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## COMMUNITY ENGAGEMENT: A MOVE TOWARDS IDENTIFYING AND QUANTIFYING

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### Abstract

*This paper explores what Australian Catholic University has historically envisaged as those activities conducted by academic staff that falls outside the traditional teaching and research framework; what could be referred to as Community Engagement (CE) activities. Additionally, the paper explores how the University has gone about capturing and reporting those activities and some of the issues identified with the collection and analysis process. Engagement with religious organisations accounted for one-third of all activities and public and private organisations represented one-fifth. Membership of external committees, invited lectures, and community contributions corresponded to more than three-quarters of all types of engagement activities. Analysis also indicated that invited lectures, seminars or workshop presentations represented the principle form of engagement activity with religious organisations and inter-institutional engagement whereas community contributions symbolized the principle form of engagement with the public organisations. These engagements have been developed over time on all ACU National campuses and realised by all faculties but at different levels.*

**Keywords:** Community Engagement, Engaged University, Mapping, Partnerships, Scholarship

Community Engagement (CE), as a core activity together with teaching and research in Australia's higher education sector, received special attention following the "Crossroads" review in 2000, the blueprint that followed "Our Universities: Backing Australia's Future 2003", and the prospect of additional government funding attached to engagement as a "Third Stream" activity in 2005. Despite the attention, CE is a vague and often misused concept leading to the use of different terms and different definitions. The Department of Education, Science and Training (DEST) refers to the "process of engaging, for mutual benefits, with business, government, or the community to generate, acquire, apply, and make accessible the knowledge needed to enhance material, human, social, and environmental wellbeing" as "Knowledge Transfer" (DEST 2006). According to the Australian Vice-Chancellors' Committee (AVCC 2005), "engagement focuses on universities' application of research, teaching, and scholarship in partnership with the needs of business and communities. It can also focus on projects designed to generate social and economics benefits within its community of interest". For the Australian Universities Community Engagement Alliance (AUCEA), a peak professional body representing 28 universities, CE or "Regional Engagement" is "a two-way relationship in which the University forms partnerships with the community ..... that focus on scholarly practice and community driven engagement that has reciprocal and mutual benefits as an outcome predicted on the exchange of knowledge" (AUCEA 2005).

Barbara Holland, an international scholar on engagement, noted that "Engaged Scholarship" has "increased institutional diversity" in the US and describes such engaged scholarship as "engaged forms of teaching and research, faculty connect their academic expertise to public purposes as a way of fulfilling the core mission of the academic institution" (Holland 2005). Harding (2006) supports the notion of "CE reflecting individual institution's particular priorities making it an axis of differentiation between universities". Despite CE being a misunderstood concept, Wallis (Wallis 2005 & 2006) argues that "it has been broadly used to describe relationships between a university and any of its communities. It is a two-way relationship leading to productive partnerships that yield mutually beneficial outcomes". B-HERT (B-HERT 2006) has taken a similar position to CE as a "two-way orientation, with institutions outside higher education committed to interactions with universities in a similar way".

Australian Catholic University is a public university funded by the Australian Government and open to students and staff of all beliefs. Its ethos is derived from Christian values and the catholic intellectual tradition, and its core concern is with ethics in all fields of endeavour. Consonant with its mission, community engagement at ACU is an integral part of the university core business that requires it "to

make a specific contribution to its local, national, and international communities". Within the context of its mission, ACU sees Community Engagement as (ACU National 2007):

*"the process through which the University brings the capabilities of its staff and students to work collaboratively with community groups and organisations to achieve mutually agreed goals that build capacity, improve well-being, and produce just and sustainable outcomes in the interests of people, communities, and the University".*

Accordingly, ACU values community engagement as;

- ◆ a key means of advancing its Mission in serving the common good and enhancing the dignity and well-being of people and communities, especially those most marginalised and disadvantaged;
- ◆ integral to its teaching, learning and research; and
- ◆ affirming relationships that depend on trust and genuine partnerships with community organisations, institutions and corporations.

Thus, ACU prides itself on being an engaged university that "has created special partnerships that serve its distinctive mission" and endorses the position that "varieties of excellence are achieved through varieties of partnerships" (ACU National 2002).

The major objective of this paper is to identify the extent of engagement with major institutional partners and the forms by which the University engages with these partners. Differences between faculties and campus/state engagements will also be explored in relation to the institutional partners and type of engagement.

## METHODOLOGY

ACU National has six campuses in Australia; two in NSW, two in Victoria, one in each of Queensland, and ACT. It offers programs in health, education, business and informatics, arts, social sciences and theology through three faculties; Education, Nursing, and Arts and Sciences. During 2003-2005, there were twenty three schools reporting to the three faculties; thirteen schools reporting to the faculty of Arts and Sciences, six schools reporting to the faculty of Education and five schools reporting to the faculty of Health Sciences. Although the vast majority of the twenty three schools (nineteen) were operating locally on one campus, four of the schools were operating nationally, offering courses in more than one State.

Like many other institutions within the Australian higher education sector, ACU National is embarking on the task of mapping its community engagement activities and, is faced with the challenge of what constitutes CE given its vague concept as outlined briefly in the introduction. On an annual basis, ACU National gathers required research data for each member of staff for submission to DEST. At the same time, data related to individual contributions made to the wider community and to the university itself of non-teaching and non-research activity is also gathered. The forms used for this collection are designed, in a similar fashion to DEST forms, and provide information about activity type, faculty staff involved in the activity, and a title and description of the reported activity (no more than 300 characters). Although each of the (non-DEST) forms is meant to capture a different category of staff engagement, analysis of the data indicated that often the same type of engagement is reported using different forms by different staff. This indicates that requiring different forms for each type of engagement may be flawed and provides further evidence that CE is a vague and misused concept.

The analysis of ACU National CE activities is based on the data collection that the university community was involved in at the end of each year and coincided with DEST data collection. Activities reported during 2003-2005 have been combined, for the purpose of analysis, providing a "snap shot" of CE activities. These activities have been coded by the authors based on the institutional partnership and type of engagement activity, taking into account categories of engagement indicated in the different reporting forms. Data were analysed initially using Leximancer software and then using SPSS software to explore themes emerging from staff engagement.

Accordingly, data explored in this paper represents what academic staff perceived as CE and reported using the forms provided. Hence the data does not represent a comprehensive mapping of the University CE activities nor of its staff. Data relies on counts of reported activities and does not

necessarily capture the complexities and quality of engagement. For instance, the data does not include the University engagement activities conducted in East Timor, those on the Thai-Burmese border (Karen refugees) nor those activities conducted by non academic units such as the University Indigenous support units. On the other hand, these activities do not necessarily reflect what ACU perceives as CE, but they do represent different levels of engagement by academic staff with the wider community. Thus CE activities represent staff engagements that were fostered by the University ethos or those initiated by the university itself as a result of its engagement with its local, national and international communities.

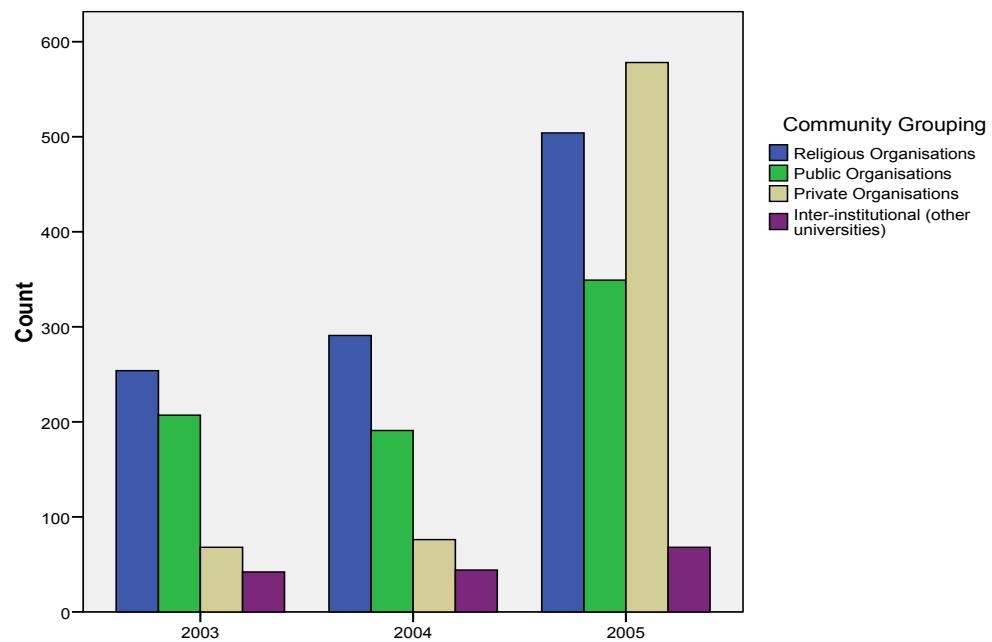
### **ACU NATIONAL COMMUNITY ENGAGEMENTS: INSTITUTIONAL PARTNERSHIPS**

ACU National prides itself as an engaged university striving to build partnerships with its multiple constituents. These CE activities could be categorised in different ways. However, two major categorise are used based on institutional partnerships and the type of engagement.

#### **Engagement Activities 2003-2005**

Reported CE activities by academic staff participating in the data collection have increased during 2003-2005. Figures show 571 activities were reported in 2003 and similar number in 2004 but they have more than tripled in 2005 reaching 1499 reported activities. The massive increase in the reported activities coincided with, but not necessarily caused by, changes in the university policy and procedures placing more emphasis on community engagement that have contributed to stimulating academic staff engagement. Relevant changes that took place include; the establishment of the Institute of Advancing Community Engagement mid 2005, the inclusion of community engagement in the academic recruitment, promotion, and performance evaluation policies, more staff awareness of the “community award” to the academic staff that was introduced in 2002 added to a similar award for general staff that was in place since 2000. There was also more emphasis from the Research Office that each academic staff must complete DEST forms even if they had no research output resulting in more reports from academic staff in relation to their engagement activities in 2005.

These activities were divided by the authors into four categories based on the “Institutional Partner”: “Religious Organisations” category included Catholic Education Offices, Centacare, parishes and other church agencies. Public Organisations category comprised various government agencies at the Federal, State, and Local levels. The Private Organisations category consisted of engagement activities with the private sector including professional bodies whereas “Inter-institutional” category refers to engagement with other universities (national and international).



**Graph 1 – Community Grouping by Year**

Graph (1) reveals religious organisations as the primary institutional partner in 2003 and 2004 accounting for 45% and 48% respectively of all reported activities (254 & 291 activities respectively), whereas public organisations came second representing one-third of the reported activities (207 & 191 activities respectively). Having religious organisations topping the engagement partnership list is consistent with the University's ethos and mission. Engagement with private organisations was the third most frequent in both 2003 and 2004 followed by inter-institutional category (12-13% and 7-7% respectively).

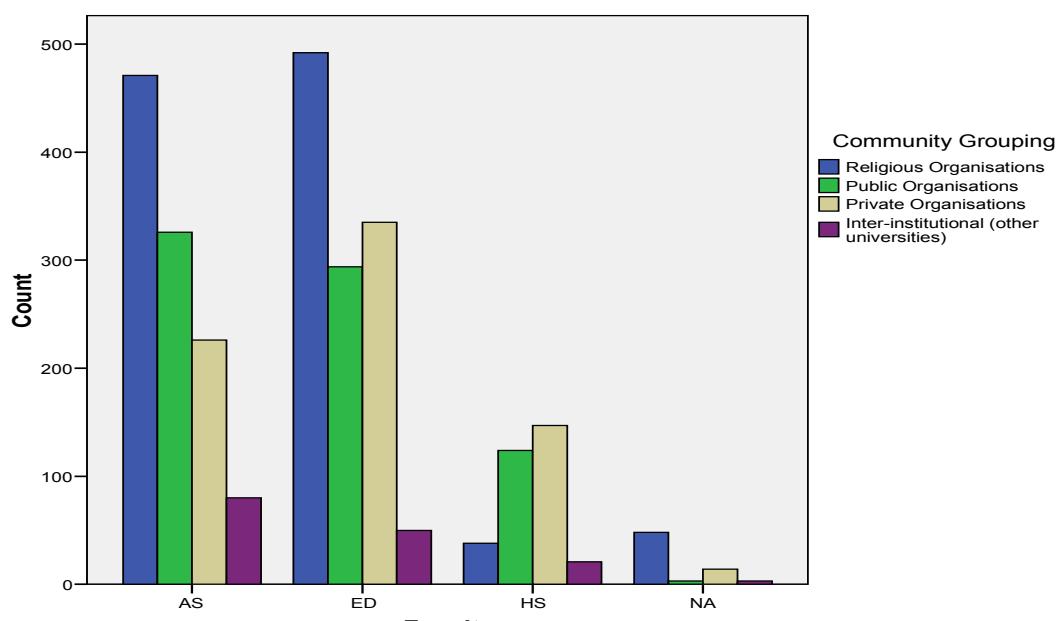
Figure (1) also shows a substantial change to the institutional partnership picture in 2005 where engagement with private sector activities was most frequent followed by engagement with religious organisations (39% and 34% respectively). Engagement with public organisations accounted for 23% or 349 activities and inter-institutional engagement comprised the forth partner (5%) with 68 reported activities in 2005.

### **Engagement Partnerships by Faculties**

To explore differences between faculties' engagement in relation to the institutional partners, data were analysed accordingly. The emphasis is not on the count of activities performed during 2003-2005, that is expected given differences in faculty size, but on prioritisation of institutional partners.

ACU National CE totalled 2672 activities during 2003-2005 conducted mainly by faculties of Education and Arts and Sciences representing 44% and 41% for each faculty respectively (1171 and 1103 activities respectively). Faculty of Health Sciences' engagement accounted for 12% and national engagement for the remaining 3% (330 and 68 activities respectively). Graph (2) shows engagement with religious organisations was a top priority for faculties of Education and Arts and Sciences, comprising more than one-third of activities conducted by each faculty (492 and 471 activities respectively), whereas engagement with private organisations was a high priority for the faculty of Health Sciences (147 activities).

Graph (2) also reveals that engagement with private organisations occupied a second priority for the faculty of Education followed by engagement with the public organisations (29% and 25% respectively). For the faculty of Arts and Sciences, engagement with public organisations was the second highest partnership followed by private organisations (30% and 21% respectively). Partnership with public organisations was the second highest engagement for the faculty of Health Sciences followed by engagement with religious organisations (38% and 12% respectively). Engagement at the university national level was mainly with religious organisations followed by private organisations (71% and 21% respectively).

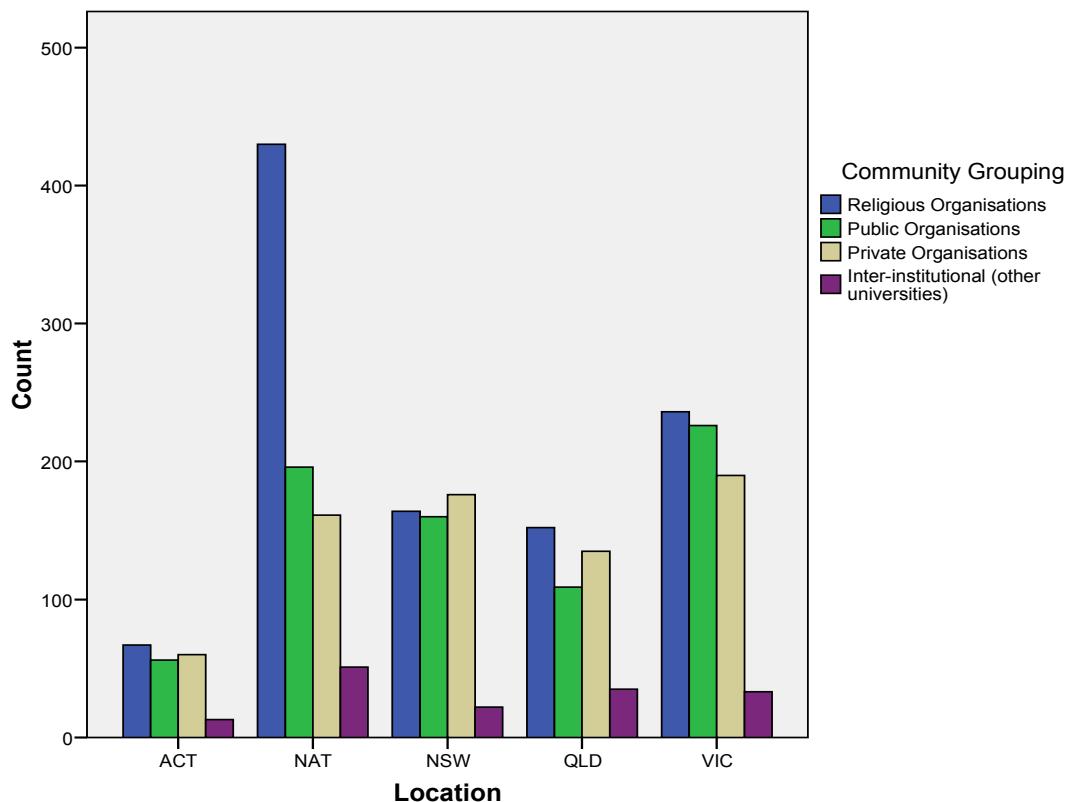


**Graph 2 – Community Grouping by Faculty**

### ***Engagement Partnerships by Campus/State***

Data were also analysed based on the campus/state that conducted the engagement in order to explore differences between campuses/state's engagements in relation to the institutional partners. Again, the emphasis is not on the count of activities performed by each campus/state, which is expected given differences in campus/state size, but on prioritisation of institutional partners.

Graph (3) shows that engagement by the University at the National level, including the four national schools, accounted for 31% of all engagement activities during 2003-2005. This was followed by engagement on the Victorian campuses (26%), the NSW campuses (20%), and the Queensland campus (16%), whereas the ACT campus comprised 7% (838, 685, 522, 431, and 196 activities respectively). Engagement with religious organisations topped the list of partners at the National level, the Queensland, Victorian, and ACT campus accounting for 51%, 35%, 35% and 34% respectively of all engagement activities on those locations. The domination of religious organisations as a major partner was also evidenced at the NSW campuses accounting for 31% of the engagement activities in the two campuses of NSW.



**Graph 3 – Community Grouping by Location**

Graph (3) also shows engagement with public organisations among the top two features of engagement at the Victorian and National level campuses and far behind for the NSW campuses (33%, 23% and 30.7% respectively). Engagement with private organisations was top of the list for the NSW campuses and a second major feature of engagement at the Queensland and ACT campuses and not far behind for the Victorian campuses (34%, 31%, 31%, and 28% respectively). Inter-institutional engagement, representing 5.8% of all engagement activities, accounted for 8% of Queensland engagement and 7% and 6% for ACT and the National schools campus engagement activities respectively. The National level accounted for one-third of all inter-institutional engagement followed by Queensland and Victorian campuses (33%, 23% and 21% respectively) whereas NSW campuses represented 14% of these activities.



## ACU NATIONAL COMMUNITY ENGAGEMENT: TYPE OF ENGAGEMENT

Considering type of engagement during 2003-2005, Table (1) shows three type of activities accounted for two-thirds of all the 2672 activities with external committee membership and invited lectures, seminars, and workshop presentations comprising one-fourth and one-fifth each (27% and 22% respectively) followed by 17% for professional association membership (708, 597, and 462 activities respectively). Figures also reveal community contributions consisted 21% of engagement activities (567 activities). Paid and unpaid Professional consultancy represented 7% of engagement activities whereas unpublished conference presentations corresponded to 6% as shown in Table (1) (186 and 147 activities respectively)

Engagement Activity	Year			Total
	2003	2004	2005	
Paid Professional (non-Research) Consultancy			6.0%	3.4%
Professional Association Membership			30.85%	17.3%
Unpaid Professional Consultancy			6.4%	3.6%
Community Contributions	11.4%	14.0%	7.1%	9.5%
Community Service Contributions	14.0%	117.4%	8.5%	11.7%
External Committee Membership	42.0%	33.7%	17.7%	26.5%
Unpublished Conference Presentations			9.8%	5.5%
Invited Lecture, Seminar or Workshop Presentations	32.6%	34.9%	13.4%	22.3%
Total (actual)	100.0% (571)	100.0% (602)	100.0% (1499)	100.0% (2672)

**Table 1 – Engagement Activity by Year**

### Type of Engagement by Faculty

Data gathered during 2003-2005 were analysed, at the faculty level, in order to explore differences between faculties' engagement in relation to prioritisation of the type of engagement.

Invited lecture, seminar, and workshop presentations and external committee membership topped the list for the faculty of education accounting each for one-fourth of its engagement activities whereas community contributions not far behind (24.4%, 24.3%, and 21.8% respectively). Table (2) also shows professional association membership representing 17.6% of the faculty of education engagement activities.

For the faculty of Arts & Sciences, Table (2) shows four types of engagement activities accounting for around three-fourth of all activities during 2003-2005 with external committee membership as the main type of engagement activities accounting for 27.5% followed closely by invited lecture, seminar and workshop presentations (22.8%), and community contributions at 22.5%. External committee membership was reported as the main activity for the faculty of Health sciences comprising 31.2% of the faculty activities during 2003-2005 followed by community contributions, and professional association membership (18.5% and 17.9% respectively) whereas invited lecture, seminar or workshop presentations represented 12.7%. ACU National level engagement followed similar trends where three types of engagement activities accounting for 79% with invited lecture, seminar or workshop presentation and professional association membership corresponding to 27.9% each followed by 23.5% for external committee membership and 16.2% unpublished conference presentations.

Engagement Activity	Faculty				Total
	AS	ED	HS	NA	
Paid Professional (non-Research) Consultancy	3.2%	4.4%	1.2%		3.4%
Professional Association Membership	16.1%	17.6%	17.9%	27.9%	17.3%
Unpaid Professional Consultancy	2.7%	3.1%	8.8%	1.5%	3.6%
Community Contributions	8.8%	10.2%	11.5%		9.5%
Community Service Contributions	13.7%	11.6%	7.0%	2.9%	11.7%
External Committee Membership	27.5%	24.4%	31.2%	23.5%	26.5%
Unpublished Conference Presentations	4.8%	4.4%	9.7%	16.2%	5.5%
Invited Lecture, Seminar or Workshop Presentations	22.8%	24.3%	12.7%	27.9%	22.3%
Total (actual)	100.0% (1103)	100.0% (1171)	100.0% (330)	100.0% (68)	100.0% (2672)

**Table 2 – Engagement Activity by Faculty**

#### Type of Engagement by Campus/State

Data were analysed based on campus/state level to investigate the flavour of engagement conducted during 2003-2005. External committee membership (26.5%) and invited lecture, seminar, and workshop presentations (22.3%) accounted for around half of the engagement activities at the National level (including the four National schools). Table (3) shows community contributions comprised 21.2% followed by professional association membership (17.3%). For the Victorian campuses, Table (3) shows external committee membership represented top of the engagement activities (26.1%), followed closely by community contributions (24.7%) and invited lecture, seminar, and workshop presentations (17.8%).

Table (3) reveals external committee membership as the main engagement activities for NSW campuses corresponding to 29.9% followed by invited lecture, seminar, or workshop presentations (20.5%) during 2003-2005. Two other engagement activities followed closely together representing more than one-third of the NSW campuses engagement activities with community contributions accounting to 19%, followed by professional association membership (18.8%). External committee membership topped the list for the Qld campus accounting for one-third of engagement activities (34.1%) followed closely by professional associations and community contributions (18.4 and 18.3% respectively). On the other hand, invited lecture, seminar or workshop presentations amounting to (15.5%) of the Qld engagement activities.

Community contributions and professional association membership were the main engagement activities for ACT campus amounting to 30.6% and 28.1% respectively followed by invited lecture, seminar or workshop presentations (18.4%) as figures in Table (3) show.

Engagement Activity	Location					Total
	ACT	NAT	NSW	QLD	VIC	
Paid Professional (non-Research) Consultancy	1.5%	4.3%	2.9%	2.1%	3.9%	3.4%
Professional Association Membership	28.1%	12.9%	18.8%	17.4%	18.4%	17.3%
Unpaid Professional Consultancy	2.6%	3.1%	1.7%	3.9%	5.7%	3.6%
Community Contributions	9.7%	9.7%	7.9%	5.8%	13.0%	9.5%
Community Service Contributions	20.9%	9.4%	11.1%	12.5%	11.7%	11.7%

External Committee Membership	12.8%	24.0%	29.9%	34.1%	26.1%	26.5%
Unpublished Conference Presentations	6.1%	5.0%	7.1%	8.1%	3.1%	5.5%
Invited Lecture, Seminar or Workshop Presentations	18.4%	31.6%	20.5%	15.5%	17.8%	22.3%
Total (actual)	100.0% (196)	100.0% (838)	100.0% (522)	100.0% (431)	100.0% (685)	100.0% (2672)

**Table 3 – Engagement Activity by Location**

### **Institutional Partnerships and Engagement Type**

Community engagement activities during 2003-2005 have been analysed based on the institutional partner and type of engagement and prioritisation of each faculty and campus/state have been explored. This section will investigate different ways that the university engaged with each partner resulting in mutual benefits and reciprocal relationships that are based upon trust and genuine partnership.

ACU National academic staff have been engaged in around two thousands seven hundreds engagement activities during 2003-2005 where engagement with religious organisations accounted for more than one-third of all activities (39%) and public and private organisations' engagement represented more than one-fourth each (28% and 27% respectively). Previous analysis also showed membership of external committees, invited lecture, and community contributions corresponded to around three-quarters of all types of engagement activities (26.5%, 22.3% and 21.2% respectively). In this section, the analysis will focus on the engagement type in relation to the institutional partner.

Table (4) shows invited lecture, seminar or workshop presentations, external committee membership, and community contributions as major engagement activities with religious organisations and together accounting for 79% of the 1049 engagement activities (30.4%, 26.8%, and 21.7% respectively). Paid and unpaid consultancies and professional association membership represented 8.5% and 8.1% respectively of ACU engagement with religious organisations. This is consistent with the ACU mission and ethos in serving church agencies. As indicated by the above figures ACU has been one of major sources that religious organisations would rely upon when organising public lectures & seminars or drawing their committee memberships. Community contributions and external committee membership represented 80% of the 747 engagement activities with the public organisations (44.1% and 35.5% respectively). Table (4) also indicates invited lecture, seminar or workshop presentations and professional consultancies corresponding to 10.7% and 8.3% respectively of ACU engagement with the public organisations.

<b>Engagement Activity</b>	<b>Community Grouping</b>				<b>Total</b>
	<b>Religious Organisations</b>	<b>Public Organisations</b>	<b>Private Organisations</b>	<b>Inter-institutional (other universities)</b>	
Paid Professional (non-Research) Consultancy	3.8%	5.2%	.3%	5.8%	<b>3.4%</b>
Professional Association Membership	8.1%	0.1%	51.9%	0.6%	<b>17.3%</b>
Unpaid Professional Consultancy	4.7%	3.1%	1.8%	7.1%	<b>3.6%</b>
Community Contributions	10.6%	18.5%	0.1%	3.2%	<b>9.5%</b>
Community Service Contributions	11.1%	25.6%	0.3%	1.9%	<b>11.7%</b>
External Committee	26.8%	35.5%	18.3%	19.5%	<b>26.5%</b>

Membership					
Unpublished Conference Presentations	4.4%	0.9%	10.7%	11.0%	<b>5.5%</b>
Invited Lecture, Seminar or Workshop Presentations	30.4%	10.7%	16.6%	50.6%	<b>22.3%</b>
Total % within community grouping (actual)	100.0% (39.3%) (1049)	100.0% (28.0%) (747)	100.0% (27.0%) (722)	100.0% (5.8%) (154)	<b>100.0% (100%) (2672)</b>

**Table 4 – Engagement Activity by Community Grouping**

Professional association membership accounted for more than half (51.9%) of the 722 engagement activities with private organisations followed by external committee membership, invited lecture, seminar or workshop presentations, and unpublished conference presentations (18.3%, 16.6%, and 10.7%). In relation to inter-institutional engagement, Table (4) shows invited lecture, seminar or workshop presentations corresponding to half (50.6) of the 154 activities followed by external committee membership and unpublished conference presentations (19.5% and 11.0% respectively).

### Conclusion

The Community Engagement debate within the Australian higher education sector has been puzzled by two issues: the definition and the funding. Although these issues are inter-related, they are not the same. Despite this confusion, CE is widely understood as being two-way partnerships between a university and its communities. For ACU National, community engagement is an integral part of University core business that requires it “to make a specific contribution to its local, national, and international communities”.

Analysis of ACU National community engagement activities during 2003-2005 showed academic staff being engaged in 2672 engagement activities where engagement with religious organisations accounted for more than one-third of all activities (39%) and public and private organisations represented more than one-fourth each (28% and 27% respectively). Membership of external committees, invited lecture, and community contributions corresponded to around three-quarters of all types of engagement activities (27%, 22%, and 21% respectively). Analysis also indicated that invited lecture, seminar or workshop presentations represented engagement activity number one (30%) with religious organisations and inter-institutional engagement (51%) whereas community contributions symbolized the type of engagement with the public organisations (44%).

The above analysis provided a snap shot of ACU National non-teaching and non-research activities during 2003-2005 and it does not represent in any way a mapping of all engagement activities. Simply, the analysis is a first attempt to explore what are ACU institutional partners and what type of activities academic staff engage in with these partners utilising existing data gathered as part of the University DEST data collection at the end of each year. A comprehensive approach and attempt to map the University Community Engagement activities consistent with its definition is needed, and in doing so, it is highly recommended that ACU needs to:

- clarify what constitutes Community Engagement by providing an operational definition,
- design a single form to report and then map Community Engagement activities, and,
- include ACU staff (Academic & General) and students in addition to departments/units in the reporting/mapping of the Community Engagement activities.

ACU national, like any other higher education institution, needs to identify its CE priorities and directions for the coming years. It's these priorities and activities related to them that will attract continuous funding, support and recognition. At the same time, staff engagement activities (non-teaching and non-research), similar to what has been analysed in this paper, need fostering through their inclusion in the operational definition of CE that meets the University requirements in relation to services beyond the university section within the promotion policy. This is a challenge that requires a sensitive balance between what CE activities the university can support without discouraging staff from doing wonders in their engagements with the wider community. Providing a clear operational definition of what

constitutes CE at ACU and making staff aware of it is a key to a successful response to this major challenge.

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## The Role of the Relationship Broker in Building Social Capital and Sustaining Institutional Responsiveness to Community Needs

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Linda Cuttriss Coordinator Community Engagement Charles Darwin University

### Introduction

Mutually beneficial interaction between universities and communities builds the social capital that creates strong, cohesive communities. However, individuals and community organisations that wish to explore opportunities to form links with a university often do not know where to start. They may have anything from a vague notion to a specific request but don't know who to ask. Charles Darwin University's (CDU) Coordinator Community Engagement (CCE) position ensures the University is responsive to community needs by serving as the primary point of contact and brokering collaborative activities and partnerships between the University and the wider community.

This paper draws upon over three years' experience in the CCE position and the ABS Social Capital Framework (2004) to describe the relationship broker's role and function and its contribution to building social capital. The paper outlines how the role can sustain institutional responsiveness to community needs and identifies the elements that determine effectiveness of the position over the long term.

### The role and function of the relationship broker

A university is often perceived to be a powerful and privileged social institution with tradition and structures that are often difficult and daunting for communities to navigate (Lupi, 1998-2008). Those who do not have existing connections with a university or have not previously dealt with a university's language and systems often do not know where to begin or who to speak to. The relationship broker breaks down the barriers by letting people into the system.

CDU's CCE role responds to the need for easy, unthreatening access to the University for all members of the community. The CCE is the primary point of contact for any external individual or organisation and is easily accessible via the 'Contact Us' button on the university's website. The position ensures that every external query gets a personalised response in a timely manner.

The relationship broker is at the interface between the University and the community. The broker forms new links and builds on existing relationships between the external community and the internal university community by connecting people, organisations, projects and activities through communication, coordination, facilitation, liaison and providing support according to the particular need.

Community needs are many and varied and in the three years as CCE they have included requests for:

- Students to undertake volunteering or community-based learning projects;
- Provision of new/existing training and professional development opportunities;
- Students or staff to undertake collaborative research projects;
- Hosting or partnering an event, seminar, workshop or conference on campus;
- Promotion of a community activity across CDU networks;
- Contact with an existing staff member, student or CDU activity; and
- Sponsorship.

Most community requests are via email or telephone although others arise through CCE networking in the community. The CCE response process depends on the nature of the request but usually involves the following steps:

1. **Telephone requests** - If the original external contact is by telephone, the CCE discusses the possible ways forward and asks for the request in writing by email. This enables the request to be forwarded to the relevant person/s, ensures that the CCE doesn't wrongly interpret the request and establishes an information trail for recording purposes;
2. **Email requests** - If the original external contact is by email the CCE usually replies by telephone to get a better understanding of the request, discusses likely ways forward, any known constraints and the likely time-frame for a response;

3. **Check the appropriate internal person/s and forward email** – The CCE usually calls to check the correct person/s before forwarding the email. As staff are usually overloaded with emails an initial phone call gets a quicker and better result as it immediately engages the staff member, allows for some discussion of the request as well as ensuring the correct person is being contacted;
4. **Communicate, support, coordinate, liaise, facilitate** – Requests for community based learning, training or research involve liaison between the external and internal parties, facilitating initial meetings and providing support as required. Some requests require the broker to coordinate involvement of staff across faculties and schools. On-campus events require coordination of catering, room bookings and promotion. Some requests merely require communication of information through staff, student and community network mailing lists.
5. **Identify opportunities** – The broker identifies opportunities that may not have been originally envisaged. For example, a request for sponsorship may be rejected but the CCE may suggest potential community based learning opportunities that may form the basis of a partnership that over time provides the rationale for a sponsorship arrangement;
6. **Monitoring** – The CCE follows up community requests to check the outcome, the level of satisfaction and to identify further opportunities;
7. **Recording** – The CCE keeps a record of each brokering activity in a database that is updated at each stage of CCE involvement and the outcome is recorded at the follow-up stage. The database shows the original date of contact, the contact person, contact details, the request, CCE action and the outcome. The database enables cross referencing of emails and telephone notes.

The CCE's function is not just a referral service; the relationship broker brings people together and only steps back when satisfied that all parties are comfortable with moving forward together. The CCE does not own or manage the new relationships; they take on a life of their own. The CCE is not a 'gatekeeper'; an individual or organisation with an existing connection with the University is free to use that relationship to develop new links with the University.

The broker may facilitate cross-disciplinary activities with community partners, negotiate the university's involvement in a partnership, provide a focus for maintaining a partnership agreement and assume the temporary role of a facilitator to move the overall process of partnering forward. Essentially the relationship broker connects people and organisations in ever expanding formal and informal networks.

### **Building social capital**

Social capital is the 'networks, together with the shared norms, values and understandings which facilitate co-operation within or among groups' (OECD, 2001). It is often referred to as the 'glue that binds' a community or society.

Social capital is a multidimensional concept and its various elements are relevant in different ways to different sectors such as education, health and community development. The Australian Bureau of Statistics (ABS) has developed a Social Capital Framework to provide a way of organising and relating these different elements (ABS, 2004). The ABS Framework equates social capital with networks and the qualities, transactions and types of networks summarised in Figure 2 (ABS, 2004, p.14) (Appendix 1) are all dimensions of the role and function of the relationship broker.

### **Norms and common purpose**

Network qualities are described in the ABS Framework as 'norms' (trust/trustworthiness, reciprocity, sense of efficacy, cooperation, acceptance of diversity and inclusiveness) and 'common purpose' (social participation, civic participation and community support including voluntary work, friendship and economic participation).

The CCE establishes norms that seek to build trust, co-operation, inclusiveness and the sense that the University is open and responsive to community needs. All community enquiries are treated with respect in the context of a common purpose of civic participation. Simple requests for the University to promote community events, conferences and national competitions are treated as seriously as requests that may generate more student enrolments or new research opportunities; staff and students can benefit from participation in local or national activities and connect with potentially valuable new networks.

Community requests that may not initially appear to be directly beneficial to the University may have unforeseen benefits. For example, two local youth organisations ask to hold a youth forum at the University with the aim of fighting racism. The event brings together secondary school students and CDU students for a common cause. Coordination of the forum establishes a working relationship between the CCE and one of the young organisers who happens to be a CDU student. Later, with the support of the CCE, the student is successful in obtaining financial support to attend an international forum as a CDU student representative and the student then assists the CCE in establishing a student-community-network at the University.

Another example of co-operation for a common purpose is the CCE providing logistical support for a national not-for-profit organisation to host an eco-social youth leadership workshop at the University. The CCE connects the organisation to University networks and the national organisation gives CDU students and other young people in the community the opportunity to develop leadership skills and become part of a national network. Student participation in the workshop also contributes to their graduate attributes of leadership and social responsibility.

The CCE also uses the University's extensive mailing lists to put students and staff in touch with volunteering opportunities provided through the Territory's not-for-profit volunteer resource centre.

### **Sharing support, sharing knowledge, negotiation, applying sanctions**

Network transactions are identified in the ABS Framework as 'sharing support' (physical/financial assistance, emotional support, encouragement, integration into community, common action), 'sharing knowledge' (knowledge and information, introductions), 'negotiation' and 'applying sanctions'.

Sharing support, knowledge and information and making introductions that facilitate engagement with the University is fundamental to the brokering role. Support sharing and knowledge sharing is common between the CCE, School of Health staff and students (particularly in Social Work, Welfare Studies and Humanitarian and Community Studies) and community services organisations. The CCE promotes community services activities to staff and students. Staff promote CCE seminars to their students and community networks. Students need community placements and community services organisations often need students for a community based learning project. The CCE introduces the organisation to the School of Health Community and Access (C&A) Champion who has the knowledge of student placement requirements and processes and who then connects the organisation to the School's extensive student placement network.

Similarly, a community legal service needs research on an issue affecting Aboriginal communities but does not have the resources to pay for a research consultancy. The CCE contacts the relevant faculty and research schools. The 'Qualitative Research Methods' lecturer responds and the CCE sets up a meeting to introduce the community lawyer. One of the lecturer's students scopes the research project for their main assignment while the lecturer and lawyer work together on funding applications for undertaking the research as a collaborative project.

The CCE role also involves negotiating agreement about the scope and nature of a relationship and gaining approval for proposed actions. This can include negotiating written agreements such as for community based learning partnerships.

The CCE may assist with conflict resolution. For example, an individual is attempting to arrange training for a group of Aboriginal artists and is frustrated about the training not being approved. The CCE sources the explanations from the several staff members who have been involved in the matter, including the person in authority, and armed with knowledge of the University's language and systems explains the reasons for the situation to the individual. The broker is able to diffuse the tension and helps map a way forward for a successful outcome.

Sanctions are used by a group or community to demonstrate approval or disapproval of behaviour (ABS, 2004). The CCE applies positive sanctions in the form of encouragement and recognition of an activity involving community, staff and/or students. Community-university partnerships are celebrated in good news stories on the CDU website.

## **Bonding, bridging and linking**

The ABS Framework describes network types as bonding, bridging and linking and each of these is core to the relationship broker's role. 'Bonding' refers to ties between people of similar background and interests. The CCE bonds community organisations with students, lecturers and researchers in the same field of study, such as health or environment. For example, a mental health service provider needs professional development training and the relevant Certificate IV isn't on scope at CDU. The CCE brings the service provider staff member together with the relevant VET (Vocational Education and Training) Team Leader and lecturer. Short term and long term solutions are discussed and set in motion.

'Bridging' refers to ties between people of different backgrounds and interests. The CCE 'bridges' the faculties, schools and core business areas of the University. For example, the CCE is contacted by a Commonwealth funded consultant who is scoping a possible training program as part of an Indigenous Employment Strategy. The CCE arranges a workshop which brings the consultant together with lecturers from several VET teams to explore the potential content and logistics of delivering a training package that meets the needs of the client group.

'Linking' refers to relationships with those in positions of authority. The CCE links people to the right person/s in the University hierarchy. For example, a Community Employment Broker (CEB) from an Aboriginal community wants to partner with CDU in a funding application for an Indigenous Training and Employment Program. The CCE links the CEB with the Director of RemoteLink and the Manager of BusinessLink to develop the application for the proposed partnership.

Many of the CCE brokering activities are small, simple requests but these are just as important in building social capital as major collaborative partnerships. According to Falk (1999) it is the everyday interactions between people as they go about their daily activities that contribute to the progressive development of social capital. The CCE receives many unsolicited responses from community organisations whose exclamations of 'Thank-you so much!' attest to the fact that even the simplest acts of support are highly valued and help build relationships with the University.

Building internal networks and links between internal and external networks, building shared visions and shared communication and building each other's self confidence and identity shifts are all processes in building social capital and thus enhanced networks and relationships (Falk, 1999). The relationship broker assesses needs and matches relevant networks by drawing upon knowledge of internal and external networks, university skills and knowledge, the university's systems, rules and communication sites as well as common understandings of the diverse groups in the community.

## **Sustaining responsiveness to community needs**

The relationship broker builds social capital; the trust, common purpose, knowledge sharing and networks that enhance relationships between the university and the community and translate into stronger communities overall. The brokering role ensures that a university is always responsive to community needs. If the individual broker (staff member) moves on, the name on the 'Contact Us' list changes but the role and function remains the same. Brokered relationships and activities assume a life of their own so should not break down if the particular broker leaves.

The effectiveness of the brokering role in sustaining a university's responsiveness to community needs depends on a well defined position profile, appropriate selection criteria, staff induction, internal networking structures and appropriate record keeping, monitoring and information sharing systems.

## **The position profile**

The primary objective of the position should refer broadly to community engagement objectives in the context of the particular university. The primary objective of CDU's CCE is, 'to coordinate and develop the University's engagement with the broader Northern Territory community. This role will work closely with the other core business areas of the University to ensure that relationships are initiated, maintained and regularly reviewed' (CDU, 2004 p.1). It is worth noting that the objective is not to 'manage' engagement but to 'coordinate' or bring together the various parties to ensure harmony and effective operation.

The key responsibilities of the relationship broker position should draw upon the type of actions that build social capital. Key responsibilities could therefore include:

- Identify key organisations and individuals with whom the University can develop mutually beneficial relationships, participate in relevant networks and share knowledge and information;
- Respond to community requests to develop links with the University and broker relevant relationships and activities between the University and external organisations;
- Respond to University requests to develop links with external organisations and facilitate the bonding, bridging and linking of the individuals and groups;
- Negotiate written agreements when required to clarify the objectives, scope and operation of university-community partnerships;
- Maintain two-way communication to monitor and evaluate the maintenance of the brokered relationships; and
- Maintain records to provide corporate knowledge of the history of brokered relationships.

### **Selection criteria**

The success of the relationship broker hinges on selecting the right person for the job and this is best achieved through the selection criteria for the position. If the broker's interactions are hostile, infrequent or negative they can destroy or rapidly deplete social capital (Falk 1999).

Although CDU's CCE position was first advertised in November 2004, the selection criteria (CDU, 2004, p.1) are consistent with the development of social capital and are still relevant today:

#### Essential

1. Demonstrate successful experience in developing and managing relationship capital;
2. Possess a demonstrated breadth of knowledge of the Northern Territory social, cultural and economic contexts;
3. Demonstrate high levels of sensitivity to the needs of equity and diversity target groups;
4. Proven ability to negotiate sometimes difficult and conflicting work culture backgrounds to achieve workable outcomes;
5. Proven ability to develop creative solutions and proposals for action that are evidence-based;
6. Demonstrate knowledge of organisations with which the University might establish relationships;
7. High level written and communication skills;

#### Desirable

8. Possess an appropriate formal qualification in a field that is related to this area e.g. education, business, marketing;
9. Proven ability to work with minimal supervision frequently at a distance from clients and colleagues; and
10. Demonstrated experience in the application of research and evaluation data to contribute to continuous improvement.

### **Induction**

Lupi (1998, p.2) states that, 'If we accept the brokering role means to work between the system and the community then you need to have a thorough knowledge of both. You need to be accepted by both and to have a good working relationship with both'. Falk (1999) asserts that communication underpins successful brokering, that interpersonal interaction is the engine of social capital and that successful brokers do not seem to advise or instruct, but facilitate the matching of information with need.

It is therefore important that a new relationship broker is given a sound induction that includes:

- Overview of the university structure and processes;
- Knowledge of key positions of authority relevant to the brokering role, existing groups and networks and key internal and external networking contacts;
- A review of guidelines for relationship brokering such as the importance of interpersonal interaction, building trust, behaving impartially, two-way communication and understanding that building relationships takes time.

### **Internal networking structures**

Formal internal networking structures can help the relationship broker connect with the right people in a large organisation such as a university. At CDU, Community and Access Champions, VET Team

Leaders and coordinators in each research school provide a point of contact for information and queries. These contacts know the staff in their area, their skills and knowledge and thus can assist the CCE with the required introductions.

### **Record keeping, monitoring and information sharing systems**

If a new person starts in the relationship broker position they will need access to their predecessor's knowledge of internal and external networks, the available skills and knowledge, the precedents, procedures and rules, the communication sites as well as a sense of the common understandings of the people, places, ideas and relationships that have developed over time. Simple but effective record keeping, monitoring and information sharing systems will help to ensure that the trust and reciprocity that has been developed between the university and the community can be sustained into the future.

### **Conclusion**

The relationship broker is a key position for universities whose vision or mission includes community engagement. As an accessible, constant, primary point of contact for all external individuals and organisations, the relationship broker position sustains the university's responsiveness to community needs regardless of staff turnover or institutional change.

The relationship broker matches the community need with the appropriate university staff member/s and the relevant education, training or research activity to facilitate a mutually beneficial outcome. If the university is unable to meet the specific community need, the interpersonal interactions that take place between the broker and the individual or organisation open the doors of the institution, establish communication and create the potential for a new relationship in the future.

Establishing trust, inclusiveness, communication and common understandings is fundamental to the broker's role. The relationship broker connects the university and the community; establishes new networks, expands existing networks and thus helps build the social capital that creates a stronger and more cohesive community.

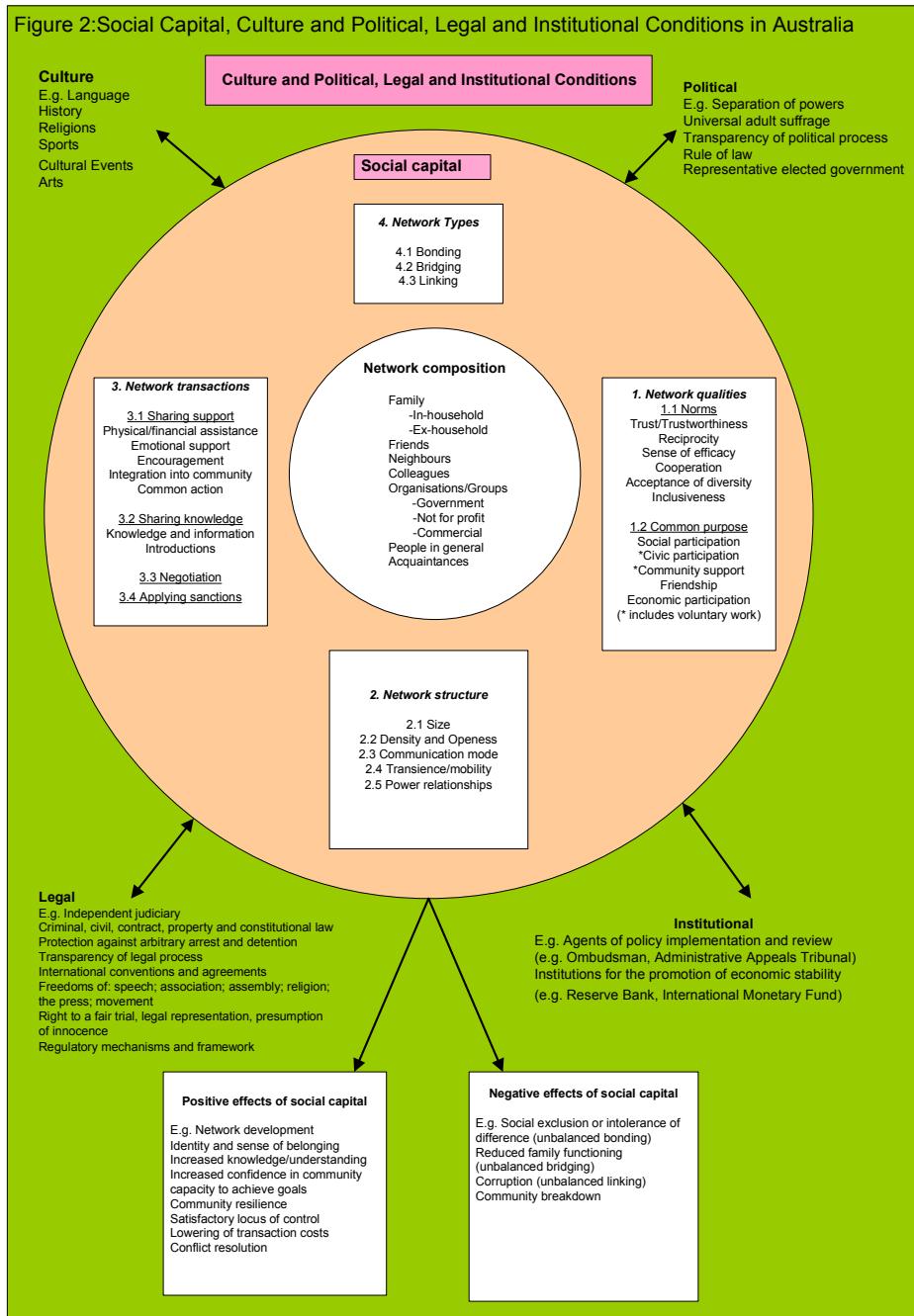
Effectiveness of the relationship broker position is dependent upon a well defined position profile, appropriate selection criteria, staff induction, internal networking structures and appropriate record keeping, monitoring and information sharing systems. The relationship broker position enables a university to respond to community needs through change over time.

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## Appendix 1 ABS Social Capital Framework – Figure 2

Source: Australian Bureau of Statistics (2004) *Measuring Social Capital: An Australian Framework and Indicators*, Information Paper, Canberra, Commonwealth of Australia, page14.



## **Strategies for effective community–university engagement: measurement and evaluation**

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### **Introduction**

South Australia's Flinders University, under the auspices of a Community Engagement Reference Group (CERG), is developing tools to make more explicit the range of community engagement activities and processes undertaken across the university—both as an objective in its own right and as a basis for evaluation. The CERG members are drawn from the University's faculties, administration, public affairs and alumni sectors. The reference group vision: that Flinders University will be 'a leader in the community, recognised for engaging with external communities to create significant mutual benefits'. The quest to develop these tools is conceptual and practical; to name and measuring university-community relationships and map current practices.

Our paper is in three parts. The first section explores definitions of community engagement that speak to the nature of the university–community relationship with respect to mutuality and capacity building, and some of the outcomes of university–community engagement practices as gleaned from relevant literature. In the second section, we overview some of the measurement tools employed by Flinders University, including a mapping exercise using data from the Faculty of Social Sciences annual reports for 2004, 2005 and 2006. This framework was developed from a review of literature in the community capacity-building fields of health, local government and urban regeneration. In the final section we propose measurement typologies that locate the measurement of community engagement in the purposes and practices of collaborative projects.

### **What's in a definition?**

Why get in a flap about pinning down a name to refer to a concept? Because we all strive for conceptual clarity in order to be confident that we are talking about the same thing. This is commonly referred to as establishing a 'shared' understanding. As a term to describe group collaborative activities, 'community engagement' has taken on more diverse connotations in the last decade. It also seems to have a few close relatives: 'social capital', 'capacity building', 'community and/or regional development', and 'knowledge transfer' and 'knowledge exchange'.

This search for a 'shared definition' raises other pertinent questions. Do we know understand and measure community engagement best by its products, outcomes, residual benefits—or the processes used to achieve these outcomes. It involves more than consultation, with its hierarchy of 'inform, consult, involve and collaborate' (City of Onkaparinga, undated). It is intentional—it has strategic purpose, and is relational and reciprocal in nature. The Australian Catholic University has described community engagement as a 'partnership characterised by mutuality, equality of status, clearly defined goals and sought outcomes, frequent communication and long-term commitment' (Australian Catholic University 2005: page no.?). This sounds more like a relationship than a liaison of convenience!

Australian University Community Engagement Alliance (AUCEA) researchers have aided understanding of what constitutes community engagement by inclusive reference to its dimensions: Anne Langworthy (AUCEA, 2005) contends that it is most appropriately understood as a partnership yielding mutually beneficial outcomes like the following:

- productive research outcomes;
- regional economic growth;
- linking the community and the world—boosting local–global connectivity;
- social capital development;
- progress towards a region's sustainable development;
- development of human capital;
- development of corporate and private citizenship attributes;
- driving social change;
- development of cultural and intellectual assets for the community.

As revealed in the growing field of relevant literature, engagement outcomes are strongly aligned with public good rather than with commerce, and typically involve working *with* rather than doing something *to or for* another group or organisation. Project objectives may be driven from 'inside–out' (university) or 'outside–in' (community) origins. Goedegebuure and van der Lee (Eidos 2006: 5) observe:

The engaged institution is not only proactive, but also responsive to issues of relevance to, and identified by, the local community...principles of community engagement are usually negotiated within specific university–community partnerships.

How do universities typically engage their communities—and with what objectives? Drivers for engagement may be diverse, eg ideological commitments; equity; sustainability; commercial or regional economic development. To effectively address any of these concerns, some level of partnership is required. An example of a typology of community–university partnerships/engagement relationships: a University of Minnesota project that advocates mapping partners using the following category types:

- consultative partnerships;
- technical assistance partnerships;
- partnerships of convenience;
- generative partnerships;
- partnerships for mutual benefit;
- outreach (see Eidos 2006: 12–13).

This six-dimension ‘typology of practice’ demonstrates the varying degrees of depth, breadth, complexity, intensity, longevity, mutuality, and partnership that may be involved in community engagement relationships.

However, while community engagement is illustrated by the practices we use in the programs we develop in partnership, when it comes to measuring the success of the resulting engagement, effective assessment must evaluate the efficacy of the relationship as well as its expression in the enhanced capability of each partner.

### **Engagement practice at Flinders University**

In a document called *Flinders strategic priorities and future directions* (date?), the University has expressed three goals for its community engagement relationships:

- (a) contribute to the social, cultural and economic wellbeing of society;
- (b) be a connected and collaborative university;
- (c) be a good corporate citizen.

In directing activities in pursuit of these goals in a regional context—Southern Adelaide—Flinders (*Flinders University Performance Report 2005*) has adopted the following as ‘key areas of interest’:

- education and training;
- enterprise, business and industry development;
- new technologies and technology transfer;
- planning, monitoring, research and evaluation;
- community services, community development and community support;
- governance and coordination.

In the current public policy context where a focus is on community engagement and collaboration it is not unreasonable for an institution to ask the question what kinds of authentic collaborative relationships have been developed and to what end?

In the next section of the paper, we describe two attempts to do this within Flinders University: one based on observations of community engagement practice at a university-wide level; the other, a mapping exercise of the professional and community activities within the Faculty of Social Sciences over a 3-year period.

### **University-wide observations of practice**

Observation of community engagement across Flinders University reveals activity within three principal areas: service learning, work-integrated learning, partnerships. In practice, there appears to be an increasing intensity or complexity in the collaboration relationship spectrum where activity moves from transient or episodic to a collaborative long-term engagement that is closer to the ideal of partnership; and from programs delivered *to* or *for* a group of stakeholders to activities planned and executed *with* a partner in an enduring relationship. This changing balance in mutual benefits is shown in Table 1 below.

<b>Types of programs</b>	<b>Percentage advantage to partners</b>
<b>Service learning:</b> <ul style="list-style-type: none"> <li>• mentoring</li> <li>• community service/volunteering/pro bono</li> <li>• sustainability</li> </ul>	to/for community: <b>25% university</b> <b>75% community</b>

<b>Work-integrated learning:</b>	to/for students: <b>75% university</b> <b>25% community</b>
<b>Partnerships:</b>	with partner: <b>50% university</b> <b>50% community</b>

**Table 1: Changing balances in mutual benefits for parties to programs in four core areas: education, research, international, community engagement**

The percentages shown in Table 1 are indicative of a changing balance in mutual benefits for the respective parties to the engagement. Each program type could involve diverse styles of engagement activity strategies. Any engagement may demonstrate unequal benefits by design without altering the integrity of the reciprocal relationship.

#### **Mapping community engagement in the Flinders University Faculty of Social Sciences Context**

According to its website, the Faculty of Social Sciences has almost 3000 students, and employs 300 staff in nine departments or schools:

- [Department of American Studies;](#)
- [Flinders Business School;](#)
- [School of Geography, Population and Environmental Management;](#)
- [Department of History;](#)
- [School of Political and International Studies;](#)
- [School of Psychology;](#)
- [School of Social Work;](#)
- [Department of Sociology;](#)
- [Department of Women's Studies.](#)

There are also a number of institutes and research centres associated with the Faculty:

- [Australian Centre for Community Services Research;](#)
- [Centre for Development Studies;](#)
- [Flinders Asia Centre;](#)
- [Flinders Centre for Airborne Research;](#)
- [Flinders Institute of Public Policy and Management;](#)
- [Flinders International Asia Pacific Institute;](#)
- [National Institute of Labour Studies;](#)
- [Centre for Scandinavian Studies;](#)
- [South Australian Centre for Economic Studies.](#)

A community capacity building framework was developed to provide the mapping reference lines for describing community–university engagement. As reported earlier there are now examples where university–community engagement is discussed through the lexicon of community capacity building. This notion increasingly is part of Australian policy and program language in health and other functional areas (social welfare, family and community services, education, environment, local government, social and urban planning; Hounslow 2002). Diverse definitions of the construct currently exist—from those describing in a vacuous way community capacity building as little more than ‘doing what needs to be done’, to others describing a comparatively sophisticated array of actions that might contribute to the development of community capacity. Goodman et al (1998: 260) provide a comprehensive definition of community capacity building:

It is a process as well as an outcome; it includes supportive organisational structures and processes; it is multi-dimensional and ecological in operating at the individual, group, organisational, community and policy levels (our understanding of community is that it encompasses all these sectors); and it is context specific.

Laverack (2001) provides an example of an approach common in the expanding and multi-disciplinary literature: a demarcation of domains for building community capacity, with suggested key strategies. Writers treat this material in different ways: some foreground only what occurs in a ‘community’ context, while others regard the domains as interlocking and co-

existing areas that span the private and collective realms and institutional arenas. The table below is a synthesis of community capacity building action domains and associated strategies.

<b>domain</b>	<b>Requirements for the capacity builder</b>	<b>strategies</b>
<b>community</b>	attention to power, history, race/gender/socio-economic characteristics, conflicts, issues, leadership, participation within the 'community setting'	<ul style="list-style-type: none"> <li>• community relationship building</li> <li>• needs assessment/asset mapping processes</li> <li>• support to community sector organisations</li> <li>• support for community planning</li> <li>• support to community participation</li> </ul>
<b>capability</b>	attention to community connections and relationships, support to community leadership, and confidence, & abilities to voice issues and responses to community needs	<ul style="list-style-type: none"> <li>• skill development (ie community development)</li> <li>• mentoring</li> <li>• developing skills &amp; knowledge about an issue/strategy</li> </ul>
<b>resource mobilisation &amp; transfer</b>	mobilisation of financial, human & infrastructure resources to support responses to community needs	<ul style="list-style-type: none"> <li>• funding and institutional support</li> <li>• social supports</li> <li>• supports to community organisations</li> <li>• service delivery</li> </ul>
<b>institutional</b>	attention to organisational systems & processes that may hinder or support efforts to build community capacity building	<ul style="list-style-type: none"> <li>• policy feedback and review</li> <li>• organisational systems &amp; processes review</li> <li>• community participation strategies</li> </ul>
<b>linking</b>	attention to the means for interconnections between community domains and institutional domains	<ul style="list-style-type: none"> <li>• advocacy</li> <li>• bridge building forums, and other processes</li> <li>• collaboration processes</li> </ul>
<b>knowledge</b>	attention to thinking critically about power, processes of social change, knowledge of 'community' needs & whose interests are being served	<ul style="list-style-type: none"> <li>• critical reflection against explicit principles</li> <li>• evaluation &amp; review</li> </ul>

**Table 2: Community capacity building domain framework**

(Source: Verity, F. 2007, Community capacity building; a review of the literature, SA Health Dept).

## The Faculty community capacity building map

The mapping exercise uses activities reported in Part 1 (academic, professional and community activities) of the Faculty of Social Sciences 2004, 2005 and 2006 annual reports. This information is self reported by staff. An interpretative process was used to allocate reported activities to seemingly appropriate 'best fit' community capacity building domains. The results of this process is summarised in Table 3 and described more fully below.

domain	strategies
<b>community</b>	<ul style="list-style-type: none"> <li>• research assistance to community groups</li> <li>• direct voluntary activity</li> <li>• direct organising of community programs</li> <li>• participation on advisory groups &amp; boards</li> <li>• public talks &amp; community education</li> <li>• outreach programs &amp; services</li> <li>• judging</li> </ul>
<b>skills and abilities</b>	<ul style="list-style-type: none"> <li>• training</li> <li>• community education</li> <li>• community development training</li> <li>• consultancy &amp; organisational advice</li> </ul>
<b>resource mobilisation &amp; transfer</b>	<ul style="list-style-type: none"> <li>• public policy formulation</li> <li>• advocacy</li> <li>• research</li> </ul>
<b>institutional linking</b>	No identified strategies
<b>knowledge</b>	No identified strategies

**Table 3: Community–university engagement strategy areas for the Faculty of Social Sciences**

### Community domain

Engagement with community groups and community agencies for the years 2004–6 was extensive, and covered eight strategy areas:

- **research assistance** to support campaigns or community groups:
  - participatory action research with Neporendi Aboriginal Forum Inc.;
  - pro bono research to explore the factors contributing to a successful aged-care centre;
- **direct volunteer activity** with community groups, either as a participant or as the organiser of volunteer activity:
  - volunteering in the *Mela* Indian cultural program, and Country Fire Service;
- **direct organising** of community programs and services:
  - organisation of a recreational program for children from refugee and migrant families from Somalia, Nigeria, Albania, Iran, Iraq and Afghanistan;
  - coordination of a Loss and Grief Centre with Anglicare, and a GriefLink website for the National Association for Loss and Grief;
- **participation in advisory groups and on boards of community organisations and civic committees:**
  - member, State Library of SA;
  - member, Services Advisory Panel;
  - board of management, Don Dunstan Foundation;
  - chair, Inner City Youth Service Inc.;
  - SA Council of Social Sciences;
  - board and reference group for early intervention, Autism SA;
  - research and ethics committee, Anglicare;
  - chair, management committee of Women's Health State-wide;

- member, UNESCO Regional Consultative Committee on Women's Studies/Gender Studies programmes in the Asia-Pacific region;
  - governing council and audit and finance committee, Onkaparinga Institute of TAFE);
- **public talks and community education/awareness:**
  - public talk to Semaphore Workers' Club;
  - presentations to community groups: SA Farmers Federation Future Leaders Forum, SA Office for the Ageing, Adelaide Town Hall forum on Inner City Housing for Young People, University of the Third Age, Sceptics Society;
- **service delivery** as community engagement; all these service delivery areas include students on placement or practicum, and an intersection with research:
  - services delivered at the University: Psychology Clinic for children and adolescents;
  - services delivered as outreach programs: insomnia service at the RGH Sleep Disorders Unit; Loss & Grief Centre (operates as part of Anglicare);
  - judges/chairs of judging panels for awards or competitions run by community groups and organisations, or government agencies: DECS Corporate Excellence awards; SA Media awards; 'people category' awards of the Civic Trust of SA; national awards for Innovation and Excellence in Local Government.

### **Capability domain**

This domain focuses on situations where faculty staff intentionally engaged in community group/organisation skill development activities to further their own agendas.

- **conduct of training:**
  - training for refugees at Kenyan refugee camp to increase their knowledge and ability to provide support for other refugees;
  - policy skill workshops for state public sector employees.
- **community education and training:**
  - sessions to numerous community groups: Alzheimer's Association; Tea Tree Gully Anglican Church; Blackwood Uniting Church; Carers Association;
  - assistance to NGOs on aspects of their management practices;
- **community development training:**
  - Hackham West Community Centre;
- **paid or unpaid consultancy** for organisations, individuals:
  - Barossa Valley Aged Care Forum;
  - workforce committee, Royal ANZ College of Radiologists;
  - Aged Care and Housing Group;
  - Strengthening Families and Communities Scheme: review of national projects;
  - community practitioners: clinical consultancy on loss and grief;
  - Star Bear Children's Grief Program: advisory supervision.

### **Linking domain**

This mapping exercise revealed 3 distinct ways of reporting Faculty-community linking engagements:

- the development of interconnecting mechanisms across government, community and business systems, and/or supporting the voice of 'community' needs in policy making eg advocacy and collaboration within the work of boards of management or advisory committees;
- establishing linking or networking activities eg cross-institutional programs, advocacy, and forums to bring activists and scholars together;
- advising on matters to do with collaboration and advocacy (notably Public Flinders Institute of Public Policy and Management and School of Social Work staff) eg a presentation to Social Inclusion Unit on inter-agency collaboration; advice to NGOs on collaboration and partnership options in the context of new funding demands; conducting advocacy workshops.

## **Resource mobilisation**

The focus within this domain is strategies where the university–community engagement process has an explicit purpose: to mobilise financial, human and/or infrastructure resources to support responses to community needs and/or build community capacity.

All examples identified in the faculty annual reports can be allocated to one category: academic input into public policy formulation, or research on an issue in partnership with a community agency or peak body eg input to Supported Accommodation Assistance Review; Council on the Ageing: advice on policy and research strategies.

## **Institutional domain**

No activity in part 1 of the faculty annual reports described internal university organisational systems and processes to support community engagement efforts. These were outlined in other faculty documents.

## **Knowledge domain**

This domain, for the purposes of this mapping process, focuses on critical reflection about or evaluation of university–community engagement activities. Although there were no activities that could be obviously assigned to this domain, this is not to say that review and critical reflection is not part of academic practice; activities of this nature are not usually included in faculty annual reports.

## **Mapping as a strategy for measuring community engagement: conclusions**

The mapping exercise described above reveals a spread of community engagement activities conducted by Faculty of Social Science staff, and demonstrates that there are many community engagement contact points and degrees of integration in the fields of teaching and research.

Across the six domains there is a clear preponderance of activity in the community domain, and the nature of this activity, by and large, reflects the dominant academic model of expert and advisor. In some cases university staff directly organise a community program or service; in others, they provide research assistance on a voluntary basis. Most often, community engagement is a one off contact (eg a talk) or is part of an ongoing relationship (ie participation on a third sector organisation board of management). An important distinction in the style of engagement activity: between the academic as an ‘insider active participant’, and as an ‘outsider advisor or consultant’ to the community group or organisation.

In the section of the annual reports used in this analysis, there are no clear examples of formal organisational processes, systems to support community engagement, or activities that suggest any reflection on or evaluation of these activities.

In addition, there are inadequacies of using only the first part of the annual reports as a data source, notably, the information used here is only reports on professional and community services activities. Perhaps an even more significant gap in the analysis: the data is sourced from the academic community and does not include perspectives of community partners or actors. A fuller account of community engagement requires examination of other organisational policy documents and plans, and communicative processes with community partners.

## **Typologies and indicators for measurement**

When a mission-driven community capacity building model underpins institutional practice of community engagement, there is an implicit obligation to

- identify ‘communities’;
- profile their significant characteristics;
- examine potential impacts of engagement with them.

Reporting the effectiveness of engagement may require an explicit statement of declared communities of interest, including a snapshot profile of each community partner and a rationale for choosing to engage—or electing not to engage—with each one. As either party to a relationship can initiate engagement, this may also serve as a measure of an institution’s

responsiveness to community overtures and initiative in reaching out. In this final section of the paper, we suggest typologies to more effectively ground measurement in purpose and practice.

University–community engagement might best be viewed as a continuum: loosely coupled and episodic in its weakest form, and intensely integrated and relational at its strongest form. It is analogous to the hierarchy of consultation in many respects. Rather than an absolute either/or distinction (ie engaged or not engaged) such relationships may be said to exhibit varying degrees of breadth and depth. At a whole-of-institution level, Garlick (in Goedegebuure & van der Lee, 2006: page) has provided eight criteria for an engaged university, presenting a possible evaluation framework:

- engagement is reflected in the institution's mission;
- community is involved in the campus in 'continuous, purposeful and authentic ways';
- curriculum contains a variety of ways for students to engage in the community;
- institution has a policy environment that supports engagement;
- individuals throughout the university play leadership roles in engagements;
- approach to scholarship includes interdisciplinary work;
- engagement work is publicised and celebrated;
- engagement activities are held to a high standard of excellence and are rigorously evaluated.

Engagement partnerships may be unequal by design or practice, and the alignment between each partner's motivations and objectives may not be perfectly congruent. Typologies of community engagement have been presented by scholars as indicator sets. Goedegebuure and van der Lee's review of these sets (2006) found the Russell Group Indicators (RGIs) applied to third-stream activities the most efficacious. The more useful RGIs related to activities within the three main areas of a university's mission: research (contract research, collaboration in academic research, staff flow); teaching (student placements, learning activities, curriculum alignment); and communication (social networking, non-academic dissemination).

The Upbeat project (University Partnership to Benchmark Enterprise and Associated Technologies; United Kingdom) adopted a knowledge transfer or outreach approach to developing indicators—though still insisting on assessing mutual benefit and the measurement of social outcomes. The Upbeat model identified four types of capital: business, social, individual performance, academic. It is disappointing that the most recent formal mention of university–community engagement in Australia (Commonwealth of Australia 2008: 57) refers to 'knowledge transfer and community engagement' as if these were discrete activities, and avoids the more reciprocal term 'knowledge exchange'.

Both approaches portray the modern university bestowing its largesse on a community. Using a more equitable partnership concept may better reflect the compacts that emerge from dialogue and collaboration between university and community partners. However, as community links may range from incidental (liaison) to intentional (planning, collaborating), and from loose (occasional) to complex (contextually rich), clearly not all engagement develops into partnership.

Can areas of practice suffice as a typology to use for measuring community engagement? As universities become entangled in relationships growing out of attempts to be connected and responsive to communities, in some cases strategy may follow action—rather than the reverse. A solution may be to identify community engagement according to a hierarchy of relationships or as a description of activity types; both exhibit varying degrees of involvement and can be ranked (eg on a 1–5 scale).

Attempts to map university–community engagement suggest the dimensions might include:

- **breadth** (multiple programs across disciplines, staff and students) and **depth** (penetration into multiple stakeholders within an organisation);
- **complexity** of project, **frequency** of contact, or **intensity** of relationship;
- **partnership status** (codified relationship in agreement or MOU): prescribed mutual benefits? project activity involving transfer (to/for) or exchange (with)?
- **rationale for engagement**: developed incidentally or by design (intent)?

- **results of engagement:** public good or enterprise specific? types of social capital developed? Sustained impacts?
- **impact potential/proactive capability**—as suggested by the profile of each partner
- **participants:** staff? students? managers? clients? others?

Each of the areas of practice presented in tables 1 and 3 could be ranked on a 1–5 scale for any/all of these dimensions. The total would express something of the richness of the unit or institution's community engagement. This would be in addition to partner evaluations of the benefits of engagement activities and/or perceived benefits of the partnership. It should also highlight unintended consequences of the engagement. Table 4 below combines the Faculty of Social Sciences mapping exercise, the integrated learning component of university practice, and the measurement dimensions outlined above for one domain.

#### **community domain strategy**

5				
4				
3				
2				
1				
<b>rank 1–5</b>	<b>Complexity</b>	<b>Breadth</b>	<b>Proactive capability</b>	<b>Impact</b>

**Table 4: Towards a measurement tool paradigm for university–community engagement**

Mapping community capacity building attributed to each party through their collective partnerships will help parties to the collaborations to see how well they have succeeded in their engagement objectives, and provide a guide to strategies for improving future collaborations.

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## **Engaging Employers with the University: Skills Needed and Changes Expected By Industries**

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### **Abstract**

*The University of Western Sydney is strongly committed to working in partnership with the employers of its graduates in order to ensure that the academic programs offered and the quality of graduates produced meet the changing needs of industries and professions. Such engagement helps the University involve students in real-world learning experiences and build on competitive advantage through developing sustainable links with industries, and thus attracting students with relevant programs and an expected increase in employability.*

*This paper examines quantitative and qualitative data gathered through the 2007 UWS Employers Survey from 146 professional groups with whom the University has worked over the past five years. The analysis of the data identifies capabilities and skills employers see as most important in recent university graduates, the extent to which graduates meet employers' demands and the key trends in various professions which university courses must take into account to remain relevant.*

*The conference presentation will also include a demonstration of the UWS interactive Online Community Engagement Portfolio which allows both students and employers to search UWS engagement activities through a range of categories in order to explore potential partnerships.*

**Keywords:** graduates, capabilities, employers, expectations.

### **Introduction**

A review of recent literature suggests rapidly growing interest amongst Australian universities in becoming engaged with employers and industry bodies (e.g., Etzkowitz 2002; Garlick 2000; Gunasekara, 2004; Holland 2001). This engagement is very important for universities in order to review and address graduate skills needed in professional practice (Australian Chamber of Commerce and Industry [ACCI], 2007; Australian Council for Educational Research [ACER], 2002; Australian Industry Group (2006); Commonwealth Department of Education Science and Training [DEST], 2007; Graduate Careers Australia [GCA], 2007); involve staff and students in real-world learning experiences (Ostrander, 2004; Ralston, 2006); and better manage competition through attracting students with the relevance of programs and an expected increase in employability (Nugent, Delaforce, & Harding, 2006; Ralston, 2006).

One of the key ideas of the current labor government in Australia is releasing latent value in national human capital by enhancing business – school connections, specifically by “creating a coordinated partnership program between Australia’s top 100 companies and schools. This program could also include universities and vocational education and training institutions” (Australia 2020 Summit, 2008, p. 8).

The latest nationwide studies of capabilities and skills employers see as most important in university graduates (DEST, 2007; GCA, 2007) show that recruiters are generally satisfied with job-specific skills of graduates, but place greater importance on their interpersonal skills, industry-related experience and ability to promptly apply the knowledge gained at university in the real work settings.

Though informative, the above findings may differ from university graduate capabilities and skills relevant to specific regional industry needs. This assumption appears valid in view of increasing pressure from government, businesses and communities for universities to align their core functions with regional economic and social innovations, particularly in supporting the renewal of regional skills bases (Barraket 2001; Gunasekara, 2004).

The University of Western Sydney (UWS) is known to perform a developmental role in workforce formation of the Greater Western Sydney (GWS) region, characterised by a high level of cultural diversity and much lower participation rates in higher education than other parts of Sydney. Some 52% of UWS students are first in their family at university but have comparable employment rates to other students. This role is evident in UWS contribution to post secondary participation of GWS residents (UWS AUQA Performance Portfolio, 2006) and in the adaptation of a number of education programs to align with GWS needs, for example, in health and education (Gunasekara, 2004), and in information technologies to support innovation in small to medium enterprises (New South Wales Department of State and Regional Development [NSW DSRD], 2005).

Therefore, the aims of this paper were to identify (a) what capabilities and skills GWS employers perceive as most important in university graduates; (b) how effectively, in their opinion, recent graduates meet the demands of local industries; and (c) what major challenges facing industries universities should address to keep their curriculums relevant. We believe that the paper's findings can be extrapolated to and be valuable for other post secondary institutions, particularly those located in the metropolitan New South Wales.

## METHOD

### Participants and Procedure

The participant pool comprised 146 representatives of professional groups and employers catered for by UWS. The potential participant details were collected from various data sources, such as the UWS 2006 Australian Graduate Survey data, the UWS Careers and Employment database, and employer contacts from all UWS schools.

Most of the respondent organisations had formal graduate recruitment programs and 63% of respondents reported between 1-20 UWS graduates employed by their organisations over the last five years. The research sample was representative of the University's profile in terms of the fields of study offered. The most common professional areas covered were: Accounting and Finance, Engineering, Management and Commerce, Computing and Information Technology, Information Systems, Human Resources Management, Civil Engineering, Teacher Education, Law, Economics, Nursing, and Journalism. Respondents were from a wide range of organisations including: private companies (32.2%), state government agencies (26.0%), public companies (12.3%), local government bodies (9.6%), not-for-profit organisations (8.9%), federal government agencies (5.5%) and other groups (5.5%). Initially, the contact person for the recruitment in each organisation was telephoned to extend a verbal invitation to participate. Once agreed, an email invitation with the link to the online survey was sent.

### Instrument

The Employer Survey instrument was developed at the University of Technology, Sydney (Scott, 2004). Survey participants rate the importance of a set of 44 items, which identify a range of recent graduate abilities and skills found in earlier studies of graduates to be associated with their successful performance in a wide range of professions (Vescio, 2005). Then they rate the extent to which they believe recent graduates demonstrate these abilities and skills. They use a five-point Likert-style scale (1 – low to 5 – high). The items cover such areas as:

- personal abilities of graduates;
- interpersonal abilities;
- intellectual abilities; and
- job-specific and generic skills and knowledge.
- Respondents are also asked to provide comments on:
- their ratings of the above items;
- any important abilities which might not be covered by the survey; and
- changes expected in their industries during the coming years which universities should address in order to keep their curriculums relevant and up-to-date.

## **RESULTS**

### **Graduate Abilities and Skills**

Varying levels of importance were placed by employers on different graduate abilities and skills. It was found that mean differences between them of .40 or more were likely to be statistically significant at  $p < .05$ . Thus, the 10 survey items with the highest mean scores on importance appeared significantly different from the 10 items with the lowest scores, while there was less differentiation between the other 24 items. The 10 most important items are listed below in rank order. The capability scale each item belongs to is indicated in brackets: Being able to communicate effectively (generic skills and knowledge);

- Being flexible and adaptable (personal);
- A commitment to ethical practice (personal);
- Being willing to face and learn from errors and listen openly to feedback (personal);
- Being able to organise work and manage time effectively (generic skills and knowledge);
- Wanting to produce as good a job as possible (personal);
- The ability to empathise with and work productively with people from a wide range of backgrounds (interpersonal);
- A willingness to listen to different points of view before coming to a decision (interpersonal);
- Being able to develop and contribute positively to team-based projects (interpersonal);
- Being able to set and justify priorities (intellectual).

Of these 10 high importance capabilities, six were ranked relatively low on the extent to which, in employers' view, recent graduates possess them (difference between mean ratings on importance and extent  $> 1.0$ ). These items were:

- Being able to communicate effectively;
- Being able to organise work and manage time effectively;
- Being willing to face and learn from errors and listen openly to feedback;
- Being able to set and justify priorities;
- Being flexible and adaptable; and
- A willingness to listen to different points of view before coming to a decision.

Table 1 in the Appendix present the quantitative results of the survey sorted by importance.

### **Key Trends and Changes Expected by Employers**

The survey invited employers to identify the key trends and changes they see as unfolding in their professional areas over the next five years, and the future graduate capabilities these imply. The most recurring themes in participant responses were:

- Anticipated shortage of skills across many industries such as engineering, accounting, IT, transport and health, particularly in regional locations; and
- Increasing need for university courses to have experiential learning components to better prepare graduates for employment.

The graduate capabilities that will be most needed in this unfolding context according to these employers were:

- Communication, interpersonal and networking skills;
- Management skills, including case and personnel management;
- Analytical skills; and
- Strong industry knowledge.

Table 2 in the Appendix provides a summary of participant comments by each profession.

## **DISCUSSION**

### **Summary of Findings**

It is evident in both the quantitative and qualitative results that the graduate abilities and skills

emphasised by the survey participants can be categorised into three groups. They are: a) interpersonal, communication and networking skills, including customer service skills, flexibility, adaptability, empathy for co-workers from diverse backgrounds, compliance with high ethical standards, openness to dialogue and team-work skills; b) organisational and management skills; and c) industry knowledge and experience. All these outcomes align well with the results of the recent nationwide studies mentioned above (DEST, 2007; GCA, 2007). The results also show that a number of highly important graduate capabilities are ranked relatively low on the extent to which graduates possess them, and that employers are concerned about the current and anticipated shortage of skills across many professions.

### **UWS Actions to Address Major Issues Identified**

In order to address the shortage of skills reported and anticipated by many GWS industry representatives the University continues to align its education programs with regional needs. For example, the UWS School of Medicine was set up in 2007 to address the critical shortage of medical practitioners in Sydney's west. The first intake was 100 students two-thirds of whom live in GWS. Other recent career trends are towards science, education, welfare, and the crime-solving professions helping to address shortage of skilled workers in these fields. The child care profession is set to receive a much-needed boost, with UWS making 344 offers to prospective early childhood students – an increase of over 100 offers from last year. Demand for psychology and social work remains strong, and the University is making increased offers in both the Bachelor of Sport Studies and Bachelor of Health Science (Personal Development, Health and Physical Education) programs this year. The University is also making hundreds of offers across its science and technology programs, such as forensic science, nanotechnology, computing and traditional sciences.

Regarding the graduate skills employers are concerned about, such as interpersonal and communication skills, organisational and management skills, as well as industry knowledge, the relevant literature provides evidence that experiential learning can be the real and lasting way to meet the employer demands for job ready graduates (Boud & Solomon, 2001; Hare, 2008; Kolb & Kolb, 2005; Kurtz, Silverman, & Draper, 2005; Santella & Emery, 2007; Vickers, Harris, & McCarthy, 2004).

For example, Santella and Emery (2007) report that out-of-classroom learning adds desirable business qualities and skills, such as the ability to work well in teams (interpersonal skills), motivation, integrity, and communication and organisation skills. As stated in the UWS Making the Difference Strategy for 2007-2009, one of the main University strategic imperatives is to involve community and industry in academic programs. Accordingly, UWS is gradually increasing the availability of experiential learning offerings for students in all programs and forms, such as:

- Internships;
- Practical placements;
- Academic Service Learning;
- Clinical placements;
- Co-op education;
- Work integrated learning;
- International co-op placements and others.

An analyses undertaken by the UWS Office of Planning and Quality in 2006 estimated that roughly 29% of the units taught at the University involved students in some form of experiential learning. Currently, the University's goal is to create opportunities and encourage 100% of students to have at least one substantial experiential learning component spread across their course. One important step toward achieving this goal is the development of the UWS interactive Online Community Engagement Portfolio which allows both UWS students and employers to search UWS engagement activities through a range of categories in order to explore potential partnerships.

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## Appendix

**Table 1: Graduate Capabilities Ranked by Employers on Importance and the Extent to which Graduates Possess Them (sorted by importance)**

Imp M	Category	Rank	Graduate Capabilities	Ext M	Rank
4.68	Skills & K	1	Being able to communicate effectively	3.3 8	10
4.64	Personality	2	Being flexible and adaptable	3.5 2	5
4.60	Personality	3	A commitment to ethical practice	3.7 5	1
4.58	Personality	4	Being willing to face and learn from errors and listen openly to feedback	3.3 8	9
4.54	Skills & K	5	Being able to organise work and manage time effectively	3.2 8	13
4.54	Personality	6	Wanting to produce as good a job as possible	3.6 3	3
4.46	Interpers	7	The ability to empathise with and work productively with people from a wide range of backgrounds	3.4 8	7
4.40	Interpers	8	A willingness to listen to different points of view before coming to a decision	3.3 7	11
4.40	Interpers	9	Being able to develop and contribute positively to team-based projects	3.5 0	6
4.31	Intellect	10	Being able to set and justify priorities	3.1 4	23
4.29	Interpers	11	Being able to develop and use networks of colleagues to help solve key workplace problems	3.2 8	15
4.27	Personality	12	Being able to remain calm under pressure or when things go wrong	3.0 1	27
4.27	Personality	13	Being willing to take responsibility for projects, including how they turn out	3.3 2	12
4.24	Personality	14	A willingness to persevere when things are not working out as anticipated	3.2 3	18
4.23	Personality	15	A commitment to sustainable practice	3.4 2	8
4.19	Personality	16	Understanding personal strengths & limitations	3.1 6	21
4.18	Personality	17	Having a sense of humour and being able to keep work in perspective	3.5 4	4
4.16	Personality	18	A willingness to pitch in and undertake menial tasks when needed	3.2 8	14
4.12	Interpers	19	Understanding how the different groups that make up the organisation operate and how much influence they have in different situations	2.9 6	33
4.11	Skills & K	20	Being able to use IT effectively to communicate & perform key work functions	3.6 6	2
4.10	Intellect	21	Being able to readjust a plan of action in the light of what happens as it is implemented	3.0 5	24
4.09	Personality	22	Having the ability to defer judgment and not to jump in too quickly to resolve a problem	3.0 0	28
4.07	Intellect	23	Being an independent thinker	3.1 7	20
4.06	Intellect	24	Being able to identify from a mass of detail the core issue in any situation	2.9 2	35
4.05	Interpers	25	Being able to work with senior staff without being intimidated	3.2 7	16
4.03	Skills & K	26	Being able to manage ongoing professional learning and development	3.2 3	17
3.99	Intellect	27	An ability to trace out and assess the consequences of alternative courses of action and, from this, pick the one most suitable	2.9 8	31
3.99	Intellect	28	Being able to see how apparently unconnected activities are linked and make up an overall picture	2.9 2	37
3.99	Intellect	29	Being creative and enterprising	3.2 1	19

3.96	Interpers	30	Being able to give constructive feedback to work colleagues and others without engaging in personal blame	2.9 7	32
3.96	Intellect	31	Being able to diagnose what is really causing a problem and then to test this out in action	2.9 5	34
3.92	Intellect	32	The ability to use previous experience to figure out what is going on when a current situation takes an unexpected turn	2.9 2	36
3.90	Intellect	33	Knowing that there is never a fixed set of steps for solving workplace problems or carrying out a project	3.1 5	22
3.88	Skills & K	34	Having a high level of current technical expertise relevant to current work requirements	3.0 4	25
3.87	Intellect	35	An ability to recognise patterns in a complex situation	3.0 2	26
3.85	Skills & K	36	Understanding how organisations operate	2.8 3	40
3.80	Skills & K	37	Understanding the role of risk management and litigation in current professional work	2.7 2	44
3.74	Skills & K	38	An ability to help others learn in the workplace	2.9 8	30
3.73	Skills & K	39	Knowing how to manage projects into successful implementation	2.8 9	38
3.69	Interpers	40	Being able to motivate others to achieve great things	2.8 0	41
3.66	Personai	41	Having an ability to make a hard decision	2.8 7	39
3.61	Personai	42	Being confident to take calculated risks and take on new projects	2.9 9	29
3.46	Skills & K	43	An ability to chair and participate constructively in meetings	2.7 7	43
3.22	Interpers	44	Having an international perspective	2.7 9	42

**Table 2: Trends and Changes Expected by Employers in Their Industries and Consequent Graduate Skills Needed**  
( ) represents number of respondents

Profession	Trends and Changes in the Industry	Most important attributes, abilities, skills and knowledge needed by graduates
Accounting Finance (35)	Changes in taxation law and superannuation, technology changes, the graduate market is becoming increasingly competitive. Graduates have poor communication, team building and networking skills. We have to struggle in coming years to fill jobs and to train ourselves, graduate shortage in the area.	Good interpersonal skills, communications skills, team player and customer service focused. Able to apply their knowledge in a practical situation to reduce on the job training. An increased emphasis on the practical side of accounting would be very beneficial for the employers. Business knowledge, soft skills and negotiation skills. Legislation and standards realise the importance of ongoing professional development, business planning, business ethics and strategic view of the organisation. Corporate governance and risk management.
Adult Education (3)	Use of technology in learning. Large numbers of teachers are near retirement. Challenge to recruit and retain good quality teachers.	Flexibility, dedication, cultural diversity, social services training and business management training.
Agriculture Horticulture (2)	Attracting high quality graduates in regional areas, Draught and climate changes had a significant impact on the Agriculture industry	Working together with the community, communication skills, knowledge of issues around climate change and its impact on organisations
Applied Biological Science (5)		Research skills, medical informatics/statistics, personnel management skills, maths data analysis, communication skills, analytical and problem solving skills and interpersonal skill.
Banking (5)	Lack of preparation based on workplace needs, need for graduates with practical exposure. Graduate lack interest in the industry, graduate retention.	Teamwork, communication, customer focus, drive for innovation, analytical skills, entrepreneurial skills.

Profession	Trends and Changes in the Industry	Most important attributes, abilities, skills and knowledge needed by graduates
Engineering (43)	Rural/regional employers are struggling to recruit and retain qualified engineers, shortage of qualified engineers, industry demand for certain discipline: geology, geotechnical engineering, metallurgy and mining engineering. Environmental issues-greener environment, forced to recruit graduates from offshore.	Ability to manage staff, communication, industry awareness, willingness to be flexible with working location, understanding of the companies history and vision, leadership skills, environmental sustainability, risk analysis, health & safety, recycling, community involvement and quality assurance, team work, adapt to change, writing reports, presentation skills, project managing and costing.
Communication Design (11)	High specialisation required in certain areas, shortage of excellent media professionals.	Communication skills, flexibility to handle multiple requirements, international development in communications, public relations, strategic thinking, and web based technical skills.
Construction (6)	Shortage of constructions engineers, recruitment and retention of engineers in regional areas, move towards design and construct green buildings.	Written and oral communication skills, leadership skills, manage projects, supervising staff, working as a team, graduates with knowledge and practical skills, risk mitigation, commercial mind, feasibility analysis, and understanding of procurement models.
Early Childhood (10)	Lack of graduate preparation based on workplace needs, very short practicum component, university course structure and decisions are made for university purpose and not what childcare industry needs, graduates less prepared for the industry.	Graduate understanding of family demands, behavioural management, use of technology as a tool for learning, parent partnership and linking with the community.
Economics (13)	Shortage of talent economic graduates.	Communication and interpersonal skills, teamwork, and analytical skills.
Environmental Science (7)	Shortage of graduates in regional areas. Course should include aspects like: natural resource management legislation, and key standards.	People management, project management, key focus on how to measure & conduct environmental risk analysis how to conduct and manage environmental rehabilitation projects, development of performance indicators, and how to evaluate the success of environmental outcomes.
Fine Arts (6)	Diversity of clients, courses should include practicum component.	Presentation skills, up to date with latest scientific knowledge, contemporary theories in learning, technology, literacy, ability to engage student.
Fire Technology (2)	Technological advances to deal with emergencies such as fire and planning for such emergencies.	Practical skills, health and safety, community support and engagement
Forensic Science (1)		Practical skills associated with forensic filed investigation
Health Service Management (2)	Aging workforce, lack of professional accountability, workforce under high demand and pressure.	Interpersonal skill, communication and cultural diversity.
Human Resources Management (3)	Lack of professional commitment by graduates.	Ongoing professional development, flexible, communication skills, patience and perseverance to work in a challenging public sector organisation and creativity in suggesting improvement's for change.
Industrial Design (2)	Lot of focus on outsourcing activities.	Manufacturability of the product designed, sales and marketing skills, time management, product user friendliness.

Profession	Trends and Changes in the Industry	Most important attributes, abilities, skills and knowledge needed by graduates
Information Systems (20)	Keeping up to date with technology advances, outsourcing IT industry offshore, trends and its implications to IT industry. Graduates with more work experience through practicums. Challengers of growing a mature organisation in a small market, graduates thorough knowledge of the chosen field. Need graduates who specialise in certain areas like business analyst.	Interpersonal skills, communication skills, team player, customer focused, relationship building skills, on going learning, self starters, manage expectations, understanding of companies values and goals.
International Business International Studies (9)	Competition, use of e-business, policy changes in trade and commerce.	Communications skills in international arena, networking and relationship building, understanding business ethics, cultural diversity, ability to deal sensitively with clients, flexible to change, research skills, globalisation and policy changes offshore and its impact to the organisation.
Journalism (11)	Course need to focus on practicum components including writing news stories, interviews so that graduates are well prepared for the workforce. Graduates who are multi skilled.	Good writing ability, interview skills, confidence, and passions. Website design and online news, flexibility, creativity, accuracy and professionalism. The ability to write record and edit words, sounds and pictures/video.
Language and Literacy (4)	Graduates with emerging language such as; Dinka, Swahili, Burmese, Karen, Assyrian	Communication skills, ongoing professional development, customer service. Flexible and being able to adjust to change. People skills e.g. dealing with aggressive clients, being able to handle stress and work pressure.
Law (13)	Massive over supply of graduates, legal education needs to take note of the increasing importance of legislation in legal practice and public service. More emphasis on legislative interpretation.	Communications skills, ability to deal sensitively with clients, time management and the operation of private enterprise and awareness of ethical issues.
Mathematics (6)	Need for graduates to have data analysis skills.	Teamwork skills, high achievement drive, genuine interest in the industry in which our company operates, sense of entrepreneurship, above average analytical skills, interpersonal skills.
Management Commerce (26)	Understanding of change and restructures in organisations. Organisations are going to struggle to get good managers and have to train them internally. Need graduate with strategic view of the global economy and at the firm/organisation level, whole of organisation thinking.	Good interpersonal skills, communication skills, customer relationship management, team player customer service focused, use of technology, business planning, leadership skills and project management.
Medical Science (1)		Medical information and statistics, management skills
Nursing and Midwifery (15)	Area of significant skill shortage. Greater growth in population in Western Sydney areas, more births; older midwives retiring and not enough student midwives currently being educated to replace and grow to meet population demands. Increasing public awareness of patient safety and legal process. Need for midwives and nurses to gain 'credit points' to maintain registration. National registration commencing in 2008 - need for national curriculum base to enable participants to transfer from different States/universities more readily. Paediatrics focus in Nursing programs.	Ability to assess and manage patients related to the day to day needs of the patient. Ability to follow policy to communicate and consult with experience staff members with reasonable English. Ability to transfer theoretical concepts to the clinical settings, maintaining their own competency, accountability, while providing best practice care. The ability to work in different settings with health professionals from different professions. The ability to move into and out of community to hospital to provide care. Ability to reflect on practice; responsible for own professional development. Ability or knowledge of new technology (eg. electronic medical record, on line x-ray reporting) & impact on the clinical & work environment evidenced based clinical care risk management regarding patient safety.

Profession	Trends and Changes in the Industry	Most important attributes, abilities, skills and knowledge needed by graduates
Music (1)		Keeping up to date in contemporary issues surrounding the community needs. Work within a multi-disciplinary team and having knowledge of how other modalities work.
Occupational Health & Safety (4)	Shortage of OHS professionals in regional areas.	Understanding of OHS laws, environmental and quality issues
Occupational Therapy (3)	Strong research to practice focus. Increasing complexity of need in client groups in child & family work. Worker with the constraints of government funding and bureaucracy is becoming more challenging. Trend towards multiple interventions requires greater interdisciplinary / trans disciplinary teamwork.	Ability to cope with change and complexity. Ability to consult and access a wide range of knowledge in human services disciplines. Commitment to life long learning and professional development. Ability to think creatively and identify creative therapies and interventions that build on family/individual strengths and potential. Commitment to finding pathways through very complex family structures and dysfunction that extends knowledge of how to work with vulnerable children and families.
Property Economics (4)		Teamwork, communication, customer focus, drive for innovation.
Psychology Counseling (10)	Graduates need to be able to demonstrate that they are flexible to change, to be committed to the organisation. Introduction of Medicare rebate for psychologists increasing distinction between different specialist areas of psychology.	Communication skills, ability to deal sensitively with clients. Ability to link theory with practice. Flexibility, dedication, social services training and business management training. Ability to develop networks and relationships with other health professionals, ability to undertake ongoing professional development and seek supervision and mentoring from peers.
Social Science (9)	Social work in health is facing competition from clinical nurse consultants who are moving into the counseling/support and psychosocial assessment areas traditionally done by social work. Social work graduates need to be able to articulate their skills in these areas and to participate in research to confirm the benefits. Welfare to work policies of the Australian Government in a tight labour market, delivery & administration of the Australian access card fraud and compliance control.	Psychosocial assessments, advocacy, group work and counseling skills. A good understanding of the social work role within multidisciplinary teams. Highly developed technical skills -computer technology, good decision making and customer service.
Sports Exercise Management (2)		Marketing knowledge of models and methods, time management, financial budgeting experience, public speaking skills and research skills.
Teacher Education (14)	Aging workforce, diverse student groups, contemporary theories of learning; matching students' expertise in technology. Catering for an increasingly diverse range of student needs i.e. behaviour, learning difficulties. The way children learn to read and the needs of ESL students are areas where new research is abundant.	Practical experience in a variety of school settings and situations. Problem Based Learning, Presentation skills with the latest scientific knowledge. Understand what is happening in schools. Technological literacy, flexibility, ability to engage students and meeting needs of individual students. Psychology skills and child development, classroom management, mental health, learning difficulties and behavioural issues and lesson planning.
Tourism Hospitality (3)	Retention of excellent and talented employees, retention of young graduates in hospitality/ tourism area, graduates who are well equipped with the client demand. Understanding of client diversity and language background.	Community skills, customer relationship management, client diversity

Profession	Trends and Changes in the Industry	Most important attributes, abilities, skills and knowledge needed by graduates
Welfare (5)	<p>Increase in working with clients with complex needs in particular dual diagnosis thus increased training/information on mental health and best practice case management. Wages and conditions in our industry (social welfare) and funding.</p> <p>Students need to be very aware of these issues and require further information wages and working conditions both from an industry and national base. Need to increase numbers for social work as we think there will be an increase in demand for social workers in our society, especially those with second languages, and interest in welfare, working with disabilities and families and youth.</p>	<p>Exceptional case management skills. Exceptional community development skills. Knowledge of political systems and how to access. Advocacy skills both individual and systems.</p>

## **Defining and Delivering Mutual Benefit: Lessons from the Indigenous Community Engagement Project at Charles Darwin University**

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**Key words:** – Community Engagement, Northern Territory Indigenous, Indigenous knowledge systems, cross cultural work

### **Abstract**

Charles Darwin University is committed to Community Engagement and see it as core business (Charles Darwin University, 2006a). Good Engagement with Indigenous people is central to the achievement of CDU's vision which is " to be thriving university that dares to be different and takes advantage of its unique geography and demography to benefit the whole community though education, research and Community Engagement" (Charles Darwin University, 2006c). However, procedures and strategies at CDU for developing partnerships with Indigenous communities in the NT have not yet been developed.

The three goals of CDU are to be "recognised internationally as a centre of excellence in areas of: tropical knowledge, desert knowledge and Indigenous and cross cultural knowledge" (Charles Darwin University, 2006b). One significant hurdle CDU faces in achieving these goals is the ongoing marginalisation of Indigenous perspectives and voices (Ponsonnet, 2007; Sunderland, Muirhead, Parsons, & Holtom, 2004), which grows out of the fact that Indigenous ontologies and epistemologies are poorly understood, and Indigenous ways of knowing are widely regarded as deficient within contemporary Australian society (Sunderland et al., 2004; Verran, 2002). Community Engagement is seen at CDU as one vehicle to assist in building awareness of the value of Indigenous knowledge, and as a way of developing mechanisms whereby the tensions between Indigenous and western ways of knowing can be discussed, and strategies to address this tension developed. One strategy to develop CDU's knowledge of Community Engagement as it relates to Indigenous people is the Indigenous Community Engagement (ICE) project.

Charles Darwin University was formed in 2003 as a result of a merger between the Northern Territory University and Centralian College (Charles Darwin University, 2008). Charles Darwin University is the only university in the Northern Territory with campuses in Darwin, Alice Springs, Nhulunbuy, Katherine and Tennant Creek. In addition, staff deliver to many of the 641 discrete communities within the NT, most of which are Indigenous communities (Human Rights and Equal Opportunity Commission, 2007), meaning that CDU's 'region' is roughly one sixth of the Australian continent.

Indigenous people comprise over a quarter of the NT population (the highest proportion of any jurisdiction in the country by a significant margin) and 81% of Indigenous Territorians live in the regional and remote areas of the NT (Australian Bureau of Statistics, 2005; Barnes, Condon, Cunningham, & Smith, 2004; Productivity Commission, 2005). Many Indigenous groups in the NT continue to live on their ancestral lands, speak Indigenous languages and continue to live in ways informed by traditional rules and understandings (Bird-Rose, 1992; Christie, 1992; Swain, 1993). They are also some of the most disadvantaged groups in Australian society, with high unemployment, poor health, and high rates of incarceration (Aboriginal and Torres Strait Islander Social Justice Commissioner, 2003; McMullen, 2005).

The Indigenous Community Engagement project arose as a result of a conversation I had with a colleague after a trip to Walungurru (Kintore) in the Western Desert to teach units from the Conservation and Land Management (CLM) National Training Package. From the perspective of a CDU Land Management Lecturer the visit was very difficult. While the students had a vast knowledge of their country, the requirements of the training package were unable to be achieved in any real sense because their understandings of the world were completely different to those embedded in the curriculum materials. On my return I talked to a colleague about the dilemma this appeared to present: which was either to not undertake further training as it would only lead to failure on the part of the students; or deliver training

unrelated to the curriculum and hoping that no-one would question me. Obviously neither of these two approaches was a solution to the more fundamental problem of the knowledge systems being unable to be effectively reconciled within a training situation. My colleague responded saying that Community Engagement may be useful in this situation as a way to work through the issues presented by these divergent knowledge systems having no effective meeting points. I began researching Community Engagement, developing a literature review and highlighting that, due to the lack of relevant literature examining situated Indigenous Community Engagement in practice, there was an opportunity for CDU to contribute to the engagement literature through documenting examples of Community Engagement already embedded in CDU projects. . The ICE project was designed to document our existing practices and to provide opportunities for staff and Indigenous people who had worked with staff from outside the university to contribute their engagement stories.

The ICE Project was funded by CDU to look specifically at the history of successful CDU engagement with Indigenous groups to identify what characterises good Indigenous Community Engagement, what enables it within the university and what makes engagement difficult. It also sought to make recommendations to improve Indigenous Community Engagement practice within CDU. The following section will detail the methodology and findings of the Project, highlighting those factors that research respondents identified as key elements of Indigenous Community Engagement.

The Project methodology consisted of three key aspects. The first aspect was a questionnaire, asking staff to contribute their understandings of Community Engagement, and what it might require to be effectively enacted at the university. This was sent via email to 140 teaching and research staff that through their work had some contact with Indigenous people or groups. The second aspect was inviting these staff to complete a case study on Indigenous Community Engagement, with funding available to pay Indigenous partners to collaborate with staff to tell their stories of their engagement experiences. The third aspect was a strategy to collaboratively identify key findings as the project progressed, creating opportunities for staff to be involved in the project in a variety of ways. Staff were followed up over the ensuing 6 months and overall 45 people participated in the project in some way.

The project findings were drawn from three sources: responses to the questionnaires; the 10 case studies prepared for the project; and, staff participation in collaborative feedback meetings. In order to draw out the findings, the 10 case studies, which demonstrate the range of engagement practices currently employed at CDU, will be outlined. The findings will then be outlined, including: what engagement means to staff and Indigenous partners of the university; what good engagement depends upon; what enables and inhibits engagement with Indigenous people at CDU; and, what it means for engagement policy within the university and in terms of Community Engagement with Indigenous people more widely.

The case studies prepared for the project cover a wide range of CDU projects and activities. Around half of the case studies are based on engagement practices that surround individual projects, examples include: Greg Williams' "Djelk Rangers and Charles Darwin University: What can we learn about Indigenous Community Engagement?"; Stuart Anderson's "Restoring Harmony: A Case Study of Indigenous Community Engagement at Wugularr"; Danielle Campbell's "Community Engagement in a Health project in Gapuwiyak; Bryce King's "Technology for Community Engagement at Djurranalpi"; and John Greatorex and Lorna Marukami-Gold's "Community Engagement: on whose terms". These examples document the situated and unique engagement practices that grew up in particular places, showing that engagement with Indigenous people is an emergent practice necessarily growing from the particular situations that people find themselves in. They also suggest that good engagement is responsive to changing demands. Another set of case studies look at more general lessons learned about Community Engagement drawing from a range of projects and situations. They include Julian Gorman and Stephen Garnett's "Research, Collaboration and Community Development- A holistic approach"; Matthew Campbell's "Is it the Community, or is it something else (that we engage with)" and the case study by Ruth Wallace, Mark Manado, Cathy Curry and Richard Agar entitled "Working from Our Strengths, Indigenous Community Engagement through Enterprise Development and Training". These case studies draw out broader factors that underpin good engagement, in particular demonstrating that community

input and ownership, and an understanding of how communities are constituted, were crucial to effective engagement. The last set of case studies look specifically at how Indigenous knowledge can be accommodated within projects undertaken by the university and include: Michael Christie and Helen Verran's "Engaging with Australian Indigenous Knowledge Systems"; the case study "Respect" by Waymamba Gaykamangu, Kathy Gethadjaka, Dhanggal Gurruwiwi, Elaine Lawurra, Joanne Garngulkpuy, Terry Dunbar, Yingiya Guyula, Frank Djirrimbilpilwuy, Gwen Rami, Ian Gumbula and Mercy Gumbula; and Michael Christie and John Greatorex's "Investment in Yolngu Community Engagement: the case of an Indigenous 'Market Research' consultancy" (in Campbell & Christie, 2008).

The first finding was that there are four main elements to respondents' understanding of Community Engagement. One element is that engagement is centred on relationships between individuals. The second is that engagement is an ongoing process, rooted in everyday life and something that extends beyond the life of individual projects. Thirdly, engagement requires the recognition of Indigenous identities and knowledge. Finally, respondents perceive that Community Engagement is about creating time and space where knowledge systems can interact respectfully. These four elements will now be discussed in some detail.

One of the major themes to emerge from the research was the engagement is centrally about relationships between individuals. This resonates with the finding in the Foundation Paper that "engagement 'happens' in the spaces between persons in the social medium in the present and over time" (Sunderland et al., 2004: p16). The significance of this finding about the perceived importance of relationships for Community Engagement with Indigenous people lies in their understandings of the rights and responsibilities that inhere in relationships. Relationships within the Indigenous sphere are the lifeblood of identity and create the mechanism through which people understand themselves and those around them, and what their rights, responsibilities and behaviour in relation to others needs to be as a result (Christie, 1992). University staff must be aware of the reciprocal nature of these relationships, understand that in turn these relationships link them with other Indigenous people as Ian Gumbula notes "we only know we can respect that person through the connection with other people that we have been working with in the past" (in Campbell & Christie, 2008). In other words, it's positive that respondents, including CDU staff, see relationships as important to Community Engagement because they clearly are. But at the same time they need to be aware of the responsibilities such relationships with Indigenous people create above and beyond the life of their project/work.

The second element of engagement - it being understood as an ongoing process rooted in everyday life - means that university staff are often called upon to do more than is required by the university and often address agendas quite different from what the actual work demands, as far as CDU is concerned. This may mean assisting people with day to day problems such as banking issues, transport or the provision of food. This process of responding to the real world issues presented by working with Indigenous people is not an optional add on, it is central and without it engagement would be "superficial, relationships temporal and the outcomes less than satisfactory" (in Campbell & Christie, 2008)). Further, respondents were united in their belief that the real world relationships through which engagement happens must be ongoing; they are in a sense above and prior to the university work that staff do with Indigenous people. As one respondent wrote 'relationships have to be maintained before, and after particular projects to keep the trust that is part of the relationship" (in Campbell & Christie, 2008)

The third element of respondents' understanding of Community Engagement is that Indigenous identities and knowledge must be recognised. Some respondents saw this as the most important element of what characterises Indigenous Community Engagement. This finding highlights the importance of recognising the divergent nature of western and Indigenous knowledge systems. To do this requires that university staff recognise that knowledge and identity are inextricably linked and mutually reinforcing, thereby recognising that how people construct themselves socially is the first step to understanding their knowledge system. Yingia Guyula stresses the importance of his identity and its role in developing new opportunities for himself: "I am now at the stage where I have become a

teacher from what I've learned from our old people...maybe through new technology there could be linkages where you can understand the way we feel about our land and our culture" (in Campbell & Christie, 2008). It also means that university staff need to recognise the practices that marginalise and silence Indigenous people through rendering their knowledge as deficient and unable to effectively address contemporary issues (Sherriff, 2000; Sunderland & Woodley, 2003). The ICE research clearly showed that in the NT Indigenous people continue to practice their own knowledge traditions, systems that have vastly different ontologies and therefore epistemologies to those on which western knowledge is based (Verran, 2002).

The fourth element of engagement articulated by respondents is the creation of time and space where knowledge systems can interact respectfully. Establishing time within projects for Indigenous people to articulate their knowledge requirements so that they can be taken seriously within the academy requires explicit planning. The research found that unless this time and space was deliberately created it was very difficult to adequately attend to issues created by tensions that inevitably arise in work of an intercultural nature. Joanne Gangukpu noted the importance of listening and said that the best process was one which noted the importance of "consulting and negotiating how we can both give our perspectives" (in Campbell & Christie, 2008)

The understanding of engagement being ongoing relationships rooted in everyday life and nurtured within spaces created for intercultural knowledge building leads to the second set of findings: the preconditions that enable engagement to happen. Successful engagement between Indigenous communities and the university depends on three main factors. The first is respect, the second is creating Indigenous ownership and the third is staff making long term commitments to working with Indigenous people.

Respect is a concept that is not easily translated between cultures: it is intuited from peoples' behaviour. The research highlights that respect was found in things like sitting down and talking together, letting others know what is happening and acting in ways that recognise each persons rights to speak (Campbell & Christie, 2008). Further, respect is demonstrated through the recognition of the centrality of Indigenous knowledge in doing cooperative projects. This manifests itself through understanding negotiation as central to Indigenous knowledge production, ensuring that the projects the university invests in work with the Indigenous governance structures that exist within Indigenous communities (Campbell, 2007). Importantly the research found that Indigenous people within the NT rarely articulate their group identities at the level of the community. This has profound implications for how organisations work with Indigenous people and groups and suggest that more effort is required to identify and work with existing governance. Interestingly one case study documented the significant efforts Indigenous people went to in developing contemporary "community" governance that drew on traditional governance structures (in Campbell & Christie, 2008) . This suggests that through thorough processes initiated and owned by Indigenous people new governance arrangements (that draw on and respect traditional arrangements) can be developed which respond to the desire of governments and others to work at the "community level". Overwhelmingly the failure to embed new projects within the already present governance structures was seen as disrespectful and a failure of engagement (Campbell & Christie, 2008).

The unequal distribution of power present within most interactions between an organisation like a university and Indigenous people has the potential to reinforce the silencing of Indigenous perspectives mentioned earlier. Within this lies the danger that activities that occur under the banner of engagement are simply ways of the university achieving its own ends. Respondents to the research saw genuine ownership of projects by Indigenous people as a key to addressing this concern. It was also noted that this is not necessarily an easy thing to do as it requires addressing basic but potentially difficult issues such as: whose knowledge is being utilised, how to recognise the knowledge of another culture; and, perhaps most significantly, what happens if what we do does not meet the needs of one of the parties? This is a particular danger for the university as often its involvement is predicated on meeting outcomes largely predetermined through funding arrangements.

The third key precondition for high quality engagement with Indigenous people is staff making long term commitments to working with Indigenous people. This directly relates to relationships being the cornerstone of engagement. The research found that staff with long term, trusting relationships were able to more effectively respond to community concerns, more able to work within the governance structures already in place, and as a consequence were more likely to be able to ensure that the work that they did as employees of the university enabled local ownership and investment. Their ability to work effectively with Indigenous people was built on the work that they had done previously, with some working in the same communities for over 30 years. Obviously the university cannot mandate staff's continued involvement, however the knowledge and respect that individual staff build up over time is an asset that the university relies upon to generate both good engagement and good outcomes.

The third set of findings relate to the enablers and inhibitors of engagement at CDU. Things that were identified as supporting and enabling engagement include: the presence of a School that specifically recognises Indigenous knowledge and works to ensure its use and transmission within CDU (the School for Australian Indigenous Knowledge Systems - SAIKS); the Yolngu studies program run by SAIKS; recognition of CE contributions through university structures including promotion and professional development; the recognition that Indigenous people need to be paid properly for their contributions to collaborative work; and, the growing awareness of CE as a central aspect of CDU's activities which is being fostered by the Community and Access portfolio and the Community Engagement coordinator in particular. These enablers will now be set out.

Engagement at CDU was seen to be enhanced by the presence of the School for Australian Indigenous Knowledge Systems (SAIKS). This school, unlike any other in Australian universities, is a site supportive of Indigenous knowledge and providing Indigenous studies and importantly is also a site that demonstrates CDU's commitment to embedding alternative knowledge practices within its structure. This commitment has seen the emergence of situated Indigenous methodologies resulting from work between Indigenous researchers and Indigenous knowledge holders, and places CDU at the forefront of developing processes to work through the ontological complexities presented by seeking to connect disparate knowledge communities.

The Yolngu studies program, based within SAIKS is an example of knowledge work that is faithful to both academic and Indigenous knowledge perspectives (see Yolngu Studies Program, 2008). This program has been going for more than ten years and has been widely recognised for its unique approach that places Yolngu epistemology at the centre of the learning process. The program was developed and implemented under the guidance of Yolngu elders and continues to be overseen by them.

CDU has also made efforts to recognise CE as a critical aspect of the university's work in a practical sense. It has done this through the development of the Community and Access portfolio whose role is to act "as a broker of relationships between the various sections of the Northern Territory community and the University" (Charles Darwin University, 2007). CDU also has a dedicated coordinator whose role is to sensitise staff to the possibilities and responsibilities of CE and, amongst other things, draw together engagement stories from within the university and disseminate them via the CDU website. CDU is also embedding CE within university systems such as promotion and professional development. Staff who focus on CE are encouraged to document this work and to draw attention to it in the processes that oversee staff development.

Other areas where CDU is working to meet the engagement challenge is to acknowledge and pay Indigenous people for their contributions to collaborative projects. This acknowledgement often involves more than recognising Indigenous people as experts within their own knowledge domains, something many organisations are now doing (see for example Desert Knowledge Cooperative Research Centre, 2008). It also means ensuring that they are paid properly for the intellectually complex work they do in the interdisciplinary knowledge space that attends some projects. Although CDU is getting better at recognising the contributions that Indigenous people make, in practical terms the systems to make payments to them

simple and efficient have some way to go.

The ICE research also identified a number of inhibitors to engagement. One of the main findings was that a lack of feedback to Indigenous people was undermining a lot of the good teaching work being done. This lack of feedback is partially due to the funding systems that attend the VET area in particular. The funding arrangements do not recognise the additional work involved with students for whom English is often a second language and who do not have an in depth understanding of the university system. These students require additional assistance, yet the system is only designed to fund delivery, meaning staff and schools must allocate time and resources to feedback that they are not funded for. Additionally, CDU does not have good systems to elicit feedback from Indigenous students about their experiences with the university. This means that lessons about both successes and failures (and ways to address them) are not being shared adequately throughout the university.

One significant finding was the limited understanding CDU or staff have (the SAIKS example notwithstanding) of how to deal with the tensions presented by the Community Engagement demand of attending to everyday needs while still achieving the outcomes required to be accountable to the funding sources. This can manifest itself in staff being required to attend to matters that are not core university business in the process of doing their work. This places staff in an invidious position where Community Engagement requires them to be responsive to local needs, while operating within a funding framework that is paying for them to achieve certain outcomes. In this tension staff are forced to choose to whom they will be primarily accountable (the community or the university) with attendant issues regardless of which way they choose. CDU needs to direct staff and resources to addressing this tension and developing practical strategies which can be used by staff. Allocating specific resources to this work is one area that AUCEA might lobby on, as it seeks to make Community Engagement a workable and effective university responsibility.

Drawing on the findings of the ICE research a number of recommendations have been made to further develop Indigenous Community Engagement at CDU. These recommendations range from practical steps requiring little change in structures or processes, to those that have implications for national level university policy that relates to engagement with Indigenous communities. The main recommendations revolve around meeting the accountabilities required by respect in the intercultural context. This means that CDU needs to take action to ensure that the requirements for feedback about the results of research are more systematically followed up and to develop systems to enable better flow of information between the university and the Indigenous communities with which it works. This may involve augmenting the responsibilities of staff already within the university and setting out the requirement for CE to be formally included within research and training programs.

One significant strategy to further embed Indigenous Community Engagement practice at CDU is to develop processes (that may include workshops, seminars, and the buy-out of staff time) to sensitise staff to some of the philosophical work entailed in the equitable engagement of Indigenous knowledge practices into their teaching and research work. This is seen as a way of addressing the overwhelming bias of knowledge work within the university based on western modes of knowing, and goes some way to opposing the forces of silencing that marginalise Indigenous perspectives within the academy.

The ICE research project has some important implications for engagement policy within the university and in terms of Community Engagement with Indigenous people more widely. Firstly, the research highlights that links between university activities and the development aspirations of Indigenous communities needs to be more comprehensively explored. This is because respondents' generally perceive engagement to be inextricably linked with the overall development of communities. However, this linking role is not currently considered core business by CDU. Tom Calma, the Aboriginal and Torres Strait Islander Social Justice Commissioner, argues that "community development has a special role in working with Indigenous communities as many of our communities are struggling with enormous problems and disadvantage" (Aboriginal and Torres Strait Islander Social Justice Commissioner, 2008). However as the Foundation Paper notes "little considerations has been given to the role of higher education as a vehicle for building or strengthening local communities" (Sunderland et

al., 2004: p56). This suggests that the university needs to find ways in which it can support Indigenous communities to articulate their aspirations and develop mechanisms to act on this. This, according to the respondents of the ICE research is Community Engagement core business.

The ICE project at CDU was an opportunity for staff and Indigenous people and groups the university has worked with to document and reflect on the Community Engagement aspects of their shared work. It revealed that awareness of and respect for Indigenous knowledge is the major precursor for successful engagement. It showed that when engagement met the needs of each party, fruitful collaborations would ensue that were faithful to the knowledge traditions of each. The research showed that Indigenous knowledge and ownership are key to successful intercultural undertakings, and that the university is well placed to build on the successes it has achieved. However there are hurdles that need to be overcome; Indigenous knowledge continues to be marginalised by processes at work in wider society that see it as deficient and not required to address the development needs in places like the NT. Further, national level systems that the university works within, set up to create consistency of outcomes nationally, are not well suited to meeting the knowledge needs of Indigenous people with their vastly different understandings of the world. The ICE project demonstrates that CDU has implemented a range of actions and projects - from complex transdisciplinary work to simple and respectful engagement that attends vocational training - which show that Community Engagement when taken seriously can meet the challenge of producing mutual benefit. The next challenge is to implement changes to policy and practice so that the lessons learnt allow further development of the Community Engagement agenda for the benefit of Indigenous people in the NT.

Further policy implications of the ICE project for Community Engagement at CDU are that there needs to be a focus on processes that build knowledge and awareness about the rights and responsibilities entailed by Community Engagement. Policy, understood as "the continuing work done by groups of policy actors who use available public institutions to articulate and express the things they value" (Considine, 1994), suggests that a critical factor in policy development is who the policy actors are. The ICE study suggests that Indigenous people need to participate in policy development at CDU to ensure their values are represented in policy. As the research demonstrated the engagement and involvement of Indigenous people and perspectives requires attention to be paid to relationships and time and space for the articulation of Indigenous aspirations. CDU Community Engagement policy development must involve Indigenous people from both within and outside the university. Indigenous people need to be brought on as long term partners of the university to participate in policy development on an ongoing basis. This provides these partners and staff opportunities to get to know each other, learn about the disparate requirements they may have, and enable the development of long term relationships that can deliver mutual benefit. The ICE project demonstrates that Community Engagement policy articulated at the national level can deliver tangible benefits to universities and their communities. It requires that the lessons learned about alternative conceptions of respect and knowledge are critical to developing new situated partnerships that meet the needs of members of each knowledge community.

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## **In2science – A Case Study Of Cross Institutional Collaboration Supporting the Engagement of School Students in the Sciences and Mathematics in Victoria.**

**John McDonald, In2science Program Manager Faculty of Science, Technology and Engineering La Trobe University, Victoria**

The In2science Peer Mentoring in Schools program is a collaborative project between the Science Faculties at La Trobe University, the University of Melbourne and (from 2008) Monash University. In2science addresses the issue of declining numbers of students studying the sciences and mathematics at both senior secondary school level and university. Through the program, current tertiary students volunteer to be trained as Peer Mentors and work with teachers in the classroom to raise students' awareness and engagement in these critical areas of the curriculum. Peer values and interests are among the biggest influences on teenagers and positive influences from university students as peer role models, if sustained, can have a lasting impact. Through the use of a clear organisational framework, the program is currently established in 36 government schools in both metropolitan and regional areas of Victoria. The program achieves win: win: win outcomes for the school students, teachers and university students who participate. In2science is a successful model of community engagement and meets the needs of the community, with implications at the local, national and international level. This case study will highlight the methodology behind managing a collaborative program between multiple universities and their campuses, proving that such enterprises can be undertaken with positive outcomes.

**Key Words:** Peer Mentoring, Collaboration, Science, Volunteers, Education, Sustainability.

### **INTRODUCTION**

Secondary school science and mathematics have been a priority area for several years. The 2006 Audit of Science Engineering and Technology Skills, (Australian Government 2006), projected demand for science skills and suggested that Australia would need another 55,000 professionals by 2012-13 but supply was likely to fall short by up to 35 per cent. Investigations in Victoria have also come to similar conclusions. The Inquiry into the Promotion of Mathematics and Science Education (Education Training Committee, March 2006) identified the need to "increase the level of engagement of many secondary students in mathematics and science studies earlier in their secondary schooling, to ensure they continue to study these subjects to develop the high levels of mathematical and scientific literacy required for success in a broad range of trade and professional careers." As a result it seems the enthusiasm for science as a field of study at school level is static or declining and measures need to be taken to redress this issue.

The issue of declining interest in the sciences amongst high school students is a concern at local, national and international levels with similar trends being observed in other countries. All this leads to a smaller pool of science trained graduates to meet the demand from both research and industry at a local, national and even an international level. To this end a diverse range of strategies have been implemented to redress the issue of secondary school science and mathematics uptake with varying degrees of success. One approach is the use of Tutoring/Mentoring programs which can be effective and beneficial to all involved if an appropriate structure and methodology is employed.

The 'Pimlico Connection', initiated by Dr Sinclair Goodlad over thirty years ago, at Imperial College, London was an early user of tertiary science students as role models and scientific resources to help engage high school students in the enabling sciences. Others have followed; The 'Perach' program in Israel has also been running for over thirty years. Within the 'Perach' program, university students receive partial reimbursement of their tuition fees for helping engage disadvantaged students by acting as a personal tutor or mentor. The 'Undergraduate Ambassadors Scheme' (UAS) operates in the UK and provides the framework for a degree course module awarding academic credit to science, technology,

engineering and mathematics undergraduates working with teachers in local schools. This program is being adopted by many British universities.

In Australia, a leading proponent of university to school Tutoring/Mentoring is the 'STAR' program established in 1994 by Russell Elsegood at Murdoch University, Western Australia. The 'STAR' program has led the way for Australian programs for the last 14 years. The principle is fairly simple in that peer values and interests are among the biggest influences on teenagers and positive influences from peer role models, in an academic context, need to be sustained if they are to have lasting impact. Currently there are 15 universities across Australia running tutoring/mentoring programs with science as the primary focus. All these programs have shown that Peer Mentors are an effective way of increasing the engagement of secondary school students in science and mathematics. Through the support of Peer Mentors in the classroom, teachers are able to diversify their teaching methodology and operate more engaging lessons. Through peer role modelling the value and rewards of science as a positive career choice have also been promoted.

Modelled on the STAR programme in Western Australia, the In2science Peer Mentoring Program places science-based university students from three Victorian universities as Peer Mentors in secondary schools in Melbourne's metropolitan area, Bendigo and Wodonga. This multi-university collaboration is unique in Australia and has lead to the growth of one of the largest programs operating today. In2science has four main aims:

to generate enthusiasm for Science (especially the enabling subjects of Chemistry, Mathematics and Physics) in students in the middle years of their secondary education (Years 7-10) to place university students in schools to act as positive role models to secondary school science students inspiring them to achieve their potential  
through the role models, to promote the value and rewards of Science as a positive career choice to foster links between schools and universities

#### HOW DOES IN2SCIENCE WORK?

Students studying within their respective science faculty are invited to apply to volunteer in the program. It is a requirement that Peer Mentors have completed at least one year of university and that they express a genuine interest in helping students in both their understanding of, and motivation for, science and mathematics learning. This ensures Mentors understand the scientific process from a tertiary point of view and have a broader experience of their field. Mentors apply online which is followed up with an interview. The interview process ensures the Mentors fully understand the program and allows the coordinators to assess their suitability to become a Peer Mentor.

Peer Mentors are then allocated to schools based upon their geographical location and access to transport. Schools then pair the Mentors with Year 7-10 science and mathematics teachers who wish to have their support. Once a placement is arranged the Mentors undertake training to build their skills and knowledge of their role and gain information about how they can confidently participate in the program. Figure 1 shows the sequence of the program at the operational level that occurs each semester.

Mentors aim to attend the school once a week for two to three hours, working with the same classes each week. Placements run each semester and are 10-12 school weeks in duration. Prior to starting, all Mentors make an initial visit to their school to ensure they know its location and to meet the teachers they will be working with. As a requirement all Mentors must complete the Victorian Working With Children Check to be placed in a school.

At each school one teacher (usually the science coordinator) acts as the program's Link Teacher. Their role is to act as a liaison person with the program and manage the placements from the school's perspective.

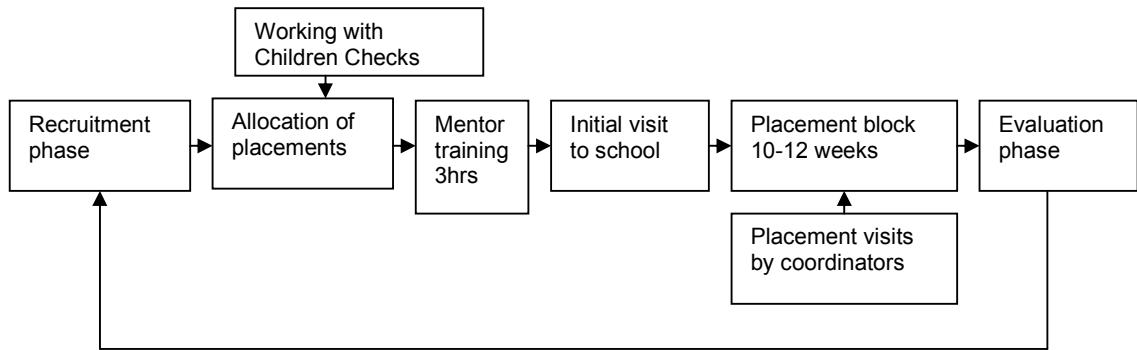


Figure 1 - Basic sequence of In2science

A condition of hosting a Peer Mentor is that schools and their teachers allow the Mentor to interact with the students. This allows for greater flexibility from the schools point of view to allocate and use the Mentors in a manner which is conducive to their teaching structure and curriculum. Documentation is provided to each teacher as to how they can best utilise the Mentor. Mentors can support the teachers in various ways including:

- acting as an additional pair of hands for practical work
- allowing the teacher more freedom to manage the learning environment
- giving teachers the opportunity to try/learn new experiments supported by the Peer Mentor
- allowing teachers to develop new teaching resources or projects supported by the Peer Mentor
- making lessons more enjoyable and easier to manage with the support of a Peer Mentor
- giving secondary students greater opportunity for oral work and efficient learning by having extra classroom support
- providing benefits for excursions
- increasing student engagement by having a young role model in the room
- giving teachers the chance to gain some subject specific professional development particularly where the teacher is teaching away from their subject specialism, and
- providing the opportunity to make links with university science faculties.

The diversity of opportunities for support and the flexibility the program offers has contributed to the success of the program as schools and tertiary students see value in what can be gained.

To offer support for regional schools away from the university campuses, In2science developed a roadshow in 2006 taking Peer Mentors to interact with students. With funding from Nanotechnology Victoria Ltd, the nanotechnology-themed activity is taken to regional schools in an area for a week each year to help engage students. Nanotechnology was chosen due to its diversity of applications in science and it is a new field of study for many teachers, therefore generating a demand for professional development. These roadshows have been well received and highly valued by the schools visited.

### **TRI-UNIVERSITY COLLABORATION AND STRUCTURE**

In2science is now entering a new phase with the inclusion of a third university (Monash University) in the program. This is not the first time collaboration has occurred between La Trobe University, the University of Melbourne and Monash University. In 2006-2007, a grant under the ASISTM (Australian Schools Innovation in Science, Technology and Mathematics) federal government project allowed Mentors from the three universities to volunteer in a diverse cluster of eight schools for an 18 month period.

In2science gains many benefits from the new collaboration:

- a larger pool of potential science and mathematics Peer Mentors to allow support for more schools

- a broader geographical spread of the university campuses allow for more schools to be accessible for Peer Mentors
- having a program run by three respected universities has greater market place power and In2science is therefore given increased kudos and value
- greater level of support for running and operating activities
- greater bargaining power in funding applications, and
- the opportunity for Peer Mentors from the different universities to interact during training and on placement – ideal for personal networking in the field of science.

A program operating jointly from three leading universities therefore has a sense of quality which in turn makes schools more willing to participate and see the benefits that involvement can bring their staff and students.

Facilitating the benefits demands a strong program structure that allows for clear and open lines of communication along with a robust yet flexible approach to cater for the needs of individual Peer Mentors, teachers and schools. Flexibility within a framework is central to the success of the program allowing schools to maximise the benefits in line with their own school aims, objectives and philosophy. In2science comprises three tiers of organisation (Figure 2).

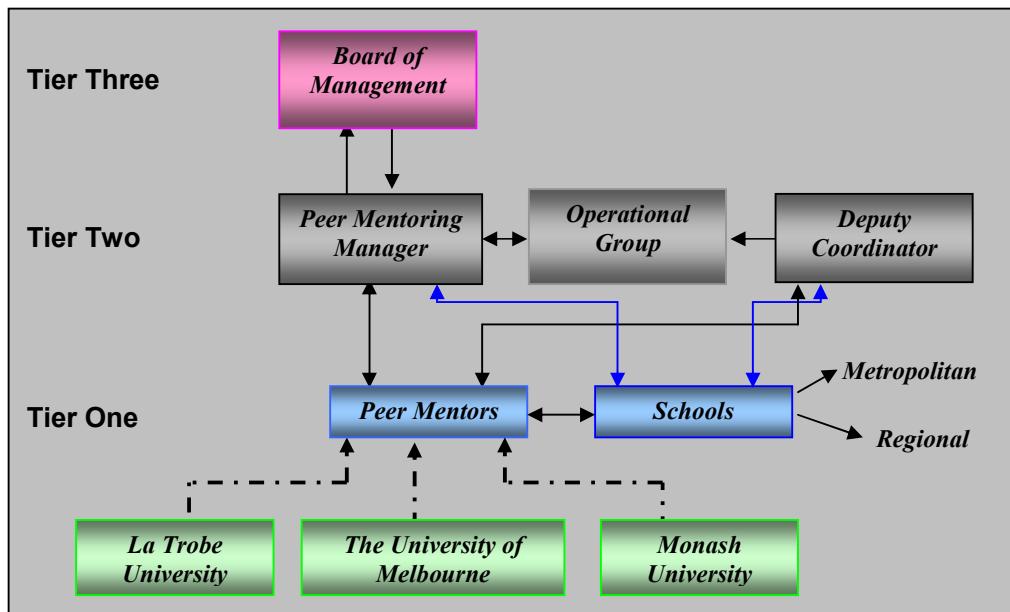
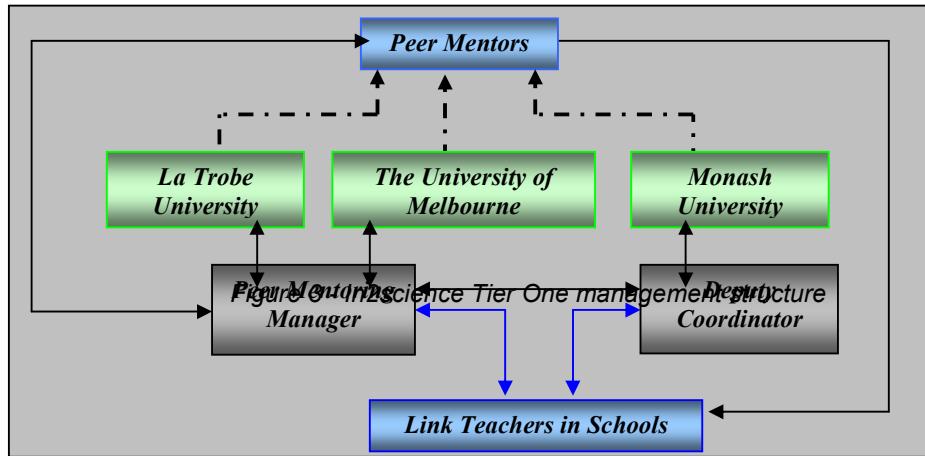


Figure 2 - In2science management structure

### Tier One

This is the interactive layer between Mentors, schools and the program. Allocation of Peer Mentors to schools is centrally managed to maximise their distribution. Peer Mentors can seek help from In2science directly or from the contact person at each university campus. An allocated staff member at each school takes the role of Link Teacher, facilitating communication between the school and the program. Link Teachers allocate Peer Mentors to classes, ensure teachers understand the program and provide in-school support for the Peer Mentors. They also conduct the school-based evaluations. In the current structure of the program the In2science manager looks after the Peer Mentors from two of the universities and the deputy coordinator looks after those from the third university (for recruitment and training purposes) (Figure 3).



### Tier Two

Crucial to the success of any such program is to have someone in a coordination/management role to ensure that effective communication occurs and that momentum of the program is maintained. The manager is the focal point of the program and the driving force behind its success. Their role spans recruiting and training of the Peer Mentors, liaising with the schools over placements and implementing the decisions of the Board. They need to be proactive in their engagement with each stakeholder and drive communication to an optimal level both within the program and to external parties.

At each partner institute the manager liaises with designated personnel who provide administrative support and assist in the management of the Peer Mentors on a daily basis. These staff members comprise the Operational Group as shown in Figure 3.

In2science has shown that the employment of a full time manager is a key requirement to its success. Having a person with a sound knowledge of both the secondary school and tertiary environment helps ensure clear and effective communication. Visiting Peer Mentors on placement is essential to communication and adds value to the program by providing opportunities for teachers to share their experiences.

### Tier Three

The Board of Management allows for good governance and a point of reference to both government and non-government organisations. The Board includes representatives from the universities and the funding partners along with teacher and industry representatives. The Board provides valuable support especially in funding applications and governance. Board members are essential for raising the profile of the program and driving awareness by organisations at a higher level.

Communication is pivotal to the overall success of the program by ensuring all stakeholders understand their respective roles and that information flows freely and effectively. Much of the information flows via the Program manager who is in regular contact with both the Peer Mentors and the Link Teachers. A variety of communication methods are utilised to maintain regular contact including; email, short messaging services (SMS), electronic newsletters and a website. The monthly Newsletter provides generic information on the program and showcases the activities the Peer Mentors have been involved with at their respective schools. It also provides information to stakeholders and is an opportunity for the universities involved to communicate upcoming events and news. The newsletter is sent to additional people including past Peer Mentors, members of the Department of Education and Early Childhood Development (DEECD), various staff within the universities, industry representatives, funding bodies and other university-to-school programs both within Australia and internationally.

Individual teachers volunteering to have a Peer Mentor work with them in their lessons are important to the success of the program. They alone direct the activities of the Peer Mentor in the classroom, allowing them to interact with the students and build a rapport. Therefore

teachers need a clear understanding of the program and the role of the Peer Mentors. Successful placements occur when:

- both the teacher and the Mentor share the same expectations about their involvement in the program.
- teachers are able to communicate with the Mentors in advance what the lesson content is going to be.
- teachers communicates what role they want the Mentor to take each lesson.
- Mentors shows initiative and is willing to go beyond their comfort zone.
- teachers facilitate the interaction of the Mentor with the students and involve the Mentor into the fabric of the lesson
- teachers introduce the Mentor to the class and explain what their role is, and
- mentors are able to make regular visits over a number of weeks.

Following the evaluation of the program by the Centre for the Study of Higher Education (CSHE) a recommendation was made that: "In2science produce a targeted Communication Pack for teachers and mentors to give structure to conversations about expectations in areas such as roles, contribution, responsibilities and outcomes", (Farrell & Harris, 2006, p. iv). This was implemented in the form of a teacher's booklet to encourage early dialogue between teacher and Mentor. As a result of the introduction of this document, there has been an improvement in Mentor-Teacher communication leading to improved outcomes for all involved.

Evaluation and reporting takes place on a regular basis. At the end of each semester all Peer Mentors, class teachers and a sample of school students are asked for feedback on their experiences. Critically, the Peer Mentors are asked the extent to which they feel they have made a difference to student learning and engagement. They are also asked about what they feel they gained from the experience in terms of improved skills, confidence, impact upon university study and career decision making. Class teachers are asked to give the Peer Mentor feedback based upon a range of criteria that would be valuable for future job applications and resumes. Teachers also give their viewpoint of the program, commenting upon benefits gained, planning required, impact upon students along with any criticisms they may have. Secondary school students are randomly sampled within the class to find out their views and ascertain the benefits they gained in terms of Mentors making lessons more interesting, helping them learning more and motivating them to study science and mathematics beyond Year 10.

## FUNDING

Funding can be one of the biggest barriers for many such programs and sustaining a program beyond three years is becoming increasingly difficult to achieve. The initial funding for the program was through a three year grant courtesy of the William Buckland Foundation. This funding allowed the program to become established and the Foundation also offered support when it came to securing new funding partners. Having systematic and reliable internal evaluations and commissioning external evaluations of the program has been vital to support funding applications. In2science is now funded until 2010 by the Victorian Government Department of Education and Early Childhood Development (DEECD) along with the George Alexander Foundation. Seeking sources of funding is an ongoing process. A carefully selected and strong Board of Management with high profile members provides enhanced networking opportunities with both industry and government organisations. The use of a newsletter has been an effective and valuable method of communicating the benefits of the program to potential partners and keeping them informed.

The major costs incurred by the program include: staffing, travel expenses (both Mentors and staff), resources to take to schools, Peer Mentor training and recruitment. These costs are primarily accounted for using grant funding. Roadshows and other activities within the program require less funding to operate. Such additional activities can be targeted to a particular organisation with a vested interest. In 2008, In2science organised prizes for participants in the program (both teachers and Mentors) sourced from various organisations. Although these organisations may not eventually become major funding partners, this has been a good initiative to successfully raise the profile and community awareness of the

program and has facilitated the opportunity for the private sector to contribute through in-kind support, gifts and donations.

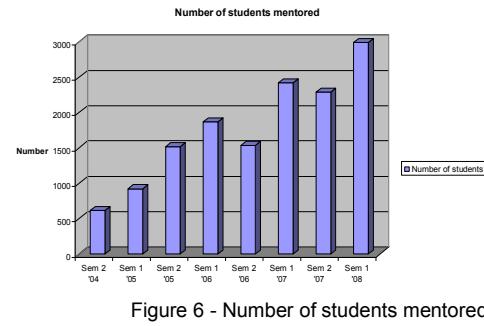
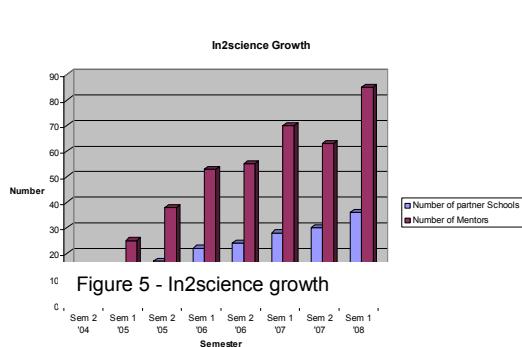
## GROWTH AND BENEFITS OF THE IN2SCIENCE PROGRAM

Initiated in 2004, the program has increased from 12 Peer Mentors placed in ten Victorian government schools to approximately 80 Peer Mentors working in 34 partner government schools (semester one, 2008) (Table 1). From small beginnings the program has used feedback and evaluations to incrementally grow in size and importance.

Table 1 - In2science placement summary

2004 – 2008 In2science placements		TOTALS
Number of partner schools		36
Number of Mentor placements		403
Number of Teachers		487
Number of Classes		644
Number of students (based upon an average of 22/class)		14,168
Numbers of semester blocks of placements		8
Number of weeks of placement		89
Number of hours of Mentoring in schools (approximate)		7114.5hrs

Figure 5 and Figure 6 show the steady growth of the program with a balance between Mentor numbers and schools. Most schools take two, three or four Peer Mentors. A key limiting factor can often be the matching of Mentor availability times to school timetables.



The university students derive a diverse range of benefits depending upon their initial motivation for involvement. For those interested in a career in teaching, they gain a greater sense of purpose and an insight into the profession from the teacher's perspective. Approximately 50% of applicants are interested in teaching with the majority going on to complete a Graduate Diploma in Education after their undergraduate studies. Many participate as a means of adding value to their degree program by gaining skills and experiences not delivered through their studies. Improving confidence and communication skills are high on their list of benefits while others look to develop their ability to work outside their 'comfort zone', demonstrating initiative and problem solving. Enhancing their resume and employability are a priority for some whereas others participate out of a desire to give something back to the community in a voluntary capacity. Mentors often comment that they wish they could have had a Mentor when they were at school. Sharing their knowledge and experiences with younger students, many Mentors gain the reward of 'enthusing them in a particular topic' or 'helping students understand a difficult concept then [enabling them] to move forward in their understanding'. External and internal evaluations have drawn similar examples of the benefits gained, and the fact that many Mentors return each semester to participate indicates the value they place on it. Representative responses from Mentors about the benefits gained from participation include:

"[T]hat look of realisation on a student's face when they suddenly understand what is going on after I have explained it to them. Another rewarding aspect is watching the younger students 'playing' in the laboratory; fascinating stuff." (Peer Mentor, CSHE evaluation, 2006)

"Yes! I was weighing up between honours and a dip. ed. but after seeing first hand what teaching entails I believe I would like to start teaching as soon as I complete my dip ed." (Peer Mentor, CSHE evaluation, 2006)

In the 2007 evaluation, 80% of Mentors 'agreed' or 'strongly agreed' that the experience was useful for their career decision making citing In2science as influential in both their decision making and confidence to apply for education courses. Ninety eight percent of Peer Mentors felt they were 'good role models' to students (In2science evaluations, 2007).

"I now have an insight to the classroom and how to run things. The way my teacher constructed the sessions was also interesting." (Peer Mentor, 2007)

"Yes - it was great to be able to contribute with explaining difficult concepts to the students as a whole as well as working one-on-one with those who were having particular trouble. I felt like I could really make a difference with the pracs especially because most of the students had never seen the equipment before. I gained a bit more confidence and felt that the students wanted me there - that's a pretty great feeling." (Peer Mentor, 2007)

School teachers feel they gain much from the program for both themselves and their students. Many teachers see value of having the 'extra pair of hands' in the classroom:  
"Enables us as a class teacher to spend more time with those students who have needs – knowing there is someone else to help out." (Teacher, In2science evaluation, 2007)

"Able to get through much more practical work. Immediate response to questions." (Teacher, In2science evaluation, 2007)

"Can further explain concepts to weaker students. Helps the class to be more enthused." (Teacher, In2science evaluation, 2007)

This enthusiasm has been discussed by several teachers who see the merit associated with the energy and youth the Mentors portray:

"[The mentor was] an energetic, dynamic person; she worked outside uni, she'd gone back to uni, she was a mum and I thought she was just a really excellent role model for the kids in terms of being young and trendy and energetic and lively and friendly and a scientist." (Teacher, CSHE evaluation, 2006)

"The fact that she "[mentor] was young and not obviously a teacher or a student teacher helped a lot I think because they didn't feel again that they were being targeted. So she was young, she's around their age so that was quite good." (Teacher, CSHE evaluation, 2006)

Teachers often comment that having Mentors in the classroom makes science 'more real' as the Mentors are able to bring their own experiences:

"Provides a greater opportunity for student- teacher communication. Increased interaction – development of a variety of ways to teach." (Teacher, In2science evaluation, 2007)

"Students get the sense that they are scientists too. Motivates and makes it real." (Teacher, In2science evaluation, 2007)

Many teachers comment that the Peer Mentor is able to increase the experiences the students have, especially if the Mentors are studying the current topic and the teacher is a non-specialist:

"Having someone that students can identify with and ask about a future in science. Having another knowledgeable person to assist not only the students but also the teacher." (Teacher, In2science evaluation, 2007)

Similarly the schools students have continually expressed the benefits they see from having the Peer Mentors in the classroom. Evaluations consistently show that students feel they learn more with the Mentor present (44.9% said 'most of the time', 47.1% said 'some of the time'), lessons are more interesting, 48.8% ('most of the time') and 87.6% ('some of the time') want a Mentor to work with them in future lessons. An encouraging 43.8% are now interested in undertaking science subjects beyond Year 10 (Source: In2science evaluation, 2007). Secondary school students also regard the youth and energy of Mentors an attractive quality towards improving their own interest in science:

"Every single time I needed help he was there. He made me understand everything I didn't know. He was great to have around and he was inspirational. Made me love physics." (School student, In2science evaluation, 2007)

"The mentors are younger so they aren't boring and answers are fresh in their brains so they tell you everything but still make you think." (School student, In2science evaluation, 2007)

"Made it fun. It was great to have someone to sit with in a small group – made things easier to grasp."

(School student, In2science evaluation, 2007)

"The mentor made science fun, which also made me learn more. He simplified things and made it interesting. He showed us a lot of confidence." (School student, In2science evaluation, 2007)

Through a clear and defined structure In2science has become established as a beneficial program for all stakeholders. With continued promotion to school and university, students' participation rates continue to increase. In2science has seen additional benefits such as increasing the recruitment of tertiary students into science and mathematics teaching; going some way to addressing teacher shortages in these fields.

The In2science program has found that a number of essential requirements are needed to establish and manage a successful program. These requirements are outlined in Table 2.

Table 2 - requirements of a successful program

#### REQUIREMENTS OF A SUCCESSFUL COLLABORATIVE UNIVERSITY-TO-SCHOOL ENGAGEMENT PROGRAM

Having a full time coordinator/manager who can drive the program.

Having clear aims and objectives for the program.

Identify key indicators of success that are measurable.

Establishing a Board of Management to oversee the program and provide opportunities for networking with potential funding partners. Board should include representatives from each university participating.

Having a clear program structure that ensures all stakeholders understand their role and their contribution to the program as a whole.

Establishing clear and effective modes of communication with all stakeholders.

Funding over a 2-3 year period to give some stability.

Ensuring flexibility for stakeholders to derive their own benefits or tailor them to their individual needs.

Communicating with University staff about the successes and benefits to ensure they see value in what is being done. This in turn allows them to provide additional support for the Mentors.

Gaining support from senior management within the Faculty or University.

Conducting regular evaluations, some of which are externally sourced.

Celebrating the success of the program either through articles in appropriate journals or university publications. Holding a launch event provides a wonderful start and possible media coverage.

Rewarding and valuing all stakeholders. This can be in the form of certificates of involvement, prizes or acknowledgment in articles and newsletters. Visits to schools to meet stakeholders on a regular bases.

Establishing links to industry through appropriate networking.

Identify a timeframe for the program that includes an establishment phase, consolidation phase then expansion phase.

Identifying opportunities for synergy with other programs with similar aims and objectives. This gives greater kudos to the program and helps raise its profile and the value of what is being offered.

#### The way forward for In2science

In2science is developing blogs for Mentors to use in order to further extend the opportunity for communication. The purchasing of resources for Mentors to bring into secondary schools will further enhance the Peer Mentor experience. This program is also seeking funding to introduce a new regional roadshow for 2009.

In2science continues to grow, incorporating more schools and Peer Mentors each semester. The successful addition of a third university to the program will provide greater leverage for securing future funding partners and allow the program to become established as a valuable contributor to the engagement of students in science and mathematics.

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## **Strategies for Universities Engaging With Communities for a Sustainable Future**

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**Key Words:** Sustainability, Climate Change, Community, Partnership

### **Abstract**

*Sustainability and climate change are issues in which universities are playing a crucial role in providing research, expertise and leadership. Universities typically engage with communities ranging from their local community to global networks of worldwide communities-of-interest, so that they are well-placed to play a major role in providing advice and leadership on how to respond to the challenge of climate change at the local and global level.*

*Griffith University has been at the forefront of environmental teaching and research since its inception in the mid 1970's and accordingly has a substantial range of expertise to draw on with respect to climate change issues in the context of a sustainable future. It also has a substantial track record of community engagement at the local level and through its international linkages.*

*In this paper, strategies and initiatives that the University has developed are used as the basis for a discussion of strategies that universities can use to respond to the challenge of climate change and sustainability.*

### **Introduction**

This paper discusses the issue of universities engaging with communities for a sustainable future, particularly in light of the need to adopt sustainable practices to respond to the threat of climate change. Climate change is an issue in which universities are playing a crucial role in providing research, expertise and leadership on how to respond to an issue that many commentators regard as the biggest issue of our time. Universities are uniquely well placed to play a major role in providing advice and leadership on this issue not only because of their research and expertise, but also because many universities have excellent links with their local communities and with global networks of worldwide communities-of-interest.

Griffith University has been at the forefront of environmental teaching and research since the university's inception in the mid 1970's and accordingly has substantial research expertise to draw on with respect to sustainability and climate change issues. It also has a substantial track record of community engagement with local communities and at the global level through its participation in many global networks, so it is well placed to take a leading role in engaging with communities on sustainability and climate change issues.

This paper draws on the experience of Griffith University in developing strategies and undertaking a variety of initiatives relating to sustainability issues to explore ways in which universities can respond to the unique challenge of climate change and sustainability.

### **Context**

Sustainability is a very widely used term with many definitions. In this paper, the definition of the World Commission on Environment and Development is used where sustainability is defined as "forms of progress that meet the needs of the present without compromising the ability of future generations to meet their needs" (World Commission on Environment and Development, 1987). Sustainable practices imply reducing the amount of resources used, waste generated and emissions produced. For these reductions to be sustainable in a social and economic context, they have to be managed in a fair and equitable manner across the globe.

Climate change arguably represents the most challenging sustainability issue facing the world. The international community has been grappling with climate change for almost two

decades with the 1992 Earth Summit in Rio and the 1997 Kyoto Protocol on reducing greenhouse gases leading the way in informing public opinion and prompting national governments to develop policies to address climate change. The recent 2007 United Nations Climate Change Conference in Bali has produced a new sense of urgency and led to discussion of strong targets for reducing greenhouse gas emissions. Many national governments, including the Australian government, are developing policies to not only implement greenhouse gas targets, carbon trading schemes, and alternative energy sources, but also develop adaptation strategies to deal with the already unavoidable impacts of climate change.

Changes to the earth's climate being brought about by increasing levels of greenhouse gas emissions now appear to be inevitable regardless of efforts to halt the increase in these emissions. The resulting consequences are increasing global temperatures, rising sea levels, more severe and frequent storms, and droughts with wide ranging impacts on the economy, society, and natural systems, which raises the fundamental issue of how to cope with these changes to ensure a sustainable future for our communities in the local and global context.

Sustainability issues relating to climate change will have impacts on a broad front involving the development of policy and implementation strategies and taking action on biodiversity, industries, water resources, health, infrastructure, housing, disaster management, and the social and economic impacts, both locally and globally. There are in fact so many areas for universities to engage with their communities on climate change issues and sustainability that it is imperative for universities to develop strategies, prioritise institutional responses, and play to their strengths.

### **Strategic and Policy Response**

Should universities consider endorsing charters, such as The Earth Charter, or other similar documents that seek to build a worldwide consensus regarding sustainability? In 2001, the Griffith University Council considered endorsing The Earth Charter which arose out of the 1992 Earth Summit and was designed to promote a global consensus statement of values and principles for a sustainable future. It endorses four broad principles: Respect and care for the community of life; Ecological integrity; Social and economic justice; Democracy, non-violence, and peace. Although the University's ethos, strategies and policies are strongly aligned with the principles and intent of The Earth Charter, the possible legal and institutional obligations that might follow from its endorsement resulted in the Council not taking any action on the matter. It appears that no other Australian universities have adopted The Earth Charter to date.

In 2002 the University Council established a sustainability working party to review the University's focus on sustainability and to recommend further actions to improve the University's sustainability profile. The University has subsequently undertaken a range of initiatives that can be characterised as:

Development of a range of community focussed sustainability initiatives.  
Enhancing its teaching and research profile in sustainability, particularly relating to climate change;  
Sustainable management of its buildings and infrastructure.

In the next section, a few of these initiatives are briefly discussed.

### **Green Cross**

An important partnership for the University is with Green Cross Australia. Green Cross International was founded by the former president of the USSR, Mikhail Gorbachev in 1993 to create a new approach to solving the world's most pressing environmental issues through reconnecting humanity to the environment. Green Cross aims to anticipate and resolve conflicts over natural resources and the consequences of climate change by fostering sustainable partnerships between business, government and the community. Griffith has been closely involved with the establishment of Green Cross Australia in partnership with the

Queensland Government and the Brisbane City Council, and is the organisation's university partner.

### **EcoCentre**

The Griffith University EcoCentre, located on the University's Nathan campus offers a bushland setting which is ideal for environmental education programs, exhibitions, conferences, meetings and training seminars. The construction of the EcoCentre followed strict eco-design principles featuring solar energy, ambient ventilation and lighting, rammed earth walls for temperature regulation, rain water collection for grey water use and wet composting toilets.

A partnership with Education Queensland led to the establishment of a state school, the Toohey Forest Environmental Education Centre, which operates out of the EcoCentre. The Centre is staffed by three teachers and is visited by thousands of school children each year. Other major partners are:

Brisbane City Council  
BHP  
AUSTA Energy  
CS Energy  
Visy Industries  
Stanwell Corporation  
QCT Resources  
Thiess Service  
Mitsubishi Australia

### **Academic profile**

Over three decades ago, Griffith University had the foresight to launch Australia's first environmental studies program. Since then, the environment has been catapulted from a fringe issue to the top of political and industry agendas around the world, bringing with it an ever-increasing demand for environmental professionals. At Griffith, natural and built environment programs take an integrated approach, focusing on the health, wellbeing and sustainability of ecosystems, natural resources and communities.

Recent program developments include a Bachelor of Engineering (Sustainable Energy Systems) which is planned for introduction in 2009. It is now clearly understood that renewable energy is of vital importance for our society to continue. A glaring hole exists in the specialised training of engineers in all aspects of renewable and sustainable energy systems which will be addressed by this program.

The Bachelor of Science (Environment) offers students a broad range of courses in the biological, physical, and social sciences with an emphasis on the contribution of these fields to understanding environmental issues, and allows students the opportunity to specialise in Environmental Protection, Environmental Sustainability or Natural Resources and Pollution. The Master of Environment gives students the opportunity to specialise in one of four sustainably focussed majors:

Economics and Policy comprises core courses that cover both the nature of environmental issues and responses by government, business and the community and a range of electives drawn from areas such as environmental planning, education, the social sciences and science. An interdisciplinary approach is taken that covers the scientific data, economic tools, management systems, policy making, regulation and community action.

Education for Sustainability gives students the opportunity to learn skills in areas such as reorienting formal education for sustainability, adult and community education, public communication and social change, planning and evaluating projects and environmental education research.

Environmental Protection includes advanced studies in environment and population health with a focus on environmental protection and pollution studies, aiming at improving ecological sustainable development outcomes for communities.

Water Resources includes studies in environmental flows, riparian restoration and aquatic ecosystem health.

Water is one of the most important current environmental issues across Australia, and will continue to be into the foreseeable future, particularly in Southeast Queensland. Public and political debate within Australia is dominated by water issues, including critical water shortages, alternative water supplies, and the health of rivers and coastal environments. The Bachelor of Science (Water Resources) uses a multidisciplinary approach to equip graduates with the skills to provide leadership in finding and implementing solutions to local, regional and national water resource issues. Graduates from this degree will help to fill the growing need for water professionals across a wide range of fields including water resource management and governance, aquatic ecosystem conservation and restoration, and monitoring and improving water quality.

The Griffith Business School's (GBS) philosophy is that the business leaders of tomorrow should take corporate responsibility and sustainability as seriously as the bottom line and have integrated corporate global responsibility principles into all of their programs. They work very closely with Westpac, the number one global bank on the Dow Jones Sustainability Index (DJSI), to ensure that their programs address the important issue of sustainable business practices.

The GBS was the first Australian business school to be invited to join the Globally Responsible Leadership Initiative by the European Foundation for Management Development - an international initiative that aims to develop the next generation of responsible business leaders.

The GBS is also the first Australian university business school to sign-up to the UN Global Compact Principles of Responsible Management Education (PRME), leading the way for the advancement of corporate social responsibility (CSR) and a new generation of business leaders.

### **Research profile**

#### Queensland Smart Water Research Facility

Building off the University's considerable research strengths in environmental science, it has been successful in leading the establishment in 2006 of the Queensland Smart Water Research Facility, an \$18 million facility which is under construction at the University's Gold Coast campus. The Facility is a joint venture with the Queensland Government providing \$10 million, the Gold Coast City Council, \$4 million and Griffith \$4 million. The research program will host a suite of research programs in sustainable water supplies, safeguarding water quality and exploring alternative water sources. Partners include:

Gold Coast City Council  
Toowoomba City Council  
Wide Bay Water  
University of Queensland  
University of the Sunshine Coast  
Central Queensland University  
NIWA Australia  
National Research Centre for Environmental Toxicology  
International Water Centre  
AquaDiagnostic  
EcoNova.  
National Climate Change Adaptation Research Facility

In 2007, the University was successful in leading a consortium bid for the Australian Government's National Climate Change Adaptation Research Facility (NCCARF). The Griffith proposal to host the NCCARF was in partnership with the Queensland Climate Change Centre of Excellence, the Queensland Department of Emergency Services and seven other universities across Australia:

[James Cook University](#)  
[Macquarie University](#)  
[Murdoch University](#)  
[Queensland University of Technology](#)  
[University of Newcastle](#)  
[University of Southern Queensland](#)  
[University of Sunshine Coast](#)

The consortium won \$50 million to support the Facility, and is headquartered at the University's Gold Coast campus.

The NCCARF recognises that adaptation research capability is widely dispersed geographically and institutionally and that adaptation planning and decision-making must account for local environmental, social and economic conditions. A number of Adaptation Research Networks, hosted by the Facility, will be established to advance regional and sectoral knowledge across Australia on climate change impacts, vulnerability and adaptation options. The themes for the Networks are:

Terrestrial biodiversity  
Marine biodiversity and resources  
Water and freshwater biodiversity  
Settlements and infrastructure  
Human Health  
Primary industries  
Disaster management and emergency services  
Social, economic and institutional dimensions.

### **Climate Response Program**

Griffith has a long standing national and international reputation in research in the environmental sciences, with the largest group of environmental professionals of any university in Australia. Various tertiary institutions have track records in the scientific prediction of climate change, and in policy initiatives designed to mitigate impacts. However, no major Australian university has fully considered how actual Australian societies, with their real and existing legal, economic and social constraints, will respond to changes in the physical and social environment, especially an increased frequency and severity of natural disasters.

The Climate Response Program brings together expertise from Griffith's Science, Engineering, Law, Environment and Planning, and Health groups to form a leading national research program to research and develop practical tools to respond to the multiple impacts of climate change.

### **Solving the E-Waste Problem**

Griffith University has been approached by the United Nations research arm for managing electronic waste to create an Asia Pacific hub dedicated to reducing the 40 million tonnes of e-waste produced each year worldwide. The United Nation's Solving The E-Waste Problem (StEP) Asia Pacific hub initiative will be led by Griffith E-Waste Research Group head, Dr Sunil Herat who is currently researching the sustainable management of electronic waste. The program consists of five key taskforces; ReDesign to investigate design to streamline reuse, repair, refurbishment and recycling; ReCycle to enhance global recycling infrastructure; ReUse to develop replicable and sustainable global reuse system; Policy & Legislation; and Capacity Building to target education, awareness raising and partner recruitment.

Universities have a unique role in building e-waste minimisation into formal education for engineers and IT professionals, and leading collaborative research projects with published results that will inform both the science and the legal and regulatory debate.

#### Infrastructure

The University has since its inception in 1971 designed its buildings to incorporate Environmentally Sustainable Design principles which have been tested, proven and refined with each generation of development. These ESD principles are set out in the University's Design Guidelines (Edition 17.2) and which form part of every construction project brief.

The last seven years in particular has seen a significant jump in the application of ESD and Griffith is an acknowledged leader in driving ESD in its buildings.

In general terms, all new buildings and retrofits now include features such as direct digital control and building management systems to optimise plant operation and energy use, advanced electrical and fire systems, lighting and hydraulic technologies.

Buildings are designed to maximise daylight penetration while at the same time limit heat and glare. Building orientation and fenestration are important passive energy management initiatives that have used since the early seventies. Internal lighting is controlled to optimise natural light and switch off lighting in unoccupied rooms.

Air conditioning systems are designed to service individual zones and where possible individual rooms have their own air conditioning unit to allow individual control by the user. Overriding controls through the BMS ensure units do not operate when the room is vacated.

Water use is minimised through the use of timed taps in all toilets, waterless urinals and water saving equipment. Air-cooled chillers are now used to avoid cooling towers which demand large amounts of water as well have the potential to introduce Legionella bacteria. Roof water is collected in tanks for re-use in toilets and for irrigation.

The designers of every new building are required to complete and submit an ESD matrix with their design which sets out the ESD initiatives included in the building and its services.

#### Discussion

The EcoCentre is a good example of a university playing to its institutional strengths and using community/partner networks to create an innovative, community focussed project on sustainability. The EcoCentre was championed by Emeritus Prof Calvin Rose, former founding Chairman and subsequently Dean of the Faculty of Environmental Sciences. The project had credibility with the broader community and with business because of the well known strengths of the University in environmental education and research and because the project had a very credible champion.

Links with the business community were used to obtain donations, including in-kind provision of construction materials by partner organisations for the construction of the EcoCentre. The EcoCentre is itself an important education tool because it has many design features that incorporate the key principles of sustainable design. Promotion of sustainable ways of living includes public awareness programs in partnership with industry, government and the community.

A key aspect of the EcoCentre in engaging the broader community is the partnership with Education Queensland, which together with Griffith University operates the Toohey Forest Environmental Education Centre. The Centre promotes and supports environmental education through learning experiences designed for students, teachers and schools and host visits of thousands of school students annually. This partnership is a very good example of an effective partnership where synergistic benefits flow to the organisations involved and to the broader community.

The Friends of the EcoCentre is a community-based group that provides a means of linking a diverse range of individuals and organisations to support the EcoCentre and engage the broader community in sustainability issues.

Turning now to the broader strategy that Griffith University has used to engage communities for a sustainable future, the strategy has been to:

Build off its strong environmental profile to strengthen its environmental teaching and research programs in the area of sustainability;

Introduce sustainable business practice as a major theme in its Business School;

Strengthen sustainable management practices with its buildings and infrastructure;

Undertake a range of activities that utilise the university's strength in environment and sustainability combined with its extensive network of partner organisations.

Although the University has considered the development of sustainable policies at the level of the Governing Body, it has not yet adopted an explicit university-level policy on sustainability. In Griffith's case, the absence of such a policy has not hindered it from launching a series of initiatives in collaboration with its partners. However, it may be the case that a university which has a weaker profile in sustainability might find it helpful to engender action by developing an explicit university-level sustainability policy.

A feature of Griffith's sustainability initiatives is the range and diversity of the partners typically involved, which gives the partnership hybrid strength, robustness and resilience, and increases the likelihood of success. To engage communities requires partners, whether it is other universities, governments, city councils, businesses, non-government organisations, community groups and organisations. A precondition for successful engagement is to have a range of linkages with partner organisations that will work together collaboratively on projects. Successful partnerships usually have governing body/CEO endorsement and support and a project champion in each partnering organisation. For a more detailed discussion of the factors that lead to successful partnerships see University Engagement with Local Government Standage and Clarke, AUCEA National Conference, 2007.

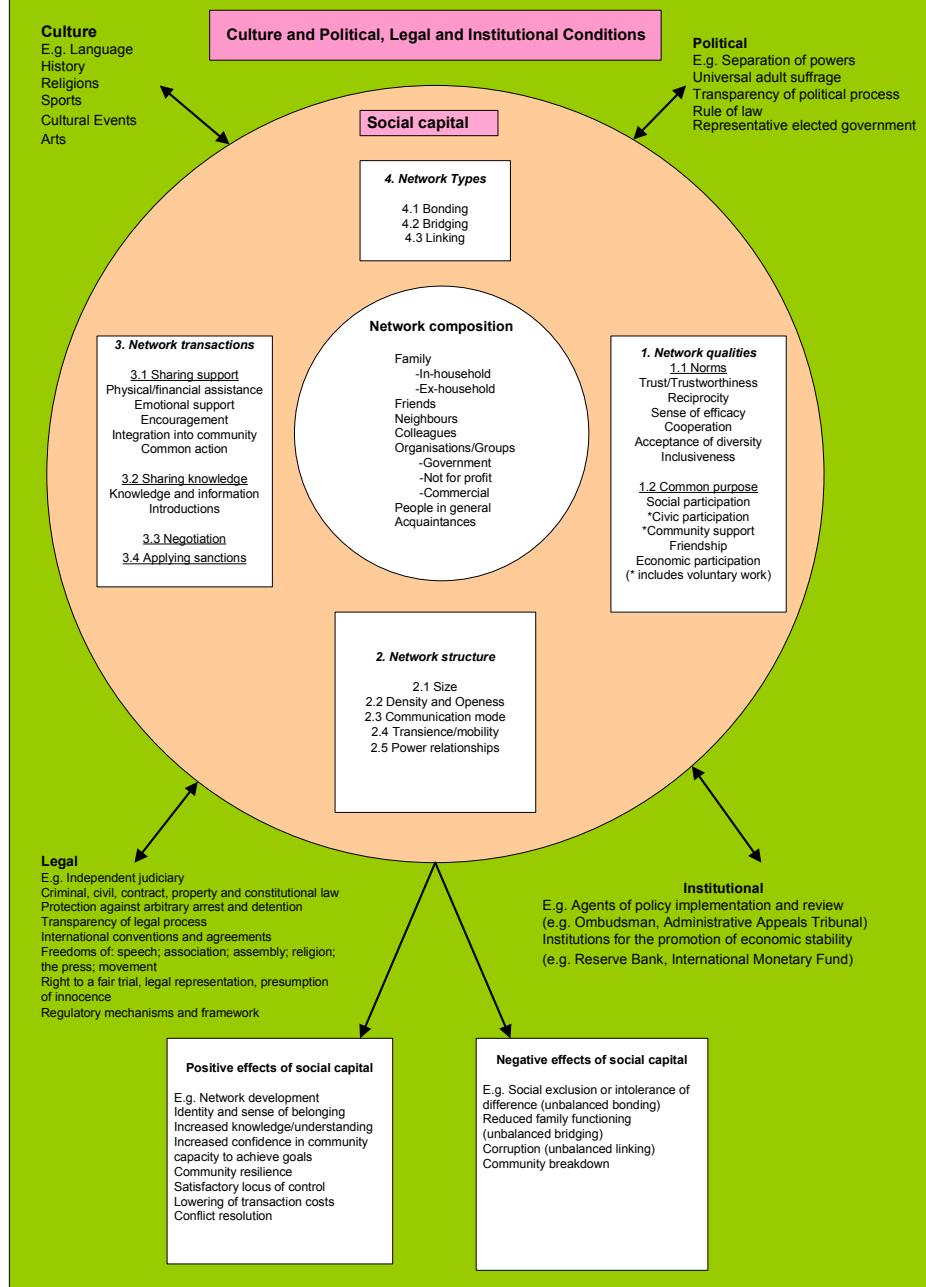
It is suggested that a university planning to improve its community engagement in sustainability should begin by reviewing its academic strengths that relate to sustainability. As indicated throughout this paper, sustainability is an issue that touches many academic areas in some way, so that any university will find that it has academic areas that are relevant. Such a review should also establish the linkages with partners that already exist, which might assist in the development of sustainability initiatives.

It will then be possible to develop sustainability initiatives that build off the institutional strengths and existing partnerships and perhaps indicate where opportunities exist for new initiatives. It is recommended that a fairly pragmatic and grounded approach should be taken so that institutional energy and engagement is focussed on achieving outcomes.

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Figure 2: Social Capital, Culture and Political, Legal and Institutional Conditions in Australia



## **Partnering With Public Libraries: Building Better Council Relations and Improving Student Attainment – A Case Study**

**Mr Jack Goodman, Mr Ross Maunsell, Ms Anne McLean Tutoring Australia and University of Western Sydney**

**Key words:** partnership, public libraries, homework support, tutoring, community outcomes

### **Abstract:**

*The University of Western Sydney (UWS) and Fairfield City Council have pioneered a new type of community engagement partnership that has the potential to strengthen the long-term relations between both entities while strengthening the communities they serve. The partnership arises from the University's schools strategic plan which includes a focus on improving educational attainment across Greater Western Sydney (GWS). The region's schools serve students from more than 170 nations, and while there are many high-achieving students, the rate of school completion and transition to any form of tertiary learning is significantly lower than for the rest of Sydney. UWS has launched a variety of school partnerships that involve staff and students in tutoring and mentoring programs, teacher support and development, academic enrichment activities, research, and curricular reform. A school sector reference group guides the agenda designed to build knowledge and capacity in the region and enhance students' skills, confidence and learning outcomes.*

*Recognising the need for students to have out-of-school support and assistance with homework, this partnership involves leveraging an existing program that has been run by the Fairfield City Library Service (FCLS) for several years. The program – called yourtutor – is a pioneering service of Tutoring Australasia that connects students via the Internet to trained and background-checked curriculum experts for one-to-one learning support in core subjects, including mathematics, English, science and assignment research. yourtutor is delivered online and is accessible from all library branches and the library's website. The program has grown dramatically and demand by Fairfield high school students has run far beyond the Council's ability to fund capacity.*

*UWS recognised an opportunity to contribute to educational outcomes by helping the program serve many more students. UWS chose Fairfield because of its large schools and below average tertiary enrolment rates. With the enhanced funding, the program is now serving thousands of Fairfield-located high school students who have demonstrated a desire to succeed academically. Furthermore, UWS believes the partnership will encourage school students to stay in school and plan for further study. School students see UWS graphics on the Web site and throughout their 20-minute (average length) learning sessions. UWS students can apply to become tutors in the program.*

*The program measures student use with both quantitative and qualitative feedback. If the partnership continues on its current trajectory, UWS envisions expanding it to more of the 14+ council areas its campuses serve.*

### **INTRODUCTION AND OVERVIEW**

University-driven community engagement initiatives can take a range of forms and drive a multitude of outcomes. The benefit of such diversity is obvious; however there is a cost, as well. Too many small and disconnected projects can result in a lack of focus and an inability to achieve "scale" in outcomes. UWS has realised the importance of integrating its approach to community engagement, particularly as it involves working with schools in the communities it serves. Earlier this year the University publicly launched "Building Better Relationships with Schools 2008-10", a Strategic Plan to provide just such a framework for all its schools engagement efforts.

At the same time that UWS was developing its Schools Strategic Plan, it was also aware of the importance of using community engagement initiatives to strengthen its ties to local

government. For UWS this is particularly challenging because its six campuses cover an enormous geographic area and serve upwards of 14 of Greater Western Sydney's councils. The benefits of an additional layer of engagement at the council level linked with its approach to schools is that it can work to achieve a scale of impact across a population of 1.8 million that would otherwise be unattainable. A unique opportunity presented itself when the University became aware of an existing initiative at the Fairfield City Library Service (FCLS) that was in need of additional support, and this revealed the potential of public libraries as ideal partners for universities seeking to generate positive community outcomes.

The initiative is called *yourtutor* and it is an online, one-to-one, live learning support service provided to communities via public libraries. The concept of *yourtutor* is simple: Students in years 4 through 12 who need help with their English, mathematics, science, assignment research or study skills questions can log on to a computer – either in the library or at home – and connect to a trained, professional, background-checked, Australian tutor for live, one-to-one tuition. The service is open from 4pm to 8pm Monday to Friday, during school terms and holidays. The company that developed and provides the service, Tutoring Australasia, has a strong social mission to make one-to-one learning accessible and affordable for all Australians, enabling students to develop their learning confidence and realise their full academic potential.

FCLS had been the first library in Australia to offer the service as part of its effort to deliver better learning support to school-aged students, and its experience over the previous four years had been exceptionally positive. Since its inception in 2003, when the service was launched to supplement a face-to-face homework program at the Fairfield branch library, it has grown to serve thousands of students across the entire council area. Initially *yourtutor* was only available from within the five library branches themselves, meaning that students had to find their way to the libraries after school and get to one of the high-demand free Internet terminals in order to get help from the tutors. In 2006 the service was expanded so that it is now available via the Fairfield Library web site. Now students with an FCLS library card can connect to *yourtutor* from home or anywhere they can log on to the Internet. They simply follow the links on the site, type in the bar code number on their library card, and connect. Usage spiked up almost immediately and has been on an upward trajectory ever since.

## THE ROLE OF PUBLIC LIBRARIES IN AUSTRALIA

Before going into further depth about the partnership and UWS's vision for it going forward, it is worth reviewing the often overlooked role public libraries play as community education hubs. Public libraries receive little recognition for the work they do, but they are used extensively by the 12-million Australians who are members. In fact, Australia's public libraries are the single largest voluntary membership organisations in Australia. Moreover, the role of the public library has changed dramatically in the last half-century. Where once libraries were simple book lenders primarily offering quiet places for reading, they are now vibrant community hubs featuring a range of services and catering to the entire population, from mothers with newborns to senior citizens. Within their broad mandate to serve as cradle to grave learning and community hubs, public libraries play a particularly critical role for students and young adults. Students flock to local libraries after school, both because libraries are safe and interesting community hang-outs and also because libraries are great places to get schoolwork done. In fact, young Australians between the ages of 10 and 20 are the single largest population of public library users.

Thus it makes perfect sense that libraries should be looking for new and better ways to engage students. Homework centres, exam study guides and materials, learning lounges, and teen recreation areas are just some of ways public libraries are seeking to engage this critical demographic. In addition, nearly every library of any scale has at least a young adult librarian, and many also employ a community outreach librarian. As a result, libraries are also strong bridge-builders with local public schools, both paying frequent visits to elementary and high schools and also hosting innumerable visits by school groups keen to learn about library services and materials geared to their needs.

Yet it is also worth noting that public libraries in Australia are among the most poorly funded public institutions. Nationally all 1,500 public libraries make do on about \$700-million in total funding, about half the funding a single university receives. On a per capita basis they receive about 8 cents a day, the vast majority of it from local government. Australia's public libraries also suffer from the fact that they receive no financial or other support at the federal level. At the recent 2020 Summit, the word "library" was not mentioned once, no librarians were invited to attend, and, to the best of anyone's knowledge, public libraries' role in the future of Australia was completely ignored. For those interested in learning more about the role of public libraries in Australian society, the Friends of Libraries Australia (FOLA) hosts a website that features a range of papers covering all aspects of the topic (<http://www.fola.org.au>).

So public libraries are perfectly positioned public institutions with multiple, highly-visible and heavily trafficked local storefronts in nearly every community in Australia. They are also, it is worth noting, far and away Australia's most trusted local, public institutions and their websites receive more visitors than the rest of all the local council websites combined. Finally, their chronic under-funding means that the vast majority are open to the idea of partnerships with universities that may seek to leverage their unique place in their communities to build better educational outcomes for young people.

### **THE UWS-FCLS PARTNERSHIP**

UWS looked at this situation within the context of its Building Better Relationships with Schools: 2008-10 Strategic Plan and saw a unique opportunity. Specifically, partnering with council libraries appeared to provide an additional channel to reach school students and their families and to achieve all four of the strategic plan's aims:

- To build sustainable University/school relationships that facilitate identification and achievement of common or complementary goals
- To increase knowledge and capacity in Greater Western Sydney through University/school partnerships and collaborative activities
- To provide opportunities for school and University students which increase their options and help them to achieve, educationally and in other spheres
- To encourage school students, teachers, staff and parents in Greater Western Sydney to feel a sense of ownership about UWS and to become advocates of it so it is increasingly a destination of first choice for university aspirants

Public libraries had another benefit. Because they work at the council level and often cover large geographic areas and populations, public libraries can represent an efficient and scalable approach to reaching large numbers of students. In the case of Fairfield City, for example, the library already has relationships with nearly 50 schools in the LGA, and UWS is gaining the benefit of those existing relationships.

The University already had a strong relationship with Fairfield Council, particularly through the Council's decade-long support for UWS student work placements, with the students undertaking projects of benefit to the Council and local community. The relationship was recognised with a UWS Regional Partnership Award in December 2007.

The process of approving and implementing the Fairfield partnership was managed through the University's schools and community engagement teams, reporting to Barbara Holland, the Pro-Vice Chancellor, Engagement. UWS signed a Memorandum of Understanding with Fairfield Council linked to the Council's existing agreement with Tutoring Australasia, indicating its intended support for the program and commitment, assuming ongoing success, into the future. The UWS marketing and communications team got involved at the launch planning phase, working closely with Fairfield Council's library management and communication teams. Because FCLS had a long history running yourtutor, and Tutoring Australasia has a comprehensive program to support the marketing and communications efforts of more than 200 local councils that deliver the service across Australia, the launch itself was fairly straightforward. The NSW Minister for Western Sydney, the Hon. Barbara Perry MP, accepted an invitation to launch the partnership and the program also included speeches by the UWS Vice-Chancellor Professor Janice Reid, the Fairfield Mayor Nick Lalich and NSW State Librarian Regina Sutton. Finally, we had the pleasure of hearing from three

students who have all used yourtutor extensively, including one who was a first-year, first-generation UWS student. Their unsolicited comments added a level of authenticity to the event and underscored for the audience that the program is delivering significant and quantifiable outcomes. The launch attracted significant attendance and media coverage. Very favourable comments were received from school principals and careers advisors who attended, many of whom had not previously been aware of the service.

UWS is extensively involved in schools engagement and interaction, with a strong focus on Greater Western Sydney. Its Schools Action Plan 2008, which supports implementation of the Strategic Plan, brings together all its existing activities with new initiatives that reflect school sector needs and priorities. The Fairfield Council partnership will be publicised during visits to high schools in the LGA by UWS academics and marketing staff. When speaking to students, teachers, and parents, they can inform them that the University now offers them access to one-to-one tutoring to help them achieve the skills, confidence and academic results they need so that they can pursue the course and career of their choice. Staff will be able to distribute small business cards that are University-branded and have simple instructions for logging in to yourtutor. These cards, which are very popular with students, in addition to larger flyers and posters which are placed around schools, raise visibility of the service and also of the University.

### **WHY FAIRFIELD CITY?**

The University's Schools Strategic Plan includes a focus on improving educational attainment across Greater Western Sydney (GWS). The region's schools serve students from more than 170 nations, and while there are many high-achieving students, the rate of school completion and transition to any form of tertiary learning is significantly lower than for the rest of Sydney and for NSW as a whole. Within GWS, the Fairfield region has amongst the lowest tertiary participation levels and thus presents the greatest opportunity to test the potential benefits of both the University-Council partnership and the specific benefits of yourtutor. Over half of Fairfield LGA residents were born overseas and more than a third speak a language other than English at home. Additionally, many parents work long hours. It is often not possible for the parents in these families to help their children with homework. They may not know a lot about educational pathways. Thus this partnership is as much about raising awareness of educational opportunities after high school as it is about increasing knowledge of UWS's specific offerings. It is likely however that by raising awareness and helping to build students' confidence and skills, UWS will see a natural increase in enrolments as families turn to their local tertiary education provider to meet their needs and achieve their aspirations.

### **HOW DOES YOURTUTOR WORK?**

One of the reasons UWS is confident this partnership will be a success is that yourtutor is exceptionally easy for students to find and use. The process begins by navigating to one of the links on FCLS's web site, which looks like this:

The screenshot shows the Fairfield City website's library page. At the top, there's a banner with the text "Our Library - making life bright". Below it, a green bar contains links for "Virtual Library" and "Multicultural". A blue sidebar on the left has a "Welcome" message and a photo of a woman. The main content area includes a "Help" section with links like "FAQs", "Contact us", "Reserves", "Borrowing", and "Community". To the right, there's a "News" section with a red circle highlighting a bullet point about online access for library members.

- Resources
- Database
- Search Engine
- Virtual Library
- Multicultural
- Get more info
- Events
- Anti-social Classes
- Fairfield High School
- Fairfield City
- Fairfield Library

**News**

- Online User Library members can now access the on the go! Use eLibrary to log in through the library website or download to your PC.
- There are 1000+ e-books available via eLibrary, including fiction, biographies, history, science, technology, business, health, self-help, and more!

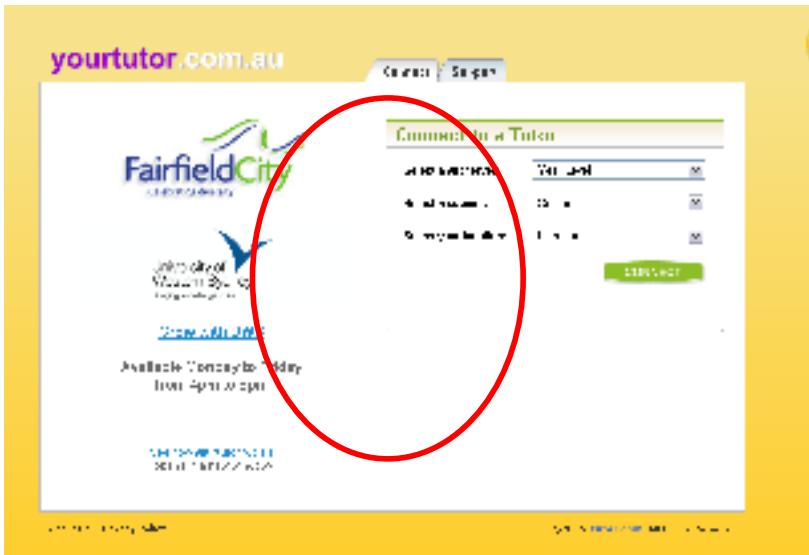
By clicking on this link on the library's home page, students are taken to a page explaining the service:

This screenshot shows the 'yourtutor' service page. It features a cartoon illustration of three children jumping. On the left, there's a sidebar with links for "HOME", "COUNCIL", "MEETINGS", "NEWS", "SERVICES", "LIBRARY", "COMMUNITY", "BUSINESS", "DEVELOPMENT", "ENVIRONMENT", "RECREATION", and "FAVOURITES". The main content area has a "CONNECT" button and a large "t" logo. Below the logo, there's a "Click here to connect and get help now" button. The text on the page explains the service for students from years 3 to 12, mentioning various resources like English, Science, and Maths. It also provides a list of what is available for each year level.

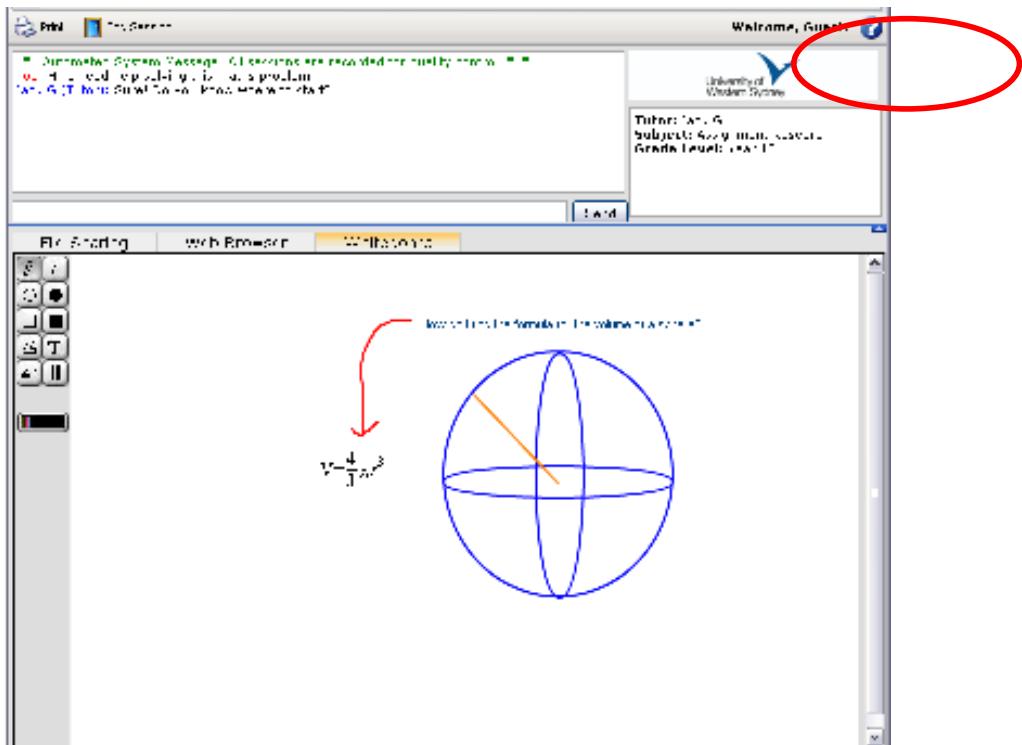
**What is it?**

- Connect during Term 1 for students in years 3-12
- Available Monday-Friday between 9am and 5pm
- Individual learning sessions via video conference
- All students are welcome at Twinkl Australia

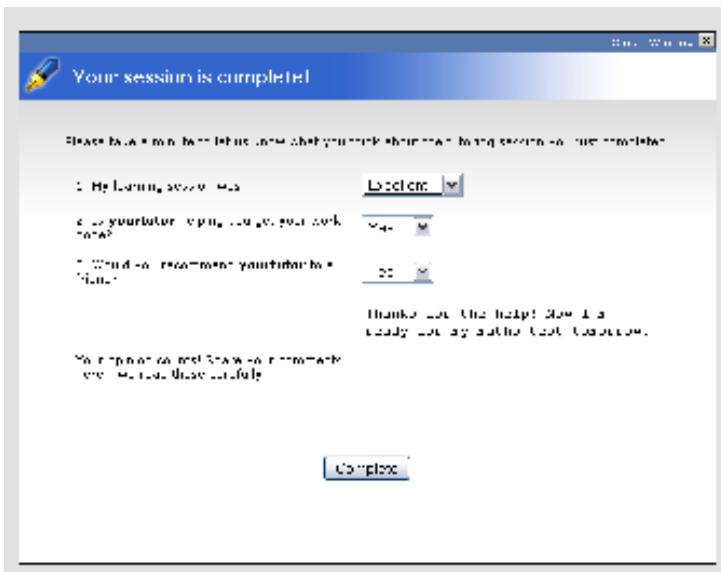
By clicking on the "t" logo and inputting their barcode (when connecting from outside the library), students see the screen below. The connection process is simple. Students simply indicate their year level (4-12), subject they want assistance with, location (i.e. branch library or "I'm at home") and click connect:



The Online Classroom is branded with UWS's logo in the right hand corner of the screen.



At the end of each learning session students are presented with a survey page to complete:



By clicking on the UWS link on the login page, students are taken to a page on the UWS web site that is only accessible via the link. This page allows students to submit their details and request additional information about courses of study and to answer any other questions they may have.

future students

Course & Career Search

UWS

Your Details

Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 City, State \_\_\_\_\_  
 Alternative Email \_\_\_\_\_  
 Work \_\_\_\_\_  
 School/Organization \_\_\_\_\_

Course interest

Business Administration  
 Early Childhood Education  
 English  
 Fine Arts  
 Health Sciences  
 Creative & Communication Arts  
 Engineering & Technology

In the month of April 2008 alone, 460 learning sessions were delivered to Fairfield students. These tutorials lasted an average of about 16 minutes each and the vast majority – >90% -- received positive feedback and comments. These interactions represent unique learning outcomes – “aha moments” – when students come to grasp concepts or gain understanding in ways they would otherwise have been unable to achieve. Typical comments (word for word) from these learning session surveys include:

“i think the tutor helped me out alot now all i have to do is to start my practice essay writing ! thanx”

“i think this tutor session wa really good the tutor broke down my whole assignment and explained key points but without giving answers and giving me time to think and answer it was

really good i understand my whole assigment alot better now! i would recommend the online tutor to anyone =)"

"helped me discover i am smart, and gave me confidence in knowing im doing the questions the right way.  
thanks dude =)"

"it helps heaps to answer a tough question when the tutorer makes you do it, instead of doing it for you, and thats exactly what this tutor done for me  
thanks alot. i feel smarter already :)  
LOL"

UWS's financial support for the project means that the program will deliver twice as many such outcomes in 2008, meeting more of the extraordinary demand that is coming from students in the Fairfield LGA.

The results of these surveys are aggregated on a monthly basis by Tutoring Australasia and delivered electronically to library and University staff. As a result, we receive significant quantitative and qualitative feedback regarding usage of the service and outcomes for the community. Among the statistics in the reports are the total number of sessions delivered, year levels of students and subjects requested, locations of each login (i.e. branch library or "at home"), session ratings and student comments. Additionally, we are gathering queries and expressions of interests from Fairfield students who click through to the UWS and request additional information.

### **ENGAGING THE UWS COMMUNITY**

There is another aspect to this partnership which has the potential to positively impact the UWS community. Working with Tutoring Australasia, UWS students have the opportunity to become tutors in the program and assist school students to achieve their academic goals. Tutoring Australasia has developed a comprehensive training and professional development program for its tutors and UWS students – both undergraduates and post-graduates – are eligible to apply for tutoring positions. They complete a lengthy application, including teaching samples, go through a Working with Children Check, are trained in online teaching techniques and, assuming they qualify, gain a valuable experience. Not only do they gain the intellectual pleasures associated with teaching, but they are also developing online communication and mentoring skills that will serve them well as they pursue their careers after university.

### **POTENTIAL OUTCOMES AND FUTURE DIRECTIONS**

Assuming this partnership is successful, UWS will consider extending its involvement through similar partnership with other councils in GWS. Yourtutor is already available via many of the council libraries in the region, so the infrastructure is in place to replicate the Fairfield model. It is anticipated that many of the other libraries would welcome such an opportunity, particularly where demand for the service is growing beyond their capacity to fund it. The main challenges for UWS will include sourcing funding from within the University's budget and/or finding a third partner that seeks to benefit from relations with both councils and the University.

For UWS, among the benefits of partnering more broadly across GWS would be the potential to make a difference to the prospects of many more school students, build stronger relationships with local councils, raise its profile in the community and more thoroughly integrate the program into existing marketing and information products. Current UWS/yourtutor communications have to be specific to the one LGA, and for this reason the partnership does not feature prominently on the UWS website (including the Future Students portal). If UWS is able to grow the number of partnerships, the opportunities will be numerous and substantial. We look forward to sharing our experience with the evolution of the partnership at future AUCEA gatherings.

## **Legal Issues of Student Engagement In Community Settings**

**Professor Barbara Holland, Mark Croucher, Peter Malecki University of Western Sydney**

### **1      Community Engagement**

The Office of University Engagement at the University of Western Sydney (UWS) provides a focal point for activities that engage the community in the core business of the University.

UWS' website notes that "Engagement at UWS is viewed as partnership, for mutual benefit, between the University and its communities, be they regional, national or global. Engagement is also seen as a distinctive way of carrying out research, teaching, learning and service, the core business of the University. Through such activities, working in partnership with our many and varied communities, we aim to contribute to the development, wellbeing and prosperity of the communities and regions we serve, starting with Greater Western Sydney".

The key to the development of any student community engagement program is that of a partnership between the educational institution, the student and the community participants. Any partnership must be grounded in a clear understanding of each partner's respective roles and responsibilities as well as setting out how risks faced by each partner will be managed during the course of a program. In short it involves planning beforehand and management during the program.

As engagement grows we must anticipate potential issues and set up systems that offer protection and assurance without being too burdensome to us, to students, to partners. In engagement partners play an intensive role in interacting with students and our approach to risk management must respect their needs while also reaffirming partner roles and responsibilities. The approach we have taken at UWS seeks to address risk/liability issues by developing Engaged Learning Agreements which reinforce best practices in community-based learning and partnership management whilst complying with our policies.

It is appropriate to turn to the experiences in the USA where organised programs for the provision of community service have been operating for many years and more recently encouraged and supported by legislative initiatives at the US State and Federal Level.(1)

What are the indices of a good student community engagement experience? The National Service Learning Clearing House website (reference website), states that:

"In general, authentic service-learning [which we refer to as student community engagement experience] experiences have some common characteristics:

They are positive, meaningful and real to the participants.

They involve cooperative rather than competitive experiences and thus promote skills associated with teamwork and community involvement and citizenship.

They address complex problems in complex settings rather than simplified problems in isolation.

They offer opportunities to engage in problem-solving by requiring participants to gain knowledge of the specific context of their service-learning activity and community challenges, rather than only to draw upon generalized or abstract knowledge such as might come from a textbook. As a result, service-learning offers powerful opportunities to acquire the habits of critical thinking; i.e. the ability to identify the most important questions or issues within a real-world situation.

They promote deeper learning because the results are immediate and uncontrived. There are no "right answers" in the back of the book.

As a consequence of this immediacy of experience, service-learning is more likely to be personally meaningful to participants and to generate emotional consequences, to challenge

values as well as ideas, and hence to support social, emotional and cognitive learning and development.”

#### **Risk Management:**

Any risk management strategy needs to be collaborative and recognise the legal environment in which all of the parties operate, with obligations to protect and educate students, preserve and protect public resources and assets (namely those of the participating educational institution in accordance with its governing legislation) and to protect the resources and assets of the community participant. The US California State University (2) employs a number of tools as part of its relationship and risk management regime in its community based learning program, including some of the following resources:

- Checklist for Community-Based Organization Visit
- Service-Learning Agreement
- Orientation Checklist
- Learning Plan
- Community-Based Organization Sign-In Sheet
- Faculty/Campus Record of Service-Learning Placements
- Student Tracking Sheet

#### **2 Legal Models**

UWS did not assume that UWS' students (Students) are automatically covered for liability through its insurances and actively sought to manage the risks of placing Students with Hosts through the Engaged Learning Agreements (Agreements). UWS developed two separate Agreements governing the placement of Students with Hosts in relation to Community Engagement Activities (Activities).

In preparing these Agreements, UWS' Legal Office reviewed previous placement agreements that UWS had entered into with Government agencies, as well as materials developed by California State University and other American agencies (3).

There is one Agreement for Students to sign/acknowledge and a separate one for Hosts with whom Students will gain experience. Whilst they are separate documents, they are designed to work in conjunction with each other. They are also designed to be generic and to apply to many different types of engaged learning programs. That being said, they are not intended to replace the clinical placement or practicum agreements (mainly for the health disciplines and those for teaching).

Basic protocols for the treatment of intellectual property and confidential information are established in the Host Agreement and Student Agreement. The Agreements can be posted on UWS' website as examples of the terms which would apply to Students and Hosts, if they elect to become part of an engaged learning program.

Taking a formal and singular approach to managing engaged teaching relationships through the parties contractually agreeing to important terms and conditions of their relationship did, at first, meet with some resistance from University academic administrators and staff who may feared the process would be too formal and legalistic and would entail additional administrative work. Academic staff also worried that processing legal forms would be a great burden. Two things on that point: first, UWS can assist with partner and student communications, and second, the routine and ongoing use of these types of standard agreements will, after the first few occurrences, actually save time and promote sustainable partnerships! Simply said, if you do not establish these practices in the agreement between the Host and UWS, the Students will be at risk of a poor learning experience and UWS will be exposed to a higher level of risk.

Whilst drafting the Agreements UWS' Legal Office sought to reinforce in the Agreements best practices in developing partnership relationships among the Students, Hosts and the University (Parties). The Agreements are designed to help the Parties understand their

relationship. It is expected that the processing of the Agreements themselves will tutor UWS' academic staff in adopting the very best practices of engaged learning. This will assist in ensuring that UWS' community engagement programs are of the best quality and perform well on related performance indicators.

### **Student Agreement**

The Student Agreement provides that by agreeing to the terms of the Agreement with UWS, the Student acknowledges that they are prepared to consider invitations from the University to participate in Activities with third party businesses or companies ("Host") as part of their UWS Degree. By agreeing to these Terms, the Student also acknowledges that they are not obliged to accept any invitation from the University to participate in any Activity; nor is the University bound to offer them any invitations to participate in any Activity. Therefore, the Student's involvement in a project with a Host is an optional part of their course. In relation to the Students supervision during their participation in an Activity with the Host the Agreement provides that UWS will continue to supervise their academic conduct throughout an Activity, in consultation with the Host where appropriate.

### **Host Agreement**

In the Host Agreement the Host agrees that the Activities will be conducted in accordance with the Learning Plan agreed to between the University, Student/s and the Host. UWS nominates which Students will participate in the Activities with the Host. The Host acknowledges that the Activities are being undertaken as an educational exercise by the Student and therefore the Student may not be in any way qualified or experienced to produce any specific outcome. The Host Agreement also covers issues in relation to the Host's obligations with respect to the Student, such as observing certain UWS' policies.

## **3      Approaches to managing risk/liability for students when studying off campus (Activities)**

The following paragraphs set out possible legal risks of Students participating in Activities with Hosts and legal approaches that may be adopted to manage these risks using Engaged Learning Agreements (Agreements). In UWS' context, it has insurance cover for certain risks, however UWS does not use insurances as a replacement for good risk management strategies.

### **Accidents at Host Workplace**

#### **Injury at Hosts premises**

It is an unfortunate fact that a Student may be injured at a Host's premises given the expected numbers of students that will be undertaking Activities throughout Australia. Because of this risk, it is important to confirm that your insurances cover Activities undertaken by your students. For example, does your organisation's Student Accident Insurance Policy protect students engaged in approved course related activities including placements at a Host's premises? Is your organisation able to demonstrate from its records that at the time of an incident, the student is enrolled in an approved course which includes such course related Activities? Policies may vary, so you should check this with your insurer.

#### **Exclusions for students receiving remuneration**

Beware that your Student Accident Insurance Policy may exclude students who are injured at a workplace and are in receipt of remuneration from the Host. Where this is the case, the Student will be deemed to be an employee of that workplace and will most likely not be covered by your organisations' insurance cover.

It is recommended that your Agreements identify the Activity to be undertaken by the Student and provide that:

- Each Activity will be conducted in accordance with the requirements described by your Organisation prior to the Student commencing an Activity.
- Your Organisation will continue to supervise the Student's academic conduct throughout an Activity, in consultation with the Host where appropriate.
- The Host will nominate one of its employees to act as supervisor for an Activity, and your Organisation will give the student directions as to how to liaise with that supervisor.
- Your Organisation, Student and Host acknowledge that the student is not an officer or employee of either your Organisation or the Host, and that the Student is not providing a consultancy or similar service to the Host.
- Your Organisation, Student and Host agree that the Student will not be able to legally bind or represent the Organisation or a Host in any way.
- There will be no fee payable to the Student in connection with the Student participating in any Activity.
- The Student is not authorised to incur any costs or expenses on behalf of the Organisation or Host without the prior written approval.
- The Host agrees to be responsible for satisfying itself that the Students are competent to perform allotted tasks and that they conduct themselves in a safe and professional manner.

#### **Public Liability**

This insurance usually provides cover to educational organisations, staff and students for legal liabilities arising from personal injury (including death) and property damage suffered by a third party - ie: a third party lodges a claim against your Organisation, staff or student alleging negligence resulting in property damage or personal injury. The protection also covers advertising injury (piracy or any act or omission in the use of advertising or merchandising ideas; infringement of copyright; or patent infringement). In order for protection to apply claims must be the result of an occurrence in connection with the University's operations.

Your Agreements may include that both the Student and Host notify the relevant officer of your Organisation of any incidents that occur which may result in a claim against the Student or University.

#### (b) Travel

Students travelling to Host's premises may be exposed to additional risk of injury. As a result, your Organisation will need to carefully consider whether it provides transport for Students to safely attend the Host's premises.

If a Student is injured, the trigger for a claim is that the Student sustains an injury resulting from an accident whilst engaged in approved course related activities. Cover may also apply to direct travel to and from the approved activity. Any excesses applied to claims are likely to be borne by the claimant (ie: the Student). If a Student is injured in a motor vehicle accident, benefits under a CTP policy (attached to the vehicle) may need to be exhausted before a claim could be considered under the accident policy.

Hosts might assume that your Organisation's insurances provide cover for a Student driving or being a passenger in their vehicle. In fact, if a Student is in the Host's vehicle, any third party property or personal injury should be covered by the Host's comprehensive vehicle and CTP insurances (as appropriate). Therefore, if a Student is required to drive a vehicle owned by the Host, the Host should ensure that their vehicle insurance cover does not exclude 'non-employee' drivers. If the Student is a passenger in a vehicle, the CTP policy should respond to claims. The Host should provide your Organisation with certificates of currency for their insurances in relation to motor vehicles (before Students commence an Activity).

#### (c) Student Conduct and reputation

Students whilst they are at a Host's premises are effectively representing your Organisation. Poor behaviour by Students will cause reputation damage to your Organisation and its academic programs. Prior to commencing an Activity, Students should agree in your Agreements to behave in a respectful and courteous manner whilst at the Host's organisation that they work for. Also, placement within Host's organisation is an educational opportunity and Students should be reminded that the Host is investing valuable resources in their learning.

(d) Discrimination and Assaults

For many Students their participation in an Activity with the Host may be their first work experience in their chosen field of study. Therefore, the experience that they have with the Host may have a substantial impact on their perception of their future career path. Students might be particularly vulnerable in the workplace if they are inexperienced and perceive the Host as giving them a favour by allowing them to participate in the Host's activities.

Your Organisation will most likely have a range of policies related conduct and behaviour that Students and staff are required to comply with which may be different from the Host's policies.

The Host and your Organisation should agree which policies are to apply to the Student and Host's conduct whilst the Student is engaged in the Activity. For example, your Organisation may wish to include in the Agreement that the Host agrees to comply when dealing with Students with your Organisations polices in respect of:

- discrimination, harassment and bullying;
- safety and accident reporting; and
- privacy.

Copies of the policies should be provided to the Host and should also be made available via your website. Students should be clearly advised that if they believe that any of these behaviours are occurring at the workplace that they can report the matter to an appropriate officer within your Organisation, such as a Complaints Officer.

If a Student suffers an injury as a result of an assault where no other policy provides cover or benefits are exhausted (eg: private health fund or CTP insurance) your Student Accident Policy (assuming you have one) may cover non-Medicare medical expenses. However, Students should also be advised to seek independent legal advice should they want to lodge a claim for compensation (i.e.: the Student should consider suing the assaulter/party responsible for not providing a safe work place), and your Organisation may wish to fund independent legal advice for the Student.

(e) Students damaging Host's property or records deliberately or accidentally

If a Student maliciously causes third party personal injury or property damage they are unlikely to be covered by your Organisation's insurances and the Student will be personally liable for any resulting claim. However, it's foreseeable that the Host will seek to recover compensation from your Organisation rather than the Student, given the likely lack of financial substance of the Student. If a Student deliberately damages a computer system or a Host's information the damage caused may be substantial. To reinforce the Student's responsibilities it's suggested that the Students agree in the Agreements that they enter into with your Organisation that they will:

use their best endeavours not to do anything which may compromise or bring into disrepute the Host or your Organisation, or cause damage to the Host or your Organisation; and ensure that their conduct whilst engaged in any Activity complies with the provisions of your Organisation's policies.

Accidental third party personal injury and property damage should be covered by your Organisation's Public liability insurances protection. Therefore claims made against the University or Student would most likely be covered, however your Organisation may bear the first excess related to any claim imposed by your insurer. Again, we stress however that

insurance policies do not replace good risk management strategies that the Parties may agree to in the Agreements.

(f) Confidentiality and Personal Information

Students may become aware of Confidential Information with regard to the Host's business practices and Personal Information regarding the Host's employees.

Students should be made aware and agree that Confidential Information and Personal Information is to be kept confidential and only used by Students where required for the purposes of submitting papers and materials for assessment.

It's worthwhile confirming that your Organisation's Professional Liability insurance is endorsed to provide cover for unintentional infringements of intellectual property and breaches of confidentiality by Students.

(g) Publication

Student's participation with the Host is part of the Student's academic experience. Students may be required to prepare a paper, dissertation, thesis or other assignment ("Assessment") that refers to any Activity for examination purposes and this should be recognised by Hosts in your Agreements. It may also need to be explained to the Host that one of the aims of the educational institutions is to encourage the public dissemination of research results generated through its programs. As such, while the Host may wish to restrict publication to third parties of information relating to the Hosts activities to protect its Intellectual Property or Confidential Information, the Host should agree to use its best endeavours to limit any restrictions it imposes on publication of a Students' scholarly works.

Hosts may request that the University take appropriate steps to ensure the protection of Host's Confidential Information. Accordingly, the Host and University may need to agree that any examiner of a Student's scholarly works sign an appropriate confidentiality undertaking; and/or that a limited time embargo be placed on access to the Assessment for examination purposes (being a time period mutually agreed by the parties), provided that the embargo does not prevent examination of a Student's Assessment within the time specified by your academic rules.

**4. New issues or concerns emerging from engagement and partnership activities.**

(a) Intellectual Property

The decision in *University of Western Australia v Gray [2008] FCA 498* was handed down on 17 April 2008, by a single judge of the Federal Court of Australia, Justice French. The critical issue which arose for consideration in this case was how the University of Western Australia's ("UWA") IP Policy applied to affect Dr Gray's claim to ownership in respect of six families of patents.

In summary, the Federal Court found that university IP policies which asserted a right to ownership of the inventions of academics would be appropriating property unless it was found that the university could claim ownership of the invention as an employer under normal contractual considerations.

In the Gray Case, French J found that UWA could not, by regulation, acquire property from its staff members. However, he said that property rights can be vested by contract in the university or otherwise, and those devolving on the University can be protected, managed and controlled by statute or regulation.

Gray's case indirectly raises questions about Educational Institutions claiming IP ownership of intellectual property developed by Students. Without an express agreement between the Student and your Organisation assigning intellectual property to your Organisation, it is arguable that the Educational Institution will have no entitlement to the intellectual property

created by the Student. Many educational organisations do not lay claim to a Student's intellectual property without a prior Agreement being entered into. Therefore, it is recommended that your Agreement with the Student provides that the Student will continue to own their own Background Intellectual Property.

agrees to grant to your Organisation and possibly the Host a royalty free, non-exclusive right to use, reproduce, adapt and communicate the Student's Background Intellectual Property to the extent that it is necessary for the performance of any Activity.

agrees to assign all current and future Developed IP to your Organisation in consideration of being afforded the opportunity to be engaged in an Activity.

unconditionally and irrevocably consents, in relation to any Moral Rights which the Student may otherwise have in relation to any Developed IP which the Student may have developed as part of any Activity.

It is arguable that if Students do not receive any consideration for assigning their IP to the University that the assignment may not be enforceable. UWS is of the opinion that the Students do receive consideration given the benefits that they receive from participating in the Activities at the Host's organisation. On this point, it is assumed that the Student's involvement in the Project with the Host is an optional part of their course, so that if the Student did not want to assign his/her IP then that Student would not be required to be participate. It is open for your Organisation to remove any doubt by requiring the Students to enter into a Deed of Assignment of their IP after the Students have received independent legal advice.

(b) Internet

Students may cause substantial reputational and commercial damage to Hosts if they release confidential information related to the Host's business or damage the Host's computer systems such as by introducing a virus to their computer systems. Your Organisation's insurances may have a general exclusion in its insurance policy for viruses introduced by Students and staff. It is difficult or most likely impossible to police Students' use of a Host's computer systems. Therefore, your Agreements with the Students and Hosts may need to make the Host responsible for the Students' use of computer resources, thus placing the onus on the Host to implement and enforce its own computer systems terms of use.

5 Checklists

When your Organisation is reviewing its Engaged Learning activities to reduce legal risks of these activities it's recommended that the following steps be taken:

Ensure that Students and Hosts enter into appropriate Agreements with your Organisation which sets out the Parties' relationship and the learning goals of the Activity.

Review your Organisation's insurance policies to highlight any particular risks which may not be adequately covered by risk assessment and management strategies.

Consider which of your Organisation's policies will need to be agreed to by the Host to cover their behaviour towards your students.

Conduct regular site reviews of the Host's premises.

Develop a risk management flow chart which describes the steps that your Organisation will take to manage risk of students engaging in Activities with Hosts.

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## **Competing Visions In Medicine: Or, Why Community Matters In The Medical School**

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### **Abstract:**

*Medical schools around the world are facing a new crisis it seems. From many quarters the complaint is made that modern medical education has become “disconnected” from its main mission: training practitioners in the humane treatment of the sick, and undertaking research relevant to improving health and well-being. Yet, as with many present-centred arguments, this dilemma is thought to have arisen recently, tied up with the demands of contemporary science and society. Yet, taking a historical perspective on the developments which have led to this point can help us to understand the nature of the dilemma better, and just as importantly, to clarify why community engagement strategies need to underpin a sustainable future for medical education.*

*For indeed we find that fundamental to the “project” of professionalising medicine from the mid-nineteenth century, was the changing focus of practitioners, away from the individuals and communities in which medicine was practised, towards a more “inward vision” (as Charles Rosenberg termed it) of professional interests and values. Moving medical education from an “apprenticeship” type training, to the more scientific and closed world of the hospital would, it was believed, produce medical practitioners with a better understanding of the nature of disease and its causes.*

*Yet, even as these changes were being implemented, the shifting focus was observed and responded to by many people. From the demands of women to be allowed entry to the profession in the later decades of the nineteenth century, through to the more recent demands by patients for a greater say in and knowledge about their medical treatment options, the closed world and inward vision of medical practice has been resisted.*

*Community engagement in medicine is seen by many as an innovation that will rescue allopathic medicine from its dilemmas. And it is clear that the emergence and gradual acceptance of this new form of medical education is following an historical trajectory that emphasises the value of shared expertise in medical decision-making. By examining the ways in which this development has reached its present position, this paper argues that a sustainable future relies upon understanding and accommodating the long-standing tensions between competing “visions” of medicine.*

The place of community engagement and participation in the provision of medical education has received increasing levels of scholarly attention over the past decade or so. Part of this scholarship includes attempts to find the “origins” of the movement to incorporate community values within the scope of medical education, as well as tracing this development over time. And there is much within this literature that is essential to a clear understanding of the expectations and impulses that have led to our current position. One predominating feature of this literature, however, has been its “insiders” point of view. In the main, the analyses presented have been concerned with the array of responses from the medical profession and developments within medical schools. On the other hand, these responses are often presented as having been initiated by an indeterminate “demand” by an equally indeterminate “public”. This is not to criticise, on the contrary it is a valuable indication of the impact and outcomes that have been generated. But it is also important to understand the context in which the demand arose for such changes, and who the public was... or is. Not least, it is useful to keep in mind that the history of medical education, at least in the western world, has never been uncontentious. Debates over content, method and indeed the make-up of staff and students in medical education, have all come in for public scrutiny and debate at various times. In this paper I will take two key moments of this contested past as a means to expand the discussion about the place of the community in the medical school. Identifying the kinds of criticism that have been levelled at medical schools in the past, and by whom, can help us to match our reactions to the expectations of those asking for change.

The first “key moment” occurred at a time when medical schools throughout the Western world were undergoing a series of profound changes in the nineteenth century. With the emergence of medical professionalism, medical education was being reshaped to produce graduates versed in the fundamentals of what were then seen to be the main requirements for practice. In addition to a growing insistence on the study of the basic sciences, anatomy and dissection, a further challenge was being confronted: the prospect of teaching young women these very “masculine” subjects. Possibly even alongside male students. The second “key moment” we will look at jumps forward a century to the 1970s. While much had of course occurred in the intervening period, we can nevertheless discern a continuity as well: the continuing demands by women among others for a system of medical education that respected their values and responded to their needs.

The essence of our first key moment can be discerned in a question posed by Robert Barnes, a British doctor, in 1875. “Why is it”, he asked, ‘that women have selected medicine as the special point of attack?’. When he asked his question there were increasingly vehement demands by women for entry into medical schools, from which they were excluded because they were women. For Barnes, as for many of his colleagues, the demands to become medical students being made by and on behalf of women were inexplicable. Why would a well brought-up young woman even consider undertaking a course of study to become a doctor that involved a heavy intellectual load, and even (as some claimed) hard physical labour? This dilemma underscores the importance of understanding medicine as part of a wider social world. The ways in which medical education interacts with those other currents can tell us much about both the society and the doctors it produces.

Contemporaries of Barnes in the second half of the nineteenth century lived within a professional value system that constituted itself as “insiders” and “outsiders”. For Barnes, insiders were without question men. Further delving may produce more precise parameters of his insiders, but his comment alone is sufficient to draw the conclusion about gender. This points to several key issues for universities, and particularly medical schools, that I shall address in this paper. The first relates to the particular case of medicine and its changing relationships with “the public”. The second concerns the long-standing and ongoing debate about the nature and function of professions. The third draws on these two issues to consider the place of universities’ community engagement as an historical process, not just by considering its antecedents, but rather as a means to assess its place in contemporary society and into the future.

The historical development of women’s demands for entry to the medical profession have been addressed by a number of scholars from a variety of perspectives. For some historians of this issue, it is suggested that the development was merely one element of the larger claims made by “first wave” feminists for entry to the universities and the professions. Couched frequently in economic terms, this school of thought has argued that the nineteenth century, as a period of great social and economic change, left unmarried middle-class women vulnerable to unemployment and poverty. More positively perhaps, others see the economic imperative rather as one that permitted women a new freedom, a freedom to pursue paid work instead of needing to rely on marriage to survive. Demands for formal admission to professions such as teaching and medicine were logical, in this framework, as an outcome of the growing number of middle-class girls who had undertaken an increasingly rigorous education especially by the late nineteenth century. Demands for access to universities were therefore simply part of these widening educational aspirations.

By contrast, other historians have argued that claims by women to enter the medical profession stemmed from a long historical tradition in western culture in which women were at the centre of medical provision and health care. This body of thought is one that I would like to consider in a little depth as it leads to a number of significant issues for this paper. The history of medicine is as fraught with contradictory arguments as any other field of historical analysis. One particularly cogent argument concerns whether we can in fact talk about “medicine” prior to the advent of science in the late eighteenth century. Some put this date later, into the nineteenth century, and for some even twentieth-century medicine was so different from its predecessors that equations with earlier practice are misleading.

Nevertheless, practitioners of “the history of medicine” continue to include the study of all periods and places. They do so by assuming a commonality of intention – to heal – rather than a commonality of practice. For the supporters of women’s medical practice who used the evidence of women’s historical involvement in healing then was not a case of arguing for a return to a medical practice based on herbal remedies or a religiously inspired desire to heal – such as that of Hildegarde of Bingen, one of the best known early women healers in the twelfth century. It was instead making an argument that women’s involvement in medicine and health care was sanctioned by long tradition and that their exclusion was a recent development (again often given an economic imperative -- in this case of male practitioners). Supporters’ primary objective, they asserted, was to provide choice: the ability to choose a woman healer if that was what the patient desired.

The crucial “moment” of exclusion, the point at which women were excluded from the process of healing the sick, women practitioner supporters claimed, was the development of medical professionalisation. However, professionalisation too is not an uncontested concept. Nevertheless, for both of these arguments concerning women’s access to a medical education, the role of professionalisation of medicine was crucial. In the argument for women’s exclusion from medicine, the ‘blame’ was laid at the door of the increasing control over educational standards for practising medicine during the nineteenth century as the basis of the policing system to restrict who could claim the title of medical practitioner. That is, it was the decision taken by university medical schools to exclude women from a medical education that was presented as the cause of their exclusion. For the alternative argument of new claims for entry, the same target was however the focus: the universities and their medical schools were presented as the “gate-keepers” to a medical career, and it was there that women and their supporters chose to commence their fight.

While medical schools were recognised as playing this gatekeeper role other aspects of professionalism were subsequently encountered, not least the ever increasing presence of professional associations (such as the British Medical Association, or BMA) in overseeing the work and conduct of its professional members. One example was when Elizabeth Garrett Anderson -- perhaps one of Britain’s best-known “pioneer lady doctors” -- managed to obtain overseas qualifications sufficient for a license to practise, and she applied for membership of the BMA in 1873. Her admission to the association was deemed unfortunate and the membership rules were subsequently changed to expressly exclude any further women members. As the interrelations between professional associations and medical schools tends to be strong, especially perhaps historically, does mean that seeing each in isolation can be misleading. Many of the academic staff involved in the medical schools were themselves leading members of the professional associations. The debate which ensued at the University of London over the proposal to admit women medical students can be seen as a case in point.

These two positions taken over the question of women’s claims to enter medicine do share another fundamental point in common however: that of the demands for “social justice” which underpinned many of the claims made in favour of women’s admission. For many women (and some men) at the time, and for most historians thereafter, the claim made by women to support their case was one that most commentators found great difficulty with refuting. As “modern medicine” often involved physical examinations, sometimes of a quite invasive kind, to force all women to undergo such examinations by men struck most people in the nineteenth century as deeply troubling. One by one the universities of Europe, the United States, and Australasia opened their doors to women medical students on these grounds. The dilemma posed by this argument and its acceptance was subsequently played out in the clinical schools. Accepting women students on the grounds of women patients’ rights led to the question of whether women’s medical practice then should be confined to women patients. While for most hospitals, in most countries, this proposal was untenable, nevertheless the concern over “social justice” continued to inform the debate over women’s place there. The argument became that if universities had opened their doors to women students, and provided them with the same training as men, could they in justice be denied the same freedom of practice? But what about male patients and their freedom to choose? In truth, “patients’ rights” -- as this movement later became known -- did not loom large in either the professional ethos or practice of the times. While it was difficult to publicly refute

claims about the “immodesty” of women patients having to be examined by male doctors, in daily practice and indeed in the belief of the rhetorically “sexless” nature of scientific study, sex was deemed (inside the profession) to have no place. But further than this, and pointing again to the nature of professionalism, the “knowledge claims” of the medical profession underpinned an ethical position referred to as paternalism. Better known as “the doctor knows best” school (possibly as a product of a popular TV series of that name in the mid-twentieth century), this understanding of professional knowledge imbued all medical practice – and indeed most other forms of professionalism. Succinctly, it postulated that the end-product of lengthy (and usually expensive) medical education was an individual with extensive, sophisticated knowledge about ill health and its treatment. On the opposite side of the doctor-patient encounter was a person commensurately ignorant of this knowledge. A “good” patient was someone who could provide a reasonable account of their symptoms and then follow doctor’s orders.

Which brings us to the second ‘key moment’ in the question of the historical development of community involvement in medical education and philosophy: the rise of patients rights movement. In 1974 a US surgeon J.P.P. Wilson railed against women’s demands for a say in their breast cancer treatment, by condemning “the patient who presents herself with a lump in her breast, a copy of an article from Vogue magazine... and a preconceived notion of how she should be treated.” For this surgeon, despite practising at a time when the reality of women practitioners, even women surgeons, was undeniable, there remained a vestige of this dichotomy of insider and outsider on a gendered basis. However, again, what is most obvious from this doctor’s value system, is that it was women patients who were the “outsiders”. While we are more distant from Barnes’s viewpoint than we are from Wilson’s, they were both grounded in a simple epistemological premise: doctors are doctors by virtue of their specialised, professional, knowledge.

The ideas surrounding social justice and professional knowledge permeate the history of the twentieth century. Yet their influence on the relationship between patients and their doctors, has been little examined. Nevertheless, the knowledge claims underpinning professionalism, and perhaps particularly science, came under increasing pressure during this century. The rise of both the sociology of science and the history and philosophy of science as distinct disciplinary sub-groups, was testament to the perception of the power that science was recognised as having, not least in the wake of two devastatingly “scientific” world wars. Capturing well the growing concerns about the limits of knowledge, or perhaps more specifically the way professions could blinker knowledge, was the 1980s question: “Do artefacts have politics?” The question was posed by a scholar in science and technology studies, Langdon Winner, in an article that has developed iconic status (although it too is not without its critics). The crucial concern for Winner however was to point out the fallacy of the “uncontaminated” nature of human “knowledge” about science or technology. Using the example of a bridge, Winner highlighted how the built environment reflects and reinforces power relations in a society.

Well before this time, however, the fundamental relationship between patients and a doctor’s professional training was being interrogated. Indeed the chilling events in the death camps of the Second World War are the often-invoked consequences of a professional ethos disconnected from its social world. While the “Nuremberg Doctors’ Trial” is often cited as the basis for the development of a standard for medical ethics -- the Nuremberg Code -- this was not an isolated incident. There have been repellent examples of exploitative research before and since, but the murderous intent of the regime under which the Nazi experiments were carried out left few in doubt of the need for a system in which interests beyond the profession’s were recognised and accommodated.

Despite widespread revulsion at the notion of potentially dangerous scientific research being conducted on unsuspecting participants, the flow of “scandals” indicated that the ideal of a shared endeavour between researcher and ‘subject’ is not always adhered to. In the 1970s one of the United States’ more notorious cases involved the exposure of a 40-year long “experiment” involving the non-treatment of syphilis sufferers in Tuskegee, Alabama. Despite the deaths of many in the study from the consequences of non-treatment, survivors and heirs received little by way of compensation. Clearly, a set of ethical standards which incorporates

a requirement for the “informed consent” of those on whom harm may be inflicted, does not necessarily lead to a change of the values system that led to abuse. Long-term potentially harmful experiments, without the “informed consent” of the subjects of the experiments, continued to be undertaken. Nevertheless, the reverberations of this kind of unethical research led to the Helsinki Declaration, of 1964 (5th revision, Edinburgh 2000) of the World Medical Association, and has been the blueprint for ethical medical research since its adoption.

However ‘ethical practice’ can be imagined to encompass a much wider framework than simply research. The way in which the medical ethos regarding knowledge -- of disease, of treatment, and of capacity to make judgements -- was to be moderated to incorporate the value-systems of those outside the profession, invoked the need for similar notions of participatory decision making. “Patients’ rights”, as our quote from Dr Wilson suggests, was equally embedded in historical events, that like the Second World War, were not immediately obvious as being part of the history of medicine. One such influence, again, was feminism, this time the so-called 1970s “second wave”.

And it is not merely an “accidental artefact of history” that women’s political movements loom large in the historical developments involving the theory and practice of medicine. The two fields are intimately connected. In essence, medicine is about the body. And an influential philosophical tradition in Western thought has been, and continues to be, that “anatomy is destiny”. In other words, the cultural structuring of womanhood began with and built on their physiological capacities and physical features. Medical practice was at the cutting edge (often literally) of the cultural construction of womanhood as we have seen in the debate over women’s entry to medical schools.

Women as a category of analysis is problematic, however, as many commentators acknowledge. As a category “feminism” may be less unwieldy. Yet it too is problematic in this context for the possible conclusion that may be drawn from its use: that feminists were either single-handedly responsible for the development of the “patients’ rights” movement, or indeed that feminists were univocal on the issue. Neither of course is true. Nevertheless there is an acceptance of sorts on the point that gender and medicine have long had an intimate relationship, and that from the emergence of the “second wave” in the 1970s, medicine has received a sustained feminist critique.

For the historian Barron Lerner, for example, one critical issue in the development of the patients rights movement was the disfiguring impact of the Halstead radical mastectomy for breast cancer. The profession’s continued preference for this treatment, despite its psychological impact on women, and despite the mounting clinical evidence against it, led women to revolt. Using the media in an unprecedented manner to influence medical decisions, Lerner argues that women’s interventions led to a reconsideration of the type of surgery performed and, as importantly, the way the decision about treatment was reached. Doctor no longer knew best, and the new civil rights movement, “patients’ rights”, was born. The wider context of the “second wave” itself however points to other civil rights movements which overlapped in their concern over the medical profession. Debates about racial equality saw demands about medical school admissions policies again become news. Access to health care and medical value-systems have continued to influence questions about medical education. One final example is provided through the disability rights movement. The medical model of disability, is a phrase now widely applied to those who see disability as an individual “fault” or “failing” which, with the right medical intervention, can be “cured” or “fixed”. The social model, another development of the 1970s and 1980s emerged in counterpoint: that “disability” is a social construction that, like Langdon Winner’s bridges, is a consequence of the politics of artefacts. A house designed for people with no mobility problems is inaccessible for those who do have them. In the social model it is therefore the poorly designed house that is disabling, not a person’s mobility. For disability rights activists, the medical profession’s insistence on finding a “lack” in individuals rather than in culture led to demands for openness and dialogue. They wanted to be asked what they needed; they wanted to engage -- and be engaged -- in planning their own lives.

So alongside the changing social philosophies that political scientists identify as having played a role in the “public’s” demands for inclusion in decision-making processes in the last half of the twentieth century, we can also consider the role of particular people, and particularly people’s bodies. Bodily integrity is widely recognised as a civil right in western thought (although its recognition and respect are not always the same), and underpinning demands for engagement with health and medicine we see frequently invoked this demand for bodily integrity.

On the wider question of seeing medical education policy and planning in its wider cultural context, we can see that taking a historical perspective on the question of community ‘engagement’ can give a rather different perspective to the question of contemporary constructs of engagement. Medical education, as with education processes more generally, have always been matters of public concern and public debate. From nineteenth century demands for more inclusionary entrance processes through to twentieth century demands that doctors be educated to respect the knowledge and values of their patients, a continuous line of criticism and debate can be drawn. Redefining expectations about the intellectual capacity of women within the profession, led to a complete overhaul of the gender balance within the student populations of medical schools. Reconsidering the relationship to be sought between a doctor and their patients, has had equally revolutionary outcomes in the way medical students are now learning about difference and cultural competency. The recognition that “professionalism” was not simply a matter of acquired expertise and accumulated knowledge, but in this configuration the exercise of power over others, enabled a new dialogue to begin over the constitution of medical education and the practice of healing. Community-engaged medical education is new insomuch as it foregrounds community values within the school’s ethos. It is as old as medical education itself however in its recognition of the social and cultural context in which it operates.

## **Monitoring Water Quality and Changes in Biodiversity as an Assessment Tool for Sustainable Catchment Management.**

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**Keywords:** Water quality, biodiversity, assessment tool, sustainable catchment management, coastal ecosystems, light attenuation

### **Abstract**

*In 1992 the ecosystem health of Hervey Bay suffered significantly as a consequence of flooding from the Mary and Burum Rivers, followed three weeks later by cyclone Fran. The major impacts came as a consequence of high energy waves, swells and currents with the potential to uproot or bury seagrass, and storm water runoff reducing salinity and increasing both turbidity and nutrients. In addition, output from a damaged sewage treatment plant on the Mary River resulted in 1.05 ML of untreated effluent per day being discharged into the river for twelve days. In the following months, Hervey Bay experienced the loss of more than 1,000 km<sup>2</sup> of seagrass meadows and the displacement, and some mortality, of an estimated 1,650 dugongs. The damage to the seagrass, that also functions as a nursery ground for juvenile fish and prawns, was subsequently reflected in the low commercial fish catches.*

*Consultation with the mayor of the Hervey Bay City Council, Heads of Chemical Engineering, Zoology and the Centre for Microscopy and Microanalysis at the University of Queensland, and an Environmental Protection Agency representative confirmed that a water quality and biodiversity study of phytoplankton, seagrass and seagrass epiphytes would be useful to enhance the understanding and recovery of the area. Consequently, a PhD research program was developed in 1993 with engagement between the university, local and state government departments, local business, volunteer groups and individuals.*

*Outcomes included a rigorous monthly, seasonal and annual baseline water quality dataset that provided council engineers with the information required to make important managerial decisions for the future sustainability of the region and a baseline dataset for future studies. Using regression analysis and various multivariate statistical methods, links were established between key physical and chemical water quality parameters and the concentration and assemblage structure of diatoms in the water column as phytoplankton, and as epiphytes on the seagrass leaf surface. Some key determinants of the potential causes of altered community composition and biodiversity were isolated and as a result, waste water inputs into the bay ceased and were redirected. Habitat characteristics for each seagrass site and limits for seagrass compensation depth using light attenuation theory were also established.*

*The research conducted in Hervey Bay was in response to community concern about sustainability issues including water quality, declines in seagrass meadows and dugong death and mass migration. A similar program was established for Moreton Bay in the mid 90's and stage one was initiated on the Sunshine Coast in August 2007 following a flood and intermittent coastal algal blooms. Engagement between the University of the Sunshine Coast, local business and community members has enabled the commencement of the baseline water quality monitoring program with a seed grant and in-kind assistance. Support by local and state government departments and other funding bodies will be sought to expand and continue the program in the longer term. This study has provided two undergraduate science students with Workplace Learning Projects at the University of the Sunshine Coast, with another project currently on offer.*

*Improved understanding of the processes that define phytoplankton biodiversity and the diversity of other marine plant and animal groups in this subtropical area is useful for promoting conservation and sustainability within the general population, government departments and commercial sectors, with the aim of clarifying possible links to catchment activity and climate change. Development of this research program in collaboration with the University of Queensland, aims to provide local councils nationally with the ability to monitor*

*their near shore marine environments to provide the information required to assess sustainability strategies at the local level. Engagement between government departments, local industry partners and community groups within each region will be promoted.*

## INTRODUCTION

The human and ecological value of the near and offshore coastal zones can be related to our knowledge, perception and understanding of the diversity and ecology of the marine life that resides in these areas. The local economy of many coastal zones is based on tourism, recreational activities and fishing industries that rely heavily either directly or indirectly on the health and delicate balance of near and offshore marine environments. When change is detected as a result of catchment practises or natural phenomena, adverse effects may occur that upset the balance of marine ecological systems, which in turn affect the local economy.

Estuarine environments have been ranked among Australia's most valuable natural resources for the importance of both their ecological processes and economic development (Smith et. al., 2001). The most conspicuous effects of increased runoff as a result of human activity and exacerbated by potential climate change includes floods and waste water discharge, increased turbidity, nutrient inputs and eutrophication (Zann, 1995; NRC, 2000), phytoplankton blooms (Bell and Elmetri, 1995) and increased epiphytic algal populations which alter marine community structure and biodiversity (John, 2000).

Eutrophication is a major national and international problem because it can lead to harmful algal blooms (HAB's), shellfish contamination, anoxic and hypoxic events, fish kills and changes in biodiversity. These impacts affect human health directly and indirectly in the food supply. The blooms may significantly decrease light penetration to benthic flora and fauna through enhanced turbidity as well as promoting growth of algal epiphytes on seagrass, coral and other sub-aquatic vegetation and substrates (Tomasko & Lapointe, 1991). During the past two decades the effects on human health and economic impacts of HAB's have increased in frequency, intensity and geographical distribution (Hallegraf, 1993). Many events have been documented which affect a wide range of marine biota along the food chain including benthic filter feeding molluscs (mussels, surf clams, razor clams, softshell clams, scallops, butter clams, oysters, gastropods), crustaceans (lobsters, crabs), fish (anchovies, herring, salmon, menhaden, sandlance, mackerel), squid, zooplankton and other benthic invertebrates, sea lions, otters, birds (brown pelicans, Brandts cormorants), dolphins, whales and humans (Anderson, 1995). Some biota effected, form the basis of fisheries in some locations or are the focus of tourism activities.

Epiphytes are organisms that grow on plants and include macroalgae and periphyton. Changes in species composition and biomass of seagrass epiphyte assemblages, is a typical response to eutrophication (Burt et. al., 1995). John (2000) found that the relatively high universality of epiphytic diatom distribution makes them ideal bio-monitors at the regional and national level and developed a predictive model of environmental health by linking epiphytic diatom attachment rates and assemblage structure to water quality parameters.

Nutrient enrichment, and hence eutrophication, stimulates the growth of phytoplankton and epiphytic algae and thus reduces the spectral quality and/or quantity of light available to the photosynthetic tissues of attachment substrates and other benthic organisms (Anderson et. al., 2002). When the quality and quantity of light change significantly, the effects can cascade throughout an ecosystem from the highest plants and animals down to the micro-organisms (ANZECC/ARMCANZ, 2000). The consequence is decline in the biodiversity of habitat structure for that ecosystem and death or migration of the animals that depend on these habitats for survival. These interrelationships affect the balance and ultimate health of the marine ecosystem and understanding them is vital to the effective management for healthy marine systems and sustainable human use of these areas.

Adequate light reaching the benthos is critical for the survival and growth of coral reefs, seagrass, juvenile fish and prawns and other benthic organisms (Masini et. al., 1995). Threatened and endangered species such as dugongs, dolphins, humpback whales and various turtles are coastal inhabitants that rely on the healthy waterways of Hervey Bay and

the Sunshine Coast. Recreational and commercial fishing activities, linked to a growing tourism industry, are also affected by estuarine, coastal marine and offshore marine dynamics, as is the recreational diving industry which makes use of similar areas.

Baseline water quality data is fundamental to understanding the influence of coastal processes on the health of near-shore marine systems and to detect potential effects of climate change. Local councils and regional government departments that are concerned with catchment management practises and other activities that influence the water quality at diffuse and point sources to waterways, require this information upon which informed decisions can be based.

Education of the potential stakeholders in a region that may be adversely affected by reduced water quality is the first step in encouraging community participation and involvement of local industry in a research program. In Hervey Bay, the mayor of the Hervey Bay City Council and many local business owners and community members had witnessed first hand some effects of reduced water quality prior to the research proposal being presented. Seagrass meadows had noticeably reduced in size, fish catches had decreased and dugongs were seen floundering close to shore with skin lesions apparent. Hervey Bay had developed a multimillion dollar tourism industry based on the migration of humpback whales through this area and relied on the fishery to support both commercial and recreational fishing industries. Local and regional government departments and local businesses also depend on the success of tourism in this region and a concern that reduced water quality may also adversely affect the area V humpback whale population that migrate along the east coast of Australia to visit Hervey Bay, was paramount.

Conferencing at the University of Queensland and in Hervey Bay was followed by commitments to assist with financial and 'in-kind' support and the postgraduate monitoring and research program commenced. The nature of the program included academic aspects as well as the potential for the practical application of the raw data generated from the intensive monitoring program to local areas of concern. Regular reports and meetings between the university, council and regional government departments provided the information required for management groups to identify problem areas and consequently modify existing water management strategies. Since this time, engagement between government and community sectors has been successful in establishing various terrestrial and coast based monitoring programs including Landcare, Water Watch and Seagrass watch (Goyne et. al., 1999; Zeller and Petroeshevsky, 2006).

This paper describes a case study in Hervey Bay where a novel approach was used to generate the funding required to conduct water quality and biodiversity research in this region. Engagement between the University of Queensland, the Hervey Bay City Council, government departments, local business and community members succeeded in producing enough funding (~ \$150 K) to support a monitoring program that was critical to local management and to the advancement in the knowledge of marine ecology. Ultimately, regional engagement can produce economically efficient research outcomes to the benefit of all stakeholders in the quest for sustainability.

## METHODS

The methods used for the Hervey Bay study will be presented followed by the proposed stages of progress for the Sunshine Coast research program.

### Community engagement

Interaction, meetings and individual discussions with key local business owners, government representatives and concerned individuals were arranged and conducted with the aim of identifying stakeholders and the respective levels of involvement from each area. Research proposals and projected budgets were customized, targeted and submitted to these groups. Expectations of research outcomes were written into each proposal with reciprocal arrangements for delivery and implementation.

### Sampling area and strategy in Hervey Bay

Fortnightly surveys of nine sites selected from a pilot study of 30 sites in 1993, were conducted between January 1994 and February 1995 to produce a total of 25 data sets (figure 1).

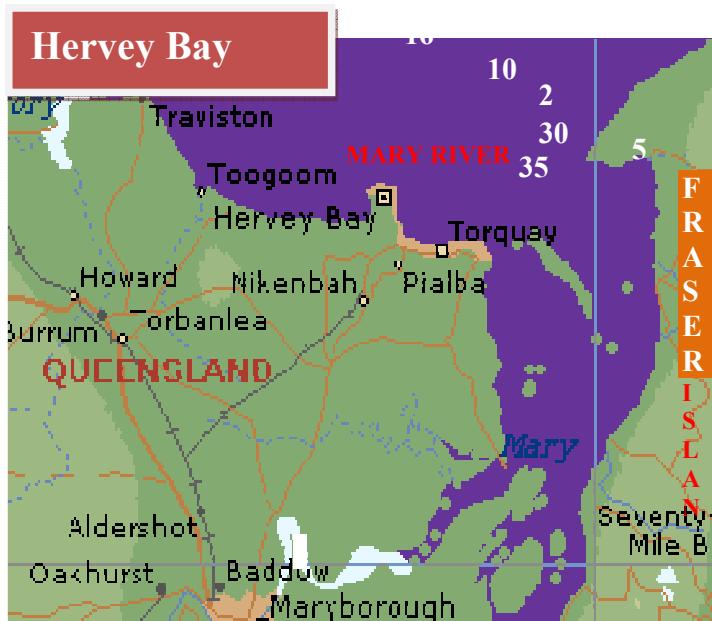


Figure 1: Survey sites for 1994 (white numbers) in Hervey Bay and the Great Sandy Straits.

#### **Physico-chemical water quality parameters**

Depth profiles of temperature, pH, dissolved oxygen, salinity and redox potential were obtained using a Scout® Hydrolab at 1-meter intervals over the full depth of the water column. Surface current speed and direction were measured with a survey boat at anchor by timing a buoyant object transit over a 10m length. Wind speed and direction, sea state, visibility and percentage cloud cover were recorded at each site. Water samples for Chl a analyses were collected from a depth of 0.5m below the surface and processed for analysis following the methods of Strickland and Parsons (1972).

Samples for nutrient analysis were collected at 0.5m depth, filtered through Sartorius (0.45 µm) filters and frozen immediately on dry ice in pre-washed polypropylene containers for analysis of soluble reactive phosphate (SRP), nitrate + nitrite (NO<sub>x</sub>) and ammonia (NH<sub>4</sub><sup>+</sup>) at the Government Chemical Laboratories. Water clarity was assessed by recording optical depth or Secchi depth using a standard Secchi disc and recorded to the nearest 0.1m, measuring turbidity using a Hach turbidimeter (model 2100A) in nephelometric turbidity units (NTU) and calculating total suspended solids (TSS) according to standard methods. Position fixing of survey sites was achieved using a hand held compass with reference to buoys and land marks.

#### **Phytoplankton and epiphyte diversity**

Unfiltered water samples collected from a depth of 0.5m were preserved with Lugol's solution and stored at 4°C for analysis. Samples were concentrated and counted using a light microscope to view a 0.05mL sample on an English Finder slide under a large glass cover slip. Identifications to genus level, and in some cases to species level, were possible at between 100x and 400x magnification. A photographic identification catalogue of phytoplankton species in Hervey Bay has been compiled.

Sites for seagrass epiphyte examination were coincident with water quality survey sites to investigate the relationship between the physico-chemical water quality parameters and the changes to epiphytic micro-algal assemblage structure on seagrass leaves throughout an

annual cycle. Light microscopy was performed on fresh samples. Mid-leaf sections were dissected, air dried on filter paper in a covered petri dish in a fume hood, platinum coated and imaged with the Jeol 6400 Field Emission Scanning Electron Microscope. Image analysis was performed on 573 electron micrographs ( $n = 3$  to 12) taken at 500X magnification to assess seagrass epiphyte assemblage structure on the leaves of 5 seagrass species at 4 sites. An identification catalogue of microalgal epiphytes on seagrass in Hervey Bay is being compiled for future reference.

### **Statistical analyses**

Rainfall data was summarized and plotted as monthly means for the catchment area. Monthly and seasonal means and standard deviations were calculated for all physico-chemical water quality, phytoplankton and epiphyte data from the 1993, 1994 and 1995 surveys. Following data transformations, principle component analyses (PCA) were performed to construct a two dimensional profile that best represent the geographical separation of survey sites on the basis of water quality (environmental and habitat health). Non metric multidimensional scaling (MDS) was performed on seasonal data for four sites to determine the dominant links between the physico-chemical characteristics of water quality and biodiversity in the phytoplankton and epiphyte assemblages. The BIOENV program in PRIMER (Clarke and Gorley, 2001; Clarke and Warwick, 2001) matched biotic to environmental variables by rank correlation of (dis)similarity matrices. The ANOSIM2 test for a two-way crossed analysis with no replication was used to establish patterns of phytoplankton and epiphyte species composition between sites and between surveys. The SIMPER routine was used to determine species which are typical of a group and that may act as good discriminators between groups. These species may become indicator species for a particular habitat type or indicative for the status of environmental health at a particular site.

### **Light measurements**

The first objective was to correlate Secchi disc depths measured at a particular site to the light extinction coefficient and the second, was to include light attenuation with water column characteristics measured throughout the study to describe the seagrass habitat characteristics at each site. Sites for examination were selected to represent a range of light conditions from turbid to very clear water. Light was measured using a spherical light sensor (Li-Cor 4 $\pi$ ).

## **RESULTS**

Results of the Hervey Bay case study include community engagement, water quality and rainfall data, phytoplankton and seagrass epiphyte assessment, dry and post flood comparisons, species abundance and biodiversity and links between key water quality parameters and changes in the species diversity of microalgae in the water column as phytoplankton and as epiphytes on seagrass. Habitat characteristics including light attenuation for a deep water seagrass site will also be presented.

### **Community engagement**

Table 1 shows the groups engaged for particular activities to achieve specific research outcomes in Hervey Bay.

Table 1: List of groups involved in financing research program in Hervey Bay during 1993 and 1995 (Hervey Bay City Council – HBCC).

Task/Activity	Provider	Financed	In-kind
Transport to Hervey Bay	Chemical Engineering Vehicle, University of Qld	HBCC (fuel)	UQ
Accommodation	Windmill Caravan Park	HBCC	
Vessel transport to survey sites	Hervey Bay Marina, Hervey Bay State Emergency Service, DASM Research Services,	Fund raising by PhD	Hervey Bay Marina, SES,

Fuel	HBCC	student, HBCC	PhD student
Nutrient Analyses	Government Chemical Laboratories	EPA + HBCC	
Chlorophyll a analyses, Suspended sediment, turbidity,	Chemical Engineering	HBCC	UQ
Light and Electron Microscopy	Centre for Microscopy and Microanalysis		UQ
Scholarship	Chemical Engineering	UQ	PhD student
Equipment and consumables	Scientific companies	HBCC	CMM + Chemical Engineering at UQ

### Physico-chemical water quality factors and rainfall

The annual means and standard deviations, maximum and minimum for physico-chemical water quality parameters were calculated for nine sites that were monitored in 1994.. The bubble overlay of Chl a on the seasonal water quality PCA in figure 2 shows that Chl a concentrations are a strong influence on the arrangement of sites. This indicates a clear geographical basis to the water quality gradient that exists from sites close to point sources to more distant sites.

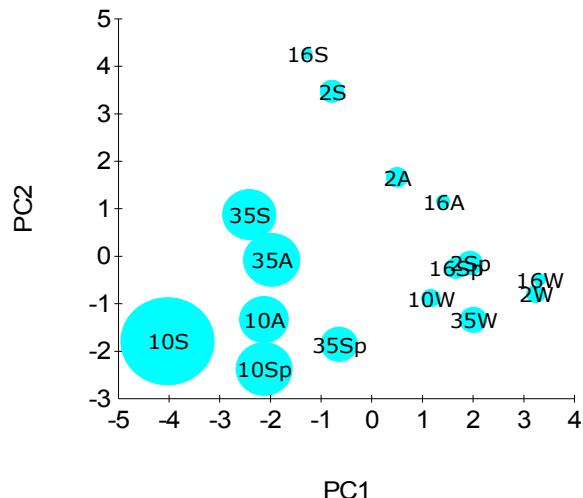


Figure 2: Principle component analysis (PCA) plot for seasonal water quality parameters with bubble overlay of Chl a ( $\mu\text{g/L}$ ) values.

### Phytoplankton Assemblages

A total of 150 phytoplankton species were identified and detailed analyses of assemblage structure and links to water quality were assessed at 4 sites; two point sources at the Mary River (site 35) and Pulgul Creek (site 10) and two sites following the water quality gradient into the bay; the Artificial Reef (site 2) and the S2 Buoy (site 16). Non-metric multi-

dimensional scaling (MDS) of seasonal phytoplankton assemblage structure for each site is illustrated in figure 3 and shows that site differences are apparent (stress 0.17).

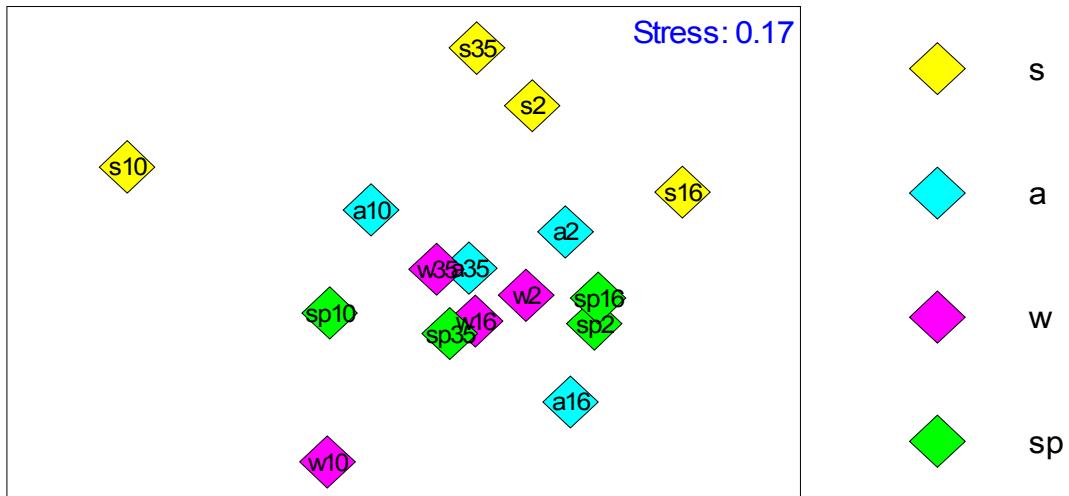


Figure 3: Ordination (MDS) of seasonal phytoplankton assemblages for sites 2, 10, 16 and 35 (s=summer, a=autumn, w=winter and sp=spring; stress 0.17).

The BIOENV program calculated that Chl a, secchi depth, SRP and pH were most strongly linked ( $p = 0.63$ ) to seasonal changes of phytoplankton assemblage structure and therefore, are strong determinants of phytoplankton assemblage structure. The phytoplankton species that primarily account for the observed assemblage differences between sites and similarities within sites were investigated using SIMPER (similarity of percentages) in PRIMER.

#### Flood effects on water quality and phytoplankton assemblage structure

Physico-chemical water quality parameters, phytoplankton cell density and phytoplankton species diversity were recorded in February 1995 when the catchment received 2,783 mm of rainfall and compared to the same sites in February 1994 when the catchment received 874 mm of rain. The results are presented for comparison in table 2.

Table 2. Post flood water quality parameters in February 1995 compared to February 1994.

Site	Year	Chl a	Cells >20µm	Secchi	SRP	Temp	pH	Salinity	%O2	Redox	Turbidity	Cells/mL	Species	Shannon
110	1994	1.25	0.54	1.3	4.5	26.6	8.07	33.1	100.7	0.123	2.70	38	23	2.3
	1995	11.2	8.5	0.6	9.0	30.2	8.38	24.8	154.6	0.070	7.20	336	23	1.6
116	1994	0.28	0.19	7.9	4.3	26.9	8.16	37.2	111.9	0.260	0.59	19	19	2.2
	1995	1.30	0.73	3.1	3.0	26.0	8.24	34.4	121.1	0.060	1.36	253	27	2.9
335	1994	1.00	0.39	2.4	4.0	26.8	8.16	36.8	101.0	0.138	1.80	38	10	2.1
	1995	17.4	3.7	1.8	12.0	23.4	8.19	28.3	125.7	0.120	6.26	679	38	3.1

The effect of the flood in February 1995 produced an increase in Chl a and SRP concentrations, pH, oxygen saturations and turbidity while Secchi depth, salinity and redox potential decreased. Site 35 at the Mary River mouth in the Great Sandy Straits, experienced the greatest impact from the flood event with an increase in diatom diversity from 10 to 38 species and a cell density from 38 to 679 cells/mL.

#### Seagrass epiphyte assemblage structure

Remnant seagrass patches recovering from the 1992 demise were located in 1993 and monitored for seasonal growth patterns, species succession and epiphyte biodiversity during

1994. An estimate of seagrass shoot density, expressed as a percentage cover, is shown monthly for each site (figure 4).

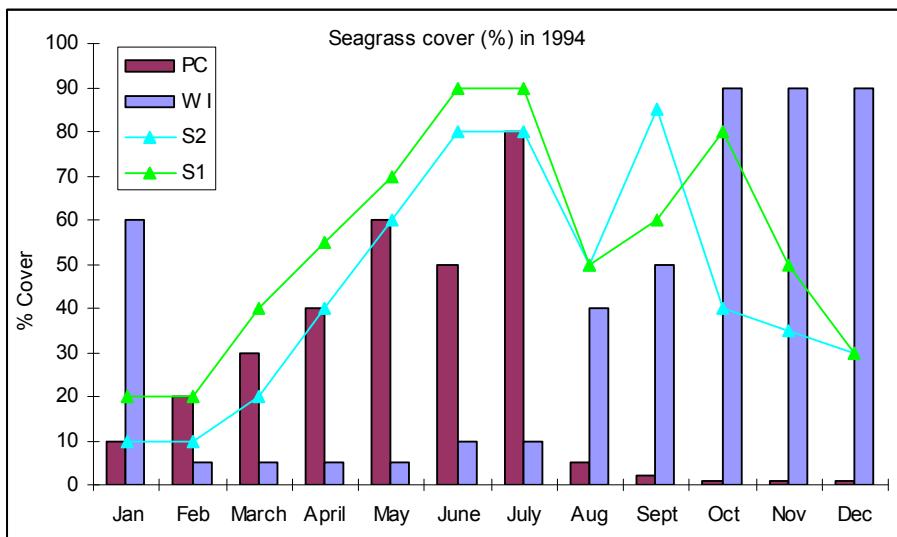


Figure 4: Monthly estimates of seagrass shoot density as a percentage for 1994.

Image analysis of 573 scanning electron micrographs identified 35 species and showed microalgal epiphyte assemblages on the leaves of *Zostera marina*, *Halodule uninervis*, *Halophila ovalis*, *Halophila decipiens* and *Halophila spinulosa*. *Halophila ovalis* was the most widespread seagrass species and had greatest density of epiphyte attachment. Analysis of the epiphyte assemblages on seagrass leaves at inter-tidal, shallow and deep water sites showed that epiphyte loads decreased with distance offshore. *H. ovalis* recorded the highest average annual epiphyte loads with the diatoms *Diatoma vulgare* and *Cocconeis scutellum* representing 19.6% and 17.2% of the total epiphyte cover. Highest cell density was recorded in autumn, followed by summer and winter. Spring recorded the lowest epiphyte cover.

The microalgal epiphytic assemblage structure on *H. ovalis* varied with changes in the water quality and depth from the point source near shore sites, to the offshore survey sites. The BIOENV program revealed that the combination of NO<sub>x</sub> and temperature were most strongly linked ( $p = 0.32$ ) to, or best "explain", the variations in seasonal epiphyte assemblage structure on *H. ovalis*.

The MDS of epiphyte assemblage structure presented in figure 5 clearly shows a similar pattern to the site differences observed for water quality (Fig. 2) and phytoplankton assemblage structure (Fig. 3). The pattern evident in the MDS in figure 5 shows clearly the placement of sites 10 and 30 towards the left hand side of the plot and sites 16 and 17 toward

the right hand section of the plot (stress 0.12).

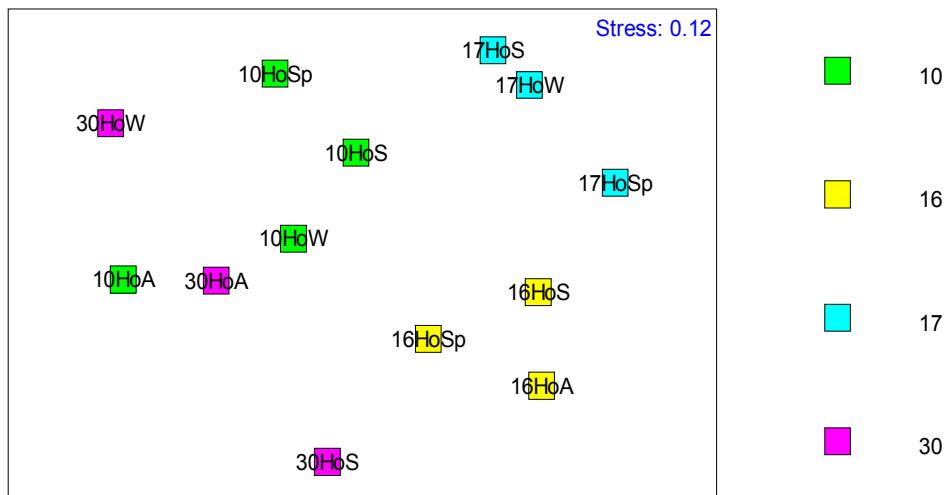


Figure 5: MDS of seasonal epiphyte assemblages on *H. ovalis* (stress 0.12); S=summer, A=autumn, W=winter, Sp=spring.

### Habitat characteristics

A representative illustration of a habitat characteristics model for an offshore seagrass site in Hervey Bay is presented in figure 6. The diagram characterizes the site by setting values for the physical, chemical and biological parameters of the environmental variables in this particular habitat. Coral reefs, rocky reefs and sandy zones can all be parameterized to derive baseline datasets for each habitat type.

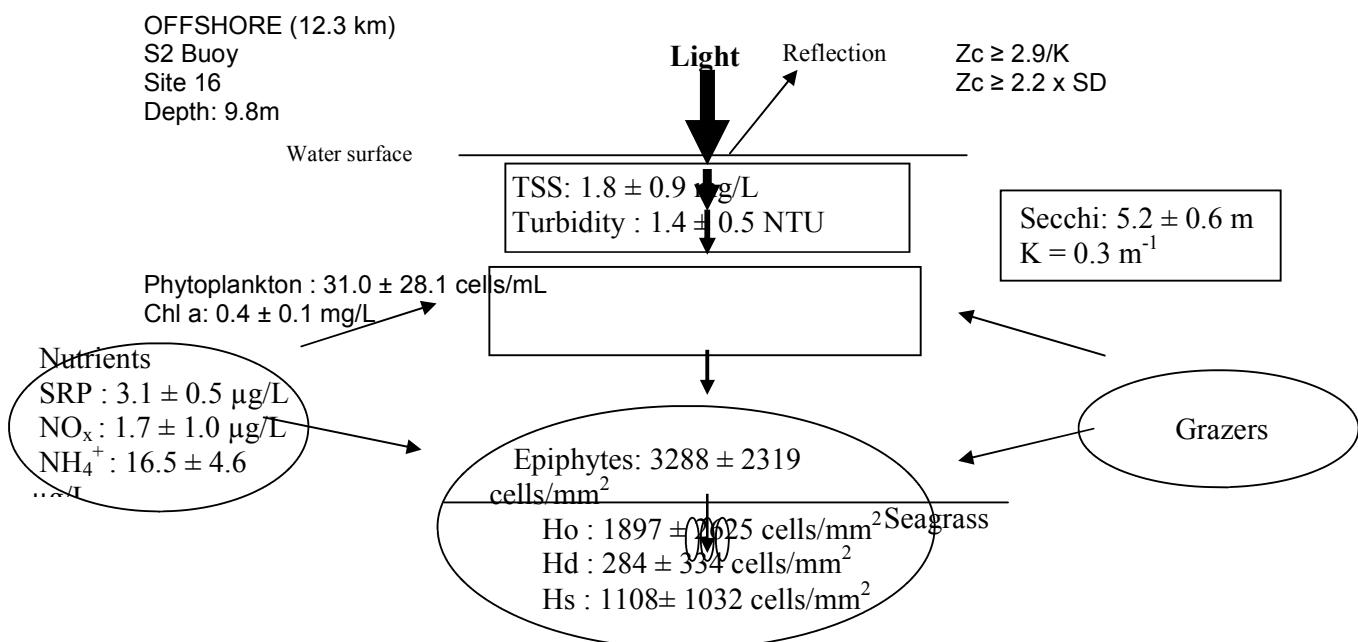


Figure 5-11: Habitat characteristics at the offshore site 16 during seagrass recovery; annual average of seasonal means (adapted from Dennison's conceptual model, 1993).

## DISCUSSION

Hervey Bay is one of the largest bays along the Queensland coast and provides seagrass habitats of international significance for dugongs (Marsh et. al., 1990) and six of the seven species of sea turtle worldwide (Hyland, 1993). Hervey Bay supports important commercial and recreational fisheries and is a popular tourist destination whose numbers are seasonally boosted by hosting the annual procession of humpback whales (*Megaptera novaeangliae*). Hervey Bay is protected from the open ocean by the largest sand island in the world, Fraser Island, and provides a haven for a large proportion of the area V humpback whales during their return southward migration to the Antarctic, along the east coast of Australia. Water quality and marine biotoxins have been implicated as the cause of death of marine mammals in the past (Anderson and White, 1992) so examination of the potentially toxic source is important in areas that marine mammals frequent.

In 1993, engagement between local and state government departments, the University of Queensland, local business and community groups and individuals established a research program with the aim of establishing a baseline water quality data set for the Hervey Bay region and investigating possible bio-indicators of environmental health specific to Hervey Bay. Areas of particular concern were isolated and the intensive (fortnightly surveys) and extensive (from the Great Sandy Straits to 33 km north of the Mary River mouth) program began.

Water quality gradients were established from major point sources of the Mary River and the Pulgul and Eli Creeks, both of which were discharge points for treated sewerage effluent, into Hervey Bay. Examination of 19 physico-chemical water quality parameters, identification and quantification of two biological forms and assessment of both datasets using multivariate statistical analyses, revealed that two nutrients were involved in determining the density and diversity of phytoplankton and microalgal seagrass epiphytes (Burt et. al., 1995 and John, 2000). The nutrient, soluble reactive phosphate (SRP), together with Chl a, Secchi depth and pH was found to be linked to the phytoplankton assemblage structure in the water column and oxides of nitrogen (NO<sub>x</sub>) and water temperature was linked to the density and distribution of microalgal epiphytes on the leaves of the seagrass *Halophila ovalis*.

The recovery and succession of each seagrass species at intertidal, shallow and deep water sites was documented and the habitat characteristics for each site were quantified during this period of recovery. The Hervey Bay City Council now recycles sewerage effluent and the seagrass areas that extend from the mouth of the Pulgul and Eli Creeks have recovered (Campbell and McKenzie, 2004). The sustainability of the ecological systems vitally important to Hervey Bay has improved as a result of this research. The ability of the local council to detect change as it occurs in response to catchment practices, sustainability strategies or climate change has been enabled with access to a reliable data set to use as a baseline and biological indicators or response variables to two important nutrients in this dynamic, vitally important, marine ecosystem.

### **Application of engagement model to the Sunshine Coast**

Stage one of the water quality study on the Sunshine Coast includes phytoplankton identification and enumeration, measuring water clarity as indicated by Secchi depth and recording light attenuation in the water column as photosynthetically active radiation (PAR). These parameters will be correlated and related to rainfall data accessed from the Bureau of Meteorology. The first two study objectives form part of two Workplace Learning Projects (WPL) at the University of the Sunshine Coast under the supervision of the author. A desktop statistical study aims to compile existing data collected by Underwater World, Sunreef Diving Services and Gary Cobb, a renowned local nudibranch specialist (Cobb and Willan, 2006). Initial statistical analyses will generate monthly, seasonal and annual means for some physical water quality parameters from 2003 to the present time. Phytoplankton samples have been processed and initial identifications have been performed as part of a WPL project to establish baseline data for phytoplankton density and diversity on the Sunshine Coast. Stage one marks the first post-flood study to document changes in phytoplankton density, diversity and the time it takes for these parameters to return to their baseline levels. It is also the first

study to determine light attenuation coefficients: a measure of water clarity that derives attenuation values from Secchi depth data.

Stage two of the program involves nutrient analyses, chlorophyll a determination and vertical profiling of physical parameters at each survey site to record seasonal means and produce a set of values that characterize each habitat type. The parameters selected for stage two have been linked to changes in biodiversity and assemblage structure of phytoplankton and of seagrass epiphytes (Milham-Scott, 2007) which together, contribute to reduced light reaching the seagrass leaf surface. The same theory applies to other benthic organisms such as coral, sponges and many other invertebrate species.

Stage three will further characterise each site by documenting biological diversity as well as sediment type. Research on the colonization of the artificial reef HMAS Brisbane will be referred to for the biological component of this survey site (Walker et. al., 2007) and the establishment of Reef Check on the Sunshine Coast will provide additional biological data from other near and offshore reefs. Habitat characteristics for natural and artificial reefs, rocky reefs and sandy zones within near and offshore marine environments of the Sunshine Coast will be established. A baseline data set is required in order to detect changes that may occur in particular habitats and ecosystems. This is the essence of sustainability – to detect change. A flow diagram that describes the overall program is presented in figure 2.

The model presented for the case study in Hervey Bay is being applied to water quality and biodiversity research that has commenced and is to be extended on the Sunshine Coast.

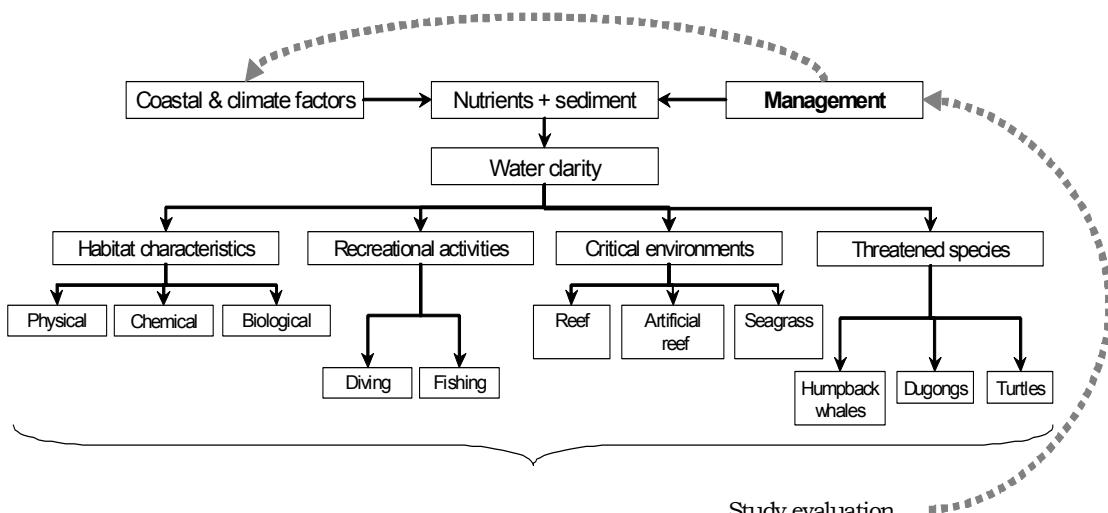


Figure 7. Overview of the proposed research program for the marine ecosystems of the Sunshine Coast.

#### **Benefits of local engagement with global importance**

Engagement between the University of the Sunshine Coast, Sunreef Diving, Underwater World, Australia Zoo, Complete Framing Australia and local community members has recently been established to progress the marine water quality research on the Sunshine Coast in a manner similar to the research conducted in Hervey Bay. Similarities include seagrass habitats of significance for dugongs, important commercial and recreational fisheries, popular tourist destination, a seasonal host to the annual migration of humpback whales (*Megaptera novaeangliae*) and natural and artificial reefs. Statistical analysis of historical data will set the scene for recent collections to provide a baseline data set for future studies.

The benefits include: 1. Access to a reliable monthly and seasonal water quality data base will enable detection of spatial and temporal changes that may occur in specific parameters (e.g. temperature, salinity, nutrients or microalgae). This data base will be made available by the University of the Sunshine Coast to the wider community in Australia and overseas to

facilitate the development of a long term database similar to that developed for the Irish Sea (1950-2008; Marine Environmental Change Network).

2. Knowledge of the effects of increased runoff on the offshore underwater marine environment has implications for sustainability studies, encouraging conservation and promoting modified land use practices.
3. Linkage of the research with established monitoring programs like Environmental Health Monitoring Program in rivers within the catchment, Reef Check and existing biological monitoring of the ex-HMAS Brisbane (Walker et. al., 2007) will develop regional engagement with a range of government bodies, community groups and other scientists to improve local understanding and knowledge upon which informed managerial decisions can be based.
4. The knowledge of seasonal and annual means for water quality and biodiversity data is paramount as migration patterns, feeding regimes and breeding behaviours of significant marine biota change throughout an annual cycle and detection of these changes is important to our understanding and consideration of these activities to ensure the survival of threatened and endangered species. The improved understanding may encourage the collection of similar data from other regions to provide a holistic and global view of changes occurring to the sub-aquatic marine environment of our planet.

The Sunshine Coast lies on a latitude that borders sub-tropical and temperate zones – a location that promotes great diversity among plant and animal groups; yet it is a zone that has been the focus of little research, given the inherent interest of the hard coral areas of the tropics (Bellwood et. al., 2006) and the macro algae dominated communities of temperate areas (Cummins et. al., 2004). Nevertheless, this intermediate zone supports a growing recreational diving industry supported by Underwater World and several scuba diving services that explore fringing and offshore reefs, as well as the recently established artificial reef of the ex-HMAS Brisbane, which is surrounded by a 35.5 ha conservation park.

The Sunshine Coast experienced a major flood (1 in 100 year) in August 2007 and has a recent history of many oceanic blooms of *Trichodesmium*. Fish kills in Tooway Creek at Moffat Beach in 2003 and 2004 (Moore et. al., 2006), unspecified algal blooms (Gaston et. al., 2006) and blooms of *Hinksia sordid* at Noosa main beach during the summer of 2003 – 2004, 2004 – 2005 and 2005 – 2006 (Moore et. al., 2006) have also been documented. The results of a fish tissue sampling study that covered three estuaries within a 100 km strip of the Sunshine Coast, revealed sewerage contamination among 17 fish species (Schlacher et. al., 2005).

Post flood fortnightly surveys of phytoplankton and water clarity began in August 2007 at four river mouth sites and three offshore sites. The study commenced with the engagement and assistance of local business, with in-kind support to date of approximately \$25,000 and a seed grant for \$5,000 from the University of the Sunshine Coast. The program plans to progress in 3 stages and is modelled on the research program established for Hervey Bay in the 1990's.

### Acknowledgements

Funding for this work was provided by the University of the Sunshine Coast together with in-kind support by Diving, Underwater World, Australia Zoo, Gary Cobb, David, Complete Framing Australia, Deborah Milham-Scott, Owen and Margaret Scott. Workplace learning students Roisin Fischer and Jaqui Riddell, at the University of the Sunshine Coast, are thanked for their contributions to the research effort.

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## **Nurturing Research Partnerships to Meet Regional Needs**

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**Key Words:** Partnership Performance Merit Quality Impact

### **Abstract**

*The University of the Sunshine Coast (USC) has just commenced its second decade and in the past two to three years has escalated its efforts in developing its research profile and performance. Fundamental to research at USC are regional engagement and sustainability, and much of USC's research is directed towards the social, cultural, economic and environmental advancement of the region. In this context of a fledgling research enterprise and an emerging region, communication and connection between USC researchers, and regional organisations and industry, do not just happen; they need to be nurtured. This is a complex matter that has to respect those working relationships that already exist and are developing between researchers and colleagues in the wider region, and the legitimate desires of researchers to maintain their freedom to pursue their intellectual interests. At USC responsibility for the development of research lies with the Deputy Vice Chancellor and he works with the Office of Research to drive research that advances the region. To achieve this, the Deputy Vice Chancellor and the Office of Research have developed a range of strategies to facilitate regional connections and the generation of opportunities for mutually beneficial research that can leverage new research resources for the region. This paper provides a description of the strategies employed, evaluation of progress, and an account of the outcomes to date. However, the focus of the paper is an analysis of the blockers and drivers that impact on this work. These include tensions between research quality and social impact, regional characteristics, state and commonwealth research funding policies, centralisation-decentralisation practices, and the positional power of larger metropolitan institutions. The paper concludes with some observations about what regional universities and their regional research partners, seeking to build regional research capacity and generate significant research findings and outputs, need to do to achieve success against the same exacting criteria as the more established universities.*

### **INTRODUCTION**

A university engages most effectively with its region through its core work of teaching and research. This paper provides a broad description of the attempts at the University of the Sunshine Coast (USC) to establish and develop a research profile and culture centred on regional social and economic development, with something of an emphasis on the types of partnerships involved. It outlines two distinct waves of activity aimed at generating research in this new university, and the main blockers and drivers influencing this quest. It also offers a view of some of the most important realities that bound such an enterprise, and alludes to some more theoretical perspectives on why certain approaches to applied regional research may be more likely to succeed.

### **KEY STRATEGIES AND OUTCOMES 2002 – 2007**

By 2000 USC had established three faculties and its foundation undergraduate programs, and appointed an experienced Deputy Vice Chancellor (DVC) with a research track record. It was time to get serious about research. And, as universities do, through its research committee, USC thought-out a deliberate approach that would enable it to develop its research profile, performance and culture. At the heart of this strategy was the creation of research centres.

#### **Research Centres Based on Potential**

Within a relatively short period USC established five research centres that were meant to bring groups of researchers together around their common interests and capabilities, and themes that were sensibly connected with the location of the University.

The Sunshine Coast Research Institute for Business Enterprise (SCRIBE) was established in the Faculty of Business, had a director and a membership of about four staff, and its mission was to undertake research and consultancy in all facets of business with a particular focus on regional economic development.

The Institute for Sustainability, Health and Regional Engagement (iSHaRE) was established in the Faculty of Science, but included some lecturers from the Faculty of Arts and Social Sciences, and the faculty of Business. It had a director and a membership of about a dozen staff, and its mission was to undertake regionally relevant research and consultancy in areas of environmental science and public health.

The National Seniors Productive Ageing Centre (NSPAC) was established in the Faculty of Arts and Social Sciences, had a director and one other staff member, and its mission was to conduct research, consultancy and educational activities related to the economic role of seniors in the context of an ageing population. NSPAC was different from USC's other research centres in that it was largely funded by the commonwealth department responsible for aged care and the National Seniors Association, who had entered jointly into a partnership with USC.

The Centre for Healthy Activities, Sport and Exercise (CHASE) was established in the Faculty of Science. It had a director and about a dozen members, and its mission was to undertake research, consultancy, training and community activities related to sport and wellbeing.

The Centre for Multiculturalism and Community Development (CMCD) was established in the Faculty of Arts and Social Sciences. It had a director and one other staff member, and its mission was to undertake research, consultancy and training activities related to the promotion of multiculturalism.

In the area of research centres, USC had a way with acronyms, if nothing else.

All of these research centres were provided with additional resources for the first three years, beyond which they were expected to achieve a large measure of financial independence. All of them started out as concepts that were to be turned into realities with concrete connections to the outside world and although their individual members had a variety of links with groups and organisations in the community, hardly any of them had significant research track records. This was a strategy born of a brand new university in fresh new region where it was nearly all blue sky and sunshine.

By the end of 2007 all of these research centres had been reviewed and only CHASE continued to exist. The reviews of all of the centres found that, despite the intelligent and conscientious efforts of all involved, the creation of research centres is not a silver bullet for generating good research from scratch in a new university. The research centres strategy had a constructive and lasting impact on the development of relationships between the University and many important regional groups and organisations, and some organisations operating at a state or national level. The strategy also provided a framework within which some early career researchers and research students were able to create research agendas for themselves that continue to have a positive influence on their career development. And many consultancies were undertaken. On the other hand, all the progress achieved had minimal impact on USC's performance in national competitive grants, quality publications, research student enrolments and completions, productive connections with other research agencies and involvement in CRCs, and demonstrable social benefit from research within or beyond the region.

### **Involvement in Queensland's Smart State Strategy**

During this period USC also worked hard to engage with the Smart State strategy that was injecting large sums of new research money into Queensland's areas of research and economic development priority. In particular, the University supported two major bids for competitive funding for research and development (R&D) in forestry, and a third bid for R&D in sports technology.

In the first round in 2005-2006, involving one of the forestry submissions and the sports technology application, support was coordinated through the Deputy Vice Chancellor's office and office of research, and the usual tactics of good grantsmanship were employed. The DVC and the manager of the office of research were in contact with key people in the department in charge of the scheme, applications were subject to peer and expert review, and a consultant was employed to prepare the final submissions to ensure the case was made in the best possible way. Not an inexpensive exercise for a fledgling institution. Neither application was successful.

For the second round in 2007 the University internalised all the feedback it received from the funding agency (the director and senior staff of the program accepted two invitations to the campus to discuss the objectives, processes and assessment criteria of the program), took the hard decision to submit only a modified version of the forestry application, and put in place a range of tactics to promote the success of the application. These included bringing the Department of Primary Industries and Forestry (DPI&F) and a local CSIRO group more centrally into the project; met regularly with the regional representatives of the funding department, through the Vice Chancellor, had a meeting with the head of the department and the Minister to discuss the proposal; re-employed the consultants to again be in communication with the funding agency and all of the key decision-makers, and to produce an effective submission; and ensured the science was not only significant but also that the outcomes would likely be commercialisable. This was an even more expensive exercise, especially if you costed in the time of the staff in the office of research, but this bid was also unsuccessful. The feedback indicated that, apart from failing to win the support of one stakeholder agency, the bid was credible and scored well against the assessment criteria. It failed because about 40% fewer projects were funded in this round and the USC project fell two or three positions below the funding cut off point.

Subsequent investigations by staff representing the Vice Chancellors of Queensland's regional universities revealed that in the first two iterations of the Smart State program more than 90% of the research funds went to the three universities in Brisbane. This has sparked a high level process through which the Vice Chancellors continue to lobby for changes to the Smart State Strategy to make it truly a state-wide exercise and to see it invest funds in research capacity-building in the regions. The view among the Vice Chancellors is that as Australia's most regionalised state this should be eminently achievable in Queensland. The immutable point remains, however, that only world class research will be funded. And this, of course, is not only the case in relation to the Queensland Smart State Strategy.

A wholesale re-think was needed.

### **A New Start**

From 2007, through a consultative process dubbed Research Futures conducted through the research committee, USC has substituted a new integrated, four-pronged strategy for its original research development agenda. This comprises the identification of areas of research concentration based on research track records; targeted recruitment of active researchers with strong track records; development of strategic partnerships within identified areas of research concentration and strength; and development of relevant research infrastructure, largely in collaboration with research partners.

This process commenced with the USC mission:

"To be the major catalyst for the innovative and sustainable economic, cultural and educational advancement of the region, through the pursuit of international standards in teaching, research and engagement."

Sustainability and regional engagement are central concepts for teaching and research at USC, so to make sure the University's research is true to the mission it was determined that for a research area to gain recognition as an area of research concentration it would first have to establish its credentials against these two ideas. It was determined that in the medium term, USC would identify a limited number of areas – two or three – that represented existing research strengths, or were areas appropriate to the University's development, and could be

advanced through strategic recruitment and other types of targeted investment. In the short term, active researchers in relevant areas of expertise were headhunted and two new research groups were anointed through a performance based selection process. This time the research groups strategy was implemented on proven track records, not potential. This produced the Genecology Group, focused on sustainable primary production in forestry and aquaculture, and the Sustainable Regions group, focused on sustainable community practices.

While these groups have a remit that includes the development of early career researchers (ECRs), and the faculties and the office of research continue to provide professional development opportunities for ECRs, the bulk of the University's resources available for investment in research support are concentrated on these two groups. If successful, they will eventually become self-sufficient, but in the meantime they are being given all possible support to enable them to perform at the highest standards. They are intimately connected into the greater Sunshine Coast region, and more broadly into South East Queensland, but they are not parochial. The world is still their oyster and they will have to make it on the international stage. A key part of this will be the applicability of many of their research findings to regional areas all around the globe.

The staff comprising these research groups would not have made the cut in the selection process if they were not already operating in partnership with important organisations in their respective fields. A key aspect of the University's support for these groups has been assistance in cementing their external relationships. And an essential ingredient in this is the collaborative development of vital research infrastructure, especially for the Genecology Group. In their case this involves gaining new levels of engagement with DPI&F and this has taken the form of joint research applications, strategic joint appointments, collaboration on projects, sharing of the use of facilities and equipment, and potential co-location of key infrastructure.

The new strategy appears at this relatively early stage to be beginning to pay dividends. But as this small case study demonstrates the lessons have not been easily won and much still lies in the balance. The advances made, and the irons in the fire for future development, have come into existence against a range of obstacles and with the assistance of some factors that have been conducive to the enterprise. What have these been, how are they regional in nature, and how do they relate to the nurturing of partnerships?

## BLOCKERS AND DRIVERS

Tensions and interconnections around six factors seem to have played major roles in USC's research development history to date.

### 1. Individual Interests and Critical Mass

Perhaps one of the greatest challenges for many lecturers as Australian universities respond to increased global competition, technological transformation and public sector reform is the irresistible pressure to convert individual intellectual interests into larger, longer-term research programs in conjunction with others in order to undertake research projects that succeed both academically and practically. It is pretty clear that few lecturers in regional universities can make a real fist of a research career these days operating as individuals pursuing limited research areas. Coming to terms with this and making the required transitions in attitudes and behaviours has been, and remains, difficult for many at USC. The reality that lecturers face now, however, is that the pathway to success for individual lecturers, schools-faculties-centres, and the institution as a whole are clearly marked: national competitive grants; quality publications; research student enrolments and completions; collaboration; and demonstrable social benefit. These are all measures that are very difficult, but admittedly not impossible, to achieve as a so called lone ranger.

## 2. Quantity and Quality

Just as many lecturers at USC were emerging from the rigors of getting their undergraduate programs established and running smoothly, and were beginning to do some research and get some publications points on the scoreboard in response to the “quantity counts” signals in the Research Block Grants, suddenly the rules changed and quality of research became the new dispensation. The challenge to meet the sort of research quality demands of the now defunct Research Quality Framework, and the emergent Excellent Research Australia, are significant for most lecturers in regional universities. In many ways this is an even more daunting prospect for USC lecturers because the institution is still very new and, although growing rapidly, relatively small.

## 3. Quality and Impact

Induction into academic life remains largely geared to interactions between academics, and between academics and their students. Many of the traditional academic practices around teaching, research and engagement are parts of a somewhat closed conversation to do with advancing a field or discipline from the perspectives of inducting new entrants (undergraduate and postgraduate students) and developing the ideas that dwell at the more theoretical end of the spectrum. This is ramified and reinforced by traditional academic recognition and reward structures linked to promotion, sabbatical leave, peer review, publication in the academic literature and the awarding of grants. The so called small world of the university can provide a total experience for academics who, in their own ways, want to leave their field or discipline in better shape than when they found it. This is no less true at USC than anywhere else, despite the fact that USC was established and has developed in an era when universities have been subjected as never before, at least in living memory, to the pressure to be relevant, to contribute to the achievement of national economic goals, and to emphasise the instrumental aspects of tertiary education. In this context it is just as hard at USC as it is elsewhere for lecturers to respond to the dual imperatives of higher quality research having a greater impact on their fields and disciplines, and of having a real impact on the world of the professions and industry, and thereby creating tangible social benefits.

## 4. Regional Characteristics

When researchers reach beyond the confines of the academic world and forge practical links with the field of practice in their discipline areas, there is no doubt that a host of new opportunities, and new resources, open up to them. There is no shortage of examples of powerful and productive partnerships between researchers in a field and practitioners in that same field, in the professions or industry, that have fuelled major social and economic advances, and generated brilliant academic careers. The necessary pre-condition for this, however, is for the researchers and their universities to be within reach of relevant professions and industries. This has been a major problem for USC because of the nature of its region. There are very few large professions or industries in the region, and there is therefore only a small commitment to R&D and few resources to fund collaborative research. In addition, until this year, the Sunshine Coast had three small regional councils all lacking the critical mass to invest heavily in research, even if there had been an active awareness of the role a university and its research can play in igniting regional development and attracting creative and entrepreneurial people to an area. This characteristic of the greater Sunshine Coast region has been an important factor in USC's difficulty in realising its otherwise sensible ARC Linkage strategy, and in successfully engaging with the Smart State strategy, which has strongly emphasised industrial partnerships.

## 5. The Department of Primary Industries and Forestry

In Queensland the DPI&F is of critical importance to the success of the research efforts of universities. Some USC researchers have excellent working relationships with DPI&F staff, no more so than among the Genecology Group. But this, combined with very credible applied research proposals and a sophisticated “political” strategy, has not yet been enough to secure large scale support for USC's forestry research. In an attempt to take the relationship between DPI&F and USC to new heights, the Vice Chancellor and Deputy Vice Chancellor

have worked with the most senior levels of the DPI&F to achieve collaboration and joint resourcing of large scale forestry R&D projects. The next four to six months will reveal the success or otherwise of this strategy.

## 6. The Merit Principle and Regional Capacity-building

The sorts of major research grants that USC has been pursuing in its areas of concentration and strength are nationally competitive and the merit principle drives the assessment criteria and process for these grants programs. This is clearly as it should be, even though it makes it very difficult for new players to get into the game, especially if they are small and regional. USC has made representations about this on behalf of its region and itself, and by implication, other regional institutions, at state and commonwealth levels for several years now. The point USC has made is that Australia cannot hope to maintain or improve its position in international research by limiting its research to a few metropolitan areas – that at the same time as resourcing already achieving research programs in the more established areas it should also support research capacity development in strategic areas in the regions. This has so far cut very little ice and shows fewer and fewer signs of ever doing so. While USC continues to adhere to the validity of this argument, it has come to the realisation that it is never going to provide a breakthrough in the development of its research effort.

### **THE HARD TRUTH**

There are four major obstacles to the development of good research programs that serve regional needs. First, they run the risk of being parochial. The research may be of international standard, but it may not be internationally significant. If the work has already been done elsewhere and applied in a variety of settings and most of the problems have been solved, a regional university cannot make a significant research program out of mere replication.

Second, even if significant research problems around which a viable research program could be developed are identified, but an existing research group in another university or research agency has already claimed the territory, a regional university is highly unlikely to succeed in overtaking the other group, especially if the other groups are in a well-resourced metropolitan institution.

Third, in a fiercely competitive higher education market as we now have in Australia, despite the common willingness of individual researchers to work with colleagues from other institutions, and in some cases even to support capacity-building in fledgling research programs, attempts to forge collaborative relationships that spread capacity and build critical mass in a research area have a very chequered history. This strategy is not one that any regional university can afford to rely upon to build-up its own research reputation because, in the end, the regional institution will most likely only help the profile of the other institution and not be able to get its own foothold in the area.

Fourth, it is very difficult for regional universities to generate the critical mass in a research program that is a necessary condition for internationally significant research that also has substantial benefits for the local region. There has to be a very good reason for capable and ambitious researchers to congregate in a regional area and for the right investors, public or private, to put significant resources into the necessary infrastructure development. Usually these scarce resources will go with the strength and be added to already viable research programs.

These are hard truths for regional universities – and their regions. There seem to be very few signs that governments are yet prepared to be serious about decentralisation and regional economic development in Australia. In this context, the private sector cannot often afford the risks associated with new investment in regional areas and opportunities for regional renewal remain very hard to realise.

This is certainly the case on the Sunshine Coast. Or is it? Recently some lecturers new to USC have been making the case that, if you look closely enough, there is new investment in

the region. They have also noticed that, not only is it in both the public and private sectors, but that these major areas of activity are also confronting difficult problems that need to be addressed. They point out that not only are these problems susceptible to evidence-based solutions, but also that these problems are the Sunshine Coast's problems. Moreover, they say, these problems, while they may have been identified in many other parts of Australia and the world, have by no means been adequately or finally addressed. These problems represent some of the major issues of the day because they are bound up with questions of peri-urban development, climate change, national skills shortages, social inclusion and public health. And finally, they point out, they are problems that USC can make its own, not just because they are local, but more importantly, because USC is the university headquartered in the region and is the obvious institution to be focusing its research efforts on these issues.

Suddenly obstacle four above does not look so insurmountable. If USC plays its cards right here maybe it could generate research critical mass around a unique expression of internationally significant local issues and problems. Perhaps some USC researchers can coalesce around this theme, get some initial runs on the board, and eventually begin to entice some of the best, or potentially the best, players from around the world to come and join them. And with some resources cobbled together from local sources and a few reasonable grants, it is just conceivable that they might land a really big investment from a partner who has a vital interest in the research. This, after all, is how all successful applied research programs begin, isn't it?

### **WHY IS IT SO?**

Somewhat unconsciously, USC has confirmed what Burton Clark (1998) found when he investigated the essential conditions required to enable universities to respond creatively to the new challenges of high quality applied research in local contexts. That is, the approach USC is implementing mirrors Clark's five elements that "constitute an irreducible minimum" for such an enterprise. According to Clark these are "a strengthened steering core; an expanded developmental periphery; a diversified funding base; a stimulated academic heartland; and an integrated entrepreneurial culture" (Clark, 1998, p.5).

At USC the higher levels of coordination being sought through the combined efforts of the Deputy Vice Chancellor, the research committee, the research groups and the office of research represent a strengthened steering core that, compared with more traditional distributed approaches to management and leadership, is enabling USC to "become quicker, more flexible, and especially more focused in reactions to expanding and changing demands" and "reconcile new managerial values with traditional academic ones" (Clark, 1998, pp. 5-6).

Investment in performing research groups is a form of expanded developmental periphery whereby, in orientation, these units, in contrast to conventional faculties, are more multidisciplinary, more project oriented, more inclined to genuine outreach, more conscious of the need for fundraising, and more interested in solving practical social and economic problems in the community.

As the research groups develop they tend, in addition to seeking traditional research funds, to tap into what are effectively third-stream sources of funding such as industry and local government. In doing so they are diversifying the funding base and hastening achievement of greater financial independence.

According to Simon Marginson (2000) nearly all enterprising groups in Australian universities are moving in these directions:

"All Enterprise Universities in Australia display the first three of Clark characteristics...On the other hand, Clark's last two characteristics are weak or non-existent in Australia. If some Enterprise Universities have created an institutional culture, none seems to be stimulating its academic heartland as Clark describes" (Marginson, 2000, pp. 240-241).

However, there is reason to believe that the regional research development strategies being attempted at USC are, at least to some extent, stimulating the academic heartland. In

recognition that despite the institutionalisation of the new research groups, faculties “continue to be the places where most academic work is done”, USC continues to work at gaining acceptance and buy-in to the work of the research groups from faculty-based staff. There is a fair way to go before, as Clark puts it “the heartland accepts a modified belief system” (p. 7), but the research groups are at least working on it.

In relation to the integrated entrepreneurial culture, once again, the degree of difficulty is very high and USC is yet to reach base camp. However, it is not as though the whole enterprise is being conducted in ignorance of the need to generate a broader front of support and action either. One important plank in the regional research development strategy alluded to above is the targeted recruitment of new academic staff. Because USC is headhunting academics with certain characteristics, especially a facility for generating deep connections with regional partners to implement mutually beneficial projects with an R&D core, including the ability to offer a real return on investment, it is reasonable to assert that the emergence of a new, more entrepreneurial culture is at least a distinct possibility.

## **CONCLUSION**

Good citizenship in the region has never been sufficient for USC. It has always aspired to make a difference to the region in the creation and maintenance of good jobs, strong professions and industries, an effective economy, a conserved natural environment, and a convivial society and enriched culture. Over its first ten years it has strived to find the best ways to play a leading role in achieving these regional goals, which of course have also been the aims and hopes of many (but not all) organisations and institutions on the Sunshine Coast. And USC and the Sunshine Coast are obviously not unique in wanting to achieve these things; most Australian regions are now only too aware of the imperative to make their own way in a globalised world. In taking this path, USC, like other universities seeking to engage with their communities, has enjoyed some success and recognition for its intent, and endured quite a lot of frustrations, such as some false starts and almost completely missing out on Smart State funding despite concentrated effort. Most significantly, however, USC has learnt a great deal about what it takes for a university to catalyse genuine innovation that impacts simultaneously on the real society and economy of the region, and the international scholarly literature – surely the holy grail of all regional universities. USC would not claim that its insights into this knotty problem are unique, or that it has gained them ahead of any of other regional university. What it has achieved, though, is a level of self-understanding and knowledge of its particular circumstances that can enable it to capitalise more effectively on its existing opportunities and set about creating realistic new prospects. The essential ingredients of this knowledge are (i) acceptance that the merit principle is paramount (special pleading, including appeals to regional capacity-building, are less likely to be effective these days); (ii) real, living, mutual connections with regional partners and organisations in the wider context that can make or break the research enterprise; (iii) sustained critical analysis of what constitutes the region’s true needs and opportunities; (iv) clarification of the big intellectual challenges inherent in addressing the region’s needs and making the most of its opportunities; (v) systematic scanning of international responses to these big intellectual challenges and identification of significant ongoing problems and issues; and (vi) the systematic search for solutions to these problems in local contexts, with local partners, and the communication of insights and answers in both the grey literature and the international academic literature. If USC is to realise its research ambitions, its success will surely be built on this knowledge.

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## **The University as a community knowledge broker for the exchange of information to assist in sustainable natural resource management.**

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**Keywords:** knowledge broker, information exchange, natural resource management

### **ABSTRACT**

*Research conducted at Charles Darwin University (CDU) in the environmental science and natural resource management (NRM) areas is internationally recognised and widely published in international peer reviewed journals, yet access to the information generated by regional NRM practitioners is largely limited. In the past, research directions and priorities have been largely derived and determined within CDU based research programs, with limited input from on the ground natural resource managers. CDU caters for a range of educational needs from vocational training through to the PhD level, yet again course design and materials have been largely determined internally. This paper presents the findings of an exchange workshop whose aim was to start to work with the community to try to readdress this situation. The workshop was funded by National Heritage Trust funds delivered by Land and Water Australia and Greening Australia under the Exchange Incentive. The aims of the workshop were to explore - what NRM practitioners would like to see CDU do in terms of information exchange, how CDU could perform the role of an effective knowledge broker for NRM information in the NT, what the limitations and barriers to information and knowledge exchange are currently, and what changes are needed to make it easier to access relevant information. Although a CDU initiative the workshop was a partnership between the NT NRM Board, the Tropical Savannas CRC, Greening Australia and the NT Government Departments of Primary Industries Fisheries and Mines (DPIFM) and Natural Resources Environment and Arts (DNRETA). Outcomes from the workshop included a recommendation to establish a NRM Industry Group to liaise with CDU with regard to training, research and information exchange, a more formalised process to assess the community engagement needs of researchers, and the creation of a working group whose role would be to continue the engagement processes started at the workshop, and to consider how to implement recommendations and create an effective exchange network to facilitate partnerships, understanding and communities of practice between CDU researchers/lecturers/trainers and people engaged in practical NRM.*

### **1. INTRODUCTION**

The Northern Territory is in a unique position in that many of its landscapes remain relatively structural intact and despite covering one sixth of the land mass of Australia, its population is small (approximately 200,000) with 28% being Indigenous, and 70% of the Indigenous population living in rural locations (Australian Bureau of Statistics 2007). However, pressures to develop this vast region are increasing. In order for natural resource management (NRM) to be effective and sustainable it is important that bodies working in NRM have access to good information and knowledge. Charles Darwin University (CDU) has a pivotal role as a research and training provider for NRM in the NT and as such it is essential that it functions effectively as a node for the exchange of information and knowledge transfer across the region. This paper presents the results of a project which was conducted primarily through a workshop to which land practitioners, stakeholders, researchers and other parties interested in NRM were invited to discuss the role that the university (CDU) could play as a community knowledge broker for the exchange of information to assist in sustainable natural resource management in the region.

Knowledge brokering has been defined by Land and Water Australia as 'people based actions of knowledge exchange and adoption' (Land and Water 2006). Their definition states that it is about building links, bringing people together and helping different groups to communicate, identify gaps, share ideas, as well as direct people to sources of research, and help to make

research easier to understand by translating outputs into readable formats. (Land and Water 2006)

The impetus for this workshop was that adequate NRM knowledge brokering is an issue nationally and it was thought that CDU could improve its role as a knowledge broker for the NT through improved awareness of research conducted at CDU and better access to information generated by academics. It was also felt that it was vital to provide a forum from which staff and students could learn from land management stakeholders and practitioners. The workshop aimed to achieve this by undertaking dialogue towards the formulation of the NT Applied Landscape Education and Research Network (ALERN). Therefore, the main aim of the workshop was to encourage and promote discussions between academics and land management stakeholders and practitioners to enable a more effective two way flow of information. The ultimate vision of such a network was to strive towards starting to create partnerships, understanding, and communities of practice which ultimately work together towards sustainable resource management. Key dimensions of effective communities of practice include: 'mutual engagement', 'joint enterprise', and 'a shared repertoire' (Wenger 1998). These characteristics were thought to be particularly important for NRM communities of practice. The benefits of establishing an effective NRM community of practice for the NT fit within what Land and Water view as being the value of communities of practices nationally for NRM i.e. that they are an important mechanism for sharing specialist knowledge, can facilitate problem solving and generate new knowledge in response to problems and cross organisational boundaries and structures (Land and Water 2008).

The outcomes from the workshop were a series of recommendations and possible solutions relating to how CDU could improve information exchange and therefore become a better knowledge broker through the establishment of ALERN.

## **2. BACKGROUND**

The funding for this project was obtained through the Exchange Incentive fund which is a fund managed in partnership between the Land and Water Australia's Native vegetation R&D program and the Greening Australia's Exchange service supported by the Australian Government's Natural Heritage Trust. The aim of the fund is to help regional practitioners better manage their natural resources by: increasing their access to current knowledge and research on native vegetation; and generating new knowledge through links to relevant researchers and organisations (Greening Australia 2008)

The project was a partnership between CDU, the NT Natural Resource Management Board, Greening Australia NT, the NT Government Departments of Natural Resources, Environment and the Arts and Primary Industries Fisheries and Mines, and the Tropical Savannas Corporate Research Centre.

The target audience for the workshop was land practitioners, stakeholders, researchers and educators, plus others who would have an interest in the establishment of the network, such as NRM facilitators, land care facilitators, large land owners and land managers, aboriginal community representatives and land corporations, environmental consultants, and NGOs.

Despite some funding bodies like Land and Water Australia that are putting forward a variety of initiatives to promote research that has a real on the ground impact and that is presented in a way that practitioners can understand, universities are still largely funded on high quality research publications that are published in high impact journals, where high impact relates to academic readership rather than applicability and relevance to on the ground practitioners.

The overall aim of this workshop was to contribute towards NRM outcomes for the NT by encouraging CDU and NRM Practitioners to work together towards: enabling the establishment of stronger links between training and research conducted at CDU and on the ground practical NRM activity; establishing effective communities of practice with regard to landscape education and research in the NT; allowing more regional and specific NRM issues rather than generic issues to become the focus of teaching and research initiatives and priorities; working towards solutions to real issues with research priorities directed towards on

the ground issues; providing improved access to information and knowledge that comes out of CDU; coordinating and developing a virtual network of knowledge, databases, research facilities and scientific infrastructure that is accessible to NRM practitioners; and facilitating integrated social, economic and environmental learning activities that can contribute to the long term sustainability of landscapes, lifestyles and livelihoods in the Northern Territory.

The objectives of the workshop were to determine:

- a) The effectiveness of current networks / exchange activities
- b) The limitations and barriers to information and knowledge exchange
- c) What can be done to improve access to information
- d) How to maintain existing and identify potential new ones
- e) How to maintain information and knowledge for currency, integrity and security
- f) How to get greater stakeholder involvement in R&D and CDU course design? And How to make R&D and training have a more practical application
- g) How to match stakeholder needs with what CDU can provide
- h) How to meet the NRM information and knowledge needs of the region
- i) If there is a need for NRM knowledge brokering in the NT
- j) What CDU can specifically do to become an effective knowledge broker of NRM in the NT and better at information exchange
- k) How to establish an effective NRM network / exchange mechanism
- l) What are the aims for ALERN (Applied Landscape Education and Research Network)
- m) If a working group is established, who should be on it

### **3. THE WORKSHOP**

The project was conducted in three phases i) formation of a planning committee to discuss issues and plan the workshop; ii) the workshop itself; and iii) summarising the workshop findings in a written report. The planning committee was formed with representatives from the partner organisations i.e. CDU, NT NRM Board, Tropical Savannas CRC, DNRETA, DPIFM and Greening Australia. The planning committee met twice to discuss the workshop and had several online discussions via e-mail. A professional facilitator was employed to run the workshop. He attended the second planning meeting. It was decided at this planning meeting that the local NRM facilitators would assist with the break out groups at the workshop so an additional facilitators meeting took place as part of planning for the workshop. A key component of the workshop was to try to identify what issues the participants felt were important with regard to information exchange and CDU. In order to do this effectively it was felt at the facilitators meeting that an 'open space' approach (Wikipedia 2008; Owen 1997) to the workshop should be taken. The 'open space' technique enables the workshop participants to determine the agenda topics rather than having topics imposed upon them.

Flyers about the workshop and invites to the workshop were circulated amongst the planning committee and then circulated around their networks. The main information network used to send out the invites was that of the NT NRM board. They targeted people individually and also included flyers for the event in the NT 'Network Notes' which is circulated amongst NRM stakeholders. CDU also targeted key people and departments/groups by sending out invites to the workshop and trying to promote it as widely as possible. CDU also created a website for the workshop and ran a media release on the event.

On the day of the workshop presentations were made from CDU staff about the different schools and departments at the university that are involved in NRM. A presentation was also made about the Exchange incentive by a Greening Australia representative and one from the Communication Unit of the Tropical Savannas CRC on their information exchange web based products. Then the discursive part of the workshop was carried out applying the principles and rules of open space (Wikipedia 2008). Using the 'open space' approach participants recorded the key issues that they felt that they wanted to talk about. Where there was overlap between topics, the topics were grouped. A total of 8 topics were nominated for discussion. These covered issues such as improving the links between practitioners and

researchers, NRM workforce planning, Indigenous land management and issue relating to information sharing, community engagement and participation in planning research, how different organisations currently share their information, and collaboration with business and industry. These were then broken down into those topics to be discussed in the morning and those in the afternoon. Break away groups then discussed and reported back on their topics. The final session of the day discussed more generally what CDU could do to improve in terms of exchange of information and how to be a more effective knowledge broker for the NT. Also discussed was where to go with the project after the workshop, in particular how to establish the ALERN network, what an ALERN working group should do, and who should be on that working group.

## **4. FINDINGS**

Detailed findings and recommendations from each topic discussed and workshop session can be found in the workshop report (Pearson and Shepherd 2008). These have been summarised in this paper under each of the key objectives.

### **4.1 How effective are current networks/exchange activities?**

From the discussions at the meeting it would appear that there is considerable room for improvement in terms of the effectiveness of networks and exchange activities relating to NRM that are currently in existence in the NT. For example, many of the participants at the workshop were not aware of 'Network Notes' which is a monthly newsletter produced by the NRM Board NT and circulated amongst parties interested in NRM. The Tropical Savannas CRC were identified as having played an important role in the past with regard to information exchange between land managers and researchers but with the ceasing of their funding bringing their end in 2008 a big potential gap was identified in terms of knowledge exchange related to NRM in the Top End of the NT. However, their Communication Unit has strategies in place to ensure continued provision of their web based products for information sharing.

### **4.2 What are the barriers and limitations to information and knowledge exchange?**

Examples of barriers and limitations identified by workshop participants to knowledge and information exchange included a lack of communication between relevant people, poor websites (e.g. ones that are not current, not easy to navigate, or do not link up with other NRM websites), researchers not putting out information in a format that is accessible or easy to read and understand by practitioners (e.g. not making good use of newsletters, summary reports, seminars), problems particularly when working with Indigenous groups of not having adequate community engagement at the start of a project and not making sure that knowledge goes back to the community, and problems with the funding of projects that fail to have community engagement and on the ground applicability as an important criteria and measure of success. Although solutions to some of these might be easy to identify it was highlighted that some barriers are incredibly difficult to deal with e.g. philosophical ones, personality clashes, and ones associated with intellectual property.

### **4.3 What can be done to improve access to information?**

This was discussed at two levels – improving information sharing and better community engagement.

#### ***4.3.1 Recommendations for improved Information sharing***

Participants identified that of upmost importance for sharing information between CDU and its stakeholders is the need to have a good CDU website. It is also vital to make existing websites more user-friendly and easier to navigate. To facilitate better access to the CDU website it was thought that the NRM Board and CDU should start to collaborate on NRM information exchange so their respective websites could be linked (especially to make sure that there is a link from NRM board to a CDU Research Office website which lists current and past research projects). It was also thought to be important to try to remove the fear of information sharing by better community engagement.

Participants also thought that it is important to make more use of existing mechanisms for information exchange such as seminars, e-news letters, e-mail lists, as well as websites. It

was also thought necessary to create some new virtual mechanisms to promote discussion e.g. a chat site and e-mail list relevant to NRM information exchange.

In dealing with Indigenous stakeholders it was thought to be valuable to promote resource and information sharing so research done on Indigenous land could go back to the community and be of use to them.

#### **4.3.2. Recommendations for improved Community Engagement processes**

Suggestions that arose from the discussion on this topic indicated that there needs to be more clearly defined community engagement processes and protocols at CDU. It should be noted that researchers often can not do much community engagement within the scope of their research projects therefore, there should be recognition of this fact and greater assistance provided to help facilitate better community engagement. It was thought that one possible solution was to have a CDU Community Engagement position funded by CDU to facilitate better engagement between researchers and practitioners with regard to NRM. It is however, also important to educate researchers in better community engagement to enable the two way flow of information, as well as how to be flexible and be more collaborative in approach (this means that researchers need to have better training on how to form links and in certain engagement techniques such as participatory planning). It was also suggested that it is important to identify research needs at different levels therefore different forums are recommended for engagement as these will be attended by different people.

#### **4.4 How do NRM stakeholders know about existing networks and mechanisms for information exchange?**

The NT NRM Board and other NRM facilitators were identified as being the major source of information on what information and networks are available. They also use their newsletter 'Network Notes' to disseminate information to NRM stakeholders. The Tropical Savannas CRC has also played a major role in information exchange and the Communications Unit will continue to provide this service.

#### **4.5 How to maintain existing mechanisms for information and knowledge exchange and identify potential new ones?**

As stated above the Tropical Savannas CRC is an important body that has instigated information and knowledge exchange so it is crucial that the work they started is maintained after the formal end of Tropical Savannas CRC at the end of 2008. Mechanisms are in place to do this to some degree through the continuation of the Communication Unit and they will be sourcing funding to maintain this in the future.

It was suggested that organisation's which currently generate NRM information, or need to use it, should put greater investment in to exchange mechanisms and make information exchange and sharing a priority. Suggestions were also made that virtual technologies offer a great medium for new ways of sharing and exchanging information, and therefore one of the roles of the ALERN working group should be to try to identify new and potential mechanisms to facilitate exchange within the network.

#### **4.6 How to maintain information and knowledge for currency, integrity and security?**

Maintaining information and knowledge for currency, integrity and security is a complex issue that was not really discussed *per se* although it was recommended that CDU appoint someone to work on community engagement issues relating to NRM and if part of their duties was to maintain a website this would ensure more currency. It is also important that CDU maintains support for the parts of the Tropical Savannas CRC that are trying to get funding to maintain their web information.

#### **4.7 How to ensure research and education is relevant to stakeholder needs, that there is greater stakeholder involvement in R&D and course design and that R&D and practical training have more practical application - includes recommendations for improved collaboration. How to match stakeholder needs with what CDU can provide?**

One solution to ensuring research and education is relevant to stakeholder needs was the suggestion that an industry based NRM committee for CDU should be created. This could ensure greater stakeholder involvement in R&D and also assist with validation of higher education courses. It was thought that there needs to be broader collaboration with regard to NRM projects with particularly business and industry representation needed in the development of research and training proposals

It was also thought to be extremely beneficial for CDU to create a Centre for Continuing Professional Development in Science and Science Education. Creation of professional networks for continuing education and supporting graduates in the workplace is important and employer awareness of the importance of networks is vital. There is also a need to bring consultants to the discussion table with CDU. It is important to have more active engagement with industry to make sure training and education suits industry requirements. Better links to industry could also help solve resource problems by sharing capacity. Cross environmental cultural short courses developed by CDU were also suggested as a way of targeting and up-skill newcomers on tropical environments and cross cultural awareness. This could be attractive to business and help form collaborative links between CDU and business.

It was also thought to be important to have regional meetings so stakeholders can meet on their country and are therefore more likely to participate. It is vital to provide a forum where NRM practitioners can have a voice and CDU offers an ear to listen and take on board the ideas and needs of stakeholders. This could be achieved through ALERN.

#### **4.8 How to meet the NRM information and knowledge needs of the region?**

The NT is a unique region with unique issues and problems associated with NRM. It is therefore crucial that the information and knowledge needs of the region can be met. This can be achieved by recognising the importance of Indigenous knowledge and promoting research that supports Indigenous capacity building, ensuring that NRM education at the grass roots is well provided for e.g. having CDU led training for school students and teaching staff could be done at the same time and recognising that remote schools have different needs and need different skills therefore CDU should try to assist them through links to VET program, improving the evaluation of NRM projects to include relevance to stakeholders and applicability in particular making sure that outcomes of research are valuable and beneficial to Indigenous stakeholders and their communities, and ensuring that there is adequate funding and stability with regard to NRM extension. It was also thought important to allow time in research projects to create cross cultural pathways linking community aspirations with researcher's desired outcomes and to work towards flexible outcomes which allow room for evolution and changes within research projects.

#### **4.9 Is there a need for NRM knowledge brokering in the NT?**

The workshop participants identified that there was a need for a broker role between NRM and researchers although it was suggested that this did not necessarily need to be done by CDU but CDU need to buy into it.

#### **4.10 Reasons why an exchange network is important**

It is important to have a network where matching of research ideas can be carried out and through which research and education can be determined to be applicable and relevant to the needs of stakeholders. It is important for CDU to invest in an effective exchange network for a two way flow of information relevant to NRM, particularly to give a voice to NRM practitioners. It is crucial for CDU to work with NRM facilitators to communicate information to other user groups who do not use or have access to the internet

#### **4.11 What specifically can CDU do?**

In the final session of the workshop participants identified some key ways that CDU could improve communication and relationships between itself and on the group practitioners, improve information exchange and be a better knowledge broker in NRM. These are listed below.

#### **4.11.1 Things that CDU can do to improve the link /relationship between researchers and practitioners**

- Establish a NRM industry research advisory group covering all issues e.g. training, research and information exchange
- Maintain current web sites with all research activities listed (e.g. need Schools to update their profiles on the website especially in relation to research) but also need a NRM exchange website that links to the NRM Board website that is a gateway into the general research site specific for NRM and key personnel working in this area
- Include quality community engagement as a program performance indicator in projects, therefore staff are rewarded and recognised for good community engagement
- Expand the role of existing community and access to cover more research as well as training and school liaison e.g. VET sector advisory groups could include more finding out what research people need not just training orientated
- Set up a formal process for assessing and supporting engagement in research projects (something like the ethics process).
- Develop feedback loops to government, industry and University for policy implications from research completed
- Broaden the groups consulted during the development phase of research projects and think more broadly about who collaborators could be i.e. look further afield

#### **4.11.2 Things that CDU can do to improve exchange of information and be a better knowledge broker in NRM**

- All of the points listed under 4.11.1 would help
- Improve access to information generated and research completed by CDU to other NRM groups (e.g. PhD students – information on what they are doing and have done should stay freely available – this should not be removed when a student finishes), and create a library of past research, as well as use newsletters to inform stakeholders on projects, progress and findings
- Make better links with external NRM data bases
- Research data base to be matched old with current
- CDU could put short articles into 'Network Notes' as a regular feature and promote public seminars
- Use library more to help disseminate information
- Draw on synergies with spatial information sharing – data sharing/information sharing agreements between organisations
- Have a person employed to assist with information exchange e.g. development and maintenance of websites

#### **4.12 Establishing a working group to create an exchange network**

The final session of the day also explored the establishment of a working group to take the outcomes from the workshop further and to try to establish the proposed ALERN. Discussion first took place around what the aims of such a network should be. The aims of a network were:

- To work towards providing a forum where practitioners have a voice to direct/propose future research and education and training
- To promote awareness of CDU capacity amongst potential and existing partners (stakeholders)
- To promote awareness of the importance of NRM community engagement within CDU

Participants decided that there were possibly two levels of working group needed as there should potentially be two networks: i) A CDU driven group that reviewed the practise of information exchange at CDU and worked towards developing relationships and partnerships with regard to research and education, that is worked towards the establishment of ALERN and ii) A larger, wider group covering NRM exchange issues for the NT.

It was decided that the main outcome from the workshop would be initially to develop a working group whose role it would be to take things forward from the workshop, i.e. to try to take the key ideas and recommendations and to work further on identifying exactly how to implement them. The working group to do this was identified as being made up of people who were currently sitting on the workshop planning committee and anyone else who might be interested. The planning committee has representation from CDU, NRM Board, Greening Australia, DPIFM, DNRETA, TS-CRC and NLP. The plan was then to produce and circulate the workshop report and then meet again to discuss the next phase of action in more detail.

## 5. CONCLUSIONS

The workshop was successful in terms of identifying a way forward to improve community engagement with NRM practitioners in the NT and also making some clear recommendations for improving access to relevant information and for the exchange of knowledge.

Discussion at the workshop concentrated on the need to share information within the NT. Also given the size of the NT it was also thought important to share resources to provide greater capacity in order to work towards sustainable NRM. Workshop participants recommended that it would be beneficial to remove the fear of information sharing by better community engagement and suggested making better use of existing mechanisms for information exchange e.g. seminars, e-mail lists, e-news, as well as websites. Websites were a particular focus of the discussions with one of the major outcomes of the workshop being to try to encourage CDU to have an NRM exchange website that is part of ALERN and to improve its websites and link up with the NRM Board website to facilitate greater information sharing. It was also recommended that the Research Office website at CDU listed all current and past research projects with contact details of the Chief investigator. It was also thought to be particularly valuable when dealing with Indigenous stakeholders to promote resource and information sharing so research done on Indigenous land can go back to the community and be of use to them. Along side that, many participants thought it was important to have regional meetings so stakeholders can meet on their country and are therefore more likely to participate.

Another key focus area of discussion at the workshop was how to facilitate better communication and more effective collaboration between NRM practitioners, stakeholders and CDU research and education personnel. The recommendations that came out of the discussion were that there needs to be more clearly defined community engagement processes and protocols at CDU. It should be noted that researchers often can not do much community engagement within the scope of their research projects. Therefore there should be recognition of this fact and assistance provided to help facilitate better community engagement. It is however, also important to educate researchers in better community engagement to enable the two way flow of information, as well as how to be flexible and be more collaborative in approach (they need better training on how to form links and in certain engagement techniques such as participatory planning). Other recommendations included creating an industry based NRM committee for CDU which could ensure greater stakeholder involvement in R&D and also assist with validation of higher education courses; encouraging broader collaboration with regard to NRM projects i.e. having business and industry representation in the development of research and training proposals and creating a Centre for Continuing Professional Development in Science and Science Education. Creation of professional networks for continuing education and supporting graduates in the workplace is important and employer awareness of the importance of networks is vital. It was also thought that cross environmental cultural short courses could be developed by CDU that target and up-skill newcomers to the NT on tropical environments and cross cultural awareness, which could be attractive to business and help form collaborative links between CDU and business. These recommendations have been presented to CDU management in the form of the workshop report and it is hoped that the ALERN working group will work with CDU to look at the feasibility of implementing some of these strategies over the coming months.

## **6. ACKNOWLEDGMENTS**

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