller, J. Y. (2005). All retention all the time: How institutional research can synthesize information and influence retention practices. In *Proceedings of the 45th annual forum of the association for institutional research*. Citeseer.

Wolf-Wendel, L., Ward, K., and Kinzie, J. (2009). A tangled web of terms: The overlap and unique contribution of involvement, engagement, and integration to understanding college student success. *Journal of College Student Development*, 50(4):407–428.

Zepke, N. and Leach, L. (2005). Integration and adaptation: Approaches to the student retention and achievement puzzle. *Active Learning in higher education*, 6(1):46–59.

Zepke, N. and Leach, L. (2010). Improving student engagement: Ten proposals for action. *Active learning in higher education*, 11(3):167–177.