



## **Inquiry into Rural Skills Training and Research Additional Information**

### **Australian agriculture – cost-effective servicing of diversity**

The rural sector is of vital importance to Australia's economy and is also the means whereby population centres can be maintained outside the major cities. Recent changes in national economic focus, technological development and land use have collectively resulted in declining demand for graduates with rural skills. Alongside this decline there is a requirement for increased technological awareness as rural industries become more sophisticated and complex.

An inevitable result of this decline in demand for graduates with rural skills, is reduction in the number of tertiary institutions offering agriculture and natural resource management training. This change is a result of market forces, following financial requirements placed on universities to teach courses with critical mass. Given that this trend will not reverse under the current university funding scheme, it is important that the attrition process is carefully managed.

There are three models that can accommodate the decline in rural skills training availability without sacrificing the quantity and quality of graduates. The first is to facilitate student travel to assist on campus study at one of the remaining centres of rural skills training. This model is enhanced by supportive on-campus college accommodation, as exists at UNE. The second is to encourage study via distance mode, such that students can live at home, take advantage of the community of distance students and supporting academics, and travel to the host institution for short intensive residential schools for the hands on aspects of the course. UNE has recently re-stated its commitment to distance education and is investing to enhance its service and delivery. The third model is collaborative teaching across universities, to achieve critical mass in both student and academic numbers across sites. UNE is actively involved in this approach for a number of courses, in addition to the model of hub (UNE) and spoke (a range of partner universities) for delivery of wool units.

This approach demands strategic location of the remaining tertiary institutions offering rural skills training. Australia is a large country with a range of climatic zones and environments. This is accompanied by wide diversity in production systems and species,

each with its own unique problems. In particular, the disease threat to crops, animals and humans is a concern that must be addressed. To achieve this, it is imperative to ensure that resources are concentrated strategically across the continent with sufficient critical mass to address specific questions and problems efficiently and effectively. It is important to recognise that this cannot be left to market forces, as student demand will concentrate resources in capital cities, the population foci of the country. This would be to the detriment of remote and rural areas and thus to the productivity of the sector. It would also pose significant risks in terms of disease and parasite outbreaks.

### **Recommendation:**

The current reduction in tertiary institutions offering rural skills training and research be closely monitored to ensure strategic cover of the range of climatic and production areas across Australia. In addition to ensuring that students have optimal opportunity to engage in tertiary training, this will service the diversity of production systems and the attendant risks of disease and parasite outbreak.

### **Reported Downgrading of entrance scores from agricultural high schools**

A check of the University Admissions Index (UAI) website provides no evidence that entrance scores from agricultural high schools are downgraded. A summary of the UAI process is provided below.

- ❖ The UAI is a rank not a mark
- ❖ The UAI is calculated by University Admissions Centre (UAC)
- ❖ The UAI indicates the position of a student relative to their Year 10 cohort assuming all Year 10 students completed Year 12
- ❖ The scaling process does not assume that any one course is more difficult than any other course
- ❖ The UAI is a numerical measure of a student's overall performance in relation to that of other students
- ❖ Agriculture is a Category A course along with Biology, Chemistry, Mathematics and Physics
- ❖ In 2005, 1269 students completed Agriculture towards the HSC, 78.3% of these were eligible to receive a UAI, the highest UAI gained by a student in Agriculture was 99.80

The following provides greater detail of the UAI process, particularly as relates to agriculture.

**UNIVERSITIES ADMISSION INDEX (UAI)**  
*(taken from the Universities Admissions Centre (UAC) Web Site)*

**What is the UAI?**

- ❖ The UAI is a rank not a mark.
- ❖ The UAI is a numerical measure of a student's overall academic achievement in the NSW HSC in relation to that of other students. This measure allows the comparison of students who have completed different combinations of HSC courses.
- ❖ The UAI is calculated solely for use by institutions, either on its own or in conjunction with other selection criteria, to rank and select school leavers for admission.
- ❖ Calculation of the UAI is the responsibility of the Technical Committee on Scaling of UAC on behalf of the NSW Vice-Chancellors' Committee.
- ❖ The UAI is reported as a number between 0.00 and 100 with increments of 0.05.
- ❖ A UAI indicates the position of a student relative to their Year 10 cohort, for example, a UAI of 80.00 indicates that a student has performed well enough in the HSC to place them 20% from the top of their Year 10 cohort, had all the Year 10 students completed Year 12 and been eligible for a UAI.

**How is the UAI determined?**

- ❖ The scaling process does not assume that one course is intrinsically more difficult than another or that the quality of the course candidature is always the same.
- ❖ For institutions, the HSC mark achieved in a course conveys information about a student's position in relation to other students who undertook that particular course. Individual course candidatures vary in size and nature, and there are many different enrolment patterns. In 2004, there were approximately 27,000 different enrolments patterns for UAI-eligible students - only 215 of these combinations were completed by 18 or more students - over 19,000 were taken by only one student.

- ❖ Because of the choice available, a student's ranking in a course will not necessarily have the same significance across different courses - the significance of ranking will depend on the nature of the course candidature - good rankings are more difficult to obtain when students are competing with students of high academic ability.
- ❖ The scaling model assumes that a student's position in a course depends on the student's developed ability in that course and the 'strength of the competition' which is defined in terms of the demonstrated overall academic attainment of the course candidature.
- ❖ Scaling modifies the mean, the standard deviation and the maximum mark in each course. Adjustments are then made to the marks of individual students to produce scaled marks, which are the marks the students would have received if all courses had the same candidature. Although scaled marks are generally different from the raw marks from which they are derived, the ranking of students within a course is not changed.
- ❖ Once the raw marks have been scaled, an aggregate is calculated for each UAI-eligible student - generally the ranking based on this aggregate mark is quite different from the ranking using an aggregate based on the HSC marks reported to students. Percentiles, which indicate the ranking of students with respect to other UAI-eligible students, are then determined on the basis of the aggregate of scaled marks.
- ❖ The next step is to determine what the percentiles would have been if all students in their Year 10 cohort completed Year 12 and were eligible for a UAI.
- ❖ The final step is to round these percentiles to the nearest 0.05. These are the UAIs.

#### **Who is eligible to receive a UAI?**

- ❖ 2005 - students must have satisfactorily completed at least 10 units of UAI courses which must include at least: two units of English; *and* three Board Developed courses of two units or greater; *and* four subjects.
- ❖ From 2006 students must have satisfactorily completed at least 10 units of UAI courses which must include at least: eight units from Category A courses; two units of English; three Board Developed courses of two unit or greater; four subjects.

#### **What are UAI courses and how are they categorised?**

- ❖ UAI courses are Board Developed courses for which there are formal examinations conducted by the Board of Studies that yield a graded assessment. These are the only courses that can be included in the UAI calculations.

- ❖ UAI courses have sufficient academic rigour to be useful as preparation for university study and are classified as either Category A or Category B courses.
- ❖ The criteria for Category A courses are academic rigour, depth of knowledge, the degree to which the course contributes to assumed knowledge for tertiary studies, and the coherence with other courses included in the UAI calculations [*Agriculture is a Category A course*]
- ❖ Category B courses are those whose level of cognitive and performance demands are not regarded as satisfactory in themselves, but their contribution to a selection index is regarded as adequate if the other courses included in the aggregate are more academically demanding.

**How does Agriculture compare with other Category A courses?**

Enrolment = number of students completing the course

UAI% = percentage of students who were eligible for a UAI

Maximum UAI = maximum UAI gained by a student in the course

Course	Enrolment	UAI %	Maximum UAI
Agriculture	1269	78.3	99.80
Biology	13215	94.9	100
Chemistry	10119	97.4	100
Earth & Environmental Studies	1127	91.7	99.35
English Standard	30140	72	99.70
English Advanced	27542	96.8	100
General Mathematics	28673	82.5	99.65
Mathematics Extension 2	3240	98.2	100
Physics	9315	97.6	100

**Recommendation:**

No action required

## **Discontinued Certificate Courses**

The issue is the definition of a "higher education award" rather than a change in legislation.

Undergraduate certificates have never been listed as higher education awards but we were able to offer them until the new HEIMS legislation was passed in 2003/2004. DEST is now ensuring that universities comply with the legislation.

We are advised by the UNE Manager of Student Accounts that we cannot offer Commonwealth supported places (HECS) to students enrolling for an undergraduate Certificate as it is not defined as a higher education award. We can run it as a fee-paying course, but we have to make clear that it is not a higher education award. With tuition fees of approximately \$11,000 for a Certificate, this is not an option.

The following is provided on page 18 of the "Administrative information for providers: student support" booklet issued in November 2005 by the Funding and Student Branch Higher Education Group of DEST.

"A higher education award is defined as:

a degree, status, title or description of bachelor, master, or doctor; or  
an award of graduate diploma or graduate certificate; or  
any other award specified as a higher education award under the Australian Qualification Framework."

The significance for UNE is the third point - undergraduate Certificates are not listed by the Australian Qualifications Framework (AQF) as awards offered by the Higher Education Sector. The website for AQF is <http://www.aqf.edu.au/aqfqual.htm>

### **Recommendation:**

Last year AQF approved that TAFE could offer Vocational Graduate Certificates and Vocational Graduate Diplomas. Following this precedent, it is an opportune time to lobby for universities to be able to offer undergraduate certificates, recognised as Higher Education Awards. This is controlled by MCEETYA (Ministerial Council on Education, Employment, Training and Youth Affairs), the body which approved the offering of Associate Degrees as Higher Education Awards. Their web address is:  
<http://www.mceetya.edu.au/mceetya/>

Their publication "MCEETYA's National Protocols for Higher Education Approval Processes" is on the web at:  
[http://www.mceetya.edu.au/verve/resources/protocols\\_file.pdf](http://www.mceetya.edu.au/verve/resources/protocols_file.pdf)

## **Pathways from VET**

We have agreed pathways into the Bachelor of Technology (BTech) on completion of approved NSW TAFE diplomas/advanced diplomas. The advanced standing for BTech students varies depending on the NSW TAFE qualification completed - the qualification and advanced standing is listed below:

Diploma of Agribusiness = 72 credit points (BTech(Agriculture))

Diploma of Laboratory Technology (Biological Techniques) = 60 credit points (BTech (Biological Sciences))

Diploma of Laboratory Technology (Process Manufacturing Testing) = 72 credit points (BTech (Chemical Sciences))

Diploma of Environmental Monitoring = 72 credit points (BTech (Environmental Monitoring))

Advanced Diploma of Horticulture = 60 credit points (BTech (Horticultural Science))

Diploma of Natural Resources Management = 78 credit points (BTech (Natural Resources Management))

Diploma of Laboratory Technology (Pathological Testing) = 60 credit points (BTech (Pathological Techniques))

The pathways are listed on the UNE website.

### **Recommendation:**

Request that TAFE advertise these pathways.

## **Infrastructure provision at a rural university**

Rural training and research is increasingly dependent upon cutting edge technology, equipment and facilities serviced by specialists in areas such as microanalysis, precision agriculture, molecular biology and information technology. Government funding schemes increasingly support collaboration and sharing of equipment, facilities and expertise amongst universities, to the extent that this is frequently a selection criterion for success. This is entirely feasible for capital city universities, where shared and collaborative facilities are readily accessible across campuses. In contrast, UNE is an isolated rural university, with the nearest campus a four hour drive or two hour flight and drive, with attendant travel costs. The requirement for shared and collaborative equipment and facilities has disadvantaged UNE significantly, to the extent that our infrastructure is old and deteriorating. This is a significant potential limitation to our ability to adequately service rural training and research into the future.

### **Recommendation:**

Remote and rural campuses, such as UNE, be granted special provision with regard to upgrade and maintenance of equipment, analytical facilities and infrastructure in order to continue to service rural skills training and research.

### **Undergraduate Certificates**

Following the question from Hon. Tony Windsor at the House of Representatives Inquiry into Rural Skills conducted in Armidale on the 10<sup>th</sup> March have been obtained further details as to the issues that have led to a restriction on training programs offered in distance education mode to a number of agricultural industries. Below is an explanation of the situation that has been referred to. A simple change in the definitions of what is considered a higher education award should overcome the difficulty and create greater flexibility and articulation possibilities for people presently working in agricultural industries and wishing to study while in their current workplace.

Undergraduate Certificates have never been listed as higher education awards but were used by the University of New England as a specific mechanism to allow us to develop industry relevant units (mostly sponsored by CRC education programs and linked to the most recent industry-relevant research). Several CRCs and GRDC have funded lecturer positions at UNE to support such certificate programs which are made available to people working in agricultural industries (sometimes without traditional academic background or entry qualifications) who wished to upgrade their industry knowledge. Units within these programs are also available to full time tertiary students.

This system was extremely successful as a means of integrating industry training with the university teaching programs and facilitated the appointment of industry funded staff to support the teaching of some of the specialist units. Part of the success of this model was the flexibility created by having all the certificate units available in distance mode but involving a residential school at a time appropriate to industry work commitments.

Over a period of years UNE had facilitated Certificate programs (4 university units completed externally over a maximum of 4 semesters) in Cotton, Grains, Feedlotting, Animal Nutrition, Meat Science, Wool Science, and were evaluating possibilities in Precision agriculture, Organic agriculture and Animal & Plant Biosecurity.

However the new HEIMS legislation passed in 2003/2004 and DEST actions to ensure universities comply with this legislation has meant that certificate programs, as described above, are no longer offered as they are not defined as a higher education award. The alternatives for universities are Diplomas, but this requires double the time commitment (8 semesters) and numbers have dropped 10 fold under this scenario. We have considered



running the full fee-paying courses but surveys of students suggest that this is not an attractive option.

Presently on page 18 of the "Administrative information for providers: student support" booklet issued in November 2005 by the Funding and Student Branch Higher Education Group of DEST:

*"A higher education award is defined as:  
a degree, status, title or description of bachelor, master, or doctor; or  
an award of graduate diploma or graduate certificate; or  
any other award specified as a higher education award under the Australian  
Qualification Framework."*

The significance for the continuation of undergraduate Certificates is that they are not listed by the Australian Qualifications Framework (AQF) as awards offered by the Higher Education Sector (<http://www.aqf.edu.au/aqfqual.htm>). Consequently a very attractive flexible and industry orientated training program is no longer available to industry.

It should be pointed out that there are some anomalies in the definitions in that only last year AQF approved TAFEs to offer Vocational Graduate Certificates and Vocational Graduate Diplomas so it seems a little unreasonable that universities should not be able to offer undergraduate certificates where they interface well with tertiary teaching objectives and maximise education potential of industry orientated CRC programs.