

Removing Barriers to Engagement in Higher Education by Students Living in a Rural Community

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Executive Summary

This research report details the work carried out as part of a project entitled 'Removing Barriers to Engagement by Tertiary Students' that was funded at the end of 2015 by the National Priorities Pool which comes under the auspices of the Higher Education Participation and Partnerships Program (HEPPP). The HEPPP program aims to ensure that Australians from low SES backgrounds, who possess the ability to study at university, have the opportunity to do so. The project team was composed of a project manager, Graham Young, who is in charge of the University of the Sunshine Coast's northern campuses at Gympie and the Fraser Coast; an administrative officer, Angeline Medland; a research supervisor, Dr Michael Christie; and a chief investigator, Dr Kerry Rutter. HEPPP provided \$59,195 and the University of the Sunshine Coast (USC) made a substantial in-kind contribution, in addition to a cash contribution from the USC Gympie Campus (please see acquittal report for details). The majority of the direct government funding was used to employ research assistants, one to assist with the data collection and analysis in the first half of 2016 and another to work with an analysis of feedback from the interventions that were put in place in the second half of 2016, as well as helping out with the reporting and dissemination of the project. Dr Maureen O'Neill undertook the first role and Ms Yvonne Farragher the latter.

The project was based within the Gympie regional community which is located in the south east of Queensland, Australia. It aimed to build the aspirations of non-indigenous, low socio economic status (SES) males aged between 20 and 34, so that they might engage with higher education study. This was an issue identified both by the literature and, in terms of the Gympie campus of USC, by the project manager. In order to assist this targeted group of young men, it was necessary to determine the sorts of barriers they faced and the reasons for their lack of interest in tertiary studies. The project also aimed to widen the aspirations of non-indigenous, low SES females (same age group as the men) so that they might consider engaging with higher education studies in Science, Technology, Engineering and Mathematics (STEM) where they are heavily under-represented, rather than choosing nursing and teaching programs.

The project was divided into two parts, one part per semester, and the work that was undertaken encompassed two cycles of action research. The first cycle comprised an analytical, critical literature review and data gathering that used a survey, focus groups and individual interviews followed by data analysis. The second part involved a number of interventions that were instituted on the basis of findings in the first cycle and evaluations of their efficacy. The USC Research Office provided expedited permission to carry out the research on 11 January 2016 (see appendix 1).

In the first half of 2016 the project team focused on two research questions, namely:

- What barriers to engagement in higher education studies do non-indigenous, low SES males aged between 20 and 34 living in the Gympie region face?
- How can we widen the aspirations of non-indigenous low SES females (same age group as above) so that they consider engaging with higher education studies in STEM areas?

We used an ongoing analytical, critical review of both relevant literature and similar projects in order to investigate both research questions. The literature review confirmed that the issues and problems that had been identified at Gympie were very similar to those found in other low SES areas in Australia and overseas. We also used a survey, focus groups and selected follow-up interviews for data collection purposes.

Two focus groups and one individual interview were used to gather data about the first research question and responses from this cohort provided a number of important insights. There was some difficulty in recruiting young males to participate in the project which underscored recent findings in the literature. Attracting and retaining males in higher education, and in particular, males from poorer circumstances appears to be a growing, global issue, one that was highlighted in the UK by the Universities and Colleges Admissions Service (UK) which reported that already in 2015 the entry rate for 18 year old women grew twice as fast as for men. Women are now 35% more likely to enter UK universities than men, the largest difference ever recorded (UCAS, 2016). That trend is set to continue and its future impact was reported on by the *Telegraph* (12/5/2016). Female students in the UK now outnumber their male counterparts by close to 100,000 and girls born today have a 75% better chance of going to university than their male peers. One expert, that the report cited, argued that 'Boys do worse than girls all the way through the school system, so it's not surprising fewer make it to university. At all stages, we need better understanding of why boys are underperforming – especially those from poorer backgrounds' (Wells, 2016).

Research into the second question enabled enough valuable data to be gathered and analysed to make a significant contribution to the literature in this area. Our research identified ten reasons why the young women in our study felt that they were more comfortable choosing such traditional female careers such as teaching and nursing rather than careers in STEM. A scholarly paper on this aspect of the project has already been presented at an international conference on Engineering Education (July 2016) and a journal article is currently under review. An invited keynote on using transformative learning theory to activate reflective thinking in STEM will be presented in the US on 3 March 2017. We envisage that a second journal article, related to the project, will be submitted during 2017.

Based on the research in the first half of 2016, a number of interventions were carried out during the second semester. This is in keeping with action research methodology. A first cycle of research often results in new insights, ideas and ways of making improvements in the targeted area. In our case, the following interventions were carried out and evaluated: a set of Mathematics and Chemistry Workshops; the RBETS Award; Lunchtime Laboratory and Career Information Sessions; High School Outreach; and, Targeted Marketing of Higher Education opportunities. These two cycles of investigation and interventions concluded the funded stage of the RBETS project, but they also provided new questions and recommendations for a third stage which we envisage will take place during 2017 and for which further funding will be sought.

There are a number of key questions and recommendations that the Gympie case study highlights. We recommend:

- That a meta review of the literature be carried out that focuses on both the failure to engage young men in our target group with higher education and the reasons why they are more likely to drop out after enrolment.

- That to increase retention rates of both young men and women in the targeted groups during their studies, universities develop outreach programs to assist students who may have the added strain of defending their choice to study instead of work, and may not have access to suitable support outside the education setting. This is particularly important for students who are the first in their family to attend a university.
- That universities in regions such as Gympie increase their school outreach activities by developing motivating workshops that spark interest and discussion in university as early as Years 7 and 8.
- That school outreach activities continue from Year 7 to Year 12 and are adapted to suit both the age and gender of the students. Such activities can be carried out both in school and on campus and, where possible, some residential activities on campus could be organized during school holidays and university downtime.
- That a system of mentoring be extended from current first year university models to include mentors for interested final year high school students. Where possible the university students and those they mentor should be matched in terms of interests and background.
- That stimulating science-based activities be increased both on campus and in schools for all students, but that female role models play a key part in those activities in order to explain the possibilities of a STEM course of study and subsequent career for young females who may have only considered nursing or teaching.

Section A: Introduction

In 2015 the Higher Education Participation and Partnerships Program (HEPPP) made funding available via its National Priorities Pool (NPP) to assist universities to improve access to undergraduate courses for students from low socio-economic backgrounds. An application to carry out an action research project at its Gympie campus was submitted from the University of the Sunshine Coast (USC). Graham Young, Director USC Northern Campuses, led a team comprising Michael Christie, Associate Professor of Education at USC, Dr Kerry Rutter, Head of Preparation Pathways at USC, and Angeline Medland, Campus Coordinator, Gympie Campus. The application was successful and the project began at an inaugural team meeting on 14 December 2015 at which the conditions of the grant and the project timetable were discussed.

The name of the project was Removing Barriers to Engagement by Tertiary Students Living in a Rural Community Project (RBETS). It was designed to: a) investigate the reasons for the under-representation within higher education of non-indigenous young males (aged 20 to 34 years) within the Gympie region of Queensland, Australia; b) identify and implement strategies for the removal of barriers to university engagement for this cohort; and c) research ways to widen the aspirations of non-indigenous young females (same age grouping and location), so that they might consider studying degree programs in Science, Technology, Engineering and Maths (STEM), as well as the commonly chosen ones of nursing and teaching.

Graham Young has been the project leader with Michael Christie in charge of research. Kerry Rutter has been the project's chief investigator and Angeline Medland has acted as project administrative support. Maureen O'Neill was research assistant from December 2015 to September 2016 during the research and data analysis stages, and Yvonne Farragher has been research assistant from October 2016 to January 2017 to assist with the production of the research report and related articles and the dissemination of results. The budget for the project was divided between HEPPP funding and support in kind from USC. The total amount of the HEPPP funding grant was \$59,196. The USC in-kind support amounted to significantly more than was anticipated (please refer to the acquittal report for details).

The original milestone and activities timeline can be seen in Figure 1.1. Fifteen of the sixteen key performance indicators (KPIs) for the milestones and activities in this table were met. Some changes to the KPIs were also made for strategic research reasons. For example, our literature review was ongoing and not just confined to January 2016. Additional actions that were undertaken as the project progressed can be seen below in Figure 1.2. This figure is a working document and, as such, includes the names of those who were expected to action the plans for improving the engagement of males in university study and females in university STEM programs. It deliberately makes use of the working notes and plans instituted at that time.

Table 1: Original milestone and activities timeline

TIMEFRAME	MILESTONE AND ACTIVITIES	KEY PERFORMANCE INDICATORS
January 2016	1.1 Project Management Committee	Project Management Committee is established and roles are agreed
	1.2 Research Assistant	Research Assistant is contracted
	1.3 Literature review	Literature review (which informs the interview and focus group research phase through the identification of priority research areas) is completed
	1.4 Identification of interview and focus group cohort	Focus group interviewees are identified and engaged Agreements to participate in research are completed Minimum target: 20 interviewees
February 2016	2.1 Interviews and focus groups	Interviews and focus groups completed to a satisfactory standard to enable project to produce desired results
	2.2 Data analysis	Analysis of interview and focus group data is completed Common themes are identified and an NVIVO analysis is completed
	2.3 Initial report	The initial NVIVO report is ready for review and further analysis by the Project Management Committee
March 2016	3.1 Research report	A Research report, which summarises all research completed to date and presents recommendations, is completed
	3.2 Action Plan	An Action Plan for improved processes at University of the Sunshine Coast is developed in relation to: <ul style="list-style-type: none"> engagement activities directed at the target group methods used to increase the aspirations of the target group, and the development of strategies to address barriers to engagement faced by the target group
April 2016	4.1 Consultation with relevant departments at USC on implementation of recommendations on recruitment, marketing and engagement of target group students for Semester 2 and Session 8 intakes	Implementation agreed to by relevant departments Successful implementation of recommendations
April 2016 – November 2016	5.1 Targeted recruitment, marketing and engagement activities for Semester 2 and Session 8 intakes	Activities completed according to agreed timeframes and provide comparable data to inform success of methods implemented as a result of the research conducted Timeframes are: <ul style="list-style-type: none"> April to June for Semester 2 September to October for Session 8
July 2016 – November 2016	6.1 Survey incoming students for Semester 2 and Session 8 intakes to identify if processes and activities implemented through the	Surveys completed

TIMEFRAME	MILESTONE AND ACTIVITIES	KEY PERFORMANCE INDICATORS
	project facilitated their transition to higher education	
	6.2 Data analysis of enrolment and retention of target group students including survey results and the number of students engaged and retained through implemented activities	Data analysis is completed, and expected to demonstrate higher enrolment numbers and retention rate percentages target group students
December 2016	7.1 Research report and its provision to identified stakeholders	Research report is completed and includes recommendations on recruitment, engagement and retention of target group students Research report is provided to identified stakeholders, including the National Centre for Student Equity in Higher Education and the Queensland University Widening Participation Consortium
	7.2 Ongoing engagement and retention strategies developed into recommendations for the Vice- Chancellor to consider for implementation under the Student Access and Equity portfolio	Recommendations provided to the Vice-Chancellor
31 January 2017	8.1 Final Report	Final Report submitted to the Department

Table 2: Additional milestone and activities timeline

ACTION	STATUS	RESPONSIBLE TEAM MEMBERS	NOTES
Schedule Mathematics and Chemistry workshops to run in Gympie during the week of the 11th to 15th July 2016. These will be RBETS-specific, but using enabling course materials for delivery	Completed	Kerry Rutter Angeline Medland (local logistics)	<ul style="list-style-type: none"> Will be set up as public workshops with registrations required Promotion through website, Facebook, what's on in Gympie, Gympie Chamber of Commerce and <i>Gympie Times</i> Enabling unit to journal charges to RBETS for delivery of workshops (must match actual costs for delivery)
Run workshop on careers options with current TPP students during May/June – needs to be before offers are released for Semester 2 undergraduate commencement	Completed	Kerry Rutter & Angeline Medland	<ul style="list-style-type: none"> Manager, Support for Learning contacted about possibility on the 19/5. Careers unable to provide specific workshop Kerry has provided some information during the Mathematics/Chemistry workshops. Further conversations about running during TPP courses in Semester 2. Kerry is also including in lunch time pop-up experiments
Develop posters to display around campus on each degree program and the	Did not progress based on	Graham Young and Angeline Medland to	<ul style="list-style-type: none"> Graham emailed Bullseye posters to project group for opinions (19/5)

ACTION	STATUS	RESPONSIBLE TEAM MEMBERS	NOTES
varying career paths to which they can lead	reasons given in notes column	develop posters used for school outreach workshops and distribute copies around campus	<ul style="list-style-type: none"> • Kerry advised that she has some posters ready to go (19/5) • Angeline contacted Careers unit for details on what is available through them (19/5) • Careers is developing posters, AM to receive updates from Ali (29/7). Careers advised is no longer developing posters. Project group to use Bullseye posters and look at other options • Careers advised they are making a suite of online resources in this space, but will not develop specific posters
Incorporate video on different careers in TPP103, TPP104 and TPP109 in second semester	Completed	Kerry Rutter to arrange this	Kerry sourced appropriate videos
Look at securing funding/potential to use existing project funding to pilot an award similar to ESTEEM but focused on helping low SES males to start TPP. The award would assist with the additional costs associated with attending university. The vision would be to find a donor willing to provide further scholarships to assist males during their undergraduate degree	Completed	Angeline Medland to prepare variation to Department to use project funding to pilot in Semester 2	<ul style="list-style-type: none"> • Variation to project budget submitted to department to use project funding to deliver • Department approved use of funds for award, no variation required • Award developed and promoted with two recipients for Semester 2, 2016
Prepare recommendations for marketing campaign focused on breaking down misconceptions in the community entry requirements career opportunities using a similar approach to the Navy etc. where the career is promoted first and the degree programs that lead there last. Entice and then engage concept	Completed	Graham Young, Kerry Rutter and Angeline Medland	<ul style="list-style-type: none"> • 19/5 – New USC advertisements that incorporate some of what we were proposing to recommend can be viewed on this YouTube link • 12/9/16 - TPP to Undergrad campaign developed and submitted to Marketing and External Engagement (ME&E) • Campaign approved by ME&E and ran with paid advertising across YouTube and Facebook and in the local cinemas. The ad can be viewed here: https://www.youtube.com/watch?v=wdxPA5oRlkk
Look at getting 'Friday Night Sport Talks' delivered at local sports clubs such as: Gympie Indoor Skate	Not viable (see notes column)	Kerry Rutter, Michael Christie to find sporting ambassadors and	<ul style="list-style-type: none"> • The Sports Talk team have advised that this is not possible

ACTION	STATUS	RESPONSIBLE TEAM MEMBERS	NOTES
Park, Gympie CATS Football club, Gympie Cricket Club		discuss with Sports Team.	
Community BBQ at Bunnings with free face painting/other activities for children. Could look at engaging education students to run some activities for Wider Field Experience hours. Concept is to reach target audience in a more neutral place with high traffic and if children have activities, it encourages parents to stay and talk	Completed	Angeline Medland, Maureen O'Neill	<ul style="list-style-type: none"> • Angeline to contact Bunnings to find out about booking process and availability • Stall held at Bunnings on the 25th June 2016. Attracted a handful of enquiries. General responses showed lack of interest. Decision made not to continue with these
Run a community forum/symposium 'Dream Big' with a range of interactive activities, presentations and information. To be held at the Gympie Civic Centre for ease of access and also to engage community who would not normally approach the university. The primary aim would be to enlighten those who have not considered university to the broad range of options available, career paths and benefits to completing a degree. This could potentially align with a 10-year celebration for the TPP program	Not viable (see notes column)	To be looked at in June/July and further consideration around viability to be discussed	<ul style="list-style-type: none"> • Not viable to achieve in project timeframe • Research has indicated that further work is required to engage community in an event such as this
School Outreach for Year 12s to be developed and piloted with students from a Gympie region high school who have not yet shown indication of plans for Year 13	Completed	Graham Young Kerry Rutter	<ul style="list-style-type: none"> • 27/7 A Gympie region high school agreed to trialling this initiative • 29/7 AM checked dates and can either hold between week of 1-4 November (any day and all rooms available). School advised not ideal time. Can hold any time during semester on a Thursday from 12-3 (ideal for school) with three rooms available – Computer Lab, Science Lab and 18 person tutorial room. Marquees could be set up outside for additional activities. Ideas – Science activity, Serious Games

ACTION	STATUS	RESPONSIBLE TEAM MEMBERS	NOTES
			<p>activity + 2-4 others (STEM in a Box)</p> <ul style="list-style-type: none"> • AM to send Kerry ethics approval, so she can check if needs to be amended for surveys • Event confirmed for the 27th October, Graham working on event budget for presentation to project group • Casual staff member (Liz Blight) to be engaged to coordinate project • 22 year 12 students from a Gympie region high school attended this event at USC Gympie on the 28/10/16
Lunch time Chemistry Experiments	Completed	Kerry Rutter	<ul style="list-style-type: none"> • Kerry to arrange lunch time chemistry experiments for students, suggestion for competition to follow • 29/7 Mick Dan has indicated he could be available for any science-related promotions/activities/workshops • Kerry has submitted risk assessments for the use of the lab space to run these experiments • Lunch time labs are running each week until the end of semester

Section B: Intended Outcomes

This project was conceived as an ongoing action research project. The funding that was sought was to be used to support the first two cycles of the research (see below under methodology). The main focus of the project was to work at removing barriers to tertiary education for students in economically depressed rural areas such as the one in which the Gympie campus of USC is located. The need to support such students was identified in 2014-2015 by the project manager and administrator. Enrolment figures and demographic data provided to them indicated that attracting young males to study at the Gympie campus of USC and retaining them in the tertiary education system was a problem. Another issue was how to attract young women to study in STEM areas rather than having them automatically enrol in courses that led to the more traditional female professions of nursing and teaching. The intended learning outcomes for the project were to:

- Research, through a literature review, the barriers to engagement in higher education that have been previously identified for similar cohorts to the RBETS project, and use this review to inform the direction of the proposed research.
- Research how to build aspirations for engaging with higher education study by non-indigenous, low SES males aged between 20 and 34 living in the Gympie region, through identifying the particular barriers that they perceive prevents their participation.
- Research how to widen the aspirations of non-indigenous low SES females (same age group), so that they consider engaging with higher education studies in areas other than the currently common ones of nursing and teaching, and encourage them to consider, amongst others, STEM-related degree programs such as engineering, where females are heavily under-represented (typically only 20% of engineering students are female).
- Devise and implement strategies for the removal of any identified barriers, and at the same time develop ways of appropriately raising the tertiary education aspirations of both cohorts.
- Implement these strategies in Gympie during the second quarter of 2016 with the intention of measuring the outcomes through comparing cohort enrolments at USC Gympie for Semester 2, 2016 against the same cohort for Semester 2, 2015. Tertiary Preparation Pathway Program Session 8 (2016) enrolments will also be compared to the same period in 2015.
- Make the results of this research available to any other Australian higher education facility to utilize for the benefit of similar cohorts.
- Apply the outcome of the research to the benefit of the Gympie community and general Australian population, through availability of increased skill levels, higher salaries and commensurate increase in taxation income for the Commonwealth, and less dependence on social welfare payments and support.

Section C: Research

i) Introduction

This project was conceived as an ongoing action research project. Action research is grounded in the philosophy of John Dewey (1916), adheres to the action research principles of Kurt Lewin (1946), and follows the main methodological recommendations of Carr and Kemmis (1983). Kemmis and

McTaggart (1988) subsequently developed a model of participatory action research. The intention of all action research is to make changes for the better. In this sense, it is both partisan and transformative (Mezirow, 1991). Since 1988 action research has become more and more relevant to educational improvement. The publication of a number of recent books and new editions (Spaulding & Falco, 2013 and McNiff, 3rd ed., 2013) encourage teachers at all levels to instigate their own research as a way of improving the learning outcomes of their students.

ii) Research Questions for Cycle One of the Project

1. What barriers to engagement in higher education studies do non-indigenous, low SES males aged between 20 and 34 living in the Gympie region face?
2. How can we widen the aspirations of non-indigenous low SES females (same age group as above) so that they consider engaging with higher education studies in STEM areas?

iii) Methodology

Action research involves a spiral process of planning, acting (implementing change), observing, analysing, reflecting and then evaluating (see Figure 2.1 below). This completes one full cycle, which, as indicated above, generally raises other issues that will be researched and acted upon in a new cycle. The first cycle of our research sought answers to the above research questions by carrying out a survey, undertaking focus group interviews, as well as individual interviews, for corroborative purposes. The results from these investigations were analyzed and interrogated and a new set of insights and questions formed the basis for the second cycle of our project.

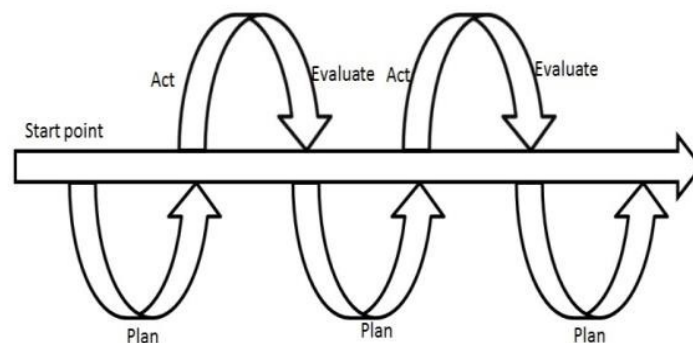


Figure 1: Action research spiral.

Source: Garrote (2015)

For the second cycle it was decided to trial a number of interventions in second semester 2016 and embed in them feedback mechanisms by which we could judge if the impact of the interventions resulted in a) greater interest and engagement in higher education studies on the part of non-indigenous, low SES males aged between 20 and 34 living in the Gympie region and b) a widening of the aspirations of non-indigenous low SES females (same age group as above) and increased interest in undertaking higher education studies in STEM areas.

The following interventions comprised this second cycle of action in the HEPPP funded project: a set of Mathematics and Chemistry Workshops; the RBETS Award; Lunchtime Laboratory and Career Information Sessions; High School Outreach; Targeted Marketing. These two cycles of investigation and intervention concluded the funded stage of the RBETS project, but provided new questions and recommendations for a third stage which we envisage will take place during 2017 and for which we will seek further funding.

iv) Literature Review

Our literature review into the first research question concerning the issue of young male participation from rural and low SES backgrounds in higher education confirmed that the issues our team identified at Gympie were common to similar socio-economic areas in other developed countries. In terms of attracting young males to enrol in tertiary studies, there has been comparatively much less research done than in our second area of interest, namely, boosting the number of women enrolling in STEM subjects at university. A number of recent reports have highlighted the fact that young working class men in particular are not interested in entering tertiary study. As mentioned in the executive summary for this report, this appears to be a growing, global issue, one that was highlighted in the UK by the Universities and Colleges Admissions Service (UK) which reported that already in 2015 the entry rate for 18-year-old women grew twice as fast as for men (UCAS, 2016). Women are now 35% more likely to enter UK universities than men, the largest difference ever recorded, and a trend that is set to continue and whose future impact was reported on by the *Telegraph* (Wells, 2016). Female students in the UK now outnumber their male counterparts by close to 100,000 and girls born today have a 75% better chance of going to university than their male peers. One expert, that the report cited, argued that 'Boys do worse than girls all the way through the school system, so it's not surprising fewer make it to university. At all stages, we need better understanding of why boys are underperforming – especially those from poorer backgrounds'. (Wells, 2016).

A correlation has been made between students, both male and female, from SES backgrounds and their reticence to study at tertiary level. This is in addition to the correlation between low SES and underachievement at university (Greenhalgh, Seyan, & Boynton, 2004). The underlying causes are linked to cultural perceptions of career paths, motivation levels, and personal identity rather than low academic ability (Greenhalgh, Seyan, & Boynton, 2004). In many developed societies, socio-cultural status continues to be a sound predictor of academic success (Reay, 2001). This is often due to the disparate valuing of education and work, lower aspiration levels, the lack of role models, resistance to authority, and the construction of masculine identities linked to social standing and belonging (Archer & Hutchings, 2000; Greenhalgh, Seyan, & Boynton, 2004). This has been corroborated by research conducted in Melbourne in 2000 which analyses the effects of neighbourhood and family in educational progress in terms of quality of schools, peer

groupings, and access to higher education and career information (Jensen & Seltzer, 2000). More recently, Curtis, Drummond, Halsey and Lawson (2012) found that adverse attitudes towards school and lower academic achievement result in lower aspirations amongst young male rural youth towards higher education and professional careers.

While young female students are more likely to experience a more supportive interpersonal environment with regard to further study, males typically exhibit less commitment towards school and view higher education as being irrelevant and unattainable. This is especially the case with males from low SES backgrounds (Devlin & O'Shea, 2011). Males often feel less accepted by their peer group than their female counterparts if they aspire to higher education. They also tend to believe that their school teachers do not encourage them to aim for university (Devlin & O'Shea, 2011). Parental educational levels also play a contributing role to young males' attitudes to educational progress. O'Shea (2016) argues that parental background is perhaps the most reliable predictor of the educational aspirations of young people. Globally, the success of first-in-family learners in higher education does not favourably correspond to the proportion of first-in-family students in tertiary education (O'Shea, 2016). In rural Australia, 35% of lower SES males believed a TAFE course would be more useful to them than a university course, compared with 27% of lower SES females and 12% of higher SES females (James, 2002). James (2002) states that 57% of lower SES males reported an interest in the subjects they could study at university, compared with 65% of lower SES females and 83% of higher SES females. 40% of lower SES males wanted to start earning a proper income as soon as they leave school, compared with 32% of lower SES females (James, 2002). Some of the differences in gender attitudes towards life after school may be underpinned by lingering perceptions that TAFE courses are more viable alternatives for young males than females, and more work opportunities being available for young males. A picture emerges of males who are less impressed with both the short-and long-term benefits of what attending university might offer.

Lamb, Dwyer and Wyn (2000) report from the Longitudinal Surveys of Australian Youth dataset that males made up 56% of non-school completions in the early 1980s, but by the mid-1990s this proportion had increased to 64%. The percentage of male non-completers who were from lower socioeconomic backgrounds also increased from 35% to 44% between the early 1980s and the mid- 1990s. Not only are males less likely to complete school than females, they are also considerably less likely to enter higher education. Aungles, Karmel and Wu (2000) estimate that the lifetime probability of males entering higher education is 38.1%, compared with 52.5% for females.

The changing landscape in education and labour markets has been accompanied by major shifts in what young boys and girls expect for their future. Over the past decade, the Programme for International Student Assessment (PISA) run by the Organisation for Economic Cooperation and Development (OECD) has asked the 15-year-old students who sit the triennial test in reading, mathematics and science to describe what they expect for their future education and occupation. Their reports suggest that girls hold more ambitious educational and occupational expectations than boys. At the same time, not only do boys seem less ambitious than girls, they are also more likely – far more likely – to expect that their formal education will end after earning an upper secondary school leaving qualification such as a Higher School Certificate or Queensland Certificate of Education. This is despite the fact that they do just as well as girls on the PISA assessment (OECD, 2015). Additionally, there is a worrying trend that many low-performing boys are failing to improve, and tend to

be extrinsically rather than intrinsically motivated to do school work. Lack of intrinsic motivation often leads to disengagement and the potential creation of an identity built on rebellion and resistance to authority (OECD, 2015). It is of interest that boys' behaviour outside school impacts their academic performance. In OECD countries, boys are significantly more likely to take part in both one-player and collaborative online games, spend less time doing homework, and are less likely to read outside school for enjoyment than girls (OECD, 2015).

The issue of young male participation from rural and low SES backgrounds in higher education is a research area deficient in current data, particularly between 2010 and present. As a result, further research into the topic and research based strategies for early intervention, aimed specifically at young males, is warranted.

In regard to the second research question and the issue of attracting young women into STEM courses at the university level the literature reveals that there is much to be done worldwide. In our USC research we were particularly interested in science and engineering education. As a small regional university we do not have specialist programs in mathematics and computer science.

Nearly two decades after its 1997 report, which revealed a disturbing discrepancy in the number of men and women who undertake STEM courses at university, the US National Centre for Educational Statistics (NCES, 2013) made it clear that the US gender gap in STEM subjects at the tertiary level remains. The same can be said for other developed countries. When one compares US data from NCES between 1997 and 2013 with data from Australia for the same timeframe, the common theme that emerges is that women are underrepresented in STEM fields throughout their education and career (NCES, 1997; NCES, 2013; ACOLA, 2013). One note of optimism is that there has been some gradual improvement in some of the most underrepresented STEM subjects. According to Freeman (2004) in the early 1970s in the US, females accounted for less than 1% of undergraduate degrees conferred in engineering. Data from the Australian Council of Learned Academies (ACOLA, 2013) showed that the same figure was true of Australian female graduates in engineering degrees in the early 1970s.

Two decades later, in 1996, the number of Australian female engineering graduates was 5.2% (ABS, 2001) which according to Roberts and Ayre (2002) trailed both the UK and the US figures by between 2-4% (NSF 1998; Lal, Yoon and Carlson, 1999). ACOLA (2013) reports that in Australia, women's participation in STEM has improved over the two decades since 1993, but that there is a case to be made for re-invigorating the agenda on women in STEM (ACOLA, 2013, p.153) especially since the number of female engineering graduates has only risen to 20% in Australia, which is the same figure for the US a decade earlier (Freeman, 2004). In Australia, national estimates suggest that gender disparities, specifically in engineering, are largely driven by inadequate enrolment rather than inadequate retention of women (ACOLA, 2013, p. 211).

Inadequate enrolments are also still the main reason for gender disparities in US engineering universities. A longitudinal study conducted by the National Science Board (NSB) (2010) that used primary sources from the American Society for Engineering Education (ASEE), the Engineering Workforce Commission (EWC), and Engineering Trends, found that the underrepresentation of women in Engineering Education for the academic

years from 1999–2000 to 2004–2005 was predominantly due to low enrolments in Mechanical, Computer, and Electrical Engineering programs. The female enrolment in those subjects was between 12% and 14% compared with the national average for female enrolment in engineering courses, which was 20% to 22%. The disciplines where women were, on average, overrepresented, when compared to the national average, included Bio-Engineering (38%), Environmental Science (37%), Chemical Engineering (35%), Industrial, Management and Manufacturing, and Architecture (29%).

A key question is whether retention in engineering education is lower among women than men. The above study (NSB, 2010) shows that female students comprised 20% of national engineering enrolments between 1999 and 2004 and during the same time women represented 22% of degree recipients (NSB, 2010). This indicates that issues of female underrepresentation, especially in the field of engineering, is not due to drop-out rates of female engineering students, but rather low enrolment rates. The earlier Australian study by Roberts and Ayre (2002) found that this is also true of Australian engineering education. They point out that there is little or no difference in retention rates between men and women in engineering and that the proportion of women and men who begin working as engineers after graduation is almost equal, that is, 85% for women compared with 89% for men. The number who subsequently left these jobs is also very similar. Women engineers in the 30-39 age bracket who stopped working as engineers made up 45% of the total. Another 17% left the job after they turned 40 years of age or more. The percentage of males who stopped working in the 20-29 age bracket was 40%. Those who left after 30 years of age made up 20% or less of the total (Roberts & Ayre, 2002).

It is interesting to note that in OECD countries, parents are still more likely to expect their sons, rather than their daughters, to work in a STEM-related profession (OECD, 2015). In rural low SES areas, this is particularly the case. The literature clearly revealed that our decision to research ways of encouraging young women from a depressed socio-economic region to consider enrolling in STEM type subjects responded to a gap in the research literature. We have found no current meta review in this field.

v) Data Collection

Introduction

The data collection phase in Semester 1, 2016 consisted of the formation of focus groups wherein initial surveys were supplied to provide demographic information for both male and female student cohorts. A total of 20 participants were recruited (9 males and 11 females). Once the participants had filled out the surveys, the focus groups or individual interviews focused on the students' educational experiences to date and the barriers they perceived to engaging with higher education or STEM programs. There were two focus groups of males comprising 3 and 4 informants respectively. An eighth individual was selected for an in-depth, informal interview. One interested male was not able to participate for personal reasons. The small number of male participants underscores the real problems that exist in attracting young males from low SES backgrounds to even talk about the possibility of entering university, let alone getting them to enrol in courses. The female students, on the other hand, were university students already, and were all currently studying in the nursing and teaching programs or the Tertiary Preparation Pathways (TPP) courses at the USC Gympie campus. They were recruited by word of mouth and by

announcements that were added to an events page on an official university Facebook site. The eleven women took part in two focus groups with five respondents in each group and one individual who agreed to an in-depth interview.

Survey

Male Survey

The group of male participants in this study were handed a survey form prior to taking part in the two focus groups and the selected individual interview. Each of the participants was given a code (M1 - M9). M2 was absent and does not appear in the data. The demographic survey included questions about the age of the participants, where they went to school, what year level they completed, the result they got if they had received an Overall Position (OP) ranking, if they had ever considered attending university, if any of their family or friends had attended university and how they had fared at school.

Half the group had gone to schools in the Gympie area while the other half had attended school in other parts of south east Queensland, and in one case a school in Victoria. Most of them had part- or full-time work. M1 worked for the local council, for example. Only one of the respondents said that he had received an OP ranking and had enrolled in a university course as a distance student, but dropped out after one semester. Another informant had gone on to do a TAFE course but he too had withdrawn. Only one of the informants had a relative (a sister) who had gone to university, although he said a number of his school friends had enrolled in university courses. He said that on one occasion he happened to be on a university campus and looked into a lecture theatre. He (M5) described the experience as unnerving and like most of the cohort had never really entertained the idea of attending university.

In response to questions about how they remembered their experience of school most said they had negative memories. Some of the responses are included below: 'Could have done better, as I did not really take an interest, as too busy socialising (M1); 'Average, passing grades, as I had lack of interest in subjects'(M3); 'Average- I never really tried at school!'(M4); 'Horrible!- Too unfocussed and distracted with big sized classes- and not enough teacher support, ended skipping school a lot due to all that and not finishing' (M5); 'Average/Above average- OP's are 1-25 and I got an 11 with Cs and Bs (M6); 'Poor! Didn't like it at all. Structure of schooling all wrong for me. I was teased a bit. No motivation at all and had not parental supervision or guidance to guide me to do my school work (M7); 'Not very well at all! This was because I wasn't focused or motivated" (M8); 'Average" (M9). In summary, the participants' assessment of their school achievement ranged from average to poor.

The four males who spoke of just being 'average' felt they simply did not try or failed to apply themselves to school work. Similarly, the four males that mentioned that they performed poorly at school highlighted that the issues contributing to this lack of achievement included: poor motivation, disinterest, social distractions and no support or encouragement.

Female Survey

The female participants filled out a survey prior to forming the focus groups. From the survey we were able to ascertain that there were three 21 year old participants, four aged

25, 27, and 29, two aged 30 and two aged 34. Eight had gone to government schools and three to private colleges. Five were from the TPP programme and the remaining females were doing degrees in education, nursing, and social work. Qualitative questions in the survey elicited information on the following topics: 1) self-perception of school attainment; 2) opinions on continuous assessment; 3) beliefs and feelings about mathematics; and, 4) friends that continued to do tertiary studies.

In terms of self-perception of school attainment, participants' responses varied. One student (S) said she had a positive self-image at school and was very organised having worked as an administration assistant after school (S1); another said she tried as well as she could at school and that she 'had great peers and engaging teachers' (S2); another respondent said she was 'Average...as I had a lack of interest' (S3) while a fourth said her perception of her schooling was 'Excellent! I was interested in subjects and had family support' (S4). Others felt that they had done 'Pretty well' (S5); 'Average- because I got an average OP score' (S6); 'Ok – because I got my certificate' (S7); 'Not great- I wasn't committed' (S8); 'Some subjects – good. Maths – not so good. Algebra and equations were problematic' (S9); 'Average- I did well in subjects I enjoyed and with teachers who were engaging' (S10); and the final informant said 'I struggled with Maths at school and this really went against me in my achieving whilst at school' (S11). In our summary of the data we concluded that the group varied from being 'ok' and 'average', to doing 'excellently' due to family support (this latter comment was from S4 – a mature-aged student who had completed previous studies and was not a first-in-family to undertake tertiary studies). Private education was an advantage (S2 and S10) and mathematics was definitely problematic (S9, S11).

The second question related to the advantages and disadvantages of continuous and varied assessment, including group work assessment. This question was included because earlier research by Christie and Nordlund (2006) found that continuous assessment was perceived to be beneficial to female students. The responses included the following comments: 'I prefer small group work projects' (S1); 'Consistent assessment tasks are ok and challenging. Individual is preferred' (S4); 'I like group work and find it more fun and appealing to do assessments in a group' (S5); 'Yes. I would feel more confident with a number of people to bounce ideas off' (S8); 'Yes- I think working in groups would be better for me' (S9); 'I prefer constant assessment tasks. I feel I can gauge how I'm going with feedback from regular assessment (S10). 'Group work is a good test of my skills and knowledge as I prefer working solo' (S6). Others were less positive: 'I would not prefer to solve problems in groups, as I find a lot of people don't participate in groups effectively' (S7); 'I prefer individual assessments, as it is sometimes difficult to rely on peers' (S2); 'Yes & no - I enjoy working by myself but also benefit from group work/discussions' (S3). We concluded that five students definitely prefer group work, two were unsure and three students prefer only individual assessments, as they do not want rely on peers and are able to get feedback from 'regular assessment' (S9). The responses supported the findings of our earlier research.

The next question asked respondents about their attitude to mathematics. They responded as follows: 'I enjoyed maths' (S1); 'Didn't love it, but didn't hate it' (S2); 'I very much disliked maths (S3); 'Not much (S4); 'I can do it – but really don't like it (S5); 'I was good at maths - top of the class (S6); 'Hate it' (S7); 'I struggled' (S8); 'I like maths - excluding algebra and equations' (S9); 'I felt I was poor at maths, didn't enjoy it' (S10); 'I struggled at maths – really dislike it' (S11). In summary, we concluded that three participants liked maths, three were

impartial ('I like it...but don't like doing it'), and four students definitely hated it due to their struggles with mathematical concepts.

Our third question probed whether or not the respondents had friends that went on to do tertiary studies. Three informants (S1, S3 and S4) said they did not while the others responded as follows: 'Most of my school friends went on to university from my private school' (S2); 'Yes- five of them' (S5); 'Four of my friends went on to university' (S6); 'Yes – ten to fifteen of them' (S7); 'Yes - two or three of them' (S8); 'Yes - six of them' (S9); 'Yes – three of them' (S10); ; 'No - none of my friends went to university' (S11). We concluded that most of the participants had school peers that went onto university studies.

vi) Data Analysis

Male Focus Groups and Interviews

The discussions were taped, transcribed and then analysed using NVivo software. A number of themes emerged from the focus group discussions. In responding to their perceived barriers to enrolment in university the informants identified the following issues and needs:

1. Money and Time

The group made the following observations in this regard: 'I would say the money would be the biggest aspect'(M1); 'You have work commitments, which ultimately at the end of the day, that's how you pay the bills and put food on the table. That has to come first over sometimes your studies. There is that financial commitment that you have to make and then on top of it, the time' (M3); 'I've thought about doing engineering, but just time, money' (M9); 'my instability in life and my housing situation, my own financial situation' (M7).

2. Family and Job Security

The informants were concerned about the investment in studying at university and the returns that they might get from the time and money spent. They had the following to say on this topic: 'When I finish my degree, getting a job would be one aspect of it' (M1); 'Probably offer more jobs around the local community based on a university degree' (M4); 'there is not a guarantee that when you finish your studies you will go into an occupation or that that job is going to be relevant, so that you can then use it' (M3); 'Just my family at the moment. They're still young kids, so still got to look after them. Possibly work is an issue, if I lose my job I've got to find something else to get into - that would be my biggest thing' (M9).

3. Coping and Balancing Skills

Two of the informants gave a number of reasons why they considered studying at university a difficult proposition. 'The planning beforehand, I would not know if I'd be able to cope. Say work five days a week, then study the weekend and back to work and that. I don't know if it would be too much of an overload or not. So, that's kind of what I'm worried about at the moment' (M1). The same respondent noted a number of other issues such as 'mental overload too of the study and work all round - the full work/study situation might be another handful too'. The second informant said that coping for him would be easier if there were support at high school. For example, if 'he was helped to understand how other

students, who are already in that first year situation, are coping with different things and how they have overcome those things, it probably would be helpful' (M6).

4. Bad School Experiences

Unhappy experiences at school was a common theme from the participants who had the following to say: 'I had a lot of trouble with a lot of the teachers there, so in Year 10 I just pretty much stopped going to school and then when I attempted to study, I did distance education and I was really like motivated at the start' (M7). The same respondent went on to say: 'Teachers were really poor. The Japanese teacher in high school was awful, terrible. And, yeah, I just stopped wanting to learn, I guess, just lost interest' (M7). Another informant admitted that school was not for him: 'I guess I just get real bored, can't focus' (M8). Finally, another commented: 'I'm a bit of an average person and have practical skills, so I'd rather do practical stuff than theory which didn't work for me at school and I was probably lazy really' (M9).

5. Lack of Information and Direction about Studying at University

A point that emerged during the discussions was that even though the informants admitted university study had never been part of their life plans, they felt that more readily available information might have at least helped them re-consider some of their options. Three informants had this to say: 'I think a lot of people don't know about the pathways and that and there'd probably be a lot of people that have not even tried to look too, they've just gone oh uni, I can't - like you said, with an OP, don't worry about it, kind of thing' (M1); 'I find without knowing specifically what my end goal is for a career or whatever I find it frustrating, I find it directionless I guess and, yeah, that's why I like - I've enjoyed getting back actually, just working because I know what I'm doing on a day- to-day basis, on a short term goal basis' (M6); 'I saw TAFE as the easy option out, and that's what a lot of young males see things. Uni is the hard way out, TAFE is the easy way. TAFE doesn't take as long, TAFE is cheaper, TAFE is quicker, gets me out there quicker, I don't have to waste time at uni' (M5).

6. Financial Support and Misconceptions about HECS Debt

There were some comments that indicated how important accurate information could be for those who might at least entertain the thought of university study. M1 hoped for a 'bit of financial support on the way too', whereas M3 said 'You just incurred a large HECS debt'. Another informant said: 'But also with HECS debt, I was also informed that if you don't earn \$52,000 and in your whole life you don't get up to that and don't start paying it off, the HECS debt goes to your children afterwards' (M4). Another said: 'You have work commitments, which ultimately at the end of the day, that's how you pay the bills and put food on the table. That has to sometimes come first over your studies. There is that financial commitment that you have to make and then on top of it, the time' (M3). The same respondent saw other hidden costs in a university education including the costs of textbooks, although he conceded that 'they have their university laptops which will have programs on it that you will need for different classes, which is great, university textbooks are very expensive' (M3).

Another participant said 'Probably for me I'd definitely need support to do the study, definitely need support there, that's what I think' (M1).

7. Emotional Support

In response to how they might see themselves being supported to study at university M1 supposed that 'if you meet a lot of new people and that, make friends, you're going to get the emotional support from them and possibly even helping with the study'. M6 thought that part of the problem is 'you can have all the information online and stuff like that, but people generally relate to people in their own peer groups. I know, personally, my younger sister has gone on to do a university course now, but at the time when I was first studying I didn't know anyone in my family who had studied at all'. Another respondent, M7, felt that one needed to have self-belief: 'The first thing you think about is highly intelligent, high OP, very smart people'.

8. Lack of Encouragement

The focus group discussions revealed that the participants had lacked encouragement to attend a university while they were high school students. This was an important finding in terms of how we, as researchers and university advocates could help rectify what appears to be a lack of encouragement for young men in the Gympie region to at least consider a university place. The informants had the following to say: 'Not encouraged. It was, oh if you want to do it, you can do it - It was pretty well left to the person to choose. If they were doing good at school, maybe some of the teachers or whatever they were excelling might have pushed them, oh well you're doing really good in science, maybe you should further your career in science' (M1); 'I wasn't overly encouraged to go to university after school. Mostly it was seen, unless you definitely knew what you were doing, had an ideal career or goal, that it was a waste of time and money to just pursue a bachelor's degree in arts or something, if it would have no real relevance in the outside world' (M3); 'I probably got discouraged because they didn't think I had the potential to go on. So, they led me towards a careers' counsellor who tried to really push TAFE onto me instead of university' (M5); 'I didn't really have much encouragement. Single parent home, my mum worked a lot, so, yeah, it was pretty much up to me to finish school, and, yeah, I didn't. It was like super difficult and like, yeah, just heaps of things, ugh, life (M7).

9. Application to Real Life

When questioned about why they had not considered university as a possibility two respondents felt that it not only delayed one's money earning capacity, but was also highly specialized and theoretical type of education. M3 said: 'I definitely agree with having a university education for a specialised job or something that's a particular area that you want to go into, but not in a broad sense of employment'. A second respondent commented 'Probably just me being me, just so practical with hands-on, so that's probably what's preventing me (M8).

10. Aspirations for Males in Gympie

In the concluding part of the discussions the participants were asked if their views or ideas had changed in terms of their attitude to university study and if they had any advice about helping remove barriers and spreading the word about university study and what it might offer to young men in the Gympie region. There had been a noticeable change in attitude during the focus group and the participants had a number of good ideas and suggestions to share with the researchers. M1 thought young males 'wouldn't mind getting a bit more

information and possibly seeking careers out of Gympie. I don't think they want to be in the council all their life'. Another respondent said that 'You go to university to get into the area you're interested in, so it increases your chances of getting a job there, possibly a higher one. But you're limited to that field though. So, you probably need to think about expanding out of that or something if you want to get more than one possible outcome'(M5). A third participant felt that 'Maybe more competency-based subjects could be offered at university rather than actual study, which could be good, because you could do two days a month in classroom and class learning - the digital skills that I learnt which is really good - really something like I'm doing now' (M9). One informant was even more positive saying 'I think university will definitely increase my chances of getting a way better job, and that's my ultimate goal' (M7).

Finally, M8, in an honest appraisal of his own capabilities said 'I'm more hands-on than anything. I've always struggled in the classroom, so I think it would be a waste of - not really my time, but the teacher's time, so need that motivation to be pushed' (M8).

11. Spreading the Word and Ways of Providing Career Pathway Advice

The feedback we received under this topic was very helpful. One participant said that those who worked with university recruitment 'might be able to maybe organise with the schools when they're doing reunions and that and pop up and you can have a chat like you're doing now and give them some information if people are keen on university and possibly take the Gympie university career advisor as well if - well if she's available and she can talk about the careers advice and pathways' (M1). The idea of school outreach was a recurring idea. M5 said 'Having some of the lecturers and that come out there and be friendly and welcoming, like they're your best mates, it's a good place to be more encouraging with the open days instead of just having them here. Really branch out into the heart of the community' (M5). Another said 'make it more relevant, they could - the university - could connect with some companies and while the students are undertaking their university course, they could go to the companies and work for them' (M4). The same informant added that 'You can pay for ads that come up in everyone's newsfeed as well. That can spread the word out more. Also, going to schools and giving them information about courses and that would help as well'. One of the group had actually begun his preparatory study at USC and said that he himself spoke well of university study: 'I keep saying to people, like, it's Gympie University there, go to it. If it wasn't here, I could tell you that I wouldn't be doing this right now. I don't think TAFE or vocational colleges are worth anything, so I wouldn't do them personally' (M7). Another student was aware of TPP and said 'I know there is a preparation course here, so there's one way of starting. Probably more advertisement, encourage men like me to come and give it a go' (M8). The same informant expatiated: 'University used to be like the cream of education and now everyone's pushed, and now trades like miners are dying off, so if everyone's high educated, what about the rest? But definitely if you're intelligent enough to do it, go for it, and then obviously you've got people like us, pretty average and take different pathways'.

The feeling that the USC campus was the Gympie University infused a lot of the conversation. M8 said 'The presence of the university in Gympie - its effect is kind of a big thing, gets people to be able to do what they want and I see that as great, especially in Gympie, considering the epidemic that's going on. So, it could force people out of their old habits, drugs or homelessness, aggressive behaviours, if they get a better job that might be

able to help them, because a lot of people are angry that they don't have money'. Another participant, referring to the USC Gympie campus, said 'Gympie's got it now, and it is starting to probably get a little bit more known around town, but definitely in the schools, students should be encouraged to go to university' (M8). A number of other suggestions for informing and motivating high school students to think of university were proffered. One of the participants injected a little humour into the discussion saying: 'Because I'm always on the internet or TV or online games, probably you could do some ads subliminally in games – it would probably get me' (M8). One of his more serious suggestions was to build self-confidence via motivational talks and 'advertisements, instead of just, well, here's a course' (M8). A similar point was made by M7 who suggested 'a bit more targeted advertising towards men in rural areas to say that there are opportunities in agricultural science'. Both of the above informants suggested open days and laboratory workshops. M8 said: 'Open days actually encourage a lot of people, especially I reckon you should put the word out a lot more so that it's going to reach almost everyone, because lots of people do come for free food, I mean who doesn't like food, but once they come in they look at the campus'.

12. Strategies to Highlight University Campus into Local Community

Under this topic informants in the focus groups and selected interview provided a number of ideas. M6 said: 'I think maybe going to a community group or something e.g., I was part of a social soccer competition one time and it was a Queensland Government I think it was program or something.

They just brought a person down, I don't remember if it was one or two times, but they talked about stuff like nutrition and responsible drinking and stuff like that'. Another informant (M3) made the point that 'A lot of people spend more time looking at Facebook than anything else these days. Even when you have those university information tables and that at malls, I do my best to try to avoid them when I am trying to walk past. Yeah, I think people if they're interested, they will follow through'. A thoughtful observation, from M6, was that 'In terms of looking at that career aspiration, I think looking at students who, again, have actually graduated and who are in jobs and what type of jobs there is'.

Female Focus Groups and Interviews

Eleven female students agreed to participate in our research and formed two focus groups of five people each. The remaining person participated in a structured interview that used the same set of questions as those that guided the focus group discussions. In each session participants completed an initial demographical survey which was then followed by the pre-determined open-ended interview questions. All participants were given a handout of the interview questions. The groups met during March and April 2016 and the interview was conducted at the end of the process. The duration of the two focus groups and the structured interview was between 45 minutes and one hour. Each focus group was coordinated by a facilitator and a scribe who recorded field notes and observations. The focus groups and interview were recorded and transcribed verbatim. A standard script was read out by the facilitator and all participants were asked to sign a consent form in accordance with the ethics clearance for this project. The topics for the focus groups and interview were informed by the survey, but kept open-ended and the conversation focussed on why the women had chosen their particular program, rather than entering a STEM program. Data were analysed using a thematic coding approach (Miles and Huberman, 1994) with

responses categorised according to evolving themes using an inductive approach and thematic examination (Lewis, 2009). Transcripts were imported and coded in NVivo 11. Using word queries, themes were recognised and identified (Creswell, 1994).

Ten themes emerged from the focus group discussions. In responding to their perceived barriers to enrolment in university, the informants identified the following issues and needs:

1. Misconceptions about Science

Five of the informants made the following points: 'Since starting my second degree I realise I was under a lot of misconceptions - I just have the base knowledge to do science, so I did psychology' (S1); 'Just didn't realise that I could have been a marine scientist or that I could go to space' (S2); 'I loved collecting the data - like when I was in biology - but just had no knowledge how to analyse or synthesise all of it' (S4); 'I know it's about being in a lab and Bunsen burners and stuff like that - just couldn't imagine me being inside on a computer - I'm too much of an outdoor type'(S3); 'I did science, I think that we all did science, but I didn't feel like I was interested in it when I was younger. But then as it got more difficult in coming up to Grade 11 and 12, I didn't enjoy it because I didn't understand it. I didn't feel a connection with the teacher and that made me hate it to be honest. I'm enjoying it now though, revisiting it at university with a different mind frame and different teachers' (S10).

2. Self-Doubt

Three participants mentioned they felt they were not smart enough to undertake STEM: 'not feeling smart enough to do something like that, at school they give you an Overall Position (OP) rank when you graduate and most of the time to get into STEM you need a really high OP rank. So, it really limits your chance of actually getting into those subjects and then you're like, hang on, am I smart enough to do this, because you've just had all your hopes and dreams crushed by a number? STEM does involve maths - intensive maths with all these complicated equations and all these formulas that you have to remember' (S6).; 'STEM looks so technical and it looks like you would just need a tremendous amount of skill. You'd have to be very good at maths and sciences and that's always something that you would have to be very bright and done very well at school, that's what I would think. I guess I do struggle with a fair bit of self-doubt' (S10); 'Too much study and not intelligent enough- I'm not a whizz kid. Definitely need support to do math' (S4).

3. Separation Anxiety

Theme 3 included moving overseas or to another country to study. One participant spoke of their anxiousness about leaving their family: 'I personally couldn't because I wouldn't be able to leave my family here. So no, living in another country doesn't interest me at all' (S9).

4. Doubts about Where a STEM Career Would Lead

Four participants spoke of being unsure about going into STEM careers, as they were unsure about where it would take them: 'I was sort of thinking in high school you're never really told where things - where they go. So, if you did have a slight interest in something what the end product could be from that, so maybe more careers stuff - advice in high school. I mean I know there is some, but I definitely wasn't exposed to knowing more. So, if I maybe had that basic understanding when I was ready for uni, I might have picked something else possibly' (S8). Another commented: 'When I was in school, science was just dissecting a frog

to me and it was - I saw no point in it or where it could lead to and then beginning nursing and realising there's a bit of science behind that, was horrible. Because honestly when I was in science in high school my big thing was lighting the Bunsen burner and scaring the crap out of the teacher, whereas now it's like I wish I'd paid attention to the periodic table and how an atom works and all that. I got to know where the 'road is going', so that is why I didn't consider STEM - I honestly couldn't see myself in any of those roles like making the prosthetic legs' (S7). Participant S10 said: 'I feel like we weren't exposed to anything or helped in any sort of direction - we were told if we didn't get a good OP, that you would go nowhere and you would be down at Centrelink. So now I feel like there's so much pressure on young people when actually we can just go get a ranking, go and do TPP, those sort of things and learn our chemistry and our bioscience and things that we thought we wouldn't be able to do' (S10). Another response was: 'Probably if I had someone already in my family doing this, I maybe would have considered it' (S4).

5. Lack of Caring and an Absence of a Child-Friendly Ethos

Theme 5 concerned the perceived nature of a career in STEM. Four participants mentioned the latter point: 'I would not consider any sort of a career path or study towards a career path that wasn't child-friendly because I think life is short and time to me is more important than anything else.

Children aren't young for very long, so my time with my child is what matters the most. Teaching allows me to go home at three and have the same holidays. Not having to worrying about putting your child in day care over school holidays is something that really appeals to me. I wouldn't ever rule anything out, but I think that the whole thing with the child-friendly hours is what really limits females to certain career choices. I would like to do teaching because it works in with family commitments as well, as I think it's a fairly well-paid position and I like children I suppose' (S9). Another said: 'I'm quite passionate and care too much to get into something that doesn't really spark my interest - honestly it would have to be the money even though that sounds very vain' (S7). One whose mother and aunt are nurses said enrolling in nursing 'sort of runs in the family. My dad said I can't do anything with accounting or business which I wanted to do, so I went to nursing. With nursing, you know that when you have a kid, people will be supportive of that, like it's caring, like people care, so you're not going to be forced into quitting your job when you're pregnant or being discriminated against because you're pregnant or you have a family' (S6). Another, who is enrolled in teaching said: 'I had some experience in a school which got me started wanting to be a teacher because I suppose it is caring about people. I want to work in special education where kids would need people who are interested and would be passionate to be there, so it's a caring role' (S8).

6. STEM Jobs are Male-Dominated

Theme 6 was endorsed by four participants who felt that: 'As a child growing up the little picture cards you played with had the female as the nurse, the female as the teacher and you have the male that's the doctor, the male that's the engineer. You have those pictures and that automatically associates or stereotypes doctors and engineers as male-dominated careers. So, as a child you're growing up already putting those two things together - that they're male industries whereas nursing and teaching is more of a female industry. Things are changing but you still look now, books you get are still a female is the nurse, a female is

the teacher, you don't see a cartoon or a picture of a male nurse, or a male teacher, or a female engineer' (S7). Another said: 'STEM is male-dominated industry. Because we're females, we have to think about in the future what happens when we have kids, are they going to be flexible enough for us to raise a family or are we just going to end up with no kids when we're older with relatively miserable lives. I feel if I went into an industry dominated by males, it would be harder for me to get a job as well because they have less commitments to the family than a woman does' (S6). Another participant emphasized the impact of gender stereotyping: 'When I was a child I felt you could be a secretary, a nurse, a teacher, and I ended up becoming a nanny before I did this. So, these are very female-orientated roles and this is what I felt from my own family and friends and society is what was expected - those are careers that would be good for you since you're a woman' (S10). One participant did try to break the mould but admitted: 'I tried doing biology but at my school it had so many males – I just dropped out of it. It was so dominated by males and I didn't feel comfortable to speak freely in biology class' (S4).

7. STEM is Not a Safe Option

Two students commented that they 'Just wanted to take the easy and safe option. One said 'I'm a nurse, but didn't really want to take on the sciences to be a doctor' (S5). Another said: 'I simply did psychology in my first degree, as I thought it would be the easy way to get a degree' (S1).

8. Lack of Motivation to do STEM

Theme 8 was a topic of concern for many informants. Seven participants spoke of their lack of motivation to undertake a 'fancy degree': 'Probably my motivation to do it wasn't that great. I lacked information, family and community support, knowledge, familiarity and encouragement to go into these 'fancy degrees'. I never really got informed about the wide variety that could have been available in the STEM field - thought it meant IT stuff and really didn't like that. I needed to be more encouraged whilst at school to do something like engineering. I wasn't encouraged to pursue science at my school - in fact subject lines didn't permit it' (S4). One said simply: 'I wasn't motivated' (S5).

Another pointed out that: 'I don't think STEM is interesting, so I think I would struggle' (S8). A third participant said: 'It's not something I suppose I'm passionate about and I believe that when you go for a job you've got to be passionate about it. STEM does wonderful things but I think you do need to have a passion to be able to do it' (S7). There was a slight variation in the response from S6 who said: 'Maths isn't really a problem for me, I'm good at maths but I just don't find it interesting. Maybe with the science side it could be interesting but you have to know what you want to do, be pretty passionate and give up a lot of things' (S6). An even more positive view about STEM was enunciated by S10 who said: 'One of our tutors was really great at explaining everything and very passionate about her field of microbiology and water cleanliness, and shared photos with us of her doing her experiments and everything. It's not something I would have ever considered, but I found it really interesting and she was very enthusiastic about her field. Like I said before, I think for me midwifery was very familiar. I'm very, very passionate about it which helps me' (S10). Finally, one informant said that if you wanted to do STEM you need to 'dream big' (S2).

9. Lack of Finances to Complete a STEM Degree

Theme 9 raised concerns about the need to have finances to complete a degree in STEM: 'I feel like I would need lots of money, so I could quit my job and live in the library' (S6).

Another informant said: 'STEM costs money but you want to provide for your family, you want to have that house, you want to have that car and you want to be able to go on that holiday and honestly without money you really can't do that' (S7).

10. Insufficient Information about STEM Pathways

The final theme comprised the lack of information about STEM: 'I think to have more people go into that industry or to think it's interesting maybe at school age or when you're younger, in primary school even, you need to be shown more about STEM stuff - going more into depth of how to do it. Because you always hear about the nurses and the teachers and the doctors and the ambulance and the fireman and the policeman, but you never really hear about the biochemist or the engineer that makes prosthetic arms or robots or all those sort of things. I think if you put it across to a young child especially about building something like a robot that would spark their interest and if you spark it, then that interest can turn into a passion as they grow older which will bring them into that industry more. Whereas when I was a kid, it was nursing and teaching' (S7).

Section D: Interventions

The following interventions formed part of this second cycle of action research

i) Mathematics and Chemistry Workshops

Free introductory workshops were delivered by the Head of the Tertiary Preparation Pathway (TPP) programme who taught 15 hours of mathematics and 15 hours of chemistry over a one week period from 11th to 15th July 2016 at the USC Gympie campus. Instruction was provided in the subject areas of mathematics and chemistry. Advertising took the form of posters, flyers, an advertisement in the Gympie Times newspaper, emails to existing USC students and Facebook posts. Seven students attended the mathematics workshop, nine students attended the chemistry workshop, with five students attending both workshops. Of the combined eleven students, five were enrolled to start TPP courses the following semester. Seven students completed feedback forms, all of whom found the workshops to be a positive experience which helped them to either consider studying at tertiary level more seriously, or provided them with the opportunity to review their knowledge of high school level mathematics and chemistry in order to undertake TPP units in these subject areas.

There was interest in a second stage of workshops which was promoted in Semester 2, 2016 and due to start in November 2016; however, this session was cancelled due to the students' personal circumstances and illness.

ii) RBETS Award

The RBETS award was created to increase aspirational, educational and career prospects for young males by removing financial, social, and academic barriers for further education. By creating a pathway to university education and providing access to a range of support services to assist while completing the Tertiary Preparation Pathway (TPP) program, students supported through the award were facilitated in developing the skills and knowledge needed to succeed at university by completing four TPP subjects relevant to their chosen undergraduate degree.

The award was made available for males aged between 20 and 34 who had not previously engaged in tertiary education. Benefits included transport assistance, childcare support, course equipment, printing costs, access to internet services and career advice. On successful completion of the program, the award recipients were eligible for entry into most USC undergraduate degree programs through direct application, in addition to being able to access a range of support services provided by USC, including disability, welfare and academic study support, and counselling. The recipients would also be eligible to apply for scholarships and bursaries to further assist them financially to complete their undergraduate studies. Under the award, students were able to complete TPP in one semester as a full-time study load, or in two semesters as a part-time study load.

There were two recipients for the RBETS, one of whom attended the mathematics and chemistry workshops and is due to complete his TPP studies in Semester 1, 2017. The second recipient commenced TPP studies in Semester 2, 2016; however, ceased attending classes and accessing additional support offered to him in mathematics. Despite attempts to

contact him and continue support, he has withdrawn from his studies. We hope to find additional funding for future RBETS awards, as we perceive great value in this intervention.

iii) Lunchtime Laboratory and Career Information Sessions

In the Gympie regional area, the percentage of tertiary students who are first-in-family is relatively high, with values ranging from 65% to 82% between 2013 and 2015 (USC, 2016). This has led to a number of personal barriers encountered in students' higher educational goals. The aim of the Lunchtime Laboratory and Career Information Sessions is to increase students' exposure to the variety of Science, Technology, Education and Mathematics (STEM) career possibilities.

Lunchtime Laboratory and Career Information Sessions were held for seven weeks and offered, as part of TPP, to all Gympie students, in particular the current enrolled TPP students. Simple experiments were conducted followed by investigations into the science behind these experiments and how this related to future career opportunities. Written feedback was received from eight session attendees; five female and three male students. As a result of the sessions, two students cited that they would change their proposed undergraduate studies to science-based courses. The inclusion of STEM career video resources proved to be influential in their provision of career possibilities which were previously unknown to the students.

iv) High School Outreach

The outreach program took place at USC Gympie and involved a high school from the Gympie region with over 1,100 student enrolments. The program targeted a number of disadvantaged students with behaviour management issues. The school principal supported the process, as part of a focus on "Year 13", in an attempt to engage students and circumvent their post-school trajectory towards unemployment. Thirty Year 12 students (22 male, 8 female) who were not studying for an Overall Position (OP) to gain a university entrance score and with no plans for further study when they left school, took part in a pilot program designed to change their thinking about university. The outreach program was created to raise students' aspirations and expose them to a range of different careers to show there are many different avenues to participating in tertiary education other than by gaining an OP. A particular focus of the day was to encourage more young rural men to consider tertiary study as a way of greatly improving their career options.

The outreach program activities included: an information session with Maya the Koala Detection Dog and related career opportunities in this field; robotics demonstrations; virtual reality and game coding activities; and, sport for education and coaching purposes, including the use of creative thinking skills involved in problem-solving and interpersonal communication in this career area. The student groups rotated between these activities. The Project Chief Investigator, Kerry Rutter, concluded the day with a presentation on the Tertiary Preparation Pathway (TPP) and its benefits as an entry point to undergraduate studies and future career pathways.

Twenty completed a pre-event survey at the beginning of the workshop and 21 filled out the post-event survey. The pre-event survey consisted of 14 statements and the post-event was identical except for two extra statements that said 'This session opened my eyes to potential career pathways' and 'The Tertiary Preparation Pathway information session was

useful'. Respondents were asked to tick one of the columns beside each statement to indicate what they thought about the statement. The five columns allowed them to say if they strongly disagreed, disagreed, were undecided, agreed or strongly agreed with the statement opposite. The responses were very informative. Only one person disagreed with the two final statements in the post-event. Similarly, only one person strongly agreed with them. However, nine agreed with the proposition that 'The session opened my eyes to potential career pathways' and five agreed that "The Tertiary Preparation Pathway information session was useful'. The rest of the group ticked the undecided box for these two statements. Analysing the other responses it is clear that there was a positive shift in opinion from before and after the event on a number of key points.

v) Targeted Marketing

It was recognised from the ongoing development of the RBETS project that targeted marketing in the Gympie community would be a valuable addition to the intervention process. A separate marketing initiative to increase the number of students entering TPP in 2017 informed the marketing approach for this project. The campaign incorporated video footage of a male student from the Gympie region who completed TPP and is currently studying primary education. This marketing ran in September and October 2016 across Facebook, YouTube and in the local Gympie cinema.

Section E: Results

There were several results and highlights from both cycles of this action research project. Those of most significance are:

- The data collection and analysis process revealed significant information regarding the reasons for the under-representation within higher education of non-indigenous young males from the Gympie region. This will inform future approaches to increasing university recruitment from this group, as this is a research area deficient in current data.
- The case study on young women's reluctance to engage in STEM subjects revealed a number of important insights and recurring themes. For example, lack of information and misconceptions concerning STEM and their own lack of confidence in enrolling in such courses. This will inform future high school outreach activities, where the use of female role models can play a key part in explaining the possibilities of a STEM course of study.
- The transformative learning that occurred during the focus groups and interviews, as part of the data collection, led to both males and females gaining new insights and information about higher education during discussions with their peers and facilitators.
- An overview to this project was presented at the Australian Higher Education Heads of Campus Forum (AHEHCF) and positively received. Attendance at the Boosting Women in STEM conference held in Sydney in September 2016 was an opportunity to disseminate information about the RBETS project and network with researchers in the field. A paper in STEM was presented at the International Symposium on Project Approaches in Engineering Education (PAEE) in July 2016 in Portugal. This paper was subsequently selected to be published as an article in an engineering education special issue of the Scopus indexed *Production* journal.

There were also two key outcomes:

- The results of the first cycle of action research lead to an analysis of new case study data that will be disseminated via future conference papers and journal articles, and will add to the literature in the fields of low enrolments of young males in universities and the widening participation of young females in STEM courses at university.
- In the second cycle of action research, the interventions that were implemented have informed future school outreach activities. As a result of the study, it became evident that intervention in the earlier years of schooling would be beneficial to increase information and motivation levels in this cohort.

Future Initiatives

Our intention is that the interventions implemented in the second stage of the action research cycle (Semester 2, 2016) will be continued and expanded where funding permits:

- Mathematics and Chemistry Workshops
- Lunchtime Laboratories and Career Information Sessions

- High School Outreach (including additional schools to those currently targeted)
- Targeted Marketing of Higher Education Opportunities

Putting the Research into Practice

- As this project was an action research initiative, it combined research and action throughout the two cycles – in other words, research carried out in first semester resulted in a number of interventions in second semester 2016.

Section F: Recommendations

There are a number key questions and recommendations that the Gympie case study highlights. The question that plagued this study was how to find young men from poorer backgrounds to talk about why they are not interested in higher education. We recommend:

- That a meta review of the literature be carried out that focuses on both the failure to engage males with higher education and the reasons why they are more likely to drop out after enrolment.
- That to increase retention rates, outreach programs could be developed to assist first-in- family students who may have the added strain of defending their choice to study instead of work, and may not have access to suitable support outside the education setting.
- That universities in regions such as Gympie increase their school outreach activities by developing motivating workshops that spark interest and discussion in university as early as Years 7 and 8.
- That school outreach activities continue from Year 7 to Year 12 and are adapted to suit both the age and gender of the students. Such activities can be carried out both in school and on campus and where possible some residential activities on campus could be organized during school holidays and university downtime.
- That a system of mentoring be extended from current first year university models to include mentors for interested final year high school students. Where possible the university students and those they mentor should be matched in terms of interests and background.
- That stimulating science based activities be increased both on campus and in schools for all students, but that female role models play a key part in those activities in order to explain the possibilities of a STEM course of study and subsequent career for girls who may have only considered nursing or teaching.

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Appendix 1: Expedited Ethical Approval

11 January 2016

Michelle Searle Director, Office of Research
Tel: +61 7 5459 4574
Email: humanethics@usc.edu.au
F25424

Dr Kerry Rutter
Dr Michael Christie
Mr Graham Young
Dr Maureen O'Neill
Mrs Angeline Medland
University of the Sunshine Coast

Dear Kerry, Michael, Graham, Maureen and Angeline

Expedited ethics approval for research project: Removing Barriers to Engagement By Tertiary Students living in a rural community (A/15/778)

This letter is to confirm that on 7 January 2016, following review of the application for ethics approval of the above named research project, the Chairperson of the Human Research Ethics Committee of the University of the Sunshine Coast granted expedited ethics approval for the project, subject to conditions that have now been satisfied.

The Human Research Ethics Committee will review the Chairperson's grant of approval and the conditions of approval at its next meeting and, should there be any variation of the conditions of approval, you will be informed as soon as practicable.

The period of ethics approval is from 11 January 2016 to 30 December 2017. Could you please note that the ethics approval number for the project is HREC: A/15/778. This number should be quoted in your Research Project Information Sheet and in any written communication when you are recruiting participants.

The standard conditions of ethics approval are listed overleaf. If you have any queries in relation to this ethics approval or if you require further information please contact a Research Ethics Officer by email at humanethics@usc.edu.au or by telephone on +61 7 5459 4574 or 5430 2823.

I wish you well with the success of your project. Yours sincerely



Michelle Searle
Director, Office of Research

STANDARD CONDITIONS OF ETHICS APPROVAL

The standard conditions of approval for all human research projects are the following:

1. Conduct the research project strictly in accordance with the research proposal submitted and granted ethics approval, including any amendments required to be made to the proposal by the Human Research Ethics Committee.
2. Inform the Human Research Ethics Committee immediately of anything which may warrant review of ethics approval of the research project, including: serious or unexpected adverse effects on participants; unforeseen events that might affect continued ethical acceptability of the project; and a written report about these matters must be submitted to the Chairperson of the Human Research Ethics Committee by no later than the next working day after recognition of an adverse occurrence/event.
3. Provide the Committee with a written report on the research project each year from the ethics approval start date and on completion of the project using the proforma "Annual / Final Report on Approved Research Project Involving Humans". This may be accessed on the University of the Sunshine Coast portal at: Research and Research Training>Research Ethics>Human Research Ethics.
4. Advise the Committee in writing as soon as practicable if the research project is discontinued.
5. Make no change to the project as approved in its entirety by the Committee, including any wording in any document approved as part of the project, without prior written approval of the Committee for any change. If you are applying for an amendment to your approved research project, please email your request to the Research Ethics Officer at humanethics@usc.edu.au, detailing the nature of the change and your reasons for the request.

Please note that compliance with these conditions of approval is a requirement of the University's Human Research Ethics – Governing Policy and the National Statement on Ethical Conduct in Human Research.

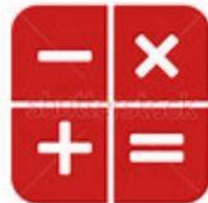
Appendix 2: Intervention Artefacts

Maths and Chemistry Workshops Advertising

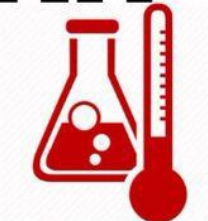
Gympie's local university brings you ...

INTRODUCTORY WORKSHOPS

introductory
MATHS
1-4 NOVEMBER
9AM-12NOON



introductory
CHEMISTRY
1-4 NOVEMBER
1-4PM



FREE

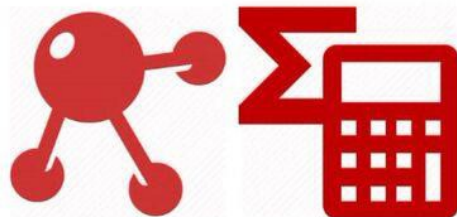
Think
about
study
@ USC
Gympie

be inspired

registration Gympie@usc.edu.au

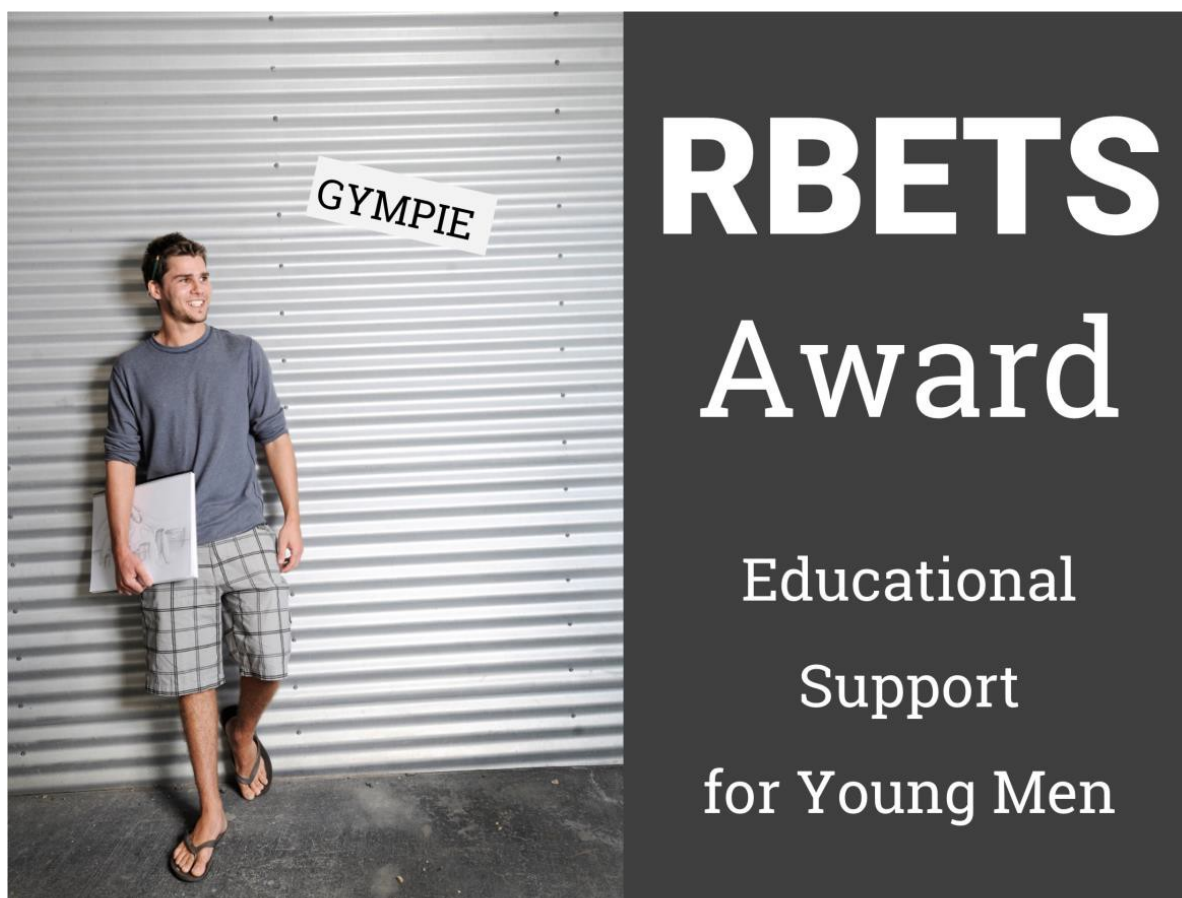
☎ **5456 5800**

Workshops will be held at the
USC Gympie campus
71 Cartwright Rd, Gympie



This is an initiative of the RBETS project funded by the Australian Government, Department of Education and Training, Higher Education Participation and Partnerships Programme National Priorities Pool—2015

RBETS Award Information Sheet



The RBETS Award aims to inspire young men to start new careers by removing barriers to further education.

You will receive financial and social support by choosing a pathway to university through the Tertiary Preparation Pathway (TPP) program. This program will prepare you for future university studies by helping you brush up on your academic skills and giving you the confidence to begin studying your undergraduate degree with the University of the Sunshine Coast (USC). Visit usc.edu.au/tpp for more information. Students supported through the RBETS Award will develop the skills and knowledge needed to succeed at university by completing four TPP subjects relevant to their chosen undergraduate degree. Not sure which degree you'd like to study? Our Careers Counsellors can help you discover what career option you're passionate about.

WHO IS ELIGIBLE?

Young men aged between 20 and 34 who have not previously engaged in tertiary education. Benefits may include transport assistance, childcare support, course equipment, printing costs, access to internet services and career advice.

WHAT NEXT?

On successful completion of the program you are eligible for entry into most USC undergraduate degree programs through direct application. You will also be eligible to access a range of support services provided by USC. These include counselling, disability (if applicable), welfare, and academic study support. You will also be eligible to apply for scholarships and bursaries to further assist you financially to complete your undergraduate studies.

LOCATION

University of the Sunshine Coast—Gympie Campus

HOW LONG WILL IT TAKE?

Under the award TPP can be completed in

- One semester (13 weeks) as a full time study load
- Two semesters (26 weeks) as a part time study load

WHEN CAN I START?

Semester 2 2016

FOR MORE INFORMATION OR TO APPLY

Speak to a USC staff member.
Call: 5456 5800.
Email: gympie@usc.edu.au

This is an initiative of the RBETS project funded by the Australian Government, Department of Education and Training, Higher Education Participation and Partnerships Programme National Priorities Pool—2015

Lunchtime Laboratory and Career Information Session Surveys

RBETS LUNCHTIME LABORATORY AND CAREER INFORMATION SESSION PRE-SURVEY QUESTIONS	RBETS LUNCHTIME LABORATORY AND CAREER INFORMATION SESSION POST-SURVEY QUESTIONS
<p>Please circle your answer.</p> <ol style="list-style-type: none"> 1. Gender: Male or Female 2. What undergraduate program would you like to do after completing TPP? 3. Was your choice influenced by any of the following? Circle all that apply to you. <ol style="list-style-type: none"> a. Parent b. Brothers or sisters c. Aunts, uncles or cousins d. Friends e. School teachers f. Media g. Community member h. Others <p>If you answered 'others', explain who or what?</p> <ol style="list-style-type: none"> 4. Why does this undergraduate program appeal to you? 5. What career do you wish to do? 6. Why did you choose this career? 	<p>Please circle the appropriate answer.</p> <ol style="list-style-type: none"> 1. Gender: Male or Female 2. At the start of the TPP program, what undergraduate program did you wish to enrol in? 3. After the "Lunchtime Labs" sessions has your choice of undergraduate program changed? Yes or no. 4. After the "Lunchtime Labs" sessions has your choice of career changed? Yes or no. 5. If you answered yes to either Q3 or Q4, how did the "Lunchtime Labs" sessions inspire you in your choice of undergraduate degree or career? 6. Was the career information you received during the lunchtime session helpful when deciding your future career path? 7. What did you find the most useful or interesting in the lunchtime sessions? 8. What did you find the best about the sessions? 9. What do you think can be changed?

High School Outreach Media Release



USC opens career options to Year 12 students

Thirty Year 12 Gympie students with no plans for further study when they leave school next month will take part in a pilot program designed to change their thinking about university.

The University of the Sunshine Coast will host a High School Outreach session of career immersion activities at its Gympie campus tomorrow (Thursday 27 October) for the group of male senior students from Gympie State High School.

Media are invited to attend tomorrow's High School Outreach session at USC's Gympie campus in Cartwright Road from 12.30-2.30pm.

USC's Head of Preparation Pathways Dr Kerry Rutter said the young men had been invited to take part in High School Outreach because they were not studying for an Overall Position (OP) to gain a university entrance score.

"We are hoping to raise their aspirations and expose them to a range of different careers to show there are many different avenues to participating in tertiary education other than by gaining an OP," said Dr Rutter.

The High School Outreach event is the latest initiative from an ongoing research project to help rural students access and benefit from university.

Dr Rutter heads the Removing Barriers to Engagement by Tertiary Students Living in Regional Areas (RBETS) research project which focuses on young men in the Gympie region.

"Initially the project was aimed at men aged from 20-35 years and involved focus groups to find out why many in this age group seemed reluctant to engage in university study," she said.

"We found that many had no idea what careers were available or believed that doing one degree locked you into doing that same job for the rest of your working life.

"We hope by extending our focus to older high school students, we can encourage more young rural men to consider tertiary study as a way of greatly improving their career options and chances of success."

Dr Rutter said the outcomes of this pilot project and activities such as High School Outreach could be replicated in other rural and regional areas.

The RBETS research project is funded by the Federal Government's Higher Education Participation and Partnerships Program.

Removing barriers to engagement by tertiary students living in a rural community



to participate in a research project by the University of the Sunshine Coast

The University of the Sunshine Coast is looking for females aged 20 to 34 to participate in a 1 hour focus group around barriers to engagement in Science, Technology, Engineering and Mathematics programs at University. Ideally participants will be studying a Bachelor of Education, Bachelor of Nursing Science or the Tertiary Preparation Pathway Program with USC.

Participants will receive a \$50 gift voucher for their time.

The aim of the focus group is to gain insight into what prevents females aged 20 to 34 from engaging in degree programs other than nursing and teaching – specifically in STEM (Science, Technology, Engineering and Mathematics). Information received through the focus group will be used in a non-identifiable manner to inform the

University of the Sunshine Coast on strategies that could be implemented to increase engagement at in STEM related program by women aged 20 to 34.

For more information or to register your participation in the focus group email krutter@usc.edu.au or call 5456 5556.

The University of the Sunshine Coast ethics approval number is A/15/778

This project is funded by the Australian Government, Department of Education and Training, Higher Education Participation and Partnerships Programme National Priorities Pool—2015

Removing barriers to engagement by tertiary students living in a rural community



**VOLUNTEERS
NEEDED**

*to participate in a research
project by the University of
the Sunshine Coast*

The University of the Sunshine Coast is looking for males aged 20 to 34 to participate in a 1 hour focus group around barriers to engagement at University.

Participants will receive a \$50 gift voucher for their time.

The University of the Sunshine Coast is looking for males aged 20 to 34 to participate in a 1 hour focus group around barriers to engagement at University.

Participants will receive a \$50 gift voucher for their time.

The aim of the focus group is to gain insight into what prevents males aged 20 to 34 from engaging in tertiary education within a rural community.

Information received through the focus group will be used in a non-identifiable manner to inform the University of the Sunshine Coast on strategies that could be implemented to increase engagement at University amongst males aged 20 to 34.

For more information or to register your participation in the focus group email krutter@usc.edu.au or call 5456 5556.

The University of the Sunshine Coast ethics approval number is A/15/778

This project is funded by the Australian Government, Department of Education and Training, Higher Education Participation and Partnerships Programme National Priorities Pool–2015

Appendix 3: Project Staff Profiles

Mr Graham Young: Project Leader

Graham Young (BSc DipEd GradCertMgt) is the Director of USC Northern Campuses, and previously a lecturer at USQ's Fraser Coast campus.

Dr Kerry Rutter: Project Chief Investigator

Dr Kerry Rutter (PhD, PGDip Sc, B. App. Sc) began teaching in the Tertiary Preparation Pathway (TPP) in 2009. Since 2013 Kerry is the Supervisor and Program Coordinator of the Preparatory and Enabling Unit at USC.

Dr Michael Christie: Project Research Supervisor

Michael Christie (BA 1AHons, PhD, TPTC, Certificate IV Workplace Training) is currently Associate Professor of Education at USC. He was previously Sweden's first Professor of Higher Education at Stockholm University from 2010-2013.

Dr Maureen O'Neill: Research Assistant

Maureen O'Neill (BSc (Hons), Grad. Dip. Ed. (Prim/Sec), PG. Ed. (Tertiary), PhD) graduated as a PhD in 2013. Her thesis focussed on researching the perspectives of the issues and problems young athletes, their parents and their teachers at government, non-government and specialist schools in Queensland and New South Wales experience in combining dual endeavours.

Ms Yvonne Farragher: Research Assistant

Yvonne attained a Master of Education from the University of the Sunshine Coast in 2015 and is preparing for a PhD in Education in 2017. She is currently working at USC as a content developer, researcher and tutor in the School of Education.

Mrs Angeline Medland: Project Administrative Support

Angeline is currently the Administration Team Leader at USC Gympie and has 7 years combined experience working with grant funding administration and contract management for the former Department of Employment and Training.