

Equitable Education: Enhancing Academic Skills and Confidence through a First-Year Online Module

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Abstract

Since 2008, higher education (HE) policies that aimed to diversify university student recruitment have increased enrolments from equity backgrounds. Supporting these students during their transition to university has been prioritised with the aim of enhancing retention, completion, and support for their future employment outcomes. Low student retention or program completion rates may impact federal government funding models and HE institutional reputations. Thus, a wide range of implemented strategies have sought to support HE success for all students, including those from equity backgrounds. Students transitioning to HE have different academic experiences and expertise. Thus, the online module, known as Skills for Academic Success (SAS), developed in this study was introduced to promote an enhanced understanding of HE expectations and academic skills needed for success. The module was completed by commencing students during the initial weeks of their university enrolment. Students perceived that the SAS module significantly enhanced their transition to HE, their understanding of university expectations, bolstered their academic confidence, and honed their study skills for success. This study showed that adaptive online modules can engage and assist students, especially those from diverse and equity-rich backgrounds, supporting them to develop a comprehensive grasp of HE academic expectations and essential academic skills. Student feedback highlighted that the resource prepared them for success as they embarked on their academic journey in the unfamiliar territory of HE.

Keywords

Academic confidence, Academic capability, Transition initiative, Academic skill development

Introduction

In Australia, the higher education (HE) sector has actioned a range of initiatives to diversify commencing student cohorts, largely derived from the Australian Federal Government's 2008 Review of Australian Higher Education, commonly known as the Bradley Review (Bradley et al., 2008). Consequently, commencing domestic student numbers in Australian HE increased by 28.3% between 2009 and 2022. Over this same period, recruitment of students from low socioeconomic status (SES)—reflecting the largest equity group—increased by 2.8% to 17.2% of commencing domestic students (Department of Education [DOE], 2009, 2023a). The change in low SES student enrolments, proportional to the overall increase in commencing domestic student enrolments reflects the increasing diversity of HE cohorts. Indeed, “around 50% of domestic undergraduate students can be classified into at least one of the six equity groups, with many falling into 2 or more groups” (Koshy, 2022, as cited in Crawford, 2022). These equity-deserving groups—encompassing characteristics such as race, ethnicity, disability, and socioeconomic status—often face systemic barriers that limit their access to opportunities and resources compared to more privileged groups. Therefore, ongoing efforts are needed to ensure equitable access and representation within HE institutions.

Proportional to increased HE commencing student enrolments, enrolment in enabling pathways, to specifically support transition and scaffolding into HE studies, has only increased by 0.15% from

3.85% to 4.0% between 2009 and 2023, (DOE, 2009, 2023a). Thus, most students with an equity background enter HE without dedicated enabling pathways to support their academic success.

Literature review

In the absence of formalised enabling pathways, many universities have invested significant funding to develop and implement strategies, purpose-built resources, and staff time to support student transition to HE. Despite this investment, attrition rates for bachelor's degree commencing students at HE institutions in Australia increased from 12.61% in 2008 to 14.73% in 2021 (DOE, 2023a). Importantly, completion rates for low SES students (61.86%) were lower than the overall domestic student degree completion rates (67.18%) for the 2008 cohort. Surprisingly, these rates fell further to 61.77% and 55.09%, respectively by 2017, indicating that almost 40% of domestic students failed to graduate with their degrees within six years of initiation (DOE, 2023b).

Students' unpreparedness and lack of comprehension regarding the essential requirements for academic success are prominent factors contributing to high attrition rates at university (Burke, 2019; Harris-Reeves et al., 2022). Considerable scholarly research has provided evidence-informed transition pedagogy to support students during HE transition, particularly within the first year (Kift & Nelson, 2005; Kift, 2015). This holistic approach nurtures a sense of capability and methodically provides support for the acquisition of academic knowledge and skills, especially during the pivotal "transition in" year and for students from diverse equity backgrounds (Kift & Nelson, 2005).

This approach is vital, not only for fostering student satisfaction but also for enhancing overall academic performance (Lizzio, 2006). Addressing these challenges is also essential to ensure the sustained success and retention of students in HE, providing inclusive support regardless of student background. Unfortunately, access and availability of programs and resources supporting HE transition and student success, particularly for students with an equity background, are impacted by institutional HE funding. Thus, HE institutions catering to larger cohorts of equity-diverse students face the challenge of effectively addressing HE transition hurdles experienced by all students (Ellis, 2019; Harris-Reeves et al., 2022). This requires targeted sustainable, adaptive, support mechanisms to ensure a successful transition for all students, regardless of their academic, economic, or social background.

Scholars have increasingly recognised the impact of background and equity contexts on students' successful transition from high school to tertiary education (Macaulay et al., 2023; McKay et al., 2016). Critically, many students from lower SES backgrounds commence their studies with limited familiarity with the expected norms of university practices (Macaulay et al., 2023), which increases the risk of academic failure. The impact of academic performance has also been identified as an important factor impacting student persistence during the transition from first to second year and beyond (Herzog, 2022; Yaacob et al., 2020).

University grades achieved are one of the most consistent predictors of student persistence and degree completion (Demeter et al., 2022). Overall academic performance before entering university and the grades achieved during university impact the persistence of students (Reason & Braxton, 2023). Failure to support students from equity-deserving cohorts to overcome recognised transitional hurdles—particularly within the first semester of enrolment—reduces the likelihood of continued enrolment at the same institution, impacting their future enrolment patterns and graduation rates (Demeter et al., 2022).

The unfamiliar expectations of HE commencement can also impact mental well-being and raise anxiety resulting in markedly elevated stress levels experienced by students (Pulido-Criollo et al., 2018). Potential stressors include the rigorous academic demands inherent in the degree program, including the intensive preparation required for assessments and examinations, as well as managing

the overall academic workload (Brown et al., 2016; Pulido-Criollo et al., 2018; Phun & dos Santos, 2010).

Prolonged psychological distress may extend beyond personal well-being to impair academic performance by disrupting information processing, attention, memory, decision-making, motivation, and impulse control (Drigas & Mitsea, 2020; Ekman et al., 2022). Analysis from the Healthy Minds Study, conducted across four universities in the United States, reinforced the association between mental health difficulties and lower self-efficacy, motivation, and academic dissatisfaction (Lipson & Eisenberg, 2018). These findings align with commonly cited reasons for deferral or dropping of HE studies (Baik et al., 2015). Thus, successful transition into HE is influenced by various factors, including each student's expectations and how those expectations are solidified and shaped (Harris-Reeves et al., 2022).

Transition practices

Universities recognise the importance of the transitional period, implementing initiatives to foster supportive environments that engage students socially and academically (Allin et al., 2017; Calcagno et al., 2017; Harris-Reeves et al., 2022; Turner et al., 2011), based on the principles of transition pedagogy (Kift & Nelson, 2005). These transition initiatives are designed to enhance student *capability*, *connectedness*, *purpose*, *resourcefulness*, and *culture*, collectively known as the *Five Senses of Success*, as conceptualised by Lizzio (2006). While all five senses contribute to a successful university transition, aspects of connectedness, resourcefulness, and capability are particularly prominent in influencing students' academic success. As outlined by Strayhorn (2023), a sense of *connectedness* encompasses students' perception of on-campus support provided to develop academic skills, and a sense of *resourcefulness* pertains to the capacity to access learning resources for academic success (Dison et al., 2019), whilst a sense of *capability* can be defined as possessing the essential skills for achieving academic success (Larsen et al., 2020). The importance of nurturing each of these dimensions is emphasised by the role played by various institutional frameworks, including learning communities and academic support mechanisms (Kahu & Nelson, 2018).

Skills for Academic Success module

This research focused on an institutional online module designed to support the transition of first-year students to university. The study aimed to explore: 1) students' perceptions of their overall understanding and preparedness for university success after completing the *Skills for Academic Success* (SAS) module, 2) the specific benefits of SAS, and 3) whether students from a variety of backgrounds or disciplines reported varying confidence levels post-completion.

Method

Context for module development

The SAS module was originally developed to tackle retention issues among students pursuing the Bachelor of Sport Development (SD) degree. Around 25% were experiencing challenges in achieving academic success, particularly in passing their subjects. The initial cohort was predominantly male (73% vs. 43% university-wide). It included many first-generation university attendees and students with lower academic capital. Specifically, first-generation students are defined as students who are first in their family to attend university and consisted of 64% vs 50%

university wide. Lower academic capital students in this cohort achieved an average ATAR¹ 70 (vs ATAR 81 university-wide) and 86.9% of students were from medium/low SES background (vs 72.6% university-wide).

Module design and development

The module was developed within the Articulate 360 platform. Targeted activities were generated to develop academic competence, underpinned by the *Five Senses of Success* model (Lizzio, 2006) and a strengths-based approach (Stebbleton et al., 2012).

Articulate 360 is a holistic suite of interconnected computer applications (Rise, Storyline, Studio, Replay, and Review) that allows the production of streamlined, multimodal e-learning modules. Colour combinations of the module were designed in conjunction with colour theory (preference and harmony) (Schloss & Palmer, 2011) as attention to colours in design helps alleviate anxiety and contributes to a pleasant experience (Richardson et al., 2014; Valdez & Mahrabian, 1994). The module was designed to ensure a reduction in cognitive overload relying on Hick's Law (reducing the number of decisions a user must make) (Mayer & Moreno, 2003; Proctor & Schneider, 2018). The module had restricted navigation to prompt directed path learning with full access for revision upon completion.

The module's design incorporated elements of constructivist learning environments, considering the online mode of delivery (Donkin et al., 2022; Huang, 2002) and comprised four distinct sections, referred to as "quarters". Additionally, the module included a "pre-game" and "post-game" component introducing a gamification element into its structure to encourage student engagement (Agustian & Seery, 2017).

The curriculum narrative within the module was consistently scaffolded, featuring introductory videos at the start of each quarter, alongside storytelling and interactive tasks (Lavoué et al., 2019) to ensure a positive student experience and engagement with the content. The curriculum was developed in a learner-centred way, necessitating student interaction with a range of learning activities, including image labelling, multiple-choice questions, drag-and-drop exercises, and videos.

Each quarter focused on a distinct topic cluster dedicated to enhancing academic skills development. The quarterly clusters, *Prepare*, *Plan*, *Progress*, and *Produce*, covered essential content, including university expectations, effective time management, study skills, and preparation for various assessments (Table 1). The clusters and associated academic skills content were based on the essential academic skills reported by Turner et al. (2011) and previous student feedback regarding the specific academic skills they deemed crucial for achieving academic success.

¹ The Australian Tertiary Admission Rank (ATAR) is a number between 0.00 and 99.95 that indicates a student's position relative to all the students in their age group.

Table 1

Skills for Academic Success Module Content

PRE-GAME	
First Quarter <i>Prepare</i>	<ul style="list-style-type: none"> • What to expect at university • How to navigate the online space • Time management
Second Quarter <i>Plan</i>	<ul style="list-style-type: none"> • Set your goals • Learn like a professional • Dodging procrastination
Third Quarter <i>Progress</i>	<ul style="list-style-type: none"> • Easy ways to take notes • Academic integrity • Research and reference your way to top marks
Fourth Quarter <i>Produce</i>	<ul style="list-style-type: none"> • Pulling apart assessment requirements • Editing and proofreading like an expert • Get set for your exams • Managing your stress
POST-GAME	

Module access

The SAS module was piloted in 2021 by SD students, before being made more widely available across the university in first-year undergraduate subjects in 2022 and 2023. The expanded distribution provided access for over 6,000 students and included a range of different approaches for implementation. These ranged from being a mandatory course task to an email advising students of the module’s availability, purpose, and accessibility.

SAS constituted a mandatory task within SD courses with completion contributing to the overall grade percentage. For all other degrees, the module was available as an opt-in optional extracurricular choice.

Students completing SAS during 2022 were awarded a digital badge; however, this was not continued in 2023 due to changing budget priority.

Survey questions

This study employed a mixed-methods approach, incorporating both qualitative and quantitative data collection methods. Student perceptions of SAS were collected using purpose-designed pre-module and post-module surveys that were integrated into the SAS module in 2022 and 2023. The pre-module survey contained demographic questions regarding participants’ age, pathway to university, and degree of study (Table 2), in addition to four closed Likert statements (Table 5, Q1–4). Questions 1, 2, and 4 were included in both the pre- and post-module surveys; however, Question 3 on indicative anxiety at university commencement was only included in the pre-module survey. Questions 5–10 explored student experience with the SAS module and were only included

in the post-module survey. The post-module survey consisted of nine closed statements (Table 5, Q1, 2, 4, 5–10). All items were rated on a five-point Likert scale (1 “strongly disagree”, 2 “disagree”, 3 “neutral”, 4 “agree”, 5 “strongly agree”). Additionally, Questions 9 and 10, which specifically addressed the digital badge components of SAS, were omitted during the 2023 data collection due to the removal of the digital badge component in that year. The responses to each Likert statement were averaged, and variation was represented as standard deviation from the mean.

The post-module survey also included three open-ended question prompts developed using De Bono’s *Plus/Minus/Interesting* strategy to engage students in critical thinking when providing feedback, requiring them to consider multiple perspectives on the issues (Gregory & Kuzmich, 2007). Informed by Lizzio’s (2006) *Five Senses of Success* framework, the survey questions specifically focused on connectedness, resourcefulness, and capability. The question prompts asked: how the module helped improve student’s academic skills, the aspects students found most useful in the module, and (in 2022) whether receiving a digital badge for the module influenced how students felt about their university experience.

The participant feedback obtained from the three open-ended questions in the post-module survey was systematically analysed by categorising responses into distinct categories, as described below in the data analysis and reported as frequency counts and percentages.

Data analysis

Quantitative data was reported using calculated mean and standard deviation values which were compared using Student’s *t*-tests, with significance difference determined at $p < 0.05$.

Qualitative analysis of open-ended responses from students was initially investigated using grounded theory methodology, following Braun and Clarke’s (2006) prescribed steps. In brief, this process involved familiarisation with the data, generation of preliminary codes, exploration of emerging categories, and review and definition of identified categories.

Identifying these commonalities and refining the final themes enabled the data to be presented without depending on pre-existing theoretical frameworks. A crucial aspect of the grounded theory process was the ongoing analysis of the text to achieve theoretical saturation, denoting the point in category development where no new properties, dimensions, or relationships surfaced (Eppich et al., 2019; Strauss & Corbin, 1998, p. 143). The initial code sets were developed by a primary coder through manual generation of codes. A second coder acted as a validating coder, conducting a comprehensive review of the initial codes. This validation process utilised a reflexive and iterative approach to refine and validate the coding structure. The grounded theory approach facilitated a dynamic interplay between data collection, coding, and analysis. This allowed the researchers to gain a more comprehensive understanding of the emergent categories until theoretical saturation was achieved.

Finally, the potential impact of different pathways to university on student readiness for university study was investigated by comparing the mean student ratings for each of the 10 Likert questions from the pre-module and post-module surveys. The data were analysed using unpaired student *t*-tests with Bonferroni correction to compare the means from data grouped by the students’ pathways to university.

Human research ethics

Student demographic data from the institution and the SD program specifically is reported from the Griffith University statistics portal for comparison. This ensured that each participant was not required to provide detailed demographic data to the research team. This intentional omission from

the surveys ensured compliance with human research ethics guidelines and optimised de-identification of personal information, further safeguarding participant confidentiality. All participants entered a self-generated unique code so that pre-module and post-module survey responses could be matched. These requirements ensured compliance with the Griffith University Human Research Ethics Committee approval for the project (Ethics no. 2022/121).

Results

Demographic data: Response rate

Demographic data was collected from 816 participants for pre-module survey responses and 317 participants completed the post-module survey response, representing a matched data response rate of 34.3% (37 post-module surveys were not matched due to inconsistent identifier codes).

Demographic data: Pre-module survey

The pre-module survey data showed that 58.2% of respondents ($n=816$) were aged 17–19 years, which is consistent with pathway to university data showing that direct transition from Year 12 secondary school was the predominant entry pathway to the university (Year 12; 61.4% $n=816$). Participants from other HE studies, for example, students who had transferred between degree programs, represented the second largest entry pathway, accounting for 19.5% of all responses, whilst previous vocational education (VE) pathways represented 16.1% of the same pre-module survey cohort (Table 2).

Table 2

Demographic Data for Pre-module Survey Respondents

Age (years)	≤16	0.1%
	17–19	58.2%
	20–24	17.1%
	25–29	10.0%
	30–39	8.1%
	40–49	5.2%
	50–59	1.4%
	60+	0.0%
Pathway to university	Mature aged student	3.1%
	Previous university study	19.5%
	Previous vocational study/certificate	16.1%
	Year 12 school leaver	61.4%

Degree enrolment data was collected in pre- and post-module surveys, although the low completion rate of the post-module survey restricted the matched data available for analysis to the 18 programs with 10 or more students completing the pre-module surveys, as shown in Table 3.

Most participants in this study were commencing students in undergraduate Health degree courses at Griffith University, Australia. The predominant student cohort who commenced SAS and completed the pre-module survey were Biomedical Science students (107 responses, representing 29.4% of commencing Biomedical Science students), despite SAS not being a mandatory requirement.

The second largest cohort was SD students (93 responses, representing 78.2% of commencing SD students), for whom SAS was a task requiring completion for assessment purposes.

Post-module survey responses reflected the mandatory task completion for SD (52 responses), although Biomedical Science (38 responses) and Nutrition and Dietetics (30 responses) students also completed the post-module survey.

Forty-seven participants from other programs were involved. Data from these participants were collected and then grouped, since each program had fewer than 10 participants, and only 22% of the 112 pre-module survey responses were matched with post-module survey completion (Table 3).

Thirty-seven responses had inconsistent unique codes whose survey responses could not be matched.

Table 3

Program of Study data for Participants who Completed the Pre- and Post-module Surveys

Academic degree	N Pre-module survey	N Post-module survey
Bachelor of Biomedical Science	107	38
Bachelor of Sport Development*	93	52
Bachelor of Nutrition and Dietetics	81	30
Bachelor of Health Science	74	25
Bachelor of Pharmacy	68	22
Bachelor of Medical Science	46	16
Bachelor of Medical Laboratory Science	32	8
Bachelor of Languages and Linguistics	29	16
Bachelor of Psychological Science	26	2
Bachelor of Dental Health Science	24	15
Bachelor of Social Work	23	4
Bachelor of Nursing	21	5
Bachelor of Pharmacology and Toxicology	21	7
Bachelor of Physiotherapy	13	3
Bachelor of Business	13	1
Bachelor of Occupational Therapy	12	5
Bachelor of Human Services	11	3
Bachelor of Dental Hygiene	10	3
47 other degrees with <10 participants	112	25
Unmatched		37
Total	816	317

Note: *Includes Single and Double Degree

Equity demographic data: Griffith University versus Bachelor of Sport Development

Key demographic characteristics for the HE institution and the SD program are presented in Table 4. These data highlight the within-institution differences in the percentages of equity-deserving individuals, specifically within the SD program. The SD program includes more first-generation students (53.2% vs. 40.9% university-wide); lower average university entrance scores (median ATAR 70 vs. 80 university-wide); and 14.3% more students from low to medium SES backgrounds.

Table 4

Demographic Data for Students Enrolled in 2022 and 2023 at Griffith University (GU) and the Bachelor of Sport Development (SD)

	GU	SD
Socioeconomic Status	High	26.8%
	Medium	58.2%
	Low	14.4%
Disability	9.7%	5.7%
First-generation university attendees	40.9%	53.2%
Median ATAR	80	70

Survey results

Table 5 shows the questions and student responses from the pre- and post-module survey Likert questions. Overall, at the completion of the module, participants perceived that they had a better understanding of university requirements to succeed (Q1: $p < 0.001$) and more confidence in their study skills (Q2: $p < 0.01$), with the average increasing from the neutral response 3 toward the agree response 4. On average, students agreed that completion of the module supported their study skills, understanding of HE success, and confidence, with average responses to Questions 6–8 all averaged above 4 on the Likert scale. The impact of the digital badge on their confidence to study successfully or motivate their study was neutral, averaging 3.69 and 3.68, respectively.

Interestingly, examination of student responses regarding anxiety about university studies (Table 5, Q4) showed that the mean score (3.70) represents a level of anxiety above the neutral point of 3.0 at the commencement of their studies. Module completion did not significantly impact the post-module survey response to “I am looking forward to completing my degree” (Table 5, Q4).

Table 5

Quantitative Data of Pre- and Post-module Surveys

Question	Pre-module Survey Mean (SD)	Post-module Survey Mean (SD)	T-test
Q1 I believe that I have a good understanding of how to succeed at university	3.62 (0.80)	4.15 (0.74)	$p < .001$
Q2 I feel confident that my study skills will enable me to succeed with my university studies	3.60 (0.81)	3.98 (0.75)	$p < .001$
Q3 I feel anxious about studying at university	3.70 (0.98)	-	-
Q4 I am looking forward to completing my degree	4.52 (0.69)	4.48 (0.73)	$p = .370$
Q5 I will use what I learnt in this module in other courses	-	4.29 (0.98)	-
Q6 This module has improved my study skills to succeed at university	-	4.01 (0.75)	-
Q7 This module has improved my understanding of how to succeed at university	-	4.09 (0.77)	-
Q8 This module has improved my confidence to study successfully at university	-	4.04 (0.74)	-
Q9 The digital badge for this module will improve my confidence to study successfully	-	3.69 (0.77)	-
Q10 The digital badge for this module will improve my motivation to complete my degree	-	3.68 (0.96)	-

Qualitative data results

The frequency of participant responses within the coded categories confirmed after validation coding of the three open-ended post-module survey questions are reported in Tables 6–8.

The impact of the module on participants' academic skills (Table 6) highlights that they perceived that module helped familiarise them with academic skills (47.3%) and HE expectations (18.3%) and increased their confidence (19.7%).

Table 6

How did this module help improve your academic skills?

Category	Frequency Count	Frequency Percentage
Familiarisation with academic skills	132	47.3%
Increased confidence	55	19.7%
Understand expectations at university	51	18.3%
Refreshed knowledge	25	9.0%
Not applicable	8	2.9%
Sense of resourcefulness	6	2.2%
Did not help	2	0.7%

Responses were not limited to students from a specific discipline or confined to those embarking on their university journey; similar sentiments were expressed by individuals from across a diverse spectrum of degrees and entry pathways. The module also supported students who had previously transitioned to HE and undertaken previous HE study, as evidenced by qualitative commentary which highlighted that the module “[provided a] better understanding about the expectations and where to seek assistance” (Midwifery student, previous university study) and “helped me understand what it takes to complete this degree” (Sport Development student, school leaver).

Participants also articulated that the SAS module enhanced their confidence in diverse ways, as exemplified in the following extracts: “[the module] gave me more confidence starting university” (Pharmacology and Toxicology student, previous vocational study) and “clarified some of the ideas I was already thinking about, and made me feel more confident in them as good practices” (Biomedical Science student, previous university study).

The SAS module was commended for positively supporting HE engagement, with participants stating: “This module goes into detail with everything I need to know in order to improve my academic skills. That is why this module is such a helpful tool” (Language and Linguistics student, school leaver); “Provided really detailed and relevant information that covers a variety of aspects to help succeed” (Sport Development student, school leaver); “learnt lots of new skills” (Occupational Therapy student, previous university study); “good refresher of important things” (Biomedical Science student, previous university study); and, “I was confused at first and this module gave me a reminder and refresher of my academic skills” (Pharmacy student, previous vocational study).

Participants agreed that the SAS module had a positive impact (Table 5, Q5–8). Their feedback to the question “What aspects of the module did you find most useful?” provided over 400 comments covering a wide range of academic knowledge and skills development (Table 5), highlighting the value of adaptive learning approaches.

Table 7

What aspects of the module did you find most useful?

Category	Frequency Count	Frequency Percentage
Referencing and researching/citing	53	12.7%
Academic integrity/plagiarism	46	11.0%
Note taking	43	10.3%
Exam preparation/study tips	37	8.9%
Proofreading/editing	32	7.7%
Deconstructing assessments	25	6.0%
Time management/Study planning	23	5.5%
Managing stress	20	4.8%
Quizzes	20	4.8%
Videos	18	4.3%
All of it	16	3.8%
Procrastination	15	3.6%
Study skills in general	12	2.9%
Learning strategies/techniques	10	2.4%
Interactivity/response activities	10	2.4%
Goal setting	9	2.2%
Navigating the Griffith online space	8	1.9%
What to expect in the first few weeks	5	1.2%
Introduction to Griffith	2	0.5%
Learning language	2	0.5%
Summaries	2	0.5%
Images	2	0.4%
Brain: left side/right side	1	0.2%
Consolidation of info in various ways	1	0.2%

Students’ perception of the positive impact of the SAS module was not influenced by recognition through receipt of a digital badge (Table 5, Q9 and 10), with average Likert scores for these questions of 3.69 and 3.68, respectively (3.0 being the neutral point). Qualitative comments on the impact of the module completion badge on their university experience (Table 8) identified increased confidence (26.7%) as the predominant response with comments such as: “receiving a digital badge ... represents that I have learned enough to ensure I will make a positive start at University” (Arts student, school leaver); and, “receiving a digital badge for this module will give me confidence in preparation for my university experience” (Biomedical Science student, school leaver).

Table 8

How will receiving a digital badge for this module influence how you feel about your university experience?

Category	Frequency Count	Frequency Percentage
Give me confidence	51	26.7%
No influence	31	16.2%
Make me happy	22	11.5%
Motivate me	17	8.9%
Unsure	13	6.8%
Sense of achievement	11	5.8%

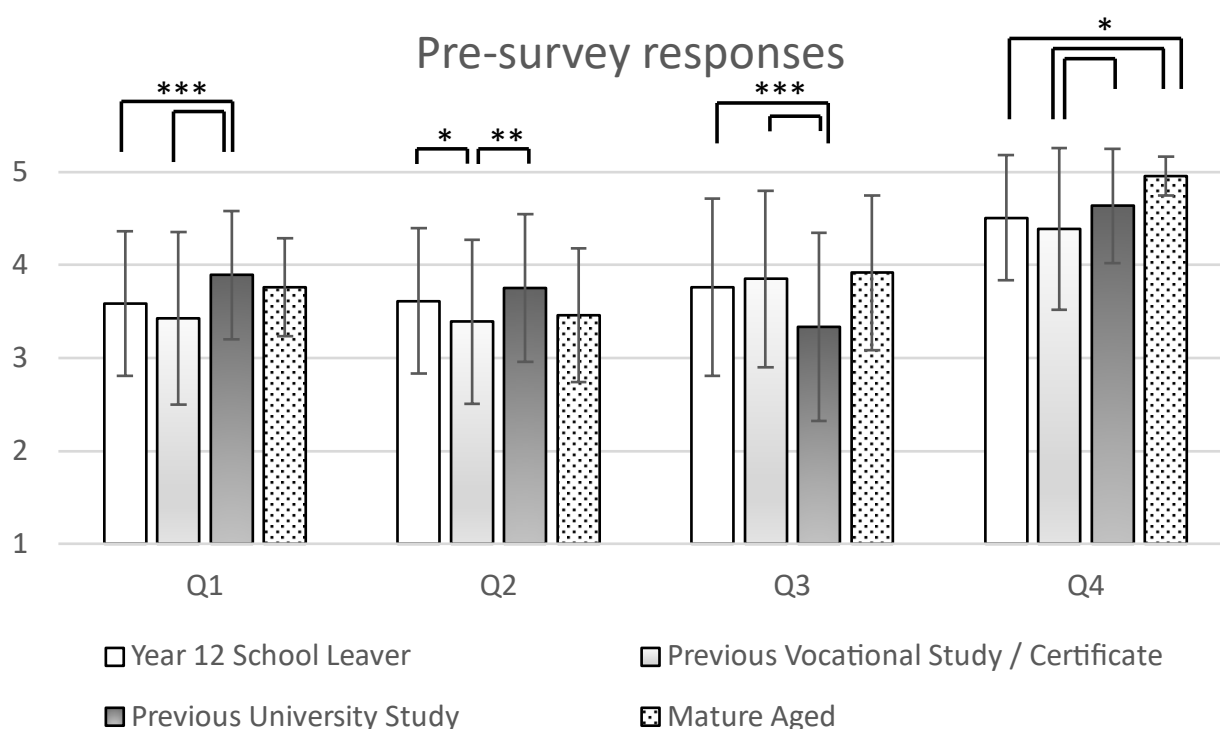
Impact of pathways to university on student readiness for HE study

Pre-module survey

Figure 1 shows the average responses to pre-module survey Questions 1–4, comparing the four predominant pathways to university to their readiness for university study. Unsurprisingly, students with previous university study perceived they were better prepared. For example, Q1 “I believe that I have a good understanding of how to succeed at university” was significantly higher for the Previous University Study pathway ($n = 159, M = 3.90, SD = 0.69$) compared to both the Year 12 School Leaver pathway ($n = 501, M = 3.58, SD = 0.78, p < .001$), and the Previous Vocational Study/Certificate pathway ($n = 131, M = 3.43, SD = 0.93, p < .001$).

Figure 1

*Pre-module Survey Responses. Student Ratings were Compared based on their Pathway to University (t-Test with Bonferroni correction). * = $p < .05$, ** = $p < .01$, *** = $p < .001$.*



Similarly, for pre-module survey Q2 “I feel confident that my study skills will enable me to succeed with my university studies”, students with Previous University Study pathways ($n = 149, M = 3.75,$

$SD = 0.80, p=.0020$) were significantly more confident than Year 12 School Leavers ($n = 479, M = 3.61, SD = 0.78, p=.027$) with students from the Previous Vocational Study/Certificate pathways ($n = 121, M = 3.38, SD = 0.88$) significantly less confident than Year 12 School leavers.

Student anxiety regarding HE study, investigated in pre-module survey Q3 “I feel anxious about studying at university” was predictably lower for students from the Previous University Study pathway ($n = 154, M = 3.33, SD = 1.01$) compared to both the Year 12 School Leaver ($n = 492, M = 3.76, SD = 0.95, p<.001$) and Previous Vocational Study/Certificate pathways ($n = 125, M = 3.86, SD = 0.95, p<.001$).

Students from the Mature Aged pathway responded most positively to pre-module survey Q4 “I am looking forward to completing my degree” ($n = 22, M = 4.95, SD = 0.21$) which is significantly higher than the Previous Vocational Study/Certificate ($n = 125, M = 4.39, SD = 0.87, p=.018$), and Year 12 ($n = 491, M = 4.51, SD = 0.67, p=.011$) pathways, whilst students with Previous University Study ($n = 153, M = 4.63, SD = 0.62$) did not differ significantly from the Mature Aged pathway cohort ($p=.043$).

Post-module survey

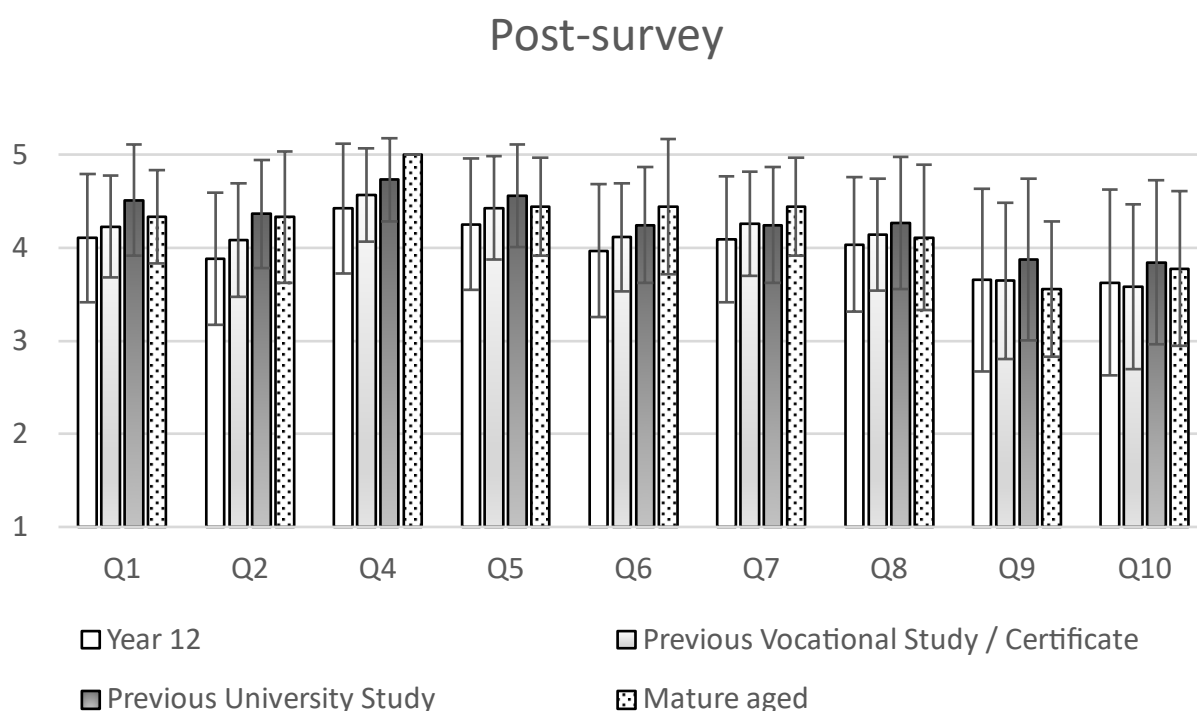
Upon module completion, students from all pathway groups reported increased support to Q1 “I believe that I have a good understanding of how to succeed at university”. Consistent with the pre-module survey result, students from the Previous University Study pathway had the highest positive response ($n = 41, M = 4.51, SD = 0.60$), increasing by 0.61 from the pre-module survey ($p<0.001$, Bonferroni corrected t -test). This was significantly higher than the Year 12 School Leaver pathway ($n = 189, M = 4.11, SD = 0.69, p=0.0035$), which improved by 0.53.

Similarly, for Q2 “I feel confident that my study skills will enable me to succeed with my university studies”, students from all pathway groups increased their positive response compared to the pre-module survey. Student responses from the Previous University Study pathway ($n = 41, M = 4.37, SD = 0.58$) were significantly higher than the Year 12 School Leaver ($n = 189, M = 3.88, SD = 0.71, p<.001$) pathway. Indeed, Previous University Study improved from 3.75 in the pre-module survey to 4.37 in the post-module survey ($p<.001$), whilst after the module, VET pathway students reported that they gained more confidence than Year 12 School Leavers.

Post-module survey results for Q4 “I am looking forward to completing my degree” did not significantly increase compared to pre-module survey results for students of any of the pathway to university groups. Mature Aged students responded most positively to this question, whilst commencing students from the Year 12 School Leaver pathway were slightly, but not significantly, less positive about their degree completion ($n = 189, M = 4.42, SD = 0.70$) compared to their average pre-module survey response.

Figure 2

Post-module survey Responses. Student Ratings were Compared based on their Pathway to University (t-Test, Bonferroni correction). * = $p < .05$, ** = $p < .01$, *** = $p < .001$



Discussion

In Australia, focussed federal government policy changes have markedly increased the diversity of university student enrolments and been supported by targeted institutional investment supporting equity student transition (Deloitte Access Economics, 2020).

Despite acknowledging support mechanisms across the student experience, students from equity groups still exhibit lower rates of retention, program completion, and increased intention to drop out (Li & Jackson, 2023). Recent research (Uink et al., 2019) has advocated for a shift towards holistic institution-wide support methods to enhance the management of personal factors (Pitman et al., 2016). However, it is also recognised that targeted academic skills development continues to play a crucial role in building confidence and self-belief (Catterall & Davis, 2012).

The increased diversity of HE cohorts widens the range and nature of resources, academic skills, and personal support needed to help each student succeed. This adds complexity and ongoing development costs to ensure sustainable success. Previous research has identified that a primary factor for high attrition is student preparedness and understanding of the fundamental skills and requirements for HE study success (Catterall & Davis, 2012; Griffin 2014). Our previous report has confirmed the heterogeneity of the SD cohort includes many students with equity backgrounds (Harris-Reeves et al., 2022) who may benefit from strengthening the cultural capital, skills, and knowledge for successful study.

This study aimed to measure the impact of SAS, an online, adaptive module tailored to support students' academic skills development ensuring they are adequately equipped, whilst fostering a sense of success, connectedness, resourcefulness, and capability (Lizzio, 2006). Initially designed

for a specific program cohort distinguished by a higher proportion of individuals from equity backgrounds, the module's success has resulted in university-wide distribution and access.

Students from diverse backgrounds often encounter unique challenges that can impede their journey toward achieving success at the university level. These stem from a confluence of factors, such as varied educational experiences, socioeconomic disparities, and differing levels of academic preparation (Denovan & Macaskill, 2017; Macaulay et al., 2023; McKay et al., 2016). This study showed that all students could benefit from participating in self-directed transition programs such as SAS. Even after finishing the module, which heightened their awareness and comprehension of academic challenges, participants remained eager to finish their degree. This finding is consistent with previous research that, irrespective of entrance scores, academic discipline of study, or their pathway to university, all students can benefit from targeted resources (Demeter et al., 2022). Furthermore, opt-in access to this resource by students across the institution suggests that more universal approaches, especially those enhanced through adaptive technologies, may benefit students across a range of disciplines.

The SAS module included a wide range of academic and personal skills development activities in an engaging modality. This modality was accessible from all digital devices and resulted in positive impacts on students across all clusters of the academic skills development curriculum (see Table 7). The range of positive student feedback suggests that the module design supported individual student needs. The inclusive design aimed to meet students where they were at in their educational journey, providing a tailored and impactful experience. This positive impact was reported by students from all pathways to university, including those with previous university study. The SAS module improved student understanding of university expectations, including students new to HE (Table 5 and Figure 2). The SAS module further helped students gain or reinforce the essential academic skills required for success and persistence at university level, consistent with previous research (Demeter et al., 2022; Herzog, 2022; Yaacob et al., 2020).

Completion of the SAS module increased academic confidence amongst Year 12 school leavers and students with prior vocational study backgrounds to overcome the recognised hurdles of the HE transition (Ellis, 2019; Harris-Reeves et al., 2022). These positive outcomes were also reported by students with past HE experiences, underscoring the value of sustainable supportive resources that can empower students to enhance their academic proficiency throughout their university journey (Herzog, 2022; Macaulay et al., 2023; McKay et al., 2016; Yaacob et al., 2020).

Australian HE institutions, along with their students, especially those from equity backgrounds, share concerns about successful academic performance. Enhanced completion rates in degree programs not only lead to improved financial support from federal government institutional funding models but also contribute to students' employment success and community engagement. Despite this investment and focus, as reported by Li and Jackson (2023) feedback from students with equity backgrounds remains positive and relatively consistent across the reported variables, analysed from Australia's national Student Experience Survey. Implementing adaptable modules or resources has the potential to enhance academic success in HE across all disciplines, benefiting students from diverse backgrounds, including those from equity backgrounds who may be less prepared for the rigours of HE.

Limitations and future research considerations

This study's limitations encompass not capturing students who terminated their enrolment early in the trimester, and the lower rate of post-module survey responses, which improved when module completion became a mandatory task within a course. Despite completing the module, students were not obligated to complete the post-module survey, which may have skewed the data. Students from different degree programs may also have different experiences with the module and its impact.

This study could not identify any differences due to low levels of student engagement, as well as incomplete module and survey submissions.

Focus group investigations undertaken after course and module completion could improve understanding of the perceived versus actual value of the module on student success. Further research is needed to determine whether the students' perceptions of the benefit of SAS on their academic skills and confidence during transition is reflected in their longer-term academic and future employment success.

Conducting the pre- and post-module surveys at different time points introduced several limitations that may have affected the accuracy and reliability of the data collected. One concern is attrition, where participants dropped out of the study between the pre- and post-module survey. This could skew results and introduce selection bias, particularly as the SD students were the only cohort required to complete the module for assessment. Furthermore, when participants completed the post-module survey, they had commenced university and had varied experiences at orientation and their classes. Additionally, there is survivor bias in that students who dropped out of university in the first few weeks would be underrepresented in the post-module survey.

Future research considerations include conducting interviews with focus groups to refine SAS to better meet the evolving needs of students.

Conclusion

Recognition that all students, regardless of academic background, can benefit from targeted, adaptable interventions like SAS has broader implications for university policies and practices. It emphasises the importance of inclusivity in the design and implementation of student support programs (Pitman et al., 2016). Furthermore, it encourages a shift in perspective towards a more holistic approach to student well-being and academic success (Uink et al., 2019, recognising that diverse student populations may encounter similar challenges that can be effectively addressed through appropriately tailored initiatives. This research has illustrated that the SAS could benefit more experienced students, suggesting the nuanced design of support programs aimed at cultivating success across the lifecycle of diverse student cohorts across institutions. This holistic approach, as advocated by Lizzio (2006), aims not only to enhance academic success but also to foster a sense of connectedness, resourcefulness, and capability among students. By doing so, it contributes to creating a comprehensive and multifaceted environment that supports the overall well-being and achievement of students from diverse backgrounds and academic disciplines, including those in transition.

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