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Investigating the influence of teacher strategies on academic self-efficacy and study behaviour of students in a tertiary bridging program

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This article describes the findings of an action research project which examined the link between academic self-efficacy and the study behaviours of students in a tertiary bridging program at a regional university in Australia. It describes the gap which exists between students' instruction in, and knowledge of, being a self-directed learner and the enacting of study behaviours which demonstrate that instruction and knowledge. The intervention employed in the study resulted in significant improvements in many areas of academic self-efficacy and study behaviours and demonstrates the effectiveness of the tertiary bridging program in this regard. The appropriateness of using traditional forms of assessment in tertiary bridging programs is discussed.

Introduction

The purpose of this study was to examine the effectiveness of an intervention designed to improve the academic self-efficacy and study behaviours of students in a compulsory academic skills course in a tertiary bridging program at a regional university. The university where the study was conducted provides an on-campus, tertiary bridging program as an alternative pathway for prospective students who do not possess the necessary academic qualifications for direct entry. The particular challenges associated with the student cohort which had been identified were a diverse age range, educational and work backgrounds and, generally, the poor quality of the students' previous educational engagement and outcomes achieved. Course data showed that approximately 26% of students who commenced the program did not submit the first assessment piece, while the majority of students who dropped out of the bridging program did so within the first six weeks after commencement.

A particular problem which appeared to be hindering these students to successfully transition into the bridging program was their lack of knowledge of what was required to be a successful student in terms of academic and study behaviours. It was considered that a short-coming existed in the bridging program, in that students were instructed in relation to the theory of academic skills, but were not adequately assisted to develop the associated academic behaviours. This study planned to identify and understand the needs of new students entering the bridging program and determine how much influence a teacher and course designcould have on their academic self-efficacy and study behaviours.

Theoretical background informing the study

Previous research (Whannell, Allen & Lynch 2010) in relation to the bridging program which is the subject of the current study examined the secondary school experiences of students up to the age of 23

years. The Whannell et al. study concluded that these students had experienced negative secondary schooling experiences, largely fostered by teachers who did not seem to care or did not provide the required support. The consequences associated with a lack of confidence and belief in academic self-efficacy which would be expected to result from these experiences are described by Pajares (1996). He observed that 'efficacy beliefs help determine how much effort people will expend on an activity, how long they will persevere when confronting obstacles, and how resilient they will prove in the face of adverse situations—the higher the sense of efficacy, the greater the effort, persistence, and resilience' (p. 544).

Phillips and Gully (1997: 792) observed that 'self-efficacy and need for achievement were positively related to goal level, which was positively related to performance in combination with ability and self-efficacy'. A sense of self-efficacy has been shown to play a major role in how students approach goals, tasks, and challenges. The concept of self-efficacy is at the centre of Bandura's social cognitive theory (Bandura 1989, 1993). According to Bandura's theory, people with high self-efficacy are more likely to view a challenge as something to be mastered, rather than something to be avoided. Those students who identify themselves as having a high level of self-efficacy also tend to aim for more complex challenges and have a firmer commitment to a final process (Bandura & Wood 1989; Wilhite 1990; Woolfolk & Margetts 2010). Students tend to pre-organise their goal setting initially by thinking about what tasks need to be accomplished. Individuals who have a 'high sense of efficacy visualise success scenarios that provide guides for performance and they cognitively rehearse good solutions to potential problems' (Baharudin & Jan 1998: 14). Students who do not perceive their level of efficacy to be high may tend to see new challenges as problems and dwell on the idea of not knowing how to handle such scenarios. Self-doubt and fear of failure are common thought processes for students who perceive themselves as possessinglow self-efficacy.

Much of the literature available on self-efficacy and the importance of such ubiquitous psychological processes for students has been gathered seemingly more as a theoretical notion rather than a teaching tool. Bandura (1999: 29) states that a‘major function of thought is to enable people to predict events and to devise ways toexercise control over those that are important to them’. This type of skill requires a multifactorial, and often abstract, level of cognitive development and the ability to think predictively. Woolfolk and Margetts (2010) refer to self-efficacy as different from other self-specific ideas such as self-concept, self-worth or self-esteem, as they argue that self-efficacy is specific to a particular task and is future orientated. Bandura (1989) described how students constantly need to plan new actions and weigh up priorities so to achieve the required outcomes. He noted that these original ideas then need to be tested, and often revised, against immediate or later consequences of their actions. This would allow students to begin building a bank of past experiences of self-efficacy and goal planning formulas.

While the literature to this point has described some of the psychological aspects involved in being a successful student, an important aspect to consider is how these psychological factors influence the actual behaviours that the student engages in. Biggs (1979: 381) described the circumstances that surround students and their study behaviours as ‘the relationship between study processes and the structural complexity of their learning’. He considered study processes under three individual elements: utilising, internalising and achieving. Each of these elements was identified as having both cognitive and affective components, suggesting that educators cannot ignore the emotional experience of students. Watkins (1982) and Biggs (1979) both described study processes as being based on the personal characteristics of the student and conclude that students notice when teachershave a level of enthusiasm and proficiency that they believe are optimum for learning. Students who were interested in the subjects also tended to be inherently highly organised, using

scheduled study periods to complete tasks on time, so that they had a deliberate process for their progress.

Purdie, Hattie and Douglas (1996) identified the characteristics of good self-regulators of learning. They noted that self-regulators are characterised as purposeful, strategic and persistent in their learning, engaged in behaviours such as self-evaluation and goal-setting, and understood the long-term relevance of outcomes. Zimmerman and Martinez Pons (1986: 625) found that '93% of the students could be correctly classified into their appropriate achievement track group through knowledge of their self-regulation practices'. The particular role of tertiary bridging programs in providing students with the 'academic literacies they need in order to transition to the next level of study as independent, critical learners—as students who know "how to learn"' (Rae 2008: 30) has also been identified in a study in New Zealand.

The concepts of Bandura (1997), Phillips and Gully (1997) and Zimmerman and Martinez Pons (1986), when merged, provide a comprehensive list of factors associated with the self-regulated learner. However, educators must distinguish between the teaching of these study behaviours and the students' actual understanding and demonstration of them. Simply because students have been instructed on the importance and techniques of goal-setting does not mean they actually know how to self-regulate or how to engage in the associated behaviours as a consequence of such instruction.

Method

Participants in the study were students in a compulsory academic skills course in the bridging program at the university where the study was conducted. A custom designed questionnaire was utilised and was completed in weeks 1 and 10 of the semester in the lecture of the compulsory academic skills course. The questionnaire comprised an initial demographic section, followed by a number of Likert-style

items offering five options ranging from strongly disagree to strongly agree. The questionnaire was completed by 246 respondents in the week 1 data collection, representing a 71% completion rate. The gender composition was 36.7% male and 63.3% female. Respondent ages ranged from 17 to 59 years, with a modal age of 18 and mean age of 26 (s = 10.1). Forty-three percent of respondents indicated that they had not finished secondary school. The demographic composition of the respondents matched the historical enrolment data. The questionnaire was completed by 102 respondents in the week 10 data collection, with 79 having completed the questionnaire on both occasions allowing for test-retest analysis.

Students were instructed in relation to the theories of academic self-efficacy and self-directed study behaviours over the first six weeks of the semester. Weekly classes in the course involved a one-hour lecture and two-hour workshop. The lectures introduced theory in relation to a range of topics intended to facilitate an improved academic self-efficacy in the students. The subsequent two-hour tutorials involved students in activities and learning experiences which required them to apply and demonstrate appropriate behaviours that reinforced the theoretical content of the lectures. Further tasks were set each week which required the students to engage further with self-directed study behaviours during their home study prior to the next lecture. The focus of each week is listed below.

Table 1: Course content coverage

Week	Content Coverage
Week 1	Challenges of transition
	Goal setting
	Importance of a supportive work/study/life balance
	Difference between study processes taught and the study behaviours which students need to demonstrate
	Previous bridging program student presentation
Week 2	Locus of control and luck
	Positive self-talk
	Motivation and commitment in the face of adverse experience
Week 3	Consolidation of weeks 1 and 2
	Exercises to consolidate previous work on motivation, goal-setting and self-talk
Weeks 4 and 5	Preparation for the first assessment task in the academic skills course
	Explanation provided to scaffold task with formal drafting completed
	Application of academic behaviours addressed in weeks 1 to 3

Results

Study participants reported the number of hours they would engage with study and paid work. The responses for both of these variables demonstrated substantial skewing from a normal distribution and the Wilcoxan Signed Rank Test was used to determine if any differences existed in the test-retest data. A statistically significant increase was demonstrated in the number of hours of weekly study ($Z = -3.37$, $p = 0.001$), indicating that the commitment of time for study had improved for students. The commitment to paid work ($Z = -0.23$, $p = 0.818$) demonstrated very little change.

The first nine Likert-style items addressed aspects relating to academic self-efficacy beliefs. Appendix 1 shows the mean result obtained for both data collections. Items 10 and 43 to 65 were included to address the study behaviours of the participants with

the results shown in Appendix 2. Both tables include the result of a Wilcoxan Signed Ranks Test with bold entries to indicate statistically significant differences.

A Principal Components Analysis was completed of the Likert-style items using direct oblimin rotation. A five-factor solution was identified with a Kaiser-Meyer-Olkin Measure of Sampling Adequacy of 0.862, which exceeds the suggested minimum of 0.611 (Tabachnick & Fidell 1996), while the Bartlett's Test of Sphericity ($p < 0.001$) indicated that the correlation matrix was suitable for factor analysis. The final five-factor solution accounted for 65.997% of the shared variance in the items making up the factors, as shown in Table 2. The response to item ratio for the final five-factor solution was 12.3:1.

Table 2: Variance accounted for by five factors

	Initial Eigenvalues		
Component	**Total**	**% of Variance**	**Cumulative %**
1	6.176	30.881	30.881
2	3.055	15.275	46.155
3	1.422	7.110	53.265
4	1.394	6.971	60.236
5	1.152	5.761	65.997

Each factor was named based upon its constituent items. Table 3 shows the factors and their respective Cronbach's alpha values, which indicate a satisfactory level of internal reliability.

Table 3: Questionnaire scales

Scale	No. of Items	Cronbach's Alpha
Social behaviours	6	0.857
Assessment confidence	3	0.791
Organisation	3	0.720
Behaviour responsibility	5	0.819
Capacity to cope	3	0.844

Summative scales were generated by assigning a value of 1 to strongly disagree up to 5 for strongly agree and then adding together each of the items identified by the Principal Components Analysis. The social behaviours scale described academic behaviours which were of a social nature and included items such as: 'I look forward to meeting my peers', 'I will be part of a study group' and 'I will communicate with teachers'. The assessment confidence scale was comprised of the items: 'Writing assignments is easy', 'I do not need much guidance when writing my assignments' and 'Examinations are easy to pass'. The organisation items described the participant's ability to organise themselves in relation to academic activities and included the items: 'I plan ahead', 'I enjoy being organised' and 'I know what it means to be organised'. The behaviour responsibility scale included a number of items which described independence and responsibility which had been addressed in the academic skills course, such as: 'I understand that the outcomes of this course are my responsibility', 'I will go to class and lectures' and 'I will look after my health'. The capacity to cope scale included three items which described the participant's ability to cope with the content of the bridging program and included: 'I should be able to keep up with the amount of work in the [bridging program]' and 'I should be able to understand the content of workshops in [the bridging program]'.

Discussion

Participants reported a high level in relation to their capacity to cope with the bridging program contentin both weeks 1 and 10, where all means are at least 4 (See Items 1–3, Appendix 1). This contrasts with the responses in relation to those items which ask them to assess a particular academic skill. In week 1, the items which require the writing of assignments ($\overline{X}_{Item\ 6}$ = 3.10, $\overline{X}_{Item\ 7}$ = 2.87), passing examinations ($\overline{X}_{Item\ 8}$ = 2.99) and doing oral presentations ($\overline{X}_{Item\ 9}$ = 2.77) demonstrated particularly low perceptions of academic ability. Statistically significant improvements are shown between the two data collections for all items related to academic self-efficacy, with the exception of Item 8 ('Examinations are easy to pass') and 9 ('Oral presentations in workshops do not concern me'). The mean result for both of these items reduced slightly between the data collections. This would suggest that, while the students' perception of their academic self-efficacy has improved as a consequence of the completion of the course, the participants still report challenges with the completion of examinations and oral presentations. Of particular interest is that a statistically significant improvement has been identified in relation to the completion of assignments. Academic writing and referencing is one particular focus of the academic skills course and the improvement in this area demonstrates positive outcomes. Debenham and May (2005: 89) describe a similar situation where the 'first milestone in an enabling program for both students and lecturers is the submission and return of the first assignments [and] it can be asserted … that the first assignment is surrounded on all sides by anxiety'.

An independent samples *t*-test was conducted to assess if any significant changes had occurred over the course of the semester for those participants who had completed both data collections, with the results shown in Table 4.

Table 4: Paired samples t-test summative scales

Scale	$\overline{X}_{week1}$	SD_{week1}	$\overline{X}_{week\ 10}$	$SD_{week\ 10}$	*t*	*p*	*df*
Social behaviours	24.72	3.045	25.26	2.90	-1.412	.162	71
Assessment confidence	8.37	1.90	9.57	2.57	-3.855	.000	75
Organisation	12.31	1.74	12.58	1.76	-1.743	.085	76
Behaviour responsibility	22.61	2.08	22.82	2.10	-.781	.438	75
Capacity to cope	12.40	1.42	13.33	1.43	-5.253	.000	77

It is apparent that the participants' belief in their capacity to cope with the curriculum in the bridging course and their confidence to complete assessments has increased significantly. Of interest is that no significant change has been demonstrated in the behaviour responsibility result. The behaviour responsibility scale has a range of possible values of 5 to 25. The very high mean result for the participants who have completed both data collections indicates that they have commenced the course possessing an understanding of the responsibilities required to be a successful student. The result for the organisation scale is just outside the cut-off for significance at the 95% level. This would indicate that the participants have also improved their organisational capacity.

Of the items which addressed academic behaviours (see Appendix 2), only five demonstrate a statistically significant improvement in the period between the two data collections: Item 10 ('I intend participating in class discussions'), Item 44 ('I believe that study techniques are individual to each student'), Item 49 ('I will study regularly and consistently'), Item 60 ('I will take up drafting options') and Item 65 ('I will complete my assessment on time'). A number of items have demonstrated marked improvements but are just outside the cut-off for significance at the 95% confidence level, which would be expected to change given a larger dataset: Item 45 ('I enjoy being

organised'), Item 50 ('I have organised a study, work, life balance'), Item 55 ('I will be active in class'), Item 57 ('I know I need to be an independent learner') and Item 61 ('I have organised a quiet study area').

While there is clear evidence for a significant improvement in the participants' perceived academic self-efficacy, the translation of this into academic behaviours is not as clear. The significant improvements in academic behaviour appear to involve personal activities relating to study and participation. However, there have been no significant improvements in aspects relating to those behaviours associated with peers and academic staff, with no significant change in Item 56 ('I look forward to becoming involved in…campus activities'), Item 62 ('I will communicate with teachers'), Item 63 ('I look forward to meeting my peers') and Item 64 ('I will be part of a study group'). The paired samples t-test result for the social behaviours summated scale ($\overline{X}_{Week\ 1}$ = 24.72, $SD_{Week\ 1}$ = 3.045, $\overline{X}_{Week\ 10}$ = 25.26, $SD_{Week\ 10}$ = 2.9, $t(72) = -1.412$, $p = 0.162$) also demonstrated no significant change. Considering the importance that social and academic integration is proposed to play in supporting students in tertiary study (Cabrera, Nora & Castaneda 1993; Evans 2000; Tinto 1975), it would appear that this area may need development within the bridging program.

The data from the questionnaires were coded to include whether the participant had completed the bridging program. Mann-Whitney U tests were conducted to identify any differences in the response patterns for single, Likert-style items based upon program completion. This approach was taken in preference to the independent samples *t*-test due to the ordinal nature of a single, Likert-style item. Participants who had dropped out of the program demonstrated a lower response pattern for Item 1 ('I should be able to keep up with the amount of work in the [bridging program]') (U = 4411.5, $N_{Dropped\ Out}$ = 74, $N_{Completed}$ = 140, $p = 0.041$), indicating that

these participants had a lower perception of their ability to cope with the amount of work involved in the curriculum. Tests of the items relating to study behaviours identified a number of significant differences in response patterns. The items which demonstrate a statistically significant difference may be divided into two groups: those relating to academic organisation and those relating to course expectations and commitment. Table 5 lists those items relating to organisation which demonstrate substantial differences.

Table 5: Organisation-related item differences based on program completion

No.	Item text	Mann-Whitney U result
43	I plan ahead	U=4454.4, p=0.055
46	I know what it means to be organised	U=4393, p=0.041
49	I will study regularly and consistently	U=4377.5, p=0.031
50	I have organised a study, work, life balance	U=4111, p=0.006
61	I have organised a quiet study area	U=4008, p=0.015

Table 6 lists those items relating to course expectations and commitment.

Table 6: Course expectations and commitment item differences based on course completion

No.	Item text	Mann-Whitney U result
58	I have high expectations of myself	U=4334, p=0.030
59	I have high expectations of my outcomes of this course	U=4070, p=0.004
66	I am committed to my study	U=3722, p=0.001
67	I am excited to begin the new challenge of tertiary study	U=4136.5, p=0.026

These results indicate that the participants who leave the bridging program perceived themselves as possessing poorer organisational capacities and have lower expectations and commitment to their tertiary academic endeavours.

An independent samples *t*-test was conducted of the summated scales for the week 1 data collection based upon program completion with the results shown in Table 7.

Table 7: Independent samples t-test questionnaire scales

Scale	$\overline{X}_{Complete}$	$S_{Complete}$	$\overline{X}_{Atrtit}$	S_{Attrit}	*t*	*p*	*df*
Social behaviours	24.64	3.165	24.26	3.165	-.826	.410	207
Assessment confidence	8.79	2.04	9.04	1.95	.857	.393	212
Organisation	12.38	1.73	11.82	1.75	-2.227	.027	211
Behaviour responsibility	22.62	2.01	22.03	2.10	-1.971	.050	207
Capacity to cope	12.76	1.56	12.32	1.44	-2.060	.041	159

Similar high levels are recorded for the social behaviours required to support academic study and confidence in being able to cope with assessment for both groups, irrespective of whether the individual dropped out of the bridging program or not. However, significant differences are seen for the level of organisation, behaviour responsibility and capacity to cope with the curriculum.

The data were also coded to include the mean result obtained on the first assessment tasks. A correlational analysis was then conducted of the data from the week 1 data collection to examine the associations between variables. Some of the variables involved, for example, age, hours of study and hours of weekly work, demonstrated substantial deviation from a normal distribution (using Spearman's rank order correlation coefficient). The correlation matrix is shown in Table 8. Sample sizes ranged from 213 to 243 for measures 1 to 8, and 155 to

168 for measure 9. The lower sample sizes in measures 8 and 9 were due to the non-reporting of hours of study and failure to complete the first assessment task.

Table 8: Initial data collection Spearman's rank order correlation matrix

Measure	1	2	3	4	5	6	7	8	9
1. Social behaviours	-								
2. Assessment confidence	-.026	-							
3. Organisation	**.358****	.098	-						
4. Behaviour responsibility	**.602****	.070	**.435****	-					
5. Capacity to cope	**.219****	**.388****	**.297****	**.361****	-				
6. Age	.037	**-.204****	-.037	-.099	**-.146***	-			
7. Hoursstudy	**.150***	-.126	.106	.084	.056	**.278****	-		
8. Hours work	**.143***	-.057	.016	.045	.019	-.080	**-.149***	-	
9. First task achievement	.020	**-.181***	.056	-.015	-.100	**.484****	**.180***	-.042	-

* Correlation is significant at the 0.05 level (2-tailed)
** Correlation is significant at the 0.01 level (2-tailed)

The correlations indicate strong associations for the behaviour responsibility scale. The correlations indicated that participants who entered the bridging program with a high level of responsibility for their own academic behaviours would be expected to be more organised (ρ = 0.435), demonstrate a higher level of social interaction with staff and peers to support their academic endeavours (ρ = 0.602) and possess a higher perceived capacity to cope with the curriculum (ρ = 0.361). However, it is also the case that none of these characteristics are associated to any degree with the quality of

achievement on the first assessment task. Confidence to complete assessment is actually negatively associated with the achievement result on the first assessment tasks (ρ = 0.-0.181).

The age of the participant appears as the primary predictor of achievement on the first assessment tasks (ρ = 0.484). While age and the level of achievement were positively associated, age was negatively associated with assessment confidence (ρ = -0.204) and the perception of the capacity to cope with the curriculum (ρ = -0.146). These associations indicate that older participants actually achieved better than younger participants, but have a lower confidence in their ability to do so. This finding supports that of Krause, Hartley, James and McInnis (2005). Age is also positively associated with the hours of study the participant intended to complete (ρ = 0.278).

The lack of significant positive associations between the personal characteristics of the participants, particularly the level of assessment confidence and the capacity to cope with the curriculum, suggests that the participants' attitudes upon entry in the bridging program in relation to their academic capacity do not reflect how well they will perform academically in the early weeks of the semester.

The correlation matrix for the week 10 data collection is shown as Table 9. Sample sizes ranged from 68 to 77.

Table 9: Final data collection Spearman's rank order correlation matrix

Measure	1	2	3	4	5	6	7	8	9
1. Social behaviours	-								
2. Assessment confidence	.153	-							
3. Organisation	**.599****	.088	-						
4. Behaviour responsibility	**.610****	.058	**.579****	-					
5. Capacity to cope	**.398****	**.419****	**.439****	**.372****	-				
6. Age	.130	-.114	.051	.061	-.097	-			
7. Hours study	**.305***	-.178	.192	.221	.053	**.381****	-		
8. Hours work	.106	-.102	-.039	.061	-.048	-.069	-.009	-	
9. Overall achievement	**.260***	.140	.220	**.253***	.211	**.407****	**.264***	.036	-

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

It is apparent that academic behaviours and attitudes are much more closely aligned to the quality of academic achievement by this time. The overall academic achievement is now positively associated at a statistically significant level with social behaviours ($\rho = 0.260$) and behaviour responsibility ($\rho = 0.253$). The levels of association with organisation ($\rho = 0.220$, $\rho = 0.059$) and capacity to cope with the curriculum ($\rho = 0.211$, $\rho = 0.074$) are just outside the cut-off for significance at the 95% confidence level. The association between achievement and age was still at a similar level to that of the initial data collection; however, the association of achievement with the weekly hours of study had increased substantially ($\rho = 0.264$). Older students were still reporting higher levels of weekly study at the week 10 data collection ($\rho = 0.381$). It is apparent that older students are still studying and achieving at higher levels ($\rho = 0.407$); however, the negative associations of age with assessment confidence and the capacity to cope with the curriculum which were present at week 1 are no longer evident.

The strength of the associations between the various academic scales has also shown a general increase to quite high levels, with behaviour responsibility now correlated with social behaviours ($\rho = 0.610$) and organisation ($\rho = 0.579$). Likewise, social behaviours and organisation are highly correlated ($\rho = 0.599$).

Conclusions

A major finding of this study is the low level of confidence that the participants demonstrated in relation to their capacity to succeed in assessment, particularly those involving oral presentations and examinations. Even though the participants reported significant improvements in perceived academic self-efficacy over the course of the bridging program in many areas, the confidence to perform in examinations and oral presentations demonstrated no improvement at all. The strong correlation between achievement and age which was

evident at both data collections also indicates that this is a particular problem for younger participants.

It was identified that the participants who left the bridging program possessed lower levels of organisational capacity and self-expectation and commitment to completion. However, it was also demonstrated that the participants' view of their academic capabilities in week 1 were not indicative of their actual achievement during the early weeks of the program. The positive association between the participants' attitudes towards assessment, their capacity to cope with the program content and their academic behaviours only appeared at the week 10 data collection. This lack of awareness on the part of the participants should be made known to current and potential bridging program students as an aid in communicating that their perceptions of their academic capacities in the early transitional period of the program may not be accurate and must be given time to develop.

This study has provided clear evidence to support the stance that the intervention employed during the first six weeks of the semester achieved significant improvements in both the level of academic self-efficacy and study behaviours of the participants of a bridging program. However, two areas are suggested for further study. Firstly, the role of assessment during the early transitional period of tertiary bridging programs is considered to be very problematic. It is considered that traditional forms of assessment, particularly examinations, may be inappropriate during the early stages of these programs and alternative forms of assessment may be warranted. The views expressed by Debenham and May (2005) relating to the academic silence with respect to teaching within tertiary bridging programs, and assessment in particular, are still apparent in this regard. Secondly, younger tertiary bridging students with negative previous experience of educational environments and who are possessed of lower levels of self-expectation, commitment and academic skills appear to be at greater risk of attrition. The

techniques which may be employed to keep these students engaged for a sufficient period to allow their skills and commitment to develop to a point that will support them in their tertiary endeavours requires further research.

Appendix 1: Academic self-efficacy related items

No.	Item Text	Collection 1 $\overline{X}$	Collection 1 *s*	Collection 1 *Nn*	Collection 2 $\overline{X}$	Collection 2 *s*	Collection 2 *N*	*Z*	*p*
1	**I should be able to keep up with the amount of work in the [bridging program]**	**4.00**	**0.623**	**246**	**4.49**	**0.553**	**77**	**-3.904**	**.000**
2	**I should be able to understand the workbooks which are used in the [bridging program]**	**4.23**	**0.585**	**246**	**4.43**	**0.498**	**77**	**-3.667**	**.000**
3	**I should understand the content of workshops offered in [bridging program]**	**4.18**	**0.595**	**246**	**4.43**	**0.572**	**77**	**-3.646**	**.000**
4	**I believe that note-taking in lectures will be easy to do**	**3.75**	**0.761**	**246**	**3.88**	**0.743**	**77**	**-2.725**	**.006**

No.	Item Text	Collection 1 $\overline{X}$	*s*	*Nn*	Collection 2 $\overline{X}$	*s*	*N*	*Z*	*p*
5	**I find it easy to integrate and extend on the ideas of other people**	**3.76**	**0.769**	**246**	**3.91**	**0.653**	**77**	**-3.793**	**.000**
6	**Writing assignments is easy**	**3.10**	**0.794**	**246**	**3.36**	**0.962**	**76**	**-2.834**	**.000**
7	**I do not need much guidance when writing my assignments**	**2.87**	**0.850**	**246**	**3.22**	**1.021**	77	**-4.284**	**.000**
8	Examinations are easy to pass	2.99	0.808	246	2.97	0.986	75	-1.575	.115
9	Oral presentations in workshops do not concern me	2.77	1.215	246	2.69	1.259	77	-1.127	.260

Appendix 2: Study behaviour and attitude items

		Collection 1			Collection 2				
No.	**Item text**	$\overline{X}$	*s*	*Nn*	$\overline{X}$	*s*	*N*	*Z*	*p*
10	**I intend participating in class discussions**	**4.06**	**0.674**	**246**	**4.26**	**0.616**	**77**	**-2.468**	**.014**
43	I plan ahead	3.97	0.859	246	4.12	0.760	77	-.806	.420
44	**I believe that study techniques are individual to each student**	**4.33**	**0.559**	**245**	**4.45**	**0.550**	**78**	**-2.874**	**.004**
45	I enjoy being organised	4.14	0.670	246	4.28	0.579	78	-1.671	.095
46	I know what it means to be organised	4.11	0.684	245	4.15	0.740	78	-.906	.365
47	I am happy to ask for help	4.18	0.664	246	4.18	0.734	78	-.147	.883
48	I intend on reading my course outline closely	4.30	0.657	246	4.29	0.686	78	-.784	.433
49	**I will study regularly and consistently**	**4.26**	**0.611**	**246**	**4.19**	**0.604**	**78**	**-2.274**	**.023**
50	I have organised a study, work, life balance	3.81	0.838	246	3.96	0.797	78	-1.759	.079
52	I will go to class and lectures	4.57	0.520	246	4.58	0.523	78	-.686	.493
53	I understand that the outcomes of this course are my responsibility	4.63	0.492	246	4.62	0.515	78	-1.061	.289

		Collection 1			Collection 2				
No.	**Item text**	$\overline{X}$	*s*	*Nn*	$\overline{X}$	*s*	*N*	*Z*	*p*
54	I will look after my health	4.48	0.562	246	4.47	0.528	78	-.539	.590
55	I will be active in class	4.31	0.609	246	4.49	0.528	78	-1.855	.064
56	I look forward to becoming involved in the...campus activities	3.98	0.772	246	4.03	0.755	78	-.510	.610
57	I know I need to be an independent learner	4.37	0.563	246	4.53	0.552	78	-1.800	.072
60	**I will take up drafting options**	**3.82**	**0.750**	**244**	**4.24**	**0.759**	**78**	**-4.336**	**.000**
61	I have organised a quiet study area	3.90	0.898	241	4.17	0.834	77	-1.715	.086
62	I will communicate with teachers	4.24	0.605	240	4.40	0.494	72	-1.446	.148
63	I look forward to meeting my peers	4.14	0.697	241	4.29	0.666	77	-.870	.384
64	I will be part of a study group	3.76	0.823	241	3.97	0.858	77	-1.420	.156
65	**I will complete my assessment on time**	**4.42**	**0.573**	**241**	**4.6**	**0.544**	**77**	**-2.043**	**.041**

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