

## *Submitted Papers*

Papers submitted to NAEAA 2017 will attract the HERDC classification of an E1 publication. This means that *refereed papers* are:

- a substantial scholarly activity, as evidenced by discussion of the relevant literature; and an awareness of the history and antecedents of work described that is provided in a format which allows a reader to trace sources of the work through citations;
- original (that is, more than merely a compilation of existing works);
- a contribution to existing knowledge;
- in a form that enables dissemination of knowledge; and
- subjected to impartial and independent (double blind) peer review by qualified experts

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## Males in Enabling: Painting a portrait through narrative.

*“I feel that STEPS is like a tunnel and there is light at the end of the tunnel, but I’m not sure if that’s a train or the outside.”*

Frank Armstrong, Trixie James, Hermina Conradie and Shane Parker  
CQUniversity, Australia

### **Abstract**

*The number of males entering higher education via an enabling pathway is increasing with noticeable diversity in age groups. Previous research undertaken by the authors began exploring the factors that inhibit or enhance the male experience within an enabling course. This paper will expand upon this research with a deeper focus into the male experience through personalised accounts derived from individual interviews. Using qualitative methodology and narrative inquiry, the findings provide a deeper understanding of the issues that males of different ages face when creating a new identity as a university student. The lens of transformative theory will underpin this research through exploring frames of reference that align to the students’ experiences. Portraits are woven into the narrative, and these personalised accounts are investigated and analysed in this paper.*

**To be published in Student Success Journal**

<https://studentsuccessjournal.org/>

## Exploring students’ uses of and dispositions towards learning technologies in an Australian pathways course

Rhian Morgan  
James Cook University, Australia

### **Abstract**

*University progression is increasingly dependent upon students developing a range of digital literacies in conjunction with the skills associated with their disciplines. Enabling and pathways programs in particular have a key part to play in supporting students to interact with technologies for learning. Widening participation and the diverse student cohorts characteristic of pre-degree spaces result in highly variable levels of digital literacy in the classroom. As such, universities need to develop strategies to effectively respond to the differing abilities of students entering the sector. This paper contributes to the development of such responses through a case study exploring students’ use of and dispositions towards technologies in an open access pathways course. In doing so the paper identifies trends in students’ uses of technology, such as preferences for mobile content and blended learning environments, before concluding with a discussion of how these findings can be mobilised in curriculum development.*

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## Emotional labour demands in enabling education: a qualitative exploration of the unique challenges and protective factors

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Lesley Osenieks  
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### **Abstract**

*Students in enabling programs bring richness, diversity, and complexity to the teaching and learning environment. They are often from under-represented backgrounds, have experienced educational disadvantage or disruption, belong to multiple equity groups, and face academic and non-academic challenges, including mental ill-health. This pilot study explored academic staff experiences in teaching and supporting students in enabling programs. Using a collaborative auto-ethnographical approach, four members of our multi-institutional research group wrote first-person reflections in response to guiding questions. From generative and reflective discussions, different themes arose. A major theme was the high “emotional labour demands” of teaching a vulnerable cohort, with both positive and negative effects on staff. Other major themes included: the diversity of emotional responses and coping strategies; the complex, sometimes contradictory, role of the enabling educator; the building of community, and witnessing students’ transformations. Within these themes, the challenges, rewards, and protective factors, which mitigate stress among enabling educators, were identified.*

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## “Why did we lose them and what could we have done”?

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### **Abstract**

Attrition remains an ongoing issue in enabling courses and the broader higher education sector. For more 31 years, CQUniversity (Central Queensland University) Australia’s *Skills for Tertiary Education Preparatory Studies* (STEPS) course has prepared students for university, many of whom are from one or more Commonwealth government target equity groups. A 2012 CQUniversity institutional review of STEPS resulted in significantly improved retention, yet attrition in STEPS continues. Empirical, qualitative research conducted in 2016-17 with 23 students who withdrew from STEPS between 2013 and 2015, and 10 Access Coordinators (AC) located across those CQUniversity campuses offering STEPS, has provided valuable insights into explanations for continued attrition. Based on suggestions of students and ACs, eight recommendations for improved retention have resulted, the intention being to increase student success and satisfaction, and improve retention in STEPS.

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## Games for adults: teaching fundamental mathematics concepts in an enabling education course

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### Abstract

*Students often come into enabling education courses with trepidation about studying, in particular in mathematics units. Game based theory using practical, as opposed to digital games, to overcome 'mathematics anxiety' was utilised. In creating the games, adult learning theories were taken into account. Students completed a survey on their perceptions of the influence of games on their learning. Results indicated that when students understood the relevance of a game, in relation to a mathematical concept, their learning was enhanced.*

*Keywords:* gamification, mathematics education, enabling education

### Introduction

Transition to university comes with many barriers. This is particularly the case for students who have not followed a traditional path after completing school. The Skills for Tertiary Education Preparatory Studies (STEPS) Course is an enabling program for adult students wanting to enter into a Bachelor level degree at CQUniversity. These students may not have finished school, may not have the prerequisites, or may not have confidence due to a delay since they last studied. STEPS is designed to cater to all needs and backgrounds. There is one core preparation unit and a suite of eleven other units. Students are directed to take units to fulfil prerequisites for their intended degree. These include writing, mathematics, science and computing units. This study focused on the mathematics units.

Research has shown that students often experience 'mathematics anxiety' throughout school and this is brought to university with them (Kargar, Tarmizi, & Bayat, 2010; Núñez-Peña, Suárez-Pellicioni, & Bono, 2013; Yaratán & Kasapoğlu, 2012). Therefore, students' first experiences of mathematics at university are critical for their overcoming this anxiety and achieving success in not only STEPS, but their chosen degrees.

In STEPS there are three consecutive mathematics units. The first unit begins with mathematics concepts from middle primary school. The units then build on these and the third unit is the equivalent of a Mathematics B (Qld) level. This meets the CQUniversity prerequisite for degrees including Engineering. To focus on initial perceptions and experiences of mathematics, this study was limited to the first of these units. Games and game-like activities, designed to engage the learner, were conducted. At the end of term, students completed a survey on their experiences within this context. Game based learning was implemented with on-campus students in two classes at the Rockhampton CQUniversity campus.

### Using games in the classroom

#### *What is gamification?*

Game based learning or gamification is a methodology used to support the engagement of students in learning concepts, particularly in mathematics (Cheong, Filippou, & Cheong, 2014). Utilising elements from a game (including design and thinking skills) to teach and consolidate concepts supports the theory that students need to be immersed in what the activity

is, to conceptualise the concept (Dicheva, Dichev, Agre, & Angelova, 2015). Games are culturally accessible, and encourage greater participation in learning and changing behaviour (Buckley & Doyle, 2016; Cheong et al., 2014). In today's educational environments, gamification enables combinations of content and necessary learning skills to be delivered in an engaged manner (Kingsley & Grabner-Hagen, 2015).

Gamification in education concentrates on engagement and motivation over fun. Faiella & Ricciardi (2015) state that using game elements to make repetitive or seemingly boring tasks interesting increases the student's motivation to learn. The majority of research revolves around the use of digital games (Buckley & Doyle, 2016) where gamification of content has been shown to support the development of problem solving, communication and critical thinking skills in adults (Cheong et al., 2014; Dicheva et al., 2015). It has also been successful in supporting learning for adults (Naik, 2014; Whitton, 2011). There is, however, a lack of evidence of the efficacy of simple, paper-based or manipulative games in the classroom with adults.

### *Why use gamification?*

Gamification is useful for three main reasons in this context. It provides a safe environment for possible failure, it is a social learning platform, and it can increase motivation.

An important component of gamification is the ability for a learner to fail in a safe environment (Buckley & Doyle, 2016; Plass, Homer, & Kinzer, 2015). Having the 'freedom to fail' and learn from mistakes improves persistence, which is an essential skill for the lifelong learner of the 21<sup>st</sup> Century (Dicheva et al., 2015). For adult learners in enabling courses, prior failures are often what has kept them from achieving entry to university education in the past (Hoffman, 2010), especially in mathematics (Jansen et al., 2013). Providing an environment where losing and trying again, and winning, are normal occurrences lessens the impact of the failures on students' self-efficacy and hence willingness to reattempt (Banfield & Wilkerson, 2014; Hoffman, 2010).

Learning through games provides the environment for students to interact on a social platform and construct the learning outcomes together. With non-digital games, the challenge, feedback and response is critical in formulating the success of the learning. The collaborative nature of games provides a social challenge that is not necessarily present in individual study. The social environment also provides the opportunity for immediate peer feedback, and for students to negotiate responses. Games with debate over the outcome or play, lead to deeper consolidation of the learning that may not occur in instructor led settings.

The ability to engage and sustain interest leads to increased motivation, especially for adult learners. This helps them to develop the understanding of a concept (Buckley & Doyle, 2016). A game that is engaging will keep a student's attention for longer and in a more significant way than repetitive exercises from a textbook. It is the ability of a game to motivate an adult learner to persevere through the conceptual phase of a mathematical idea that has profound results for their ability to apply the concepts at a later stage (Glasser, 2011).

### *Game theory*

To maintain motivation, the structure of the game must meet the learner's needs. As shown in Figure 1, engagement from games consists of several forms. Learning has been shown to be supported through this model of gamification. Figure 1 illustrates the need to consider adult

learners not only in terms of what they do, their behaviour of playing a game, but also their emotional, cognitive, social and cultural situation. Emotional reward systems and social interactions that are initiated through games provide a more sustained application of mathematical concepts (Faiella & Ricciardi, 2015; Kai, 2013).

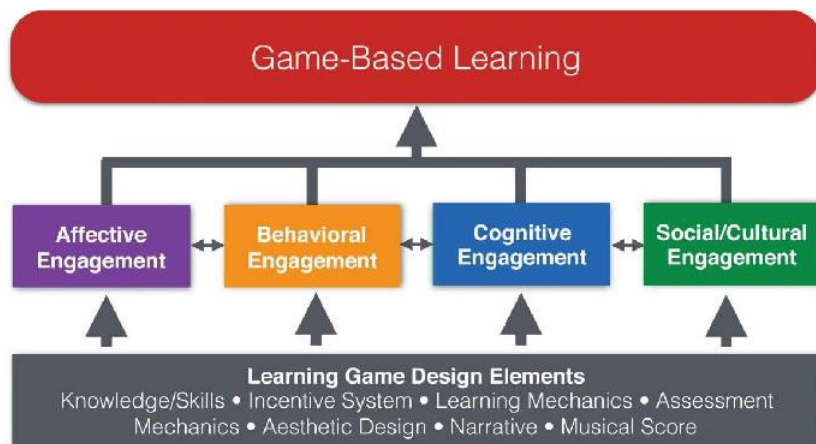


Figure 1 Game theory model (Plass et al., 2015)

Cognitive processing in relation to interaction with other components of game theory has been shown to facilitate retention of information (Faiella & Ricciardi, 2015). In terms of learning, game based environments can assist in problem solving by reducing the cognitive load for the learner (Shen, 2005). It does this by scaffolding the cognitive process through the use of rules that support the learner through mastering the concepts presented (Dominguez et al., 2013; Shen, 2005).

#### *Game theory, engagement and flow theory*

Game theory describes engagement in an activity. Persistence through challenges and failures is described through flow theory. Total absorption in a game results in active cognitive processing enhancing learning. Flow theory is one of the founding theories as to how the use of games maintains the learning experience. Flow theory provides a sequenced review of why games support the learning of a concept (Cowley, Charles, Black, & Hickey, 2008; Csikszentmihalyi, 1991; Moreno-Ger, Burgos, & Torrente, 2009). Flow theory works when the game has an intrinsic value to the person who is playing the game, hence encouraging engagement and motivation for learning.

When using the concepts of gaming, key components found in flow theory facilitate the immersion of the adult learner. The flow theory consists of:

1. a challenge that requires skill to achieve with an attainable goal and known rules
2. complete absorption in the activity
3. clear goals
4. immediate feedback
5. concentration on the task in hand
6. a sense of control, lacking the sense of worry about losing control
7. loss of self-consciousness
8. transformation of time

This can be illustrated by the use of card games that are redesigned to meet a specific purpose such as adding and subtracting negative numbers.

To be effective, design principles must be considered. These are reflected in flow theory as shown above and being absorbed in the activities that lead to problem solving is often referred to as 'being in the flow' (Ke, Xie, & Xie, 2016). As stated above, the constraints and rules of games give the player a sense of control. If they happen to 'fail', 'lose' or something similar, it is reflected that it was due to the game play, not due to them losing that control.

It was the experience of the researchers in this study that when students were involved in a game-like activity, that they exhibited these eight elements. Students were more outgoing than usual, mentioned that time went quickly, and it was difficult to bring their attention back to the instructor. This led the researchers to develop a project to introduce intentional learning games into the classroom and then assess students' perceptions.

### **Introducing games into the classroom**

Introducing games into the classroom requires careful consideration. These considerations include ease of implementation and appropriate level of gaming to reflect the concept being taught as well as theories of adult education. Digital games require expertise to design the appropriate level of learning. This is quite often beyond the level of expertise for the lecturer or teacher. Non digital games can still be modelled using game theory to enhance the motivation and cognitive learning for the students involved (Qian & Clark, 2016). In the STEPS mathematics classroom, there is often a mix of ages and technical abilities. With limited access to computers, it was decided to use physical and paper based games.

The game, whether digital or non-digital, must fundamentally have the ability to provide the initial understanding of a concept and support consolidation. Consideration of the content, students involved and the desired outcomes provides the most benefit when these are the basis for the game (Cheong et al., 2014; Robson, Plangger, Kietzmann, McCarthy, & Pitt, 2015) and therefore games need to be designed for learning as opposed to 'fun' (Attali & Arieli-Attali, 2015; Whitton, 2011). The lecturers in this study were experienced in teaching the content of the unit and hence designed and created games to focus on the specific learning needs at that point in the syllabus.

Adults bring with them preconceived ideas in relation to their own learning (Robson et al., 2015). This means that adults often have heightened self-awareness around engaging in activities (Knowles, 1981). In addition, adults consider the longer learning journey and hence need to perceive what they learn as being applicable to their current and future situation (Rodrigues, 2012). Because of these reasons, adult resistance or willingness to engage in games has been linked to the perceived relevance of the game being used (Banfield & Wilkerson, 2014; Whitton, 2011). Once the condition of relevance to the topic has been satisfied, adult students are more willing to partake in a game.

Teaching adults is different from teaching children the same mathematical content. The researchers used a combination of andragogy (Knowles, 1981) and inclusive pedagogies for teaching mathematics. Games, fun and play that is regularly used when teaching younger children tends to stop with older students. Learning stops being 'play-based' and starts being 'work'. Often when teaching adults, classes become routine and are about doing the 'work'. In addition, mathematics is a subject that is often taught in isolation with limited connections made to 'real world' situations and examples. This disconnect can add to the perception of mathematics being a difficult and 'boring' subject. As the research has shown (Naik, 2014; Qian & Clark, 2016), there is a place for gamification of the mathematics curriculum in adult

learning in light of careful consideration of game based learning theories.

### *The games*

Several simple manipulative or paper based games constructed by the lecturers were conducted in the classroom. Some examples are as follows.

In order to support algebraic thinking, printed cards with numbers as well as pictures of fruit (apple, banana and carrot) became a part of the tools to support understanding. Having visual cards that illustrated like and unlike terms in a non-threatening approach enabled discussion that may not have occurred if the content had been taught in an abstract manner. Various techniques involving a game environment to enhance the learning of adding and subtracting algebraically supported the ability for mistakes to be made in a safe learning environment.

Well-known card games were repurposed to explore the concepts of positive and negative numbers. For example, the principles of 'snap' allowed the black cards to be positive and the red cards to be negative values. As the cards were revealed on the pack, a running score using directional numbers was able to be collaboratively explored until a target was reached.

A simple flow chart structure was used to practice conversions of units, for example kilograms to grams. As the students found a solution, they were able to make a path through to a result that ended in a prize such as a sticker or chocolate frog. Common errors were incorporated as alternative routes that lead to a path with no prize, and this promoted self-checking of solutions.

A paper based version of 'battleships' was used to consolidate knowledge of two dimensional coordinates. Lines drawn on Cartesian planes were constructed to isolate letters that would solve a riddle, helping students understand linear inequalities. Again, students could check their own work and use peer support in an environment that was safe and fun, and yet focussed on learning.

### **Survey instrument**

At the end of the term during in which these games were used, students were surveyed using a purposely designed instrument to explore their perceptions of using the games in the mathematics classroom.

The survey contained eight questions that allowed the students to give responses on a 5-point Likert scale and a ninth question around games they engaged in. These questions covered three main areas: adults' perception of the difficulty of mathematics; that games are not only for children; and that games help students learn the concepts. Students were able to make further comments if they chose to. The survey was administered by a third party to eliminate the chance of any bias if the teacher had been in the classroom. It was optional for the students to complete any or all of the questions. The survey was conducted at the end of class time to allow the opportunity for students willing to participate. There were 45 students in the two classes on the day the survey was administrated. All 45 participated in the survey. A statistical analysis was not conducted due to the low number of participants.

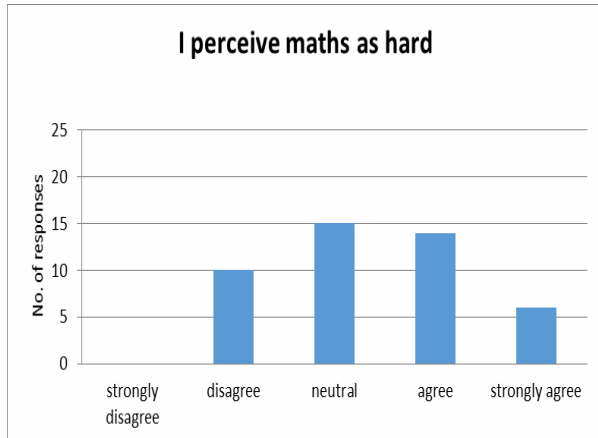
The results from the Likert scale questions were graphed and the text responses themed according to open coding and categorisation (Strauss & Corbin, 1998). The categories that emerged from this analysis supported the four main question areas in the survey.

### **Results and discussion**

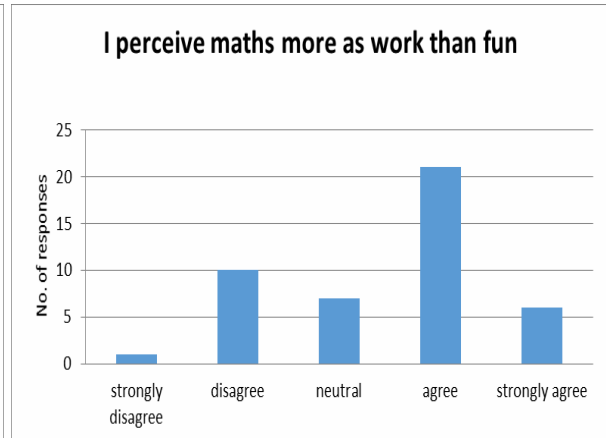


*Adults often find maths difficult*

Students in enabling courses often have prior experiences that were not conducive to learning mathematics or even to the enjoyment of the subject. Therefore, the results are not surprising from the questions asked in Figures 2 and 3. These results support the theories that students come in with some level of ‘mathematics anxiety’ and barriers to their motivation to learning the content.



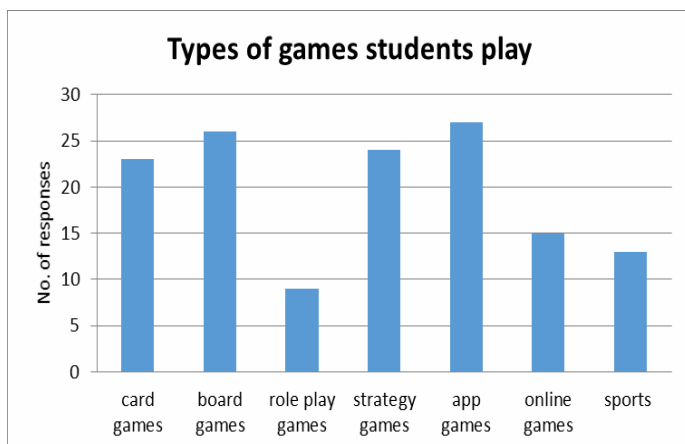
*Figure 2 Mathematics is ‘hard’*



*Figure 3 Mathematics is ‘work’*

*Adults enjoy games too*

As discussed above, games are often used when teaching children basic mathematics concepts, but less so for adults, and one argument could be that adults do not want to play games. Figure 4 shows this is not the case as many adults find games such as card games, video games, board games and sporting games relaxing. While the type of games adults play could be seen as different, they are still engaging, otherwise people would not take part. In STEPS mathematics courses, therefore, we aimed to bring that engagement into the adult classroom through games.



*Figure 4 Games students play outside the classroom (multiple answers allowed)*

Since students do like to engage in games, there would be reason to suspect that they would also like engage in games in the classroom. One challenge, however, was that the types of games used to teach children the mathematics concepts could be seen as ‘childish’. With enthusiasm from the teacher, however, this was not the case and the students embraced all of the games presented. The challenge was to employ fun and engaging activities that were less likely to be perceived as condescending or demeaning. The games and activities were described to make it clear to the students that there was no assumption of low intelligence made simply because they had a low level of mathematics knowledge. This is confirmed by the results in Figures 5 and 6 that show most students strongly disagreed or disagreed that games were only for children, and Figure 7 where they agreed that seeing the relevance was important.

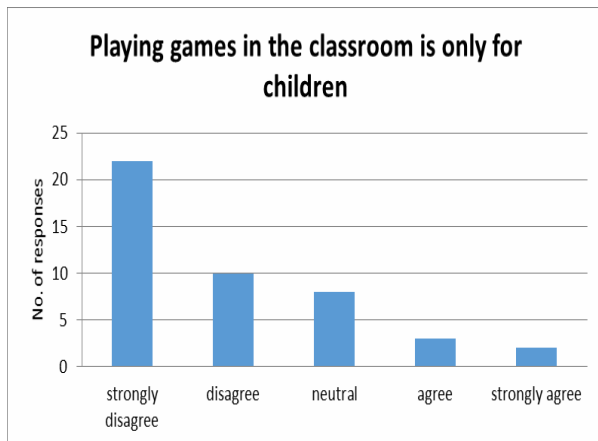


Figure 5 Games are only for children



Figure 6 Games are demeaning

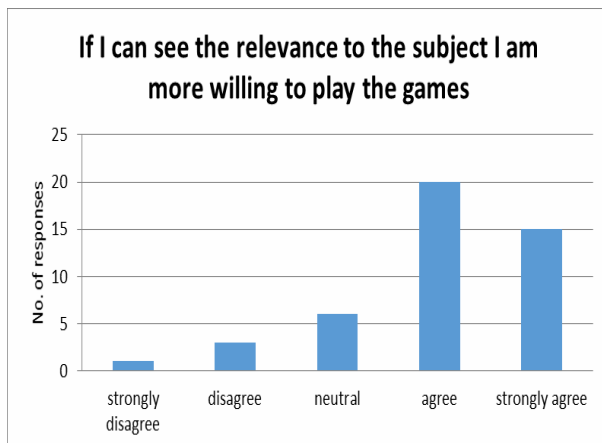
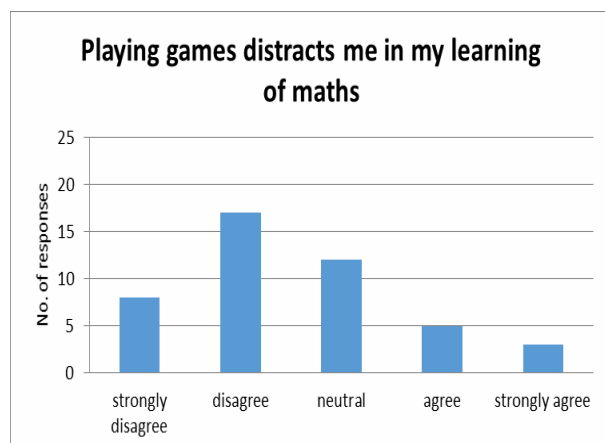


Figure 7 The relevance of the games

#### *Games help adults learn maths content*

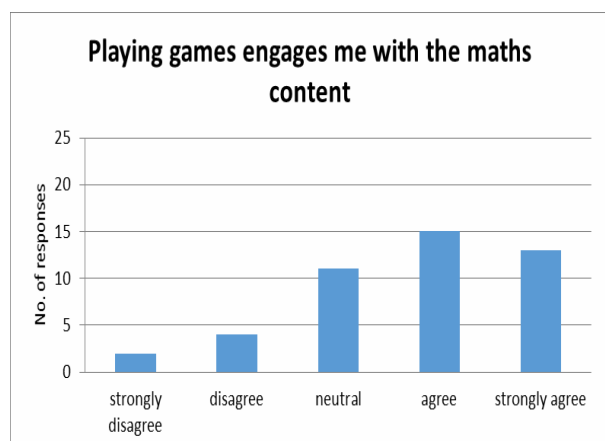
Adult learning theory suggests that students are self-directed and self-motivated. There is the perception that adult students just want to learn what they need to know to pass the test. There is a risk that they could interpret games as obstacles to this end. This can be seen as an institutionalised way of learning. Lecturers were aware of the need to justify why content is delivered in a particular manner, and so this became a focus for the lecturers. Games and game like activities were introduced with clear reasoning for the purpose of enhancing learning outcomes. This meant that students were receptive to the games and this, in turn, helped them

remember the mathematical concepts and supported a deeper understanding. This is shown in the results in Figure 8.



*Figure 8* Games distract from learning

Not only does engaging in the games not distract students when the games are framed correctly, the students agreed that the games actually engage them and make the learning fun as seen in Figures 9 and 10.



*Figure 9* Games engage students with content



*Figure 10* Games make learning fun

## Conclusion

There are sound theoretical bases for using games in learning and to not limit their use to children. The results from this study provide evidence that adult learners (i) enjoy the games; (ii) find games engaging; and (iii) help them engage with the learning. The games help students overcome 'mathematics anxiety' as they provide a safe environment for 'failure'. Students are also able to engage their affective, cognitive and social domains to assist them to consolidate the meaning of the concepts being taught. It is important that adult learning theory is employed when designing games so as to make them relevant to the participants and that the reasons for their use are communicated effectively to the students. The games do not need to be technologically excellent, but with the right enthusiasm from the teacher, they can be used as an extremely low cost strategy to engage and motivate students towards success in a subject that

is often seen as not ‘fun’.

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## Time management and attitude towards science as predictors of academic success in an enabling science subject: A preliminary exploratory study

Johanna E Nieuwoudt and Michael Brickhill  
Southern Cross University

### Abstract

*Students' attitudes towards science and time management may contribute towards academic success within science subjects. Possible relationships between the attitudes and time management skills of students and final grades achieved in an enabling science subject were investigated using the My Attitudes Toward Science (MATS) instrument and the time and study environment subscale of the Motivated Strategies for Learning Questionnaire (MSLQ). Results suggest academic success may not be related to a positive attitude toward science nor good time management, as no significant relationships were found between students' final grades and any subscales. Interpretations of results are limited by a small sample size and apparent unreliability of MATS subscales. Greater insight into factors influencing academic success in science subjects could be obtained using more reliable survey instruments in conjunction with targeted focus groups.*

*Keywords: academic success, attitude, enabling, science, time management*

### Introduction

A major concern for universities is to ensure that students do well and progress through their undergraduate degrees. The experiences of students in their first academic year are crucial to their overall chances of academic success (Perry, Hladkyj, Pekrun, & Pelletier, 2001) and first year students are at high risk of attrition (Australasian Survey of Student Engagement, 2011), particularly in Enabling programs where the rate of attrition approaches 50% (Hodges et al., 2013; Pitman et al., 2016). The number of students studying the fundamental sciences in Australia decreased despite an increase in the overall number of students enrolled in tertiary education (Birrell, Edwards, Dobson, & Smith, 2005; Dobson, 2007). Australia may experience a 'science crisis' if enrolment in science subjects continues to decline (Australian Council of Deans of Science, 2003; Kennedy, Lyons, & Quinn, 2014). It is therefore desirable to decrease attrition rates and increase academic success in science subjects. To achieve this it is important to understand the behaviours and attitudes of students that succeed well in these subjects.

It is known that students' attitude toward a subject is an important attributing factor in academic success (Bloom, 1976). Also, according to the Theory of Reasoned Action, the attitude of an individual plays a major role in the behaviour that the individual will perform (Aydeniz & Kaya, 2012). It seems that a positive attitude towards a subject may translate in effort regulation, even when the student is not enjoying the particular activity (Liu, Hsieh, Cho, & Schallert, 2006). Research suggests that academic success in science subjects may be related to attitudes toward science (Smith, Pasero, & McKenna, 2014), however, the strength, significance, and generality of this relationship appears inconclusive. This may be due to the lack of clarity about what is meant by 'attitude towards science' (Osborne et al., 2003) and the different ways attitude towards science is measured (Newell, Tharp, Vogt, Moreno, & Zientek, 2015). Attitude toward science refers to "students' emotional conception of science – beliefs, values and feelings – and is a complex, multi-faceted construct" (Osborne et al., 2003, p. 218). Several researchers have concluded that a positive attitude toward science is related to academic success in science subjects (e.g., Narmadha & Chamundeswari, 2013; Papanastasiou &

Zembylas, 2004; Sgoutas-Emch, Nagel, & Flynn, 2007). Other researchers have found negligible associations between attitude towards science and academic success (e.g., Gungor, Eryilmaz, & Fakioglu, 2007; Osborne, Simon, & Collins, 2003), or no relationship between attitude towards science and academic success (Liu et al., 2006).

Although a positive attitude towards science may contribute to academic success, it is important to note that students also need to manage their time effectively in order to perform well academically. Students often voice concerns about a lack of time to complete all assigned tasks to a satisfactory standard (Burke, Bennett, Bunn, Stevenson, & Clegg, 2017). Time and study environment management may also be important in driving students to complete assigned tasks to a satisfactory standard and accordingly increase academic achievement (Burke et al., 2017). Time and study environment refers to the regulation of study time and tasks, as well as the surrounding study environment (Effeney, Carroll, & Bahr, 2013; Pintrich, Smith, Garcia, & McKeachie, 1991). Some research suggests that time management is positively correlated with academic success (e.g., Kitsantas, Winsler, & Huie, 2008; Komarraju & Nadler, 2013), although Klingsieck, Fries, Horz, and Hofer (2012) found no significant correlation between time management and academic success. One meta-analysis found a small association between time management and academic success (Broadbent & Poon, 2015).

Science teaches students critical thinking skills which are important in all subjects (Movahedzadeh, 2011). It is suggested that a positive attitude towards science will not only lead to an increase in academic success in science subjects, but in other subjects as well (Movahedzadeh, 2011). Students with good time and study environment management are more likely to have higher academic achievement (Broadbent & Poon, 2015). Overall, the literature suggests that both time management and attitudes toward science are related to academic success. However, no studies to our knowledge have addressed both time management and attitudes toward science as predictors of academic success in an enabling science subject. The experiences of students in their first academic year are crucial to overall academic success in undergraduate degrees (Perry et al., 2001).

The Preparing for Success at SCU Program (PSP) is an enabling program at Southern Cross University that is 12 weeks in duration, and consists of four subjects. Southern Cross University is a regional university in northern New South Wales, Australia. The program is offered three sessions a year, and can be studied online or on campus at Coffs Harbour, the Gold Coast, and Lismore. The three compulsory subjects equip students with communication, study, and numeracy skills. The fourth subject is an elective, and students can choose between an arts-based or science-based subject. Successful completion of the program provides a distinct pathway into tertiary study at Southern Cross University, but not necessarily in the student's first choice program. The subject EDU10448 Studying Science introduces students to science, and key concepts in biology, physics, and chemistry.

The purpose of this research is to investigate the role students' attitudes toward science and time management skills may play in predicting their academic success in an enabling science subject, as measured by the subject final grade. An online survey study was conducted that aimed to: (a) determine the relationship between attitude towards science and academic success as measured by the subject final grade, (b) determine if there is a difference in attitude towards science between the start and the end of the session, (c) determine the relationship between time management skills and academic success as measured by the subject final grade, and (d)

determine if there is a difference in time management skills between the start and the end of the session.

If academic success can be predicted by time management and/or attitudes toward science, then improvements in these factors may lead to an increase in final grades, not only in science subjects but also in other subjects.

## **Method**

### *Participants and recruitment*

Participants were invited to participate in an online survey about the role students' attitudes towards science and time management skills might play in predicting academic success. The inclusion criterion was enrolment in the Studying Science subject (EDU10448) at Southern Cross University. An information statement was provided at the start of the questionnaire. Participant consent was implied by completing the survey. Participation was voluntary, and participants could withdraw at any time of the study and were able to skip any questions they did not want to answer. Ethics approval was obtained from the Human Research Ethics Committee of Southern Cross University (approval number ECN-16-039). A total of 433 students were invited to participate in the online survey ( $n = 177$  in Session 3, 2016, and  $n = 256$  in Session 1, 2017). A total of 43 participated in the online survey ( $n = 21$  in Session 3, 2016, and  $n = 22$  in Session 1, 2017), with only 14 students participating in both the Weeks 3-5 and Weeks 10-12 surveys.

### *Materials and Procedure*

Potential participants were recruited online through e-mails sent by the University Blackboard e-mail system to all students enrolled in the Studying Science subject. A link (web address) to the survey was provided. The online survey was opened from the start of the third week of Session 3, 2016; and again from the start of the 10<sup>th</sup> week of the session. The survey was open for three weeks each time. In Session 1, 2017, the process was repeated again. The online survey was supported by Qualtrics research software.

This study used a cross-sectional design with an online survey consisting of self-report measures. Students' attitudes toward science were assessed with the multidimensional My Attitudes Toward Science (MATS; Hillmann, Zeeman, Tilburg, & List, 2016). The time and study environment subscale of the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich et al., 1991) was used to assess students' time and study environment management.

The MATS consists of 40 items rated on a 5-point Likert scale, with responses ranging from 1 (disagree a lot) to 5 (agree a lot). The MATS consists of four subscales, and the scores from each question under each subscale are added up. The four subscales are: Attitude toward the school science (score range 14 – 70), Desire to become a scientist (score range 2 – 10), Value of science to society (score range 12 – 60), and Perception of scientists (score range 12 – 60). The scores obtained using the MATS provides a dimensional description. Higher scores for each subscale indicate a more positive attitude towards school science, a strong(er) desire to work as a scientist, a higher perceived value of science to society, and a more stereotypical idealised view of scientists respectively. There is no cut-off score.



The time and study environment subscale of the MSLQ consists of eight items and are rated on a 7-point Likert scale, with responses ranging from 1 (not at all true of me) to 7 (very true of me). Total scores range from 1 to 56. The scores from each question are added up and an average taken. The time and study environment subscale provides a dimensional description, with a higher score indicating greater ability to manage time and study environment. There is no cut-off score. Time management in this subscale referred to students' scheduling, planning, and management of study time and making effective use of available study time. The study environment referred to the place where an individual studied (Pintrich et al., 1991).

### *Measures and Analysis*

Descriptive statistics were used to explore the study population's characteristics. Final grades were acquired from the university Blackboard system. Cronbach's alpha was used to determine the reliability and internal consistency of the MATS subscales and the time and study environment subscale of the MSLQ.

Pearson product-moment correlation coefficient ( $r$ ) and Spearman Rank Order Correlation ( $r_s$ ) analyses were undertaken to examine the associations between attitudes toward science and final grade, and between time management and final grade. Paired sample t-tests and Wilcoxon Signed Rank Tests were undertaken to examine between-group differences. Non-parametric tests were used for variables that were not normally distributed. Effect size was calculated by eta squared ( $\eta^2$ ) and by  $z/\text{square root of } n$ , respectively. The level of significance was set at  $p \leq 0.05$ . Statistical analyses were performed using IBM SPSS, Statistics 24 (IBM SPSS; Chicago, Illinois).

### **Results**

In the current study, the MATS subscales had variable internal consistency (Attitude toward the school science  $\alpha = 0.83$ , Desire to become a scientist  $\alpha = 0.53$ , Value of science to society  $\alpha = 0.57$ , Perception of scientists  $\alpha = 0.47$ ). The time and study environment subscale of the MSLQ had good internal consistency ( $\alpha = 0.79$ ).

The mean final score achieved was 62.91 (i.e. a Pass grade) out of a possible 100 ( $SD = 26.19$ ). Grades ranged from Fail to High Distinction, as presented in Table 1. Fail grades were awarded to students as a result of non-submission of assessments. Withdrawn grades were awarded to students who formally withdrew from the subject.

Table 1 *Final grade distribution of participants (N = 43)*

Final Grade	<i>n</i>
Withdrawn	2
Fail (0-49%)	11
Pass (50-64%)	3
Credit (65-74%)	8

Distinction (75-84%)	14
High Distinction (85-100%)	5

Mean scores for the MATS subscales were calculated for the total sample (Attitudes toward the school science, 53.43,  $SD = 7.4$ ; Desire to become a scientist, 6.93,  $SD = 1.95$ ; Value of science to society, 53.97,  $SD = 3.87$ ; Perception of scientists, 25.85,  $SD = 4.34$ ). The mean score obtained for the time and study environment subscale of the MSLQ was 5.38 ( $SD = 1.0$ ).

Pearson product-moment and Spearman rank order correlational analyses found no significant correlations between final grades and all five subscales, as presented in Table 2. Wilcoxon Signed Rank Tests and Paired-samples t-tests found only one significant difference between students' survey responses at the start of the session and towards the end of the session, as presented in Tables 3 and 4.

Table 2 *Pearson product-moment correlation coefficient and Spearman Rank Order correlation between final grades and the MATS subscales (n = 55) and the time and study environment subscale of the MSLQ (n = 55)*

	Attitude toward the school science	Desire to become a scientist	Value of science to society	Perception of scientists	Time and study environment
Final grade	-.113 ( <i>r</i> )	-.069 ( <i>r<sub>s</sub></i> )	.034 ( <i>r</i> )	.032 ( <i>r</i> )	-.205 ( <i>r<sub>s</sub></i> )
	.410 ( <i>p</i> )	.617 ( <i>p</i> )	.807 ( <i>p</i> )	.817 ( <i>p</i> )	.134 ( <i>p</i> )

*Note.* MATS = My Attitude Towards Science; MSLQ = Motivated Strategies for Learning Questionnaire

Table 3 *Wilcoxon Signed Rank Test statistics for differences in survey responses obtained in Weeks 3-5 and 10-12*

	Weeks 3-5	Weeks 10-12	<i>z</i>	<i>p</i>	Effect size	<i>n</i>
Desire to become a scientist	<i>Mdn</i> 7	<i>Mdn</i> 7	-.466	.641	.12	14
Time and study environment	6.4	6.1	-.524	.600	.14	14

Table 4 *Paired-Samples T-Test statistics for differences in survey responses obtained in Weeks 3-5 and 10-12*

	Weeks	Weeks	<i>t</i> (df)	<i>p</i>	$\eta^2$	<i>n</i>
	3-5	10-12				
	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )				
Attitude towards the school science	53 (6.05)	56.6 (5.88)	-2.178 (13.0)	.048	-.50	14
Value of science to society	53.86 (2.38)	54.71 (4.50)	-.872 (13.0)	.399	-0.16	14
Perception of scientists	25.50 (3.92)	26.64 (4.39)	-1.080 (13.0)	.300	-0.20	14

## Discussion

It appears that academic success is not necessarily related to a positive attitude toward science, as no significant relationship was found between final grades and the MATS subscales in this preliminary exploratory study (see Table 2). Mean scores on the MATS indicated a high positive attitude towards science; however, final grades ranged from Fail to High Distinction (as seen in Table 1). Data from the current study indicated that 44.2% ( $n = 19$ ) of participants achieved a score greater than 75 out of a possible 100 points, with the mean final grade score being 62.91. It has been suggested that a student with a positive attitude towards a subject may continue to work hard, even when the student is not enjoying a particular task within that subject (Liu et al., 2006). This may be due to a relationship between achievement and attitude. However, it is not clear if academic success leads to a positive attitude towards a subject, or if a positive attitude towards a subject leads to academic success in that subject (Osborne et al., 2003).

A significant change in students' attitude towards the school science occurred between the start of the session and towards the end of the session (see Table 4). It is not known what led to the positive increase in how students feel about science as a subject. Future research consisting of focus groups is required to explore this change. No significant change occurred in three of the subscales of the MATS between the start of the session and towards the end of the session (evident from Tables 3 & 4). A possible explanation for the lack of change may be that participants already had a strong desire to work as a scientist, a high perceived value of science to society, and a non-stereotypical idealised view of scientists respectively. Further research is required, particularly involving students whose attitudes toward science are perhaps not as positive as current survey participants' were at the beginning of each study session. Any link or relationship between academic success and attitudes toward science may also be confounded by non-intellective factors of academic success, for example, academic self-efficacy (Richardson, Abraham, & Bond, 2012), conscientiousness (e.g., Powell & Nettelbeck, 2014; Richardson et al., 2012), and effort regulation (Komarraju & Nadler, 2013). Furthermore, the results of the

current study are not conclusive due to the small sample size and variable Cronbach's alpha values of the MATS subscales.

Mean scores on the time and study environment subscale of the MSLQ indicate a greater ability to manage time and study environment; however, final grades ranged from Fail to High Distinction (as seen in Table 1). It appears that academic success may not necessarily be related to good time and study environment management, as no significant relationship was found between final grades and the time and study environment subscale (evident from Table 2). Although the relationship between time management and academic success was not significant, the negative relationship ( $r_s = -.205$ ) may reflect students who withdrew from the subject and who had disengaged and stopped participating (thus being awarded a Fail grade). There was no significant change in time and study environment management skills between the start of the session and towards the end of the session (evident from Table 3). One possible explanation for this lack of change may be that the participants already had good time and study environment management skills, and therefore any significant change in time management was not likely. More research involving students who have a lower ability to manage their time and study environment at the beginning of the session is required.

Of the 43 participants, 13 (30.2%) did not complete the Studying Science subject, despite having a positive attitude towards science and good time management skills. This may be due to external contextual factors, such as personal circumstances and cultural influences (Poropat, 2009). Students enrolled in the PSP are typically from diverse economic, cultural, and educational backgrounds (Hellmundt & Baker, 2017). Students enrolled in university-based enabling programs often do not complete the program due to health issues, life events (for example, taking up a new job), financial difficulties and family responsibilities (Hellmundt & Baker, 2017; Hodges et al., 2013). While enabling programs have attrition rates approaching 50% (Hodges et al., 2013; Pitman et al., 2016), this attrition is not always negative and does not necessarily represent personal failure on the part of students nor failure on the part of universities. Attrition can be positive, for example, when students make an informed decision to not complete a given subject or course (Muldoon, 2011). A student's decision to withdraw may be driven by health issues, family responsibilities, or coming to a personal conclusion that university education is not an option that they wish to continue to pursue (Hodges et al., 2013).

The quality of teachers and their teaching is also important to academic success (Hattie, 2009). Positive and personalised interaction between students and inspirational teachers are key to enhance student learning (Scott, 2008) and can influence the determination of students to complete a science course (Packard, Gagnon, LaBelle, Jeffers, & Lynn, 2011). The first year of university is challenging for students and for teachers due to high levels of student diversity (Taylor, 2013). Teachers are responsible for providing students with opportunities to attain the necessary academic skills (Taylor, 2013) as well as facilitating student engagement (Trowler, 2010) through active learning and innovative curricula (Scott, 2008). Nevertheless, students are ultimately responsible for their own engagement (Trowler, 2010) and according to Bensimon (2009, p. xxiii) "must invest time and effort into academic activities and practices".

Previous research indicates that a positive attitude towards science (e.g., Narmadha & Chamundeswari, 2013; Papanastasiou & Zembylas, 2004; Sgoutas-Emch et al., 2007) and good time management skills (e.g., Broadbent & Poon, 2015; Kitsantas et al., 2008; Komarraju & Nadler, 2013) are associated with academic success. The current study is the first study

addressing attitudes toward science as predictors of academic success in an enabling science subject. No significant relationship was found between these variables. It is likely the results presented here represent only a partial picture of a complex interaction between the behaviours and attitudes of students that are associated with academic success. To decrease attrition rates and increase academic success, it is important to investigate the mediating factors such as academic self-efficacy. A focus on modifiable variables will enable the design of interventions that are more likely to enhance students' academic success.

### *Limitations*

It is acknowledged that the current study had several limitations. Self-selection bias is a limitation of both online and traditional surveys. The data were exclusively based on self-reporting, which can have tendencies toward social desirability bias. It is also possible that participants' interpretation of the meanings of statements or questions may differ markedly from those intended by the researchers (Dillman, Smyth, & Christian, 2009). For example, the terms science and scientists may be too broad and may be interpreted differently by participants.

The small sample size also limits the interpretations and generalisations that can be made from the results obtained. Future studies should collect data from a larger sample of students. In the current study, the subscales of the MATS had Cronbach's alpha values ranging from 0.47 to 0.83. Only the Attitudes toward the school science subscale showed high reliability ( $\alpha = 0.83$ ), with the Desire to become a scientist, Value of science to society, and Perception of scientists subscales having Cronbach's alpha coefficient values below 0.70. Due to the relatively small number of participants, a factor analysis was not conducted to investigate the reasons for a low value of alpha. A low number of questions per subscale could also be attributing to a low alpha value, for example, the Desire to become a scientist subscale consist of only two items. Hillmann et al. (2016) explained that the Perception of scientists subscale may have a low Cronbach's alpha value, as student perceptions of scientists may be different than the traditional stereotypical views of scientists. Future research needs to address the psychometric properties of the MATS and its subscales in Australia. Focus group conversations either during or after survey deployment(s) could assist in further identifying and clarifying non-intellective and external contextual factors contributing towards students' academic success.

### **Conclusion**

The survey results presented suggest students' academic success may not be necessarily related to a positive attitude toward science nor time management and that attitudes and time management may not change significantly during a study session. However, these results are based upon a small sample size and also do not account for likely confounding effects from non-intellective and external contextual factors influencing student success. Future research involving larger samples of students using more reliable survey instruments in conjunction with focus groups should provide greater insight into factors influencing students' academic success in science units.

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## Amplifying success: The role of the Access Coordinator in the STEPS enabling course at CQUniversity.

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### Abstract

*Enabling education is a key stepping stone in the transition for many students from diverse, non-traditional and low socio-economic backgrounds that would otherwise face potential barriers to higher education opportunities. For such students, entering higher education institutions can be further fraught with other administrative navigational barriers and uncertainty of support as they traverse this unfamiliar setting. Such barriers can lead to lack of study engagement which has the potential flow on effect of lack of success in their studies. Student evaluation data shows that STEPS students value the support offered by the Access Coordinators in the three primary areas of pastoral care, administrative and academic support. The role of the Access Coordinator in the STEPS course at CQUniversity therefore aims to provide a range of support strategies as students transition into higher education contributing to increased student engagement and overall student success and retention.*

### Keywords

*Enabling education, Access Coordinator, student success, retention, pastoral care, academic support, administrative support.*

### Introduction

The Skills for Tertiary Education Preparatory Studies (STEPS) course, originally conceived in 1985 through the Commonwealth Government's Higher Education Equity Program (HEEP), provided CQUniversity the opportunity to offer a fee-free tertiary preparatory program. The entry guidelines and criteria for STEPS admittance have changed significantly since its inception as has the course structure as a whole. The STEPS course is currently offered internally across ten locations as well as via distance studies, with yearly student entry numbers ranging from 30-180 for the on campus delivery locations to in excess of 600 for distance.

From the recommendations of an external review (King, 2011) of three very similar enabling courses offered via CQUniversity in 2011, the STEPS course underwent a substantial overhaul. This overhaul included the introduction of a new single enabling course at CQUniversity retaining the title – STEPS – introduced in 2012. This new version of STEPS now offered one core unit and a suite of eleven elective units that are tailored to the specific undergraduate entry requirements of the student. Shifts in entry guidelines also broadened in terms of age of entry, testing requirements, unit offerings and time allocations for study completion. One of the desired outcomes of the external review was to increase overall student engagement and retention in the course which saw the formation of the Access Coordinator (AC) role. The AC role was created to manage the course on each campus (and via distance delivery) and provide pastoral care, administrative support and academic guidance to students (Seary, Willans, & Cook, 2016, p. 4). As an institution-wide initiative for the STEPS course, ACs were introduced for each of the ten campuses and one for students studying by Distance Education.

In addition to the administrative and academic support provided by the AC, the ACs are pivotal in providing pastoral care for STEPS students before and during their STEPS studies. The Equity Challenge Unit in the United Kingdom (2013) provide a useful definition of Pastoral Care in Higher Education.

Pastoral care comprises the range of support services that are provided for students' emotional, psychological and spiritual wellbeing. While most institutions will have specialist services dedicated to the provision of this support, academic staff also have a critical role to play, being best placed to observe behaviour in the learning environment that might indicate that a student is in need of support. The relationship between academic achievement and resilience in dealing with personal issues is well documented, and a student who receives relevant and timely support in dealing with the problems of everyday life is more likely to have the energy and motivation to do well in their studies.

Enabling students often have personal barriers to learning including family, health (mental and physical), schooling, social, and financial issues. As such, these students may not have the knowledge or resources to be able to plan their study journey by themselves and areas such as self-enrolment into units can be a daunting process for many students. During the individual interview process for STEPS entry the AC draws on a range of factors, such as diagnostic testing results, students' personal situations, family responsibilities and employment circumstances to establish a study plan which will best suit the ability and needs of the student. This time is also used to establish a 'connection' with the student and create an environment of open communication and support that will build with the student throughout their STEPS journey, and into their future studies. Pastoral care has been used as a successful retention tool in the Secondary schooling system but in terms of Higher Education, this role has largely fallen as an added workload task to teaching academic staff (Pitman & Trinidad, 2016). There are a diverse range of reasons why enabling students fail to complete higher education studies, extending across three broad domains: personal, social and academic. Within the STEPS course, the AC role is responsible for the facilitation of the administrative and academic support and pastoral care needs of students from pre-admission to completion. The AC can be seen as the 'one point of contact' for the student throughout the duration of their STEPS studies (and sometimes beyond) which can extend from one term of study to a maximum of six terms.

## **Literature Review**

There are a substantial number of concerns regarding the challenges facing students from diverse, non-traditional and low socio-economic backgrounds commencing undergraduate studies in regional University campuses (Devlin & Shea, 2012; Kift, 2015; Stirling & Rossetto, 2015; Thalluri, 2016). Nationally, enabling programs have demonstrated success in attracting under-represented or non-traditional cohorts. Largely, the identities of adult enabling students entering higher education have been shaped by their experiences at school, in the family and workplace and for some, the return to formal study can prompt feelings of anxiety, stress, disorientation and panic (Barnett, 2007; Willans & Seary, 2011) as new students look to cope with multiple identities of being not only a student, but also possibly a wife/husband/partner, parent, worker and carer. Enabling students can also lack the necessary administrative navigation skills in a tertiary education setting and can therefore struggle with feelings of disconnection with the wider university community (Bennett & Burgess, 2011). These students

can face overwhelming anxiety due to the unexpected, unfamiliar, and sometimes totally confusing demands and expectations of university study (Stirling & Rossetto, 2015) which are high risk factors in terms of disengagement and attrition. The most highly reported reasons for student attrition are “perceptions of course and teaching quality, lack of clarity around what is required for success, limited engagement, and expectations mismatch” (Kift, 2015, p. 53).

While mature-aged students have a strong potential to succeed at university (Cantwell, Archer, & Bourke, 2001; Donaldson & Graham, 1999; McGivney, 1996; Richardson, 1995), their financial and family responsibilities are barriers to study and might lead to greater attrition factors (Davies & Williams, 2001). Mature-aged students returning to formal education, can have amplified needs for ongoing support, information, motivation and encouragement to achieve study success. While many mature-aged students are seeking “second chance learning opportunities that may not have been available when they were younger” (Johns et al., 2016, p. 70) there are multiple challenges with taking on the role of university student while also juggling with their other life roles (Merrill, 2012). Merrill’s (2012) UK study explores the factors that keeps students motivated to go on with their studies with a focus on support structures, particularly from academic staff not only in regard to academic support but also in understanding their personal experiences, struggles and hardships and the subsequent impacts that these factors can have on study success.

The literature suggests that improving engagement and completion for at-risk secondary students includes targeted interventions and programs underpinned by a school-wide commitment to improvement and success and includes, but is not limited to, mentoring, targeted assistance and early intervention strategies (Hearn, Campbell-Pope, House, & Cross, 2006; Lamb & Rice, 2008). Research has shown where small groups of secondary teachers are allocated a group of students for pastoral care/case management, improvements are gained in the quality of relationships leading to enhanced student connectedness and gains in school completion rates (Lamb & Rice, 2008). As such, pastoral care has been used as a successful retention tool in the Secondary schooling system but in terms of Higher Education, this role has largely fallen as an added workload task to teaching academic staff (Pitman & Trinidad, 2016), and once school leavers enter the world of Higher Education these pastoral support structures tend to diminish.

Within the STEPS course, those in the AC role are responsible for the facilitation of academic, administrative and pastoral care needs of students from pre-admission to completion and are the primary point of contact for the student throughout the duration of their STEPS studies. It is vital that there is continued communication and support for students throughout their transition to university. Kift argues that this should be in the form of “just-in-time, just-for-me tailored support, especially for time-poor students whose differing social and cultural capital on entry demands the equitable unpacking of the ‘hidden’ rules and expectations of and for learning success” (2015, p. 54). In STEPS, the AC and associated administration staff take a lot of the burden off the students around these hidden rules. An AC is proficient at interpreting the needs of the students and explaining only the relevant aspects to the students without unnecessary academic jargon. The AC discusses the study plan, and once the student agrees, no other processes are required for the student until they are ready to commence study. It is the individual support from the AC that is vital to the psychological and emotional identity of

the STEPS participant as an actual university student. As Whannell & Whannell (2015, p. 46) outline, “the process of positive identity formation is proposed as following a cyclical path where ongoing successful academic engagement...progressively strengthens the university student identity”. Currently there seems to be a research gap in the formation of positive student identity for many students in enabling courses. It is here that the role of the AC is believed to be successful hence analysing the feedback from students to ensure that students do perceive ACs as important and valuable as foretold in the literature.

## **Methodology**

This study utilised data collected each term through the AC Evaluation surveys from 2015 and 2016. Qualitative analysis was performed on the data to distinguish themes.

### ***Evaluation survey***

All students are invited to complete an anonymous evaluation of their specific AC at the end of each term. While the questions are the same for all ACs, students complete the survey for the AC to whom they are allocated depending on their campus enrolment. Data was drawn from the responses for the Rockhampton campus and Distance Education. There were five questions in the evaluation and each prompted for a text response.

1. Was the application process, interview procedure and development of your Required Study Plan clear and appropriate for your needs as a student?
2. Did the Access Coordinator provide you with timely, helpful support throughout the term when it was asked for? (eg. Were your questions answered satisfactorily? Did you find the Access Coordinator to be approachable and open to your queries?)
3. Did the weekly instructional emails from the Access Coordinator assist you with your study?
4. Do you have any suggestions for ways in which the Access Coordinator could improve in their engagement with students?
5. Do you have any general comments about your STEPS experience with your Access Coordinator?

Generally, answers were between one word and one sentence in length. Students had the option to skip questions if they desired. The data was aggregated across five terms from Term 1, 2015 to Term 2, 2016, totalling 122 respondents.

### ***Qualitative analysis***

A qualitative, thematic analysis was conducted on the data using open coding and categorisation (Strauss & Corbin, 1998). Long or detailed comments were broken into their key ideas while maintaining the original wording. Taking responses for each question, similarities were sought and comments grouped and assigned a meaningful code. Due to the short, discrete nature of the comments, no comment was given more than one code. These coded statements were then compared and contrasted to form categories. This allowed for trends to be shown across the responses, and the range and type of responses from the students. The categories were then analysed to understand the meaning and the relationships between

the themes. The categorised themes were then combined across questions and campuses for a meta-analysis.

The thematic analysis enabled an overarching look at the trends in the types of comments students gave. It was closer inspection of the comments that allowed insights into the sorts of ways the students found ACs helpful. This aligned well with the needs of the students as identified in the literature. Consideration of the underlying significance of each category to the role of the AC and the impact on student success, led to three main categories emerging. Examples of codes such as, *'Helpful/thoughtful/engaging/approachable/ Easy to talk to'* led to the category of Pastoral Care. Codes including, *'Study planning was good/ Helpful, well explained/ Assessment knowledge'* established the category of Academic Assistance and codes linked to *'update emails were helpful/support was timely/Application process was easy and smooth'* confirmed the category of Administrative Activities. In summary areas of support were labelled: Pastoral Care, Academic Assistance, and Administrative Activities.

## **Results**

There is limited published material on the potential pastoral care benefits and outcomes in enabling programs – with the primary focus being on retention, academic achievement and transition into undergraduate studies (Johns et al., 2016). This said there is very limited discussion on the specific role of the AC within the STEPS course, affiliates (Seary et al., 2016; Willans & Seary, 2011) aside. The aims however are to meet the needs of students with diverse learning styles and encourage academic skills development through active participation in the learning process and inclusion. Stages here include academic assistance through increased preparedness; pastoral care through staff approachability, timely and tailored support and fostering a sense of connection and engagement both in STEPS studies and the wider CQUniversity community; and administrative assistance in the entry and enrolment process, monitoring of progress, attention to 'at risk' student and retention strategies.

### *Pastoral care*

As mentioned, the role of the AC provides a 'one point of contact' for the student throughout the duration of their STEPS studies. Through prolonged contact between the student and the AC, a relationship is built with the student that promotes open communication and trust which in turn leads to increased learning confidence, self-belief and social inclusion. As Bennett & Burgess (2011) suggest, this builds trust in the relationship and fosters connectedness for the student and improves overall success outcomes. Weekly emails are sent to students throughout the duration of their studies and work to calm potential anxiety and study stress issues that Willans and Seary (2007) outline, and offer a broad range of motivation strategies; course updates; assessment submission date reminders and study success tips. Regular contact throughout their studies assists the student to feel legitimised and supported as a university student and aims to create a supportive learning community – fostering wider engagement opportunities within current and future study paths. In the AC evaluations a number of students commented on their appreciation for regular communication from their AC.

I can't believe the amount of support you supplied. I never felt alone in my study and I think this has helped me know that I am within a supportive environment. Keep being approachable, I have recommended this program to anyone wishing to study because it is so supportive.

The Pastoral care role of the AC focuses on facilitating support structures and understanding personal circumstances in an 'out of classroom', non-judgemental setting in line with suggestions made by Merrill (2012) in UK studies. One student commented:

I just want to say thank you for all words of wisdom and advice each week. I often found the inspiration to keep going in your quirky links and quotes. Also thank you for your support for when one got lost or had a stupid question. Thanks to the STEPS program I am now confident enough to go ahead and tackle my Bachelor of Nursing with the knowledge that I can do so even as a mature age student. Something I didn't believe 12 months ago that I could do and be able to be as good at it as the current school leavers. Keep on bringing your rays of sunshine each week to the new STEPS students. They were always enjoyed. Thank you.

It is important here to acknowledge that the pastoral care role of the AC is not just supporting the students with 'problems' but offering proactive support to the wider student group. A high proportion of study problems can occur early in the term, so it is important that AC's acknowledge key stress points for the student such as first assessment submissions and use these as prime times for advice and support specific to the situation to address imminent issues. For example:

The inspiration (sic) quotes and your newsletter has given me the boost I need this week. I had a mini melt down. My thoughts were while in the middle of my melt down was that I just won't complete it. This will put me so far behind, I'm never going to catch up. Why did I think I could do this study stuff? It is all too hard! Then I thought I will clean up my email and send a withdrawal email through saying what had happened, and I read your email and your quotes and thought, you know what I can do this. This is just a road block... which I just need to find another path around. So I have printed your "Don't give in, Don't give up" and the "No matter how many mistakes you make or how slow you go", and put them on my wall at work and one for home. I can do this and I will get through this little test!!!!. So thanks (AC) for your newsletter this week!!!

Examples such as this reinforce the value of pastoral care to student motivation and retention and the relationship of trust built between the AC and the student through the sharing of personal thoughts around perseverance and study determination.

### *Administrative support*

In terms of administrative assistance, STEPS students' entrance interviews and individualised study plans are formulated with the AC either in person for internal students or over the telephone for distance students and are the first stage of the relationship building process. Through this interview process AC's are able to anticipate the support structures that students may require and can therefore guide the student towards learning skills support and other university support services that the student may require, are unaware of or feel unable, or not entitled to access. Comments from two students are noted:

I was nervous about joining STEPS, unsure of what was expected of me and I was sure the phone interview was going to be an hour long and I had to have a world of knowledge, but alas, it was simple fun and friendly. (AC) made me feel at ease and arranged everything for me and helped me find my courses for STEPS.

The application process was great! It was a bit of a nervous thing for me, as I hadn't studied for so long. (AC) was very supportive of this. My plan was set up well, best suited to study Paramedics next year.

Student appreciation for this administrative support aligns with the suggestions highlighted by Kift (2015) and Davies (2013). These authors have commented that the lack of clarity around what is required for study success, limited prior Higher Education engagement, and unfamiliar expectations are some of the most common reasons behind student attrition. All administrative processes including course and unit enrolments, the establishment of study plans, revisions to study plans, campus transfers, unit and course withdrawals, and transition procedures into future undergraduate studies are advised and processed via the AC. As such many problems associated with navigation struggles in Higher Education processes are removed from the students' responsibility. Bennett & Burgess (2011) highlight these to be areas of concern, and therefore the AC addressing these potential issues can aid in decreasing student stress and increasing student retention. Further administrative support is offered via the advocacy/liaison role of the AC between the student & support lecturer/Unit Coordinator/Head of Course/ and wider university support structures which again links back to Merrill's (2012) UK research data.

### *Academic Support*

The AC role addresses practical academic problems such as poor achievement and aims to cater for individual diversity as defined by Willans & Seary (2011) and Barnett (2007). ACs are responsible for monitoring students' academic progress via emails, telephone discussions or face-to-face meetings along with regular communication with the students' lecturing staff. Through the personalised enrolment processes, ACs are able to identify students with specific academic literacy or numeracy challenges and where necessary, implement specific support structures to enable successful study progression. As trained academic staff, ACs are equipped to understand, and be empathetic towards the distinctive needs of the enabling student cohort. One early intervention strategy for 'at risk' students involves revising study plans to reduce the students' study workloads to manageable levels with the aim of reversing the mindset of 'failure'. This is reflected in the following student comment:

[AC] is a brilliant and fantastic Access Co-Ordinator. She has been very approachable, always reachable and responds to any queries in a quick and timely manner. She has been exceptionally helpful and inspirational at times throughout this journey and has made me feel like someone is out there rooting for me to come through this journey, keeping track of my progress and this has really helped me being a Distance student.

Kift's (2015) research argues, academic support should be in the form of "just-in-time, just- for-me tailored support". This is especially relevant for time-poor students who have less social and cultural capital on entry than school leavers. 'Hidden' rules and expectations surrounding Higher Education need to be interpreted by the AC to promote a thorough student understanding. Therefore the role of the AC in the STEPS course becomes crucial for continued successful outcomes for the student. One reflection of this academic support is outlined below

I am thankful I was transitioned to the STEPS program and [AC] went through the subjects I would need to complete in the first year of my undergraduate degree with me. I was not going to complete FMU [Fundamental Mathematics for University] as my scores had been sufficient for entry, but thankfully [AC] explained the need for a maths basis in first year nursing. I would not be able to pass the maths component of my first few subjects without FMU.

While a range of positive outcomes associated with the role of the AC as part of the STEPS course have been discussed, there are also potential negatives that need to be considered. These include the financial cost of having an academic staff member in the role of AC; students

becoming familiar with their one point of contact to the point of not ‘letting go’ once they commence undergraduate studies; and associated AC training and professional development costs. In terms of financial costs, the role of the ACs within the STEPS course are workload allocated in line with other hands on learning, teaching and support lecturer roles that are carried out concurrently. This workload allocation varies for ACs dependant on the number of students for which they are responsible. A potential shortcoming of being a one point of contact for a student over an extended duration is the student not letting go once commencing undergraduate studies. This said, support seeking behaviours are actively encouraged in all aspects of Higher Education and students have been taught to seek help when in doubt as part of their STEPS studies. ACs also work toward reducing their pastoral care input as the student progresses through their studies and the role becomes less ‘hand-holding’ and more directive in nature. In regard to specific AC training this continues to be ongoing professional development consisting of regular meetings to discuss and streamline processes and develop new engagement and retention strategies in consultation with senior management. Further incidental training opportunities are also undertaken such as basic counselling skills, mental health awareness, and cultural awareness training including Indigenous considerations, sexual orientation and gender diversity and a broad range of learning styles.

All areas considered, through the AC evaluation findings the pastoral care, administrative and academic benefits that the AC provides in the STEPS student’s learning journey outweigh the potential negatives. With the changing landscape of enabling education in Australia, in terms of a proposed transition to a fee for service structure, the need for proven retention and success strategies through evidence-based outcomes will be a vital key to course funded placements, which could be considered for future research. It is predicted that the role of the AC in the STEPS course will provide greater measurable success for STEPS students and as such should be a consideration for other enabling courses to implement.

## **Conclusion**

This paper illustrates that Access Coordinators play a valuable role in supporting students in the STEPS enabling course. Through the process advice and support strategies that are given to students as an integral part of their experience with STEPS, the ACs are shown to provide timely and individual assistance to the students and help the students feel engaged with the university. This helps relieve students’ anxieties and means that they are well prepared for university study, no matter what their background or familial experiences are with Higher Education. The role of the AC is embedded into the administration, academic, and pastoral care aspects of the course, and does not sit outside of the academic environment. ACs are able to deal with some of the issues raised in Pitman’s report on enabling programs across Australia, including greater information about the course, pathway choices and “more foundational knowledge for degrees” (Pitman & Trinidad, 2016, p. 74). This gives students a sense of consistency and cohesion in an otherwise complex and daunting environment. As Lisciandro & Gibbs (2016, p. 198) outline, “there is increasing interest in understanding the mechanisms that facilitate retention and success of enabling pathway students, with the aim of developing effective strategies for maximising opportunities for university access and participation”. This paper further highlights the opportunity for greater investigative research into the role of the AC as part of enabling success, as current research and data does suggest that the pastoral care, administrative and academic support of the AC in the STEPS course is working toward greater student success and overall increased course retention.

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