Australian Government

Department of Education, Employment and Workplace Relations

Interventions early in school as a means to improve higher education outcomes for disadvantaged (particularly low SES) students

A design and evaluation matrix for university outreach in schools

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About this report

This report was commissioned by the Department of Education, Employment and Workplace Relations (DEEWR) in July 2009. The University of South Australia was contracted to undertake the research and produce the report.

Contents

Executive summary

This document performs two functions. It provides a synopsis or abridged version of the research, *Interventions early in school as a means to improve higher education outcomes for disadvantaged (particularly low SES) students*, with emphasis on reviewing its major findings. It also provides an extension to the research, extrapolating from it through a meta-analysis of the data to conceive of a matrix for designing and evaluating early interventions.

The research was funded by the Australian Government Department of Education, Employment and Workplace Relations (DEEWR) and undertaken from August 2008 to July 2009 by the Australian National Centre for Student Equity in Higher Education (NCSEHE). The research was prompted by concerns about the long-term under-representation of some population groups (particularly those of low socioeconomic status) within Australian higher education and by a growing conviction that, if they are to be successful, interventions to redress this situation need to be implemented earlier in schooling rather than later.

The focus of the research was on early interventions by universities in schools, with 'early' defined as pre Year 11 and 'interventions' defined as organised and strategic outreach programs 'purposely designed to manoeuvre a population in particular directions' (Alloway et al. 2004: 218).

While the research was unable to provide precise guidance on 'how early is early', an important characteristic of effective programs identified in the research was that they tended to be long term. Typically, this included programs that began at least with middle school students—those enrolled in the years from the upper end of primary school to the lower end of secondary school—whereas the academic literature suggests that programs could usefully begin even earlier. As Heckman and Rubenstein (2001) notes, the best 'pay-offs' for investment in education are when academic and aspirational support for students begins as early as possible and is continued for as long as possible.

The project was initially conceived in three stages. The first involved an analysis of literature describing pre–Year 11 outreach programs operating primarily in Australia but also in Canada, the United States, the United Kingdom and New Zealand. The second stage involved a survey of Australian universities to identify the nature and extent of their interventions or outreach programs targeting pre–Year 11 students. And stage three involved case studies of seven effective pre–Year 11 outreach programs operating in Australia, which were identified through the literature review and the survey. A fourth stage, reported in this document, provides a synopsis of the research and an extension to it, leading to the development of a matrix for designing and evaluating university outreach programs.

Among a number of findings, the research identified 10 characteristics, four strategies and an equity orientation comprising three perspectives associated with effective pre–Year 11 outreach programs. These characteristics, strategies and perspectives form the basis of the meta-analysis, which extends the research reported in the project's three stages. The Design and Evaluation Matrix for Outreach (DEMO) derived from the meta-analysis suggests that effective programs are those that exhibit at least five characteristics, three strategies and two perspectives. These are the programs that are more likely to increase the number of disadvantaged students going on to higher education than otherwise would have been the case.

Review of the Australian and international literature

The first stage of the study employed Anderson and Vervoorn's (1983) four conditions of entry to university—Availability, Accessibility, Achievement and Aspiration (the 4As)—as a framework through which to examine the literature on university pre–Year 11 outreach programs operating in Australia, Canada, the United States, the United Kingdom and New Zealand.

The 4As framework provides a way to move beyond deficit understandings of student entry into higher education, which are often expressed in terms of 'barriers' (what students cannot do, do not have, are too far from, etc). Within the literature, 'barriers' tend to locate the entry problem within students—effectively 'blaming the victim'—and do not take into account how barriers are also constructed by institutions, governments and systems.

The literature review is prefaced by a historical account of student entry policy in Australian higher education. Each of the four sections of the review—organised according to the 4As—also includes an account of contemporary policy and conceptual debates, with reference to the particular entry condition. The review is then followed by an account of the international context, of policy and programs, with particular reference to Canada, the United States, the United Kingdom and New Zealand. This second framing of the literature enables connections to be made between situational and program particulars, and contextual and policy parameters.

Programs described in the review are located within one or more of the 4As. Analysis of these programs includes identifying and naming program types within each entry condition. Programs are categorised first according to one of the 4As they seek to address and then, within these, according to the way in which the program seeks to address the condition of entry, as follows:

- *Availability program types*: the bond (guaranteeing availability); the pledge (committing to availability); the sponsored (reserving availability)

- *Accessibility program types*: access via philanthropy; access via example

- *Achievement program types*: targeting the talented; targeting the academic middle; targeting areas of national priority; targeting particular under-represented groups; targeting pedagogy (how we think about teaching); targeting the middle years (how we think about schooling)

- *Aspiration program types*: the exposé (aspiration inspired by knowledge); the taster (aspiration inspired by experience); the combo (aspiration inspired within collaborative networks).

In addition to identifying program types, nine characteristics of effective programs emerged from the literature review. (A 10th characteristic was identified during the analysis of the survey data.) The program characteristics are outlined below, organised within four program strategies: assembling resources, engaging learners, working together, and building confidence. (The strategies are an extension of the research and are discussed in more detail later in this document.) The following listing is intended to suggest that particular strategies tend to lead to programs with particular characteristics and, equally, that particular characteristics are indicative of particular strategies.

Assembling resources

- *People-rich*: an approach that requires the development of ongoing relationships between young people and those in a position to offer them ongoing guidance which relates to their situation and capacities.

- *Financial support and/or incentives*: addressed to particular economic constraints of different cohorts, and which combine with other support strategies.

- *Early, long-term, sustained*: an approach to intervention that is designed to work with students in earlier phases of schooling, ideally the primary years, and to continue as they make the transition through the middle years into senior secondary schooling.

Engaging learners

- *Recognition of difference*: premised on the perspective that disadvantaged students bring a range of knowledge and learning capacities to formal education that should be recognised and valued as assets.

- *Enhanced academic curriculum*: (including pedagogy) designed to sustain the ongoing quality of everyday lessons throughout schooling and to prepare students for further or higher education.

- *Research-driven interventions*: that engage the research capacities of the university to inform program design, implementation and evaluation, and to support the production and dissemination of knowledge about effective intervention strategies (this characteristic is identified in Component B).

Working together

- *Collaboration*: between stakeholders across different sectors and agencies at all stages of program development and enactment.

- *Cohort-based*: an approach that engages with whole classes, or even larger cohorts of young people in a school or region, to change peer cultures as well as supporting individuals.

Building confidence

- *Communication and information*: about university life and how to get there, using a variety of digital media technologies as well as more traditional means such as brochures or school visits.

- *Familiarisation/site experiences*: through a schedule of university visits designed to both inspire and familiarise young people with higher education and what it means to be a student in that context.

Discussion of the relationships between program characteristics and strategies is taken up further in the program design and evaluation section and in the technical notes (Appendix B). In particular,

strongly composed programs have a depth of character within a broad strategic approach. Conversely, weakly composed programs are shallow in character and strategically narrow.

Survey of the nature and extent of Australian university outreach activities

The literature review was followed by a survey of all (Table A) Australian universities, aimed at identifying the nature and extent of pre–Year 11 outreach programs operated by universities. Typically, these are programs designed to encourage and enable disadvantaged (particularly low SES) school students to consider higher education.

The survey requested information about program origins, annual budgets, aims, target groups, outcomes, and if and how these were evaluated. Responses were received from 26 universities reporting on 59 programs.

Quantitative data generated by the survey are represented in the report figures, organised in terms of institutional and programmatic issues. (Appendix A includes figures extracted from the survey report, which are referenced in this document.) A third section of the survey report includes an account of the qualitative data provided by some respondents throughout the survey. This qualitative element provided insight into and, in some cases, an expansion on the quantitative responses.

Analysis of the survey data indicates a number of commonalities across existing university outreach programs. At the time of the survey (December 2008) these included:

Scale

- The largest group (39 per cent) of surveyed programs involved more than 20 schools, while 27 per cent involved 6–10 schools.

- Programs that involved large numbers of students (201 to 500 students each year) accounted for 31 per cent of programs reported.

Origins and budgets

- University equity units drive and fund a large proportion of the early interventions. Nearly 40 per cent of the programs in this survey were reported to be based in equity units. The majority of programs reported were both initiated and funded by universities.

- Universities generally received funding of between $10 001 and $50 000 per program per year, with most being funded for more than five years.

Aims and targets

- The most significant target group were students from low SES backgrounds, followed by Indigenous students and then students from rural and remote locations. [1]

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[1] While it is acknowledged that the term 'regional and remote' is now used by government, the term 'rural and remote' was used in the survey and hence is used throughout this report.

- Most of the interventions reported were aimed at Year 10 students.

- The largest group of these Year 10 programs aimed at building student aspirations to attend university, while financial assistance for students was the least commonly reported aim.

- Many of the interventions were one-off events that aimed to provide students with a taste of university, although extended programs of on-campus visits by school students, and school visits by university staff and students, were also reported.

Outcomes and evaluation

- The most frequently reported program outcome was a change in aspirations towards higher education. Also commonly reported was an increase in students' understanding of university enrolment and procedures.

- Most respondents reported that their programs are evaluated, predominantly on the basis of participant feedback.

As far as possible, the survey data was also analysed in terms of the nine characteristics of effective programs identified in the literature review. The findings of the analysis are summarised below.

People-rich

Some programs surveyed are engaged in the kind of people-rich activities that create specific opportunities for students to engage with others in extended conversations (see Figure 12, Appendix A). For example, several programs report that students are involved in extended university visits and in community or school projects with university staff; or are being mentored or tutored by university students. However, the one-off event remains a common outreach activity, with either university staff or students visiting schools or teachers and students visiting universities.

Financial support and/or incentives

Among the reported early interventions in schooling, only 4 per cent of surveyed programs make scholarships and grants available to pre–Year 11 students (Figure 12, Appendix A).

Early, long-term and sustained

The idea that programs should be long term is reflected in expectations that the majority of the programs surveyed will last for more than five years (Figure 4.1, Appendix A). Similarly, more programs are reported to be funded for five or more years than for periods of less than five years (Figure 8, Appendix A). Although, it is important to note that there is a mismatch between expected program duration and anticipated funding, particularly for programs in the 'greater than five years' category, with expected durations exceeding anticipated funding. The data also illustrates that the school year level targeted most frequently is Year 10 or its equivalent, with each pre–Year 10 target group dropping in frequency so that junior primary and pre-school levels receive the least attention. So while many programs may be sustained over time, they are rarely targeting students much earlier than senior secondary school.

Recognition of difference

It is not clear from the survey data whether equity groups targeted by early intervention programs are valued for what they potentially bring to higher education (in the form of linguistic diversity, cultural knowledge, etc). What is clear is that early intervention programs tend to target students from low socioeconomic backgrounds and that most of these are offered when low SES students are in Year 10. It is also clear (in Figure 11.1, Appendix A) that a significant number of Year 10 programs aim to build students' aspirations for university. That is, there appears to be an assumption that low SES students lack aspiration. While this is not indicated in the data, it is not uncommon in the higher education sector for aspiration to be equated with a desire to go to university while those who desire other futures are regarded as lacking aspiration. How aspiration is understood (and how low SES students are valued) in university outreach programs needs to be the subject of further qualitative research.

Enhanced academic curriculum

The literature suggests that enhanced academic curricula and pedagogy lead to improved student retention and achievement and hence improved access to university. However, improving students' academic achievement is well down the list of most surveyed program aims (Figure 10, Appendix A). And while improved student retention, achievement and completion rates are claimed as program outcomes (Figure 15, Appendix A), there is little concrete evidence about the accuracy of these claims.

Collaboration

Large numbers of schools (and students) are involved with universities in the programs reported in the survey (Figure 9, Appendix A), although this in itself does not reveal the extent of these schools' involvement. A better indication of this is the low level of involvement of schools and departments of education in initiating programs (Figure 5, Appendix A) and in their evaluation (Figure 14, Appendix A). However, these too are imperfect proxies for collaboration.

Cohort-based

Like people-rich activities, the important feature of a cohort is its relational aspects. In part, such relations are influenced by a cohort's size: how many schools and how many students are involved. In the programs reported it is evident that there are many that are large scale, operating in more than 20 schools, and some of these have an operational footprint that is state-wide (Figure 9, Appendix A). However, it is difficult to imagine that programs of this size are able to contribute to changing peer group attitudes towards university participation, even if (and especially when) one individual per school is targeted across many schools. Programs that operate in just one school but target large numbers in the school equally exhibit a counter-cohort orientation. Getting the size right is part of the equation, as some programs demonstrated (targeting clusters of schools and clusters of students). However, more needs to be known about the qualitative aspects of these groupings to be able to make judgments about whether they constitute legitimate cohorts of peers.

Communication and information

The move towards more contemporary (particularly online) forms of communication and dissemination of information noted in the literature review is reflected in some outreach activities reported by universities (recorded as 'other' in Figure 12, Appendix A). The simplest programs provide information online, including university information, notices of events and learning materials for downloading. More interactive web 2.0 technology is also employed by a few outreach programs, which establish social networking sites, wikis, blogs, etc. Programs use this technology to form online communities, such as 'CareerShop', which keep students up to date with the latest career and university information. More could be done to generalise these forms of communication and information sharing with pre–Year 11 students.

Familiarisation/site experiences

Programs that aim to familiarise students with university are common among those reported in the survey (Figure 12, Appendix A). As noted above, the better forms are those that involve extended interactions with universities and university staff and students. These are evident in the programs surveyed, but so are one-off visits.

As well as being able to map the results of the survey against the characteristics identified in the literature review, analysis of the survey data revealed an additional characteristic emerging from practice that was underemphasised in the literature. *Research-driven* programs engage the research capacities of the university to inform program design, implementation and evaluation, and to support the production and dissemination of knowledge about effective intervention strategies.

Case studies of selected Australian university outreach activities

The third stage of the research involved seven case studies of leading Australian university outreach programs that were identified through the survey. The cases illustrate a range of outreach approaches tailored to the needs of different groups and contexts, and are operated by a variety of university types. Programs selected for the case studies include the following:

- Access and Success Project (Victoria University)

- Uni-Reach Program (Griffith University)

- Uni Connections Program (Wollongong University, Shoalhaven Campus)

- Koori Express Program (RMIT University)

- Make it Reel Program (University of Technology, Sydney)

- YuMi Deadly Maths Program (Queensland University of Technology)

- Regional Schools Outreach Program (Ballarat University).

Data was gathered from semi-structured interviews and focus groups with a range of participants, including university equity staff and academics, university student mentors, school students,

teachers and parents. Print and web-based materials describing the programs and their contexts were also consulted.

The case studies confirm the 10 characteristics of effective programs identified in the first two stages of the research and provide rich descriptions of how the characteristics differ between contexts. At least half of the characteristics were evident in each case, although these were not necessarily the same ones in every case, suggesting their value emerges through combination rather than in a particular priority order.

The case studies also highlight a common equity orientation informed by three equity perspectives: unsettling deficit views; researching 'local knowledge' and negotiating local interventions; and building capacity in communities, schools and universities. These are described in the following terms:

Unsettling deficit views. Working with, rather than on, others requires strategies based on positive understanding of historically disadvantaged schools, students and their communities. This means widening university catchments to include working with the most disengaged, hard-to-reach students, rather than simply targeting high-potential candidates or those already proven to be outstanding. However, it does not mean watering down the curriculum. While programs should present university as attainable for disadvantaged students, and position these students as intelligent and capable learners, they also need to maintain an in-depth, intensive and long-term focus on rigorous and rewarding learning to build academic disposition (for example, Make it Reel, Deadly Maths). Programs aimed at improving achievement and aspirations should be sensitive to alternative cosmologies and epistemologies. They should also present opportunities for learning that involve high intellectual challenge, high expectations of students producing high-quality products (artefacts of learning), and high-motivation projects and events.

Researching 'local knowledge' and negotiating local interventions. Given the importance of context in addressing inequalities, research about 'local knowledge' is a key feature of interventions and university equity policy. This necessarily involves building viable relationships with specific schools and their communities and learning about their understanding of the 'problem' as a preliminary step to designing interventions (for example, Access and Success). This may include community consultations, for example, or hiring or working with staff that have local knowledge. There also needs to be scope to negotiate between universities, schools and their communities over imagined interventions. Encouraging genuine reciprocal alliances and collectively investigating long-term effects on a range of factors will help to build an evidence base particular to specific contexts and groups (for example, university–community links; Gutiérrez & Hunter 2009), and to make the interface between school and university more permeable.

Building capacity in communities, schools and universities. Achieving improved outcomes for disadvantaged students requires building increased capacity in communities, schools and universities, including increased funding for programs from sources such as state and federal governments and further supplementary funding from individual universities. Capacity building programs that aim to familiarise students and their parents with university are about developing cultures of possibility. These programs need to begin early in schooling, particularly with primary schools in areas of high disadvantage, in order to generate cultural and dispositional shifts in students, families and teachers in relation to achievement and aspiration (for example, Koori

Express, Deadly Maths). Change models that involve the whole school are preferable to individual classroom projects. Further, programs may be strengthened by engaging in the development of curriculum materials, working with school leadership and developing school–community partnerships. Implementing such programs requires professional development of university staff and teachers through participatory action research methodologies, which involve negotiating theory and practice in specific interventions and have the potential to link with teacher professional learning in credentialed programs provided by the university.

Findings from the case studies suggest that a combination of program characteristics—supported by a coherent institution- or department-wide equity orientation toward policy and practice—hold the strongest promise for designing and implementing effective early interventions.

Outreach program design and evaluation[2]

This section builds on the research described above, extrapolating from it through a meta-analysis of the data, to conceive of a matrix for designing and evaluating early interventions. The Design and Evaluation Matrix for Outreach (DEMO) enables the program composition and likely effectiveness of programs to be discussed and evaluated.

Program depth and breadth

The research outlined above described 10 characteristics that are typical of effective programs. While it is not appropriate to organise these characteristics into a hierarchy of relative importance, it is possible to identify four program strategies related to particular character subsets. These four strategies and their associated characteristics are set out in Figure 1.

Assembling resources	Engaging learners	Working together	Building confidence
People-rich	Recognition of difference	Collaboration	Communication and information
Financial support and/or incentives	Enhanced academic curriculum	Cohort-based	Familiarisation/site experiences
Early, long-term, sustained	Research-driven		

Figure 1: Four strategies and 10 characteristics of outreach programs

The characteristics associated with each strategy share a common logic:

- *Assembling resources* involves committing human resources (people-rich), financial resources (financial support and/or incentives) and time resources (early, long-term, sustained) to support and implement outreach programs and activities.

- *Engaging learners* involves learning and teaching of various orders: learning about programs, their effects and intervention strategies more generally (research-driven), high-quality and rigorous student learning driven by quality teaching (enhanced academic curriculum), and learning from and valuing the knowledge of others (recognition of difference).

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[2] See Appendix B for a more technical discussion of the instruments described in this section.

- *Working together* involves cooperation and partnership at the level of program design and implementation (collaboration) and in terms of engaging student communities through programs, rather than just targeting individuals (cohort-based).

- *Building confidence* involves strengthening students' awareness of university structures, pathways and opportunities (communication and information) and increasing students' familiarity with university contexts and lifestyles (familiarisation and/or site experiences) in order to promote the view that access to and participation in higher education is for everybody.

Grouping the 10 characteristics into four strategies enables the total number of characteristics combined in a given program to be referenced against the balance of strategies from which these characteristics are drawn. Extending the analysis provided by the research, effective programs are not guaranteed simply by combining five or more characteristics from a homogenous group of 10. Their combination also needs to represent a balance of strategies.

For example, a program that combined financial support (assembling resources), enhanced academic curriculum (engaging learners), collaboration (working together) and familiarisation/site experiences (building confidence) would be stronger than a program that combined financial support (assembling resources), people-rich (assembling resources), communication and information (building confidence) and familiarisation/site experiences (building confidence). The first example has four characteristics drawn from across each of the four strategies, while the second combines four characteristics drawn from just two strategies.

Program composition, then, is assessed in terms of a balance between the total number of program characteristics (depth) and the number of program strategies from which they are drawn (breadth). Figure 2 illustrates how these two measures—characteristics and strategies—can be referenced with each other.

Program Depth (Characteristics)		1	2	3	4
	10				VS
	9				VS
	8			S	VS
	7			S	VS
	6		M	S	VS
	5		M	S	VS
	4		M	S	S
	3	W	M	M	
	2	W	W		
	1	W			
		1	**2**	**3**	**4**
		Program Breadth (Strategies)			

W=Weak M=Moderate S=Strong VS=Very Strong

Figure 2: Program composition

Both axes of the figure measure the *number* of characteristics (1–10) or strategies (1–4) rather than *particular* characteristics or strategies (for example, '4' on the x-axis refers to four total strategies, not the 'fourth' strategy of building confidence). The strength of a program's composition increases from Weak, through Moderate and Strong, to Very Strong as its depth and breadth increases.

The program composition can be read from characteristics to strategies or from strategies to characteristics. The first approach enables the identification of strategies associated with particular characteristics, whereas the second approach enables identification of the characteristics associated with particular strategies. Both approaches reveal that programs improve in composition across a number of thresholds:[3]

- Weak programs comprise three or fewer characteristics drawn from just one strategy, or two characteristics drawn from two strategies.

- Moderate programs comprise three or more characteristics drawn from at least two strategies.

- Strong programs comprise four or more characteristics drawn from at least three strategies.

- Very Strong programs comprise five or more characteristics drawn from across all four strategies.

To illustrate what this means for particular programs, consider an outreach program that:

- focuses on improving the educational outcomes of middle-year students

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[3] See Appendix B for further discussion of thresholds between degrees of program strength.

- engages teachers in researching their students' out-of-school knowledge

- seeks to engage this knowledge as a valued learning resource in the classroom

- brings middle-year students onto a university campus to experience a (modified) university teaching experience, which draws on their lifeworld knowledge (for example, in health, law, journalism, media studies).

Such a program might involve the following characteristics: early, long-term, sustained (assembling resources), recognition of difference (engaging learners), enhanced academic curriculum (engaging learners), research-driven (engaging learners), collaboration (working together), cohort-based (working together), and familiarisation/site experience (building confidence). In terms of its composition, the program would be considered Very Strong because it comprises seven characteristics drawn from all four strategies.

Likely program effectiveness

The composition of a program, as indicated by Figure 2, provides one criterion used in the Design and Evaluation Matrix for Outreach to assess the overall likelihood of program effectiveness. The second criterion is a program's equity orientation. The overall likely effectiveness of a program—for increasing the number of disadvantaged students participating in higher education—depends on its strength *and* the degree to which it is supported by an equity orientation toward policy and practice.

As indicated in the third stage of the research, a comprehensive equity orientation includes the three equity perspectives set out in Figure 3.

Equity orientation		
Unsettling deficit views	Researching 'local knowledge' and negotiating local interventions	Building capacity in communities, schools and universities

Figure 3: Three perspectives of an equity orientation

The DEMO (see Figure 4 below) references program strength with the number of equity perspectives evident in the sponsoring institution, department or the program itself. As with Figure 2, the x-axis measures the number of equity perspectives rather than the particular equity perspectives that are present (for example, '3' on the x-axis refers to three total perspectives, not the 'third' perspective of building capacity in communities, schools and universities).

Program Composition	VS	U-L	L-QL	QL-VL	VL
	S	U	L	QL	QL-VL
	M	U	L	L	L-QL
	W	U	U	U	U-L
		0	1	2	3
		Number of Equity Perspectives			

U=Unlikely L=Likely QL=Quite Likely VL=Very Likely

Figure 4: Design and Evaluation Matrix for Outreach

Different measures of likely effectiveness are provided for each possible combination of the values on each axis. The optimum is Very Strong programs combined with all three equity perspectives. These programs are Very Likely to be effective. Whereas, programs that are Weak and/or have no equity perspective, are generally Unlikely to be effective.

A number of cells on the matrix have an ambivalent value. This ambivalence reflects the possibility that programs with a maximum rating on one of the criteria—program strength or equity orientation—may have an increased likelihood of being effective due to their comprehensive satisfaction of this criterion. In this sense, a Very Strong character and strategy or a strong equity orientation matters. For example, a Very Strong program with no equity orientation may still be Likely to be effective and similarly a Weak program with a strong equity orientation may still be Likely to be effective. In each instance when the likely effectiveness of a program falls within an ambivalent cell, judgment is necessary to determine whether its particular combination of depth, breadth and equity orientation warrants the lower or higher rating. This judgment will require a careful consideration of contextual factors.

As with program characteristics, it is not appropriate to organise the equity perspectives into a hierarchy of relative importance. However, it is important to note that an approach that unsettles deficit views is particularly significant, especially in combination with the other two perspectives to ensure that they represent an equity perspective. For example, the task of researching local knowledge could be pursued from a deficit perspective that simply approached this knowledge as requiring remediation, rather than having value that needs to be recognised and better connected with school curricula and pedagogies.

In this sense, programs that include a single equity perspective of unsettling deficit views may be considered stronger than if they included just one of the other perspectives. Further, programs that include unsettling deficit views as one of two perspectives can be considered stronger than programs that include just the other two perspectives. For example, a program of Moderate strength with one equity perspective would be Unlikely to be effective. However, if that single equity perspective involved unsettling deficit views then it could be considered Likely to be effective.

The DEMO: designing and evaluating outreach programs

The routine and rigorous evaluation of outreach programs conducted by Australian universities is an area that could be improved. The Design and Evaluation Matrix for Outreach provides a valuable

resource for strengthening this dimension of outreach work, and potentially the effectiveness of programs in the future. It foregrounds program conceptualisation and design as a significant factor contributing to the likelihood of programs making a difference for disadvantaged students.

The overall effectiveness of a program—understood in terms of its likelihood of increasing the number of disadvantaged students going on to higher education than would have otherwise been the case—will depend on the combination of depth (number of characteristics), breadth (number of strategies), and equity orientation (number of equity perspectives). While acknowledging that there have been effective outreach programs conducted by Australian universities, Bradley et al. (2008) call for a more sophisticated approach to outreach that is designed to increase participation for disadvantaged groups, especially low SES, rural and remote, and Indigenous students:

> The success of various initiatives undertaken by the public universities has been varied, particularly in relation to low socio-economic status, rural and Indigenous students. There have been some very effective programs but the next phase of activity requires a more sophisticated approach. (p. 37)

The DEMO takes account of the key features of the effective programs identified in this research, and provides a conceptualisation of the relationship between these features. It is provided as a resource to support the design and implementation of more sophisticated outreach initiatives.

Outreach programs and activities may be designed from the ground up and the DEMO may be used to inform this process. It can also be used to redesign programs during their implementation through a participatory action research process. In addition, it is also possible that programs or parts of programs may be 'borrowed' from other contexts. Such 'program borrowing' also demands redesign work in order to ensure that borrowed programs or program elements address the needs of the new contexts in which they will be implemented. It is important to note that programs that appear successful in one context may not necessarily meet the needs of other contexts, and that their success may be measured and reported against criteria that do not support the pursuit of equitable educational outcomes for disadvantaged students.

In these instances, importing a successful program into a new context, based on its demonstrated effectiveness elsewhere, does not guarantee that it will produce the desired outcomes. Further, evaluating a program in terms of its reported outcomes, without also considering its depth, breadth and underlying orientation, is likely to result in a narrow assessment. The DEMO is intended to support evaluation and redesign of existing programs, which will potentially inform the development and implementation of outreach work in other contexts.

The DEMO provides indicative guidance for the analysis of programs in terms of their effectiveness, including the dynamics produced by different combinations of characteristics and strategies (their composition), and equity perspectives. It can be used independently, especially when designing programs and evaluating prospective programs in order to make funding decisions. It can also be used in conjunction with other qualitative and quantitative measures to provide a rigorous evaluation of existing programs.

In all instances it is important to consider the *context* of the program being designed or evaluated. While the matrix provides relatively clear qualitative measures of likely program effectiveness, these

measures should be informed by an analysis of contextual factors that place specific demands on programs and may impact on the effectiveness and appropriateness of different approaches.

For example, the rating of a program that appears likely to be effective according to the matrix, but which does not include a particular characteristic that is known to be important for success in the context addressed by the program, should be subject to discussion and possible revision. While assessments produced using the DEMO are relatively distinct, it is important to note that in practice there will be some overlap between them and this should be taken into account to ensure nuanced and balanced use of the instrument.

The DEMO emphasises the importance and value of combining characteristics and draws attention to the strengthening of programs that results from synergistic relationships between different characteristics and strategies. Programs are Very Likely to be effective once at least half of the 10 characteristics are combined (and which necessarily involves at least two strategies). In this sense, the strength of a program depends more on the *combination* of program characteristics, in response to the particular needs of different contexts, than on the *specific* characteristics that are combined. Therefore, two programs comprising quite different sets of characteristics could be equally effective.

Further, the DEMO separates measures of program composition from assessment of program equity orientation, which is a significant contributor to the measure of likely overall program effectiveness. A program with a large number of characteristics is unlikely to make a difference for disadvantaged students if it is not supported by a strong equity orientation at the level of the institution or organisation, or at least the department that is responsible for its development and implementation.[4] In this sense, two programs of different composition may be equally likely to produce desirable outcomes if they are both supported by a strong equity orientation.

The combination of characteristics and strategies with the orientation of the program provides a better abstract indicator of likely effectiveness than specifications of required program structures or checklists of required features.

For evaluation purposes, it is recommended that the program composition be identified first, before referencing this against the presence of equity perspectives in order to determine overall likelihood of program effectiveness. Contextual factors and demonstrated program outcomes should also be combined with the measure of likely effectiveness to ensure a comprehensive and balanced evaluation.

For design purposes, including the evaluation of prospective programs to inform funding and policy decisions, it is recommended that the equity orientation be identified first. For example, program design is likely to benefit from early and substantive discussion, between program staff and others across the university and other collaborating institutions, about how the equity perspectives can support the design and how they can be implemented in a given context. This discussion would then inform a consideration of how the four program strategies can be drawn on and which program characteristics should be included, given contextual requirements and budget limitations.

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[4] The exception is in instances where particularly high numbers of characteristics and strategies suggest potential effectiveness despite a lack of equity perspectives. See Appendix B for further discussion of this point.

There can be no simple formula for a sophisticated approach to outreach activities. The DEMO should not be used as the final arbiter of a program's merit. Instead, it is intended to be used to promote discussion and debate, to inform design and to strengthen evaluations that also draw on a range of other data. The sophistication and effectiveness of the next phase of outreach activity will benefit from the rich discussions and complex design work that the DEMO is intended to support.

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Appendix A: Figures extracted from the survey report[5]

Figure 4.1: Current programs and their duration

Is the program still operating?	Frequency	Per cent
Yes	49	83.1
No	5	8.5
No response	5	8.5
Total	*59*	*100.0*
Expected program length?*	**Frequency**	**Per cent**
Less than a year	1	2.0
1–2 years	6	12.2
3–5 years	7	14.3
>5 years	35	71.4
Total	*49*	*100.0*

* Of those who indicated that the program is still running.

[5] T. Gale, R. Hattam, S. Parker, B. Comber, D. Bills & D. Tranter (March 2009). *A survey of the nature and extent of outreach activities conducted by Australian higher education (Table A) providers*. Canberra: National Centre for Student Equity in Higher Education and Department of Education, Employment and Workplace Relations.
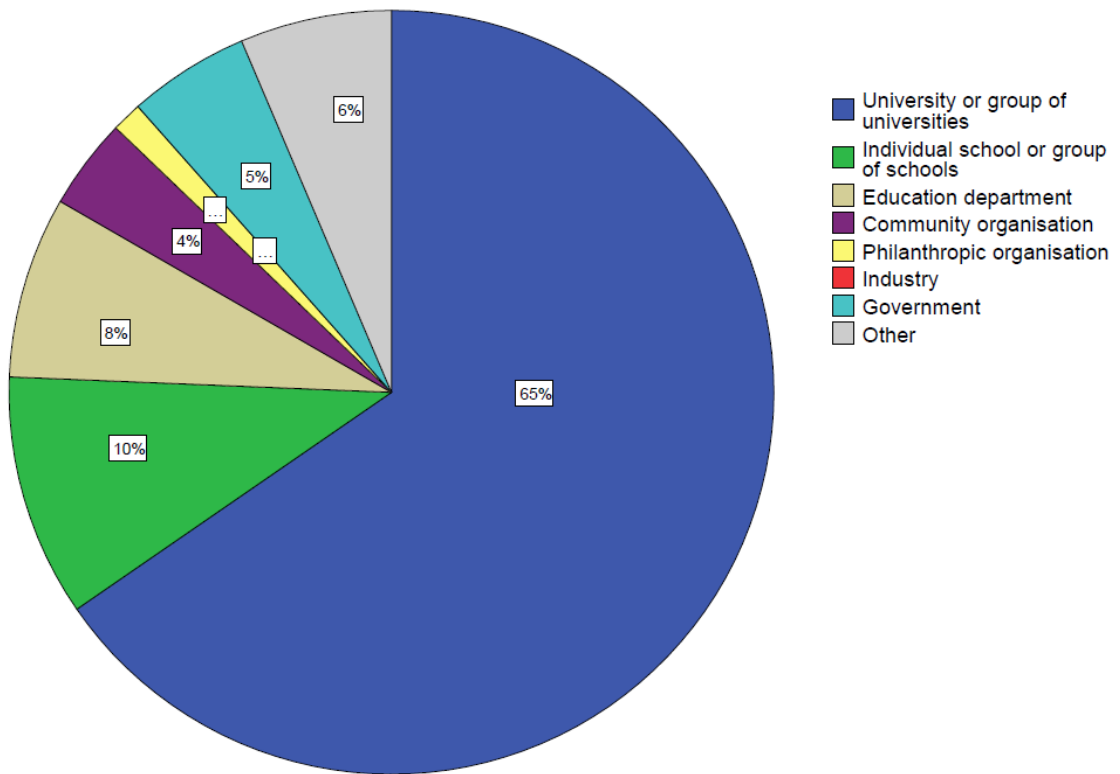
Figure 5: Program initiators

Legend:
- University or group of universities
- Individual school or group of schools
- Education department
- Community organisation
- Philanthropic organisation
- Industry
- Government
- Other

Values: 65%, 10%, 8%, 4%, ..., ..., 5%, 6%

Figure 8: Program budget and funding duration

Years: 1, 2-3, 4-5, >5

Percent vs Total annual budget of the program

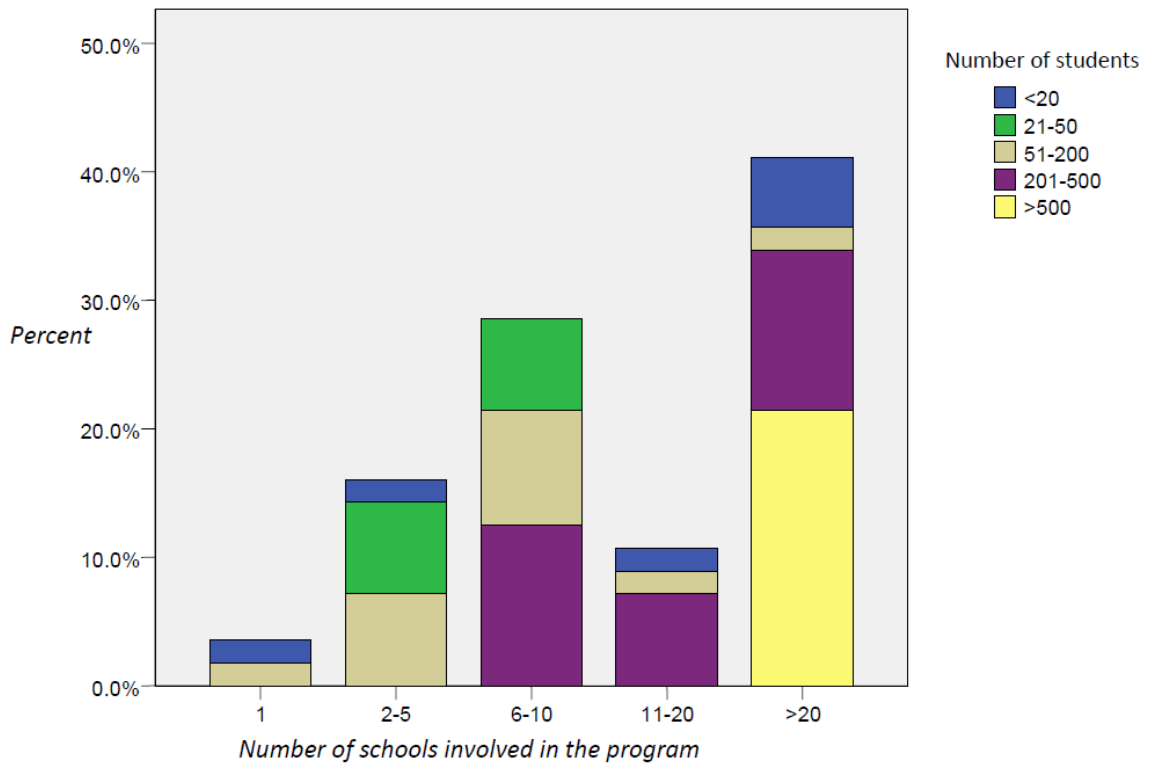**Figure 9: School and student numbers involved in program**
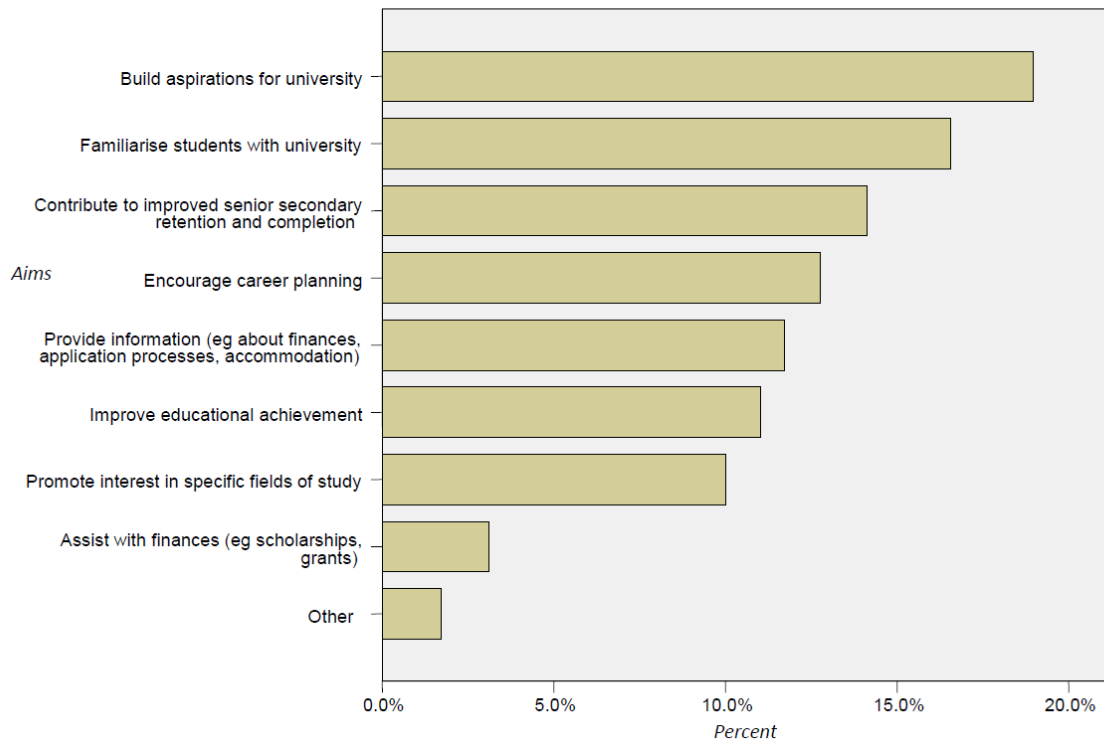

Figure 10: Program aims
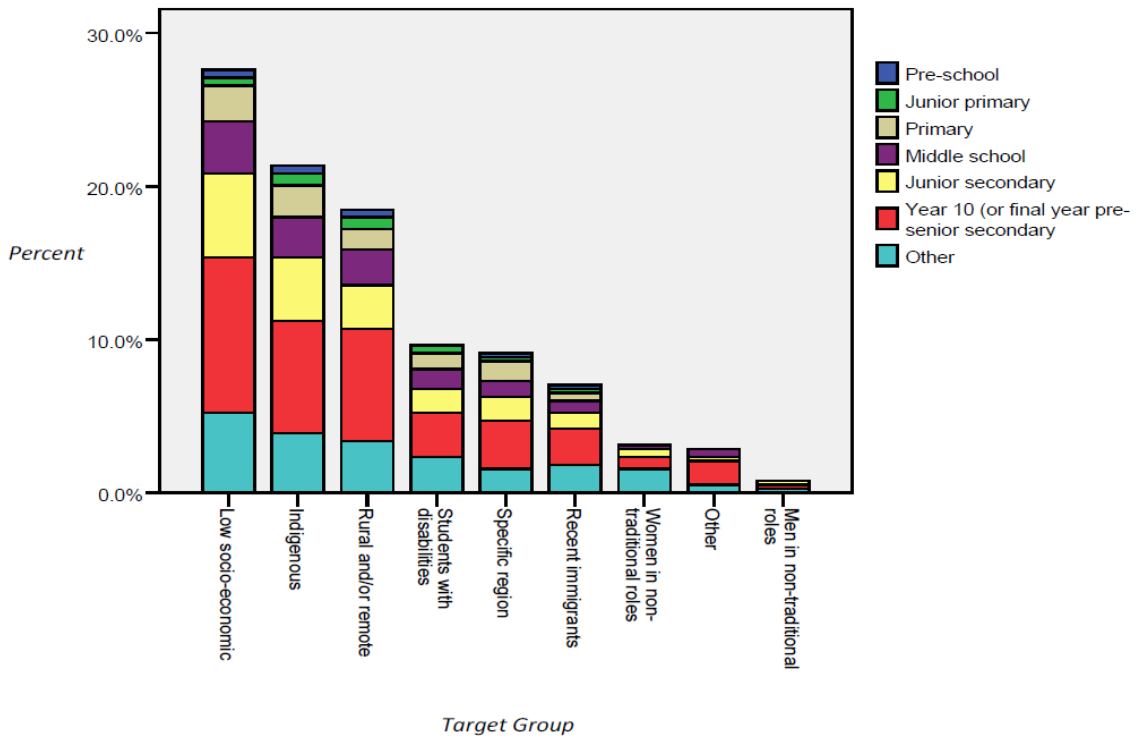
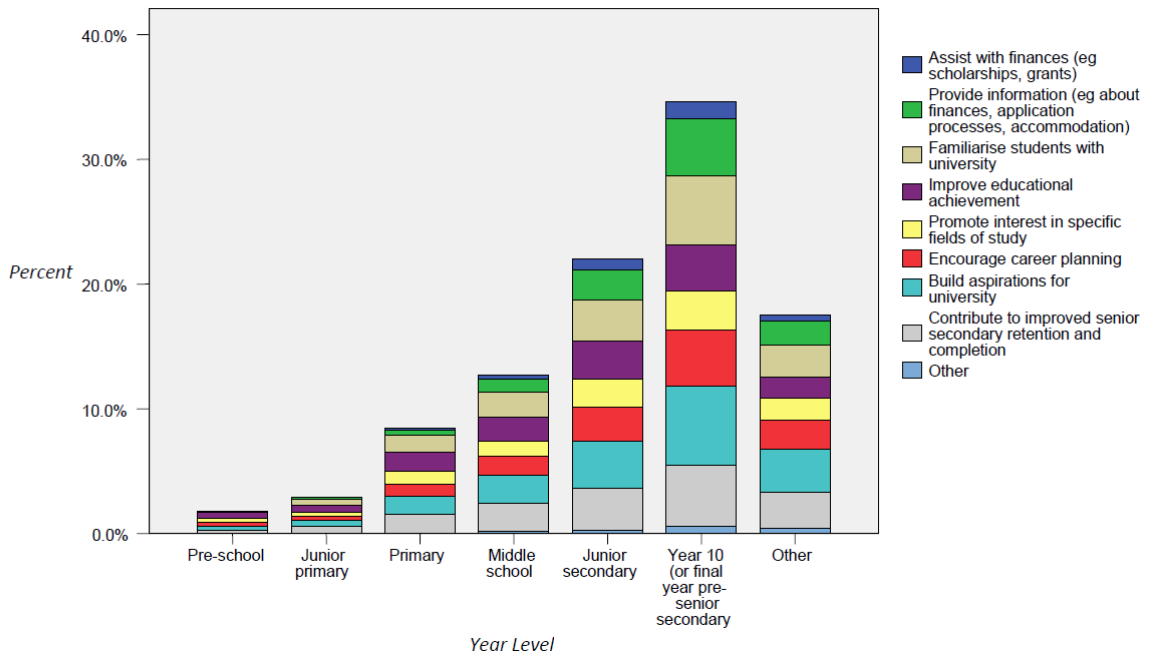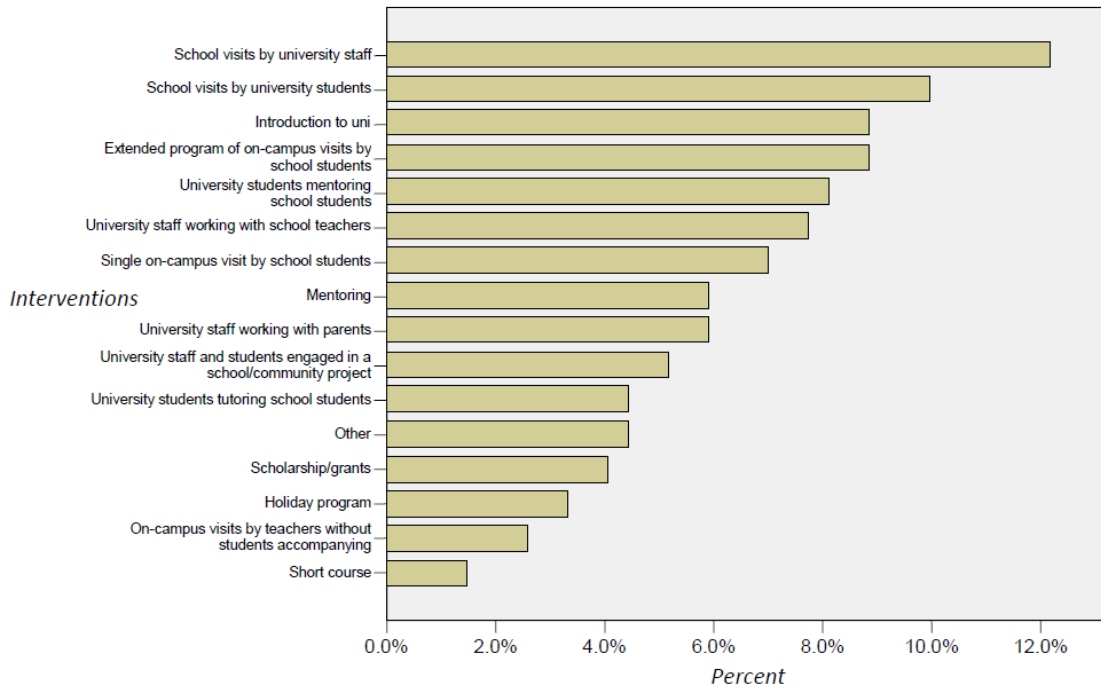**Figure 11: Program target groups and school year levels**
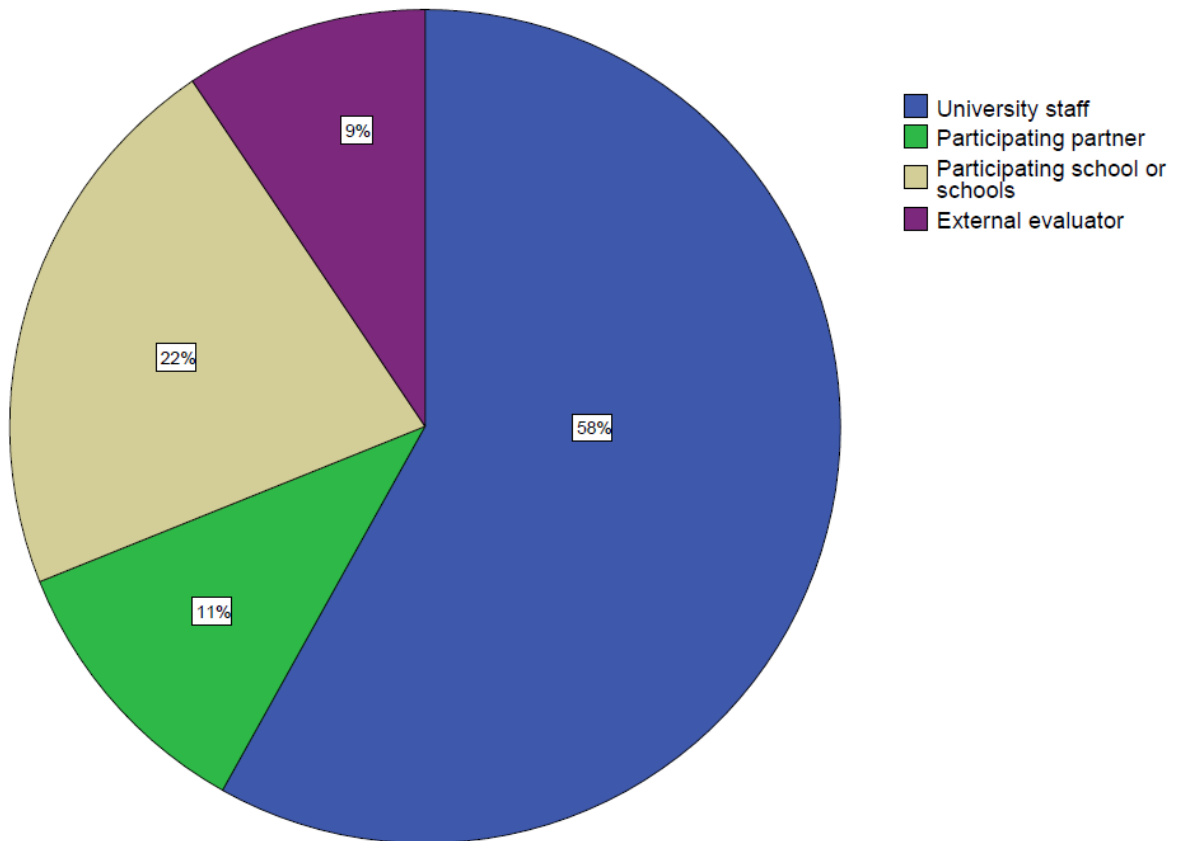

Figure 11.1 Target year levels by program aims

Figure 12: Program type

Figure 14: Program evaluators

Appendix B: Technical notes

The Design and Evaluation Matrix for Outreach (DEMO), in conjunction with the supporting figures from which it is derived, references the criteria identified in this research—program characteristics, program strategies and equity perspectives—with each other in order to determine the overall likelihood of program effectiveness. These technical notes describe the rationale for the measures of strength on the program composition figure (Figure 2) and the measures of likely effectiveness on the Design and Evaluation Matrix.

Program composition

For evaluation purposes, program composition is the first instrument to be used. It is suggested that program characteristics be identified first, in order to subsequently identify the strategies from which they are drawn. For reference, the listing of strategies and associated characteristics is reproduced here (Figure 1).

Assembling resources	Engaging learners	Working together	Building confidence
People-rich	Recognition of difference	Collaboration	Communication and information
Financial support and/or incentives	Enhanced academic curriculum	Cohort-based	Familiarisation/site experiences
Early, long-term, sustained	Research-driven		

Figure 1: Four strategies and 10 characteristics of outreach programs

Within this model, programs can have a maximum of 10 characteristics and four strategies. The number of characteristics evident in a program determines its *depth*. Programs with a large number of characteristics are deep while those with a low number of characteristics are shallow. The number of strategies evident in a program determines its *breadth*. Programs with a larger number of strategies are broad while those with a lower number of strategies are narrow.

Once the numbers of characteristics and strategies have been identified they can be referenced with each other using the program composition figure. Depth is recorded on the y-axis and breadth on the x-axis. The possible combinations of these two variables are represented on the figure as cells of varying 'strength': Weak (W), Moderate (M), Strong (S), or Very Strong (VS).

Program Depth (Characteristics)	1	2	3	4
10				VS
9				VS
8			S	VS
7			S	VS
6		M	S	VS
5		M	S	VS
4		M	S	S
3	W	M	M	
2	W	W		
1	W			
	1	2	3	4
	Program Breadth (Strategies)			

W=Weak M=Moderate S=Strong VS=Very Strong

Figure 2: Program composition

There is a relationship between the number of characteristics and the number of strategies. An increase in the number of characteristics will, at particular thresholds, necessarily increase the number of strategies that are present. For example, each strategy comprises no more than three characteristics. Once a program has four characteristics it must necessarily involve at least two strategies. Therefore, increases in program depth will eventually result in corresponding increases in breadth.

The relationship between depth and breadth prohibits certain combinations of characteristics and strategies. Grey cells mark combinations that are not possible. For example, it is not possible to have four characteristics and one strategy, because each strategy involves no more than three characteristics. Equally, it is not possible to have one characteristic and two strategies. The grey cells on the figure therefore mark the upper and lower limits on possible combinations.

Thresholds emerge at three critical points on the figure: at the combination of two strategies and three characteristics (2,3), three strategies and four characteristics (3,4), and four strategies and five characteristics (4,5). These thresholds have been used to establish the four measures of program composition: Weak, Moderate, Strong, and Very Strong. The three intersecting lines in Figure 3 mark these thresholds (each coordinate in Figure 3 corresponds to a cell in Figure 2).
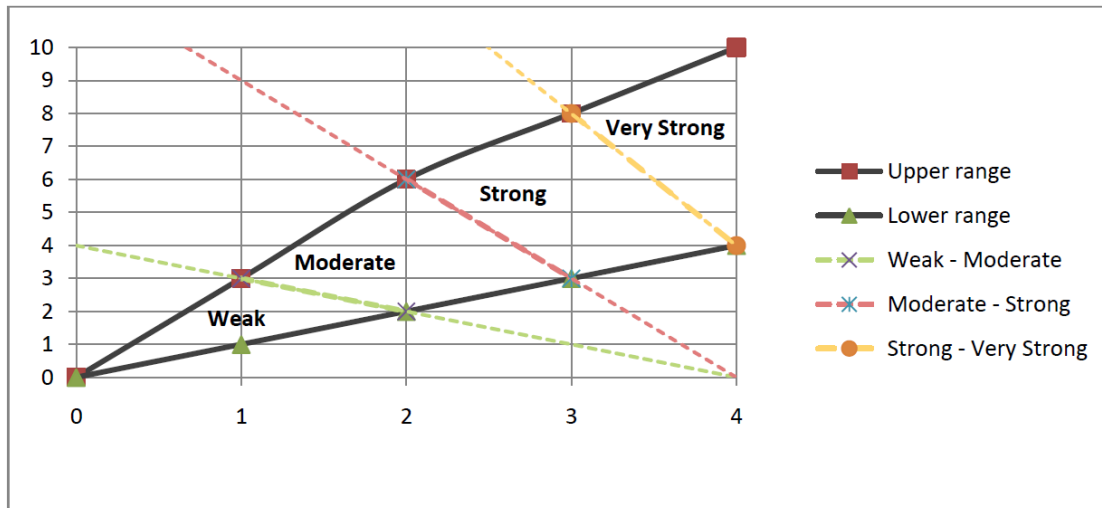
Figure 3: Composition thresholds

Programs become qualitatively stronger as the numbers of characteristics and strategies surpass each of these thresholds. As each threshold is surpassed a corresponding increase in depth and breadth results in combinations that comprise at least one more characteristic than the number of strategies. For example, the minimum requirement for a program composition to be considered of Moderate strength is the presence of least two strategies represented by at least three characteristics (2,3; the first coordinate beyond the first threshold).

As each threshold is surpassed, programs draw from an increasingly broad set of strategies in relation to the previous measure, while having a concentration of characteristics in at least one strategy. For example, a Strong program that comprises early, long-term and sustained (assembling resources), recognition of difference (engaging learners), enhanced academic curriculum (engaging learners) and cohort-based (working together) has three strategies and four characteristics (3,4). This composition ensures reasonable strategic breadth with a particular strength in the area of engaging learners.

There are cells where an increase in program breadth does not entail a corresponding increase in depth that would surpass the next threshold. For example, a program composition is Weak if it comprises two characteristics, regardless of whether they are drawn from one or two strategies. A program composition is Moderate if it has three characteristics, regardless of whether they are drawn from two or three strategies, and a program composition is Strong if it has four characteristics, regardless of whether these are drawn from three or four strategies. In these instances, increasing breadth by distributing characteristics more broadly is not considered to result in the same qualitative strengthening of a program's composition that results from a *corresponding* increase of depth *and* breadth.

The program composition measure for a program becomes one criterion referenced on the DEMO.

Design and Evaluation Matrix for Outreach

For evaluation purposes, the DEMO is the meta instrument to be used. Having determined a program's composition, the DEMO combines this with the equity perspectives that inform and support the program. For reference, the list of equity perspectives comprised by an equity orientation is reproduced here (Figure 4).

Equity orientation		
Unsettling deficit views	Researching 'local knowledge' and negotiating local interventions	Building capacity in communities, schools and universities

Figure 4: Three perspectives of an equity orientation

Analysis of the case studies suggests that a program can have a maximum of three equity perspectives.[6] The number of perspectives is recorded on the X-axis and the program composition is recorded on the Y-axis.

Program Composition		0	1	2	3
	VS	U-L	L-QL	QL-VL	VL
	S	U	L	QL	QL-VL
	M	U	L	L	L-QL
	W	U	U	U	U-L
		0	**1**	**2**	**3**

Number of Equity Perspectives

U=Unlikely L=Likely QL=Quite Likely VL=Very Likely

Figure 5: Design and Evaluation Matrix for Outreach activities

The possible combinations of program composition and equity perspectives are represented in the 12 cells of the matrix (Figure 5). In combination they produce four possible measures of program effectiveness: Unlikely, Likely, Quite Likely and Very Likely.

Programs that have a Weak composition or do not have an equity orientation are generally Unlikely to be effective. The likelihood of programs being effective increases incrementally as composition strength and number of equity perspectives increases: programs of Moderate composition with one equity perspective are Likely to be effective and programs with a Strong composition and involve two equity perspectives are Quite Likely to be effective. Programs that are Very Strong in composition *and* include all three perspectives are optimal and Very Likely to be effective. Other combinations are also possible. The likely

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[6] The number of equity perspectives and indeed the number of program characteristics and strategies are derived from the research. It is possible that further research may reveal more equity perspectives, characteristics and strategies. That is, this research focused on university programs operating in schools in an Australian context. It may well be that programs operating in different contexts may reveal different program features.

effectiveness of these combinations increases in relation to improved program composition and/or the presence of a larger number of equity perspectives.

The matrix includes six ambivalent cells that have two possible values.[7] These cells relate to programs that have a Very Strong composition *or* include all three equity perspectives. Programs with a maximum rating on one of the criteria—composition or equity orientation—may have a higher likelihood of being effective due to their comprehensive satisfaction of this criterion. In each instance where the likely effectiveness of a program falls within one of these ambivalent cells, contextual judgment is necessary to determine whether its particular combination of depth, breadth and equity orientation warrants the lower or higher measure.

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[7] 'Ambivalent' is used strictly to mean uncertainty or fluctuation between two apparently different values.