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Moving beyond aspiration to achievement: Outreach activities in disadvantaged northern Adelaide region

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UniSA College was established in 2011 with the twin arms of providing both academic programs (Foundation Studies) and outreach activity (UniSA Connect) to students from all walks of life, but in particular for students from disadvantaged backgrounds. This paper will focus on the UniSA Connect activity based in northern Adelaide secondary schools, one of the most socio-economically disadvantaged regions in Australia. An overview of the model and methods of engagement will be provided along with how this model responds to an increasingly urgent policy agenda – developing academic skills and authentic learning links, particularly in maths and science.

The paper begins from the premise that the importance given to 'raising aspiration' as a means to increase higher education participation is misplaced. Students are not lacking aspiration. However, as a result of unequal distribution of social, economic and cultural resources, the capacity to realise ones aspirations varies. The links between academic achievement and school retention are clear, as is the need for a shift from models of engagement that merely transfer knowledge to schools or communities to a model that builds community capacity. Outreach programs in universities often share common elements which include open days; visits to schools and visits to university by schools; 'taster days' where students might engage in enrichment activities and preparatory courses. While these elements of outreach activity are valuable and offer rich experiences for students, they do not adequately bridge the gap to a more collaborative paradigm of 'knowledge creation' with communities (Scull & Cuthill 2010, p. 62). Moreover, many programs operate at the margins and rely on grant funding. A focus of this paper will be to provide an outline of both the conceptual and operational aspects of UniSA Connect outreach activity, including the rationale for particular programs, the partnership arrangements and the importance of integration and sustainability.

Introduction

This paper will begin by providing some background information about UniSA College and its history of outreach activity. Northern Adelaide secondary schools, students and the community have, as Hattam et al. (2009, p. 306) argue, been the target for national and state intervention programs for many years with a strong feeling within the community of being 'over-researched'. Ready-made projects are often conceived and offered up to schools without collaboration or consultation. Reframing this paradigm and rebuilding trust has been of paramount importance in recent years. The paper then summarises the types of outreach activity undertaken in Australian universities according to the research conducted by the National Centre for Student Equity in Higher Education (NCSEHE). While this research is now dated by a few years, it does provide insight and evidence of the programs that rated highly in terms of making a difference to disadvantaged students' likelihood of continuing onto higher education. Drawing on research and evaluation work, the middle section of this paper takes up the raising aspiration discourse and briefly highlights the problems associated with this agenda before describing the framework of outreach, our program choices, what we have learnt and why the work we do is a continual work-in-progress aimed at building sustainable relationships and effective programs. Lastly, we consider the question of how we measure the effectiveness of our work and what we define as the markers of success. The focus of UniSA College outreach activity aims to build capacity in the areas of Maths and Science and responds to various policy agendas in this regard including recommendations that outreach projects have a strong focus on developing academic skills, especially in Mathematics and Sciences, and building university aspirations for Aboriginal and Torres Strait Islander young people (Behrendt, 2012). At the same time, our efforts are firmly centred on strengthening the capacities of teachers and students so that students can pursue any number of post-school options or career pathways. If student uptake of higher education does not necessarily guarantee social and economic returns then do we need to rethink the purpose of equity strategies and outreach activity? Higher education should not be viewed as the only desirable end. Rather than selling the value of higher education to those who have traditionally been excluded, we need to pursue, as Sellar et al. (2011, p. 49) argue, ways to increase the 'value' of individuals and their communities. It is this approach that our outreach activity seeks to encapsulate.

Background

The University of South Australia has a strong and significant history of working with northern Adelaide schools to foster students' educational aspirations and encourage the participation of those students in a range of post-school pathways including higher education. The City of Playford in Northern Adelaide, one of 10 areas identified by the Commonwealth Government as highly disadvantaged and targeted for additional assistance, has participation rates in post-school education amongst the lowest in Australia, with over 60% of the adult population holding no post-school qualifications and less than 4% a Bachelor degree. The youth unemployment rate in Playford is 30-40%, one of the highest in the nation (ABS, 2011). In mid-2010, UniSA developed a Participation Strategy based on the three elements of Awareness, Access and Achievement. At the centre of the Participation Strategy is UniSA College. The College actively contributes to the University's function by: improving access,

delivering and coordinating the University's pre-degree and pathway programs for domestic students; and developing awareness through outreach activities connected to School curriculum and teaching pedagogies, and related government, industry and community partners.

The College provides access to higher education for those with low prior educational attainment, especially low-SES students, through Foundation and Diploma programs. What has changed in the last year is the model framing outreach activity. It has been informed by historical work but also by research and evaluation, including that conducted by the National Centre for Student Equity of a large federally funded project called the University Aspirations Project (UAP) that ran for 2 years and was completed in 2012. The objectives of this project were threefold: to evaluate the effects that the project had on the aspirations and achievement of students in primary and secondary schools across northern Adelaide; to investigate attitudes towards the project amongst teachers, school leaders, program staff and parents and; to explore broad issues of aspiration to inform both the evaluation of specific programs and the development of an 'Aspirations Framework'. The evaluation was informed by the Design and Evaluation Matrix for Outreach (DEMO) developed by the NCSEHE (Gale et al. 2010). One of the intended outcomes of the University Aspirations Project was to emerge with an Aspirations Framework that would guide practice across the higher education sector and inform policy.

The importance given to the concept of aspiration still occupies a significant place in the higher education sector and in the widening participation agenda more broadly. What became clear throughout this project and simultaneously in a number of other outreach programs was that students did not need their aspirations raised. An extensive survey exploring students' aspirations revealed that higher education was valued, students felt confident in their own abilities, believed that they had the support and information to pursue further study (Roberts et al. 2012). However, the *Mapping Aspiration and Achievement in Northern Adelaide: identifying interventions that improve students' educational and career outcomes* report (MAANA) found that broader structural inequalities and effects such as financial resources, academic skills and limited access to social and cultural resources hampered those aspirations. The pursuit of an 'Aspirations Framework' was reconsidered in light of this evidence and the eventual outcome was providing an 'Equity Framework' instead. An equity framework is underpinned by a number of key features including collaboration with communities, engagement with whole cohorts, an understanding of the social contexts in which education occurs, developing cross-disciplinary and cross-sector approaches to supporting students via school-university partnership programs. A key finding of the MAANA report was that low SES students are less well equipped to capitalise on the opportunities for social, cultural and economic advancement (Roberts et al. 2012). The MAANA report recommended a number of changes to school outreach activity which included a greater focus on capacity building and academic achievement. UniSA College took up these recommendations and as a result of this study, significant changes were made to the conceptual and operational framework of outreach activity. Short-term aspiration building programs were reshaped into programs aimed at capacity building and academic achievement, linked to the Australian Curriculum and the South Australian Certificate of Education (SACE) accredited programs. Before turning to describe this

new model of engagement, it is important to briefly discuss the conceptual problems associated with the raising aspiration discourse.

At the heart of the raising aspiration discourse is a deficit model, a model which shifts the focus from social institutions and structural inequality to individuals. According to Sellar et al. (2011), there are three main concerns which need to be considered in approaches that aim to raise student aspirations for higher education. The first is what happens when students are automatically assumed to have low aspirations and higher education is elevated as more valuable than other educational or vocational pathways. Increasing the desirability of higher education for disadvantaged groups does not mean they will have equitable access or that participation will yield suitable social and economic returns. Neither is it obvious that the under-representation of disadvantaged groups in HE is a result of low aspiration (Sellar, 2011). Zipin et al. (2013, p. 2) go further to suggest that attention to aspirations simplifies the complexities and masks the severities of historical conditions. Moreover, the discourse of raising aspiration tends to signify a lack of motivation and is associated within an individualist psychological register. This individualism, they argue:

> links to a key governmentality of recent times: that individuals must take responsibility, as lifelong learners and entrepreneurs of the self, to navigate their own achievement of well-being, or they have themselves to blame… (Zipin et al. 2013, p. 3)

Deconstructing this deficit model and thinking is a constant challenge. The *capacity* to realise one's aspirations is key, as is the need to acknowledge and support aspirations for different ends and imagined futures. The Redesigning Pedagogies in the North (RPiN) project offers particular insights into ways of reforming curriculum for marginalised students in the northern suburbs of Adelaide (Hattam et al. 2009). It is not within the scope of this paper to delve into the project at great length. However, the pedagogy, known as the 'funds of knowledge' approach, is innovative and transformative. It is a pedagogy which both builds curriculum around students' life-based contexts and enables students to connect what they are learning to their own lives, communities and regions.

Types of outreach activity in Australian Universities

University outreach activities are often framed within a multitude of imperatives which include marketing (bums on seats), addressing barriers to higher education and identifying enabling factors, including those which create aspiration to attend university. The most extensive survey of the extent and type of outreach activities by Australian universities was conducted by the National Centre for Student Equity and published in 2010. Data was gathered from 26 universities who reported on 59 programs. Unsettling deficit views, researching and valuing 'local' knowledge, and building capacity in schools, communities and universities emerged as the most important aspects of successful outreach programs. One program that serves as an exemplar for Science, Technology, Engineering and Mathematics (STEM) initiatives which received particular attention in this regard, was the YuMi Deadly Maths delivered by Queensland University of Technology. The program focuses on improving students' academic achievement in maths and does this by producing maths out of everyday life (not dissimilar to the 'funds of knowledge' approach taken in the RPiN project). Of importance, explains Ewing et al. (2013, p. 30), 'is the application of the

RAMR model – reality, abstraction, mathematics and reflection'. The program was designed originally for Aboriginal and Torres Strait Islander students but has now been adapted to benefit low SES students and those at risk of disengaging from learning. The program is based on whole of school change. It is influenced by the philosophy that 'issues such as low student achievement or engagement are framed as problems that can be addressed through the reform of curriculum and pedagogy, rather than remediating individual student deficits of learning capacity or interest in education' (Gale et al. 2010, p. 171).

UniSA Connect Programs

It is widely acknowledged that Australia is facing a growing demand for STEM skills, and agreed that our social and economic prosperity depends on the capacity to develop a workforce with stronger skills in STEM (James et al. 2011). The demand for STEM skills is outpacing the supply of skilled men and women and there has been a decline in students studying STEM (Australian National Engineering Taskforce, 2012). Australia is lagging behind other OECD countries with a steep decline in student commitment to STEM. Other OECD countries, for instance, have compulsory focus on disciplinary content which is not uniformly the case in Australia. This situation creates serious capacity gaps in STEM teaching with a high proportion of Australian secondary school teachers teaching out of their field of expertise. The problem, as Marginson et al. (2013, p. 24) highlights, is not only with the number of teachers, but also their qualifications, competence and confidence in teaching STEM subjects. In South Australia there is an increasing need to have a technologically, mathematically and scientifically literate society and to have a larger pool of South Australians who can undertake studies which lead to science, technology, engineering and mathematics (STEM) careers. While UniSA Connect programs clearly respond to this policy initiative and could well be viewed to be merely serving a neoliberal agenda and market logic (ie. producing skilled STEM workers for the knowledge economy), we argue that there are also significant equity and social inclusion issues for low SES and Indigenous students at stake.

For a start, STEM graduates have high employment rates and low levels of unemployment compared to graduates from other disciplines. Marginson et al. (2013, p.72) argues that 30 per cent of science and mathematics students are scoring below minimum competency levels (level 3) in science and mathematics which is cause for considerable concern, as much of the lower scoring cohort is associated with disadvantaged, low SES school populations. According to Grace Sarra from the YuMi Deadly Maths Program, Indigenous students in Australia continue to be the most educationally disadvantaged group within the area of mathematics education, with performance lagging two years behind that of non-Indigenous students as gauged by testing programs in numeracy conducted by MEECYDA. STEM disciplines are accessible largely to students with 'talent'. As Marginson et al. (2013, p. 14) put it,

> the notion that educational outcomes are determined by pre-given talents, as if STEM was akin to an elite sporting contest, naturalises the social stratification of learning and undermines social inclusion by fostering a long 'tail' of low achievers.

In 2012 UniSA commissioned a report by consultant Larissa Andrews *Indigenous Student Science, Technology, Engineering and Mathematics engagement in the Northern Adelaide Region Report,* which has provided a comprehensive set of

recommendations for how we might move forward in this area. The redesign of outreach activities have been influenced, in part, by the recommendations in this report, including the importance of building capacity in schools for teachers and providing support and successful role models for Indigenous students and connecting with their communities. UniSA Connect programs rely on changing pedagogies in the teaching of STEM related subjects which emphasise more active engagement with learning activities and the use of inquiry-based learning linked to important and relevant applications. Teachers in schools we have worked with who have large numbers of students from disadvantaged circumstances continually emphasise the importance of these approaches for producing a more engaging learning experience for their students. Hence, reforming curriculum and pedagogy is essential for building the capacity of teachers and students in the northern regions of South Australia. As NCVER demonstrate in their most recent research, academic school quality has a considerable effect on school completion rates for the most vulnerable of students. Determinations about 'school quality' were constructed by considering the tertiary entrance rank score of individuals. They argue that school academic quality is more important for students from low socioeconomic backgrounds (Lim et al. 2013, p. 20).

In a similar vein to the YuMi Deadly Maths Program, UniSA Connect operates on a whole of school model, seeking to deliver STEM subjects through authentic and interesting pedagogies. We know that many students find the teaching of science didactic and often boring, a point also raised by the Australia Office of the Chief Scientist report (2012). Productive partnerships have been built with a range of internal and external stakeholders to facilitate the delivery of a rich and diverse range of programs to schools in the northern suburbs of Adelaide. This means adhering to an active model that seeks to address and enhance school culture, confronting stereotypes about low SES students with teachers by developing pedagogies and curriculum together. Our focus is on inspiring STEM study with secondary school students; forming productive school partnerships; promoting career awareness; and engaging community groups. The College is fortunate to have a Maths and Science Centre at Mawson Lakes campus that is a creative learning space designed to engage secondary students in maths and science activity. The Centre was awarded a commendation by the Council for Educational Facility Planners International (CEFPI) Australasia Region Facilities Awards 2012. The Council recognised the Centre for its vibrant, creative, welcoming and comfortable learning space which engages learning in a range of work areas that are flexible, visually stimulating and provide access to graphic and multisensory resources. The space was described as a simple yet highly creative and inspiring space that is a strong enabler to teaching and learning activities appropriate for the 21st century.

The UniSA Connect team work with experienced STEM academics to identify relevant and contemporary STEM ideas and develop interactive experiential programs which link to the Australian Curriculum or SACE. The workshops are either developed or trialled with secondary school partners to provide authentic learning links for students. Scenario based problem solving is used as a key approach in programs including;

- STEM 2 hour secondary school workshops, including Engineers Without Borders, Microfluidics, Penguin Pong, a series of year 12 Physics applications

- Specialist programs like the Maths Experience Programs, Science Booster and Aviation

- One day STEM programs individually negotiated for visiting secondary schools

- Holiday Revision Program for Year 12 STEM subjects, consisting of 5 x 3 hour workshops

- Career Awareness Program delivered in secondary school sites and integrated into the SACE Year 10 Personal Learning Plan subject

A range a teacher professional learning workshops have been developed and include;
- Technical workshops to learn new technologies and make curriculum connections

- Science Inquiry Based Learning

- Career Awareness Program; modelled on train the trainer

- STEM career information

- Hosting teacher professional learning days or part days where needs are negotiated.

Forming productive school partnerships allows exchange of ideas, appropriate examples for the school context, authentic learning links to the secondary curriculum and shared understanding. By working with teachers, communication is focussed on learning outcomes for secondary school students as well as keeping the connection with the University. By focussing on STEM together, fresh innovative ideas are often generated. Parent/significant adults are invited to student presentation as part of Specialised Programs to foster shared understanding and capacity building. At this time, information about the programs, a talk from a researcher about how STEM is used in their work, and career pathway information is available.

Leadership teams from the Department for Education and Child Development (DECD) schools within the Northern Adelaide Region select the breadth and level of involvement which supports the school to achieve one or more key outcomes within their Site Improvement Plan. This approach ensures that STEM is integrated into the business of the school, integrated into curriculum and is well placed to become sustainable. Schools select involvement on a continuum beginning with one outreach or professional development activity and ending with multiple programs and the designation as an intensive partner. Developing long term relationships based on negotiation establishes a partnership capable of responding to teachers' knowledge of student needs. The University is able to provide advice and work with teachers to design and deliver experiential learning programs for students. Teacher practices, including pedagogies, account for more of the variance in student performance than any other in-school factor according to Lingard and Mills (2007, p. 234). With this in mind we believe the conceptual framework of our outreach activity is well placed to make a

difference. We turn now to comment briefly on what evidence there is for making such a claim.

Indicators of success

A major finding of a project conducted by the Centre for the Study of Higher Education (CSHE) is the difficulty of evaluating an initiatives' effectiveness given the multiple factors that confound analysis such as students participating in various programs, differences in the student body, school culture and staff capacities. Likewise, argues, Naylor et al. (2013, p. 14), schools or communities that partner with universities may undergo structural or cultural changes that are unrelated to the program. There is a dearth of publicly available, peer-reviewed research or evaluation, conducted with rigorous methodologies, on the effects of equity initiatives. The newly reconstructed National Centre for Student Equity in Higher Education at Curtin is, however, soon to make a contribution in this regard and publish a report that highlights HEPPP funded case studies of outreach activity (one from each university) that has taken place over the last two years.

As discussed in this paper, we have adjusted our outreach activity in response to learning from best-practice initiatives, policy and research. In terms of best-practice there is a need to contextualise pedagogy with Indigenous culture and perspectives; work with school and community leaders to support whole-school change; provide professional learning programs for teachers and; change pedagogies in the teaching of STEM related subjects which emphasise more active engagement with learning activities and the use of inquiry-based learning linked to curriculum. The policy context includes learning from the Behrendt Review (2012); Larissa Andrews report (2012); Lyons et al. (2012) Report and the Australia Office of the Chief Scientist Report (2012). Research that has informed our outreach activity includes Gale et al. (2010) and the Equity Framework: Building community confidence, engaging learning, working together, and providing resources; research conducted by the NCSEHE by Roberts et al. (2012) as part of the University Aspirations Project; and Londsdale (2013).

While our activity has been largely focussed on low SES areas in Northern Adelaide we have begun to receive requests from schools in the West and have extended the focus. These requests do in themselves provide strong evidence of a successful partnership model. In 2012 we had 156 school interactions, involving 452 teachers and 3063 students. These figures are substantially higher than 2011 when 6 schools, 7 teachers and 602 students were involved. Evaluation from our Year 12 Tutorial Program provides further evidence to support the importance of good pedagogy. This program is designed as a revision course for Year 12's preparing for their exams in maths, chemistry and biology. Experienced Year 12 teachers were recruited to run the program which accommodated up to 20 students per subject over 5 days, 3 hours per day. 100% of students reported that the tutorials helped them feel more confident about the subject. 100% reported that the tutor helped them understand the subject and 100% felt that they learnt what they needed to in order to do well in the exams. Students overwhelming commented on the way the tutor was able to unpack the subject and deliver the content in ways they could understand (with visual aids and a range of teaching styles). One student reported 'if I had this teacher at school I would have been getting A's on tests instead of C's'. 97% of the students stated that they enjoyed coming to the tutorials.

We will put even more of a concerted effort into research and evaluation on the effects of our outreach activity into the future. At present, each school commits to the collection of pre- and post-intervention data that can inform outcomes within their Site Improvement Plan and their Annual Report. This data is also provided to the Northern Region DECD to inform reporting against the Northern Region Improvement Plan. The university also has access to the data to inform its reporting against the strategic direction of the University of South Australia.

In summary, the theoretical case for outreach activity is generally very good. What is unique in the outreach activity of programs like ours and models such as YuMi Deadly Maths are the links to curriculum. Moreover, unlike many programs operating at the margins and relying on grant funding, UniSA Connect school outreach programs are sustainable by virtue of income generated from academic programs which enables us to go well beyond experience programs and 'taster' days that target individuals as potential students. We hope that we have a model that will not only continue to develop sustainable collaborative partnerships but will, to borrow from Behrendt et al. (2012, p. xi) 'unlock capacity and empower choices'.

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