

ARBORICULTURAL EDUCATION AND TRAINING IN AUSTRALIA

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INTRODUCTION:

The role of arboriculture in the curricula of Australian educational institutions has been relatively brief, with dedicated courses existing for at most 20 years. Historically, the discipline, or perhaps tree surgery, has been taught as a minor part of horticulture, and to a lesser extent forestry courses, in Australian Universities or Colleges of Advanced Education (CAE) or Technical and Further Education (TAFE) Colleges. For most of the past century, if arboriculture was taught at all, it was as a single subject or as a component of other subjects.

The high level of skill training that is required for arboriculture does not lend the discipline well to degree level training, and as a consequence most arboricultural training has been pitched at the TAFE Certificate, Diploma or Advanced Diploma level. In Australia, an exception to this has been a brief period where a specialist Diploma in Arboriculture was offered at Burnley College, as part of the Victorian College of Agriculture and Horticulture (a CAE) and continued under the auspices of the University of Melbourne.

Changes to higher education funding and delivery regimes in 1995-6 altered the education landscape and began a series of rapid and extensive changes in Australian post secondary education which continue today. These changes have impacted most upon universities, but the TAFE sector has also undergone change, and more extensive changes are likely in the future. In 2001 a paper was presented to the International Society of Arboriculture, Australian Chapter evaluating the position of Australian arboriculture (Moore 2001). This paper reviews and updates this earlier work.

A BRIEF REVIEW OF HISTORY

Arboriculture, or its subset tree surgery, has been part of horticultural curricula at colleges like Burnley in Victoria and Ryde in New South Wales for decades. For much of the past century delivery has been as a minor component of more general horticultural subjects, with specialist subjects and courses dedicated to arboriculture emerging in the late 1970s and mid 1980s. Similar scenarios developed in institutions in Queensland and Western Australia.

In Victoria, arboriculture was taught as a minor component of the diploma programs at Burnley until the late 1970s, when a single small specialist subject was developed. When the institution sought to develop a new set of programs in 1983, it was proposed that there would be a degree that would contain a single specialist arboriculture subject, and an associate diploma course with four specialist streams – Nursery Production, Parks and Gardens, Landscape Construction, and Turf Management. It is significant that there was no arboriculture stream proposed in the original course submissions. In the process of seeking accreditation the Turf stream

was rejected, and in an unprecedented development, an arboriculture stream was substituted in its stead.

The substitution of the arboricultural stream was a piece of good fortune, or of downright opportunism depending upon your perspective. The stream should never have been approved as the documentation to allow such approval was not available, and information on prospective student numbers was either non-existent or suggested a relatively small prospective intake. However, a brief window of opportunity presented itself, and the political and financial climate of the time allowed the stream to progress. The program commenced in 1985 and continued with little change until 2000. It has been the only dedicated arboriculture tertiary education course offered in Australia.

The course has been HECS-attracting, delivered within the Higher Education sector, and should not be confused with diplomas of the same level that have been offered under the auspices of the TAFE or VET sector. The differences are significant in that different curricula, funding and management arrangements apply to the programs because of their delivery through the different sectors.

Australia has only ever had one arboriculture course delivered through the tertiary education sector, and since 1996 through the university sector. This fact is often overlooked, with the importance of arboriculture in tertiary education overestimated by those in industry. The number of students has always been relatively small, and the cost of delivery high and efficiency of delivery low. In addition to the diploma course, the arboriculture subject in the degree program at Burnley has been delivered every year from 1985. A second arboriculture subject was added to the degree curriculum in 2001.

There have been successful subjects or parts of subjects delivered in many Australian states as parts of general horticulture or forestry curricula. There have also been very successful programs of high calibre delivered in a number of states through the TAFE or Vocational Education and Training (VET) sectors. The Advanced Certificate in Arboriculture commenced at Burnley in 1986 and continued until it was superseded by the Certificate level 4 and the TAFE Diploma Level 5 in Arboriculture both based on the Horticulture Training Package in 1999 and continued until 2005.

THE IMPACT OF THE REFORMS INITIATED IN 1995-6

The tertiary educational landscape changed dramatically in 1995 and 1996, when the then Federal Minister for Education The Honorable Amanda Vanstone announced significant funding reductions for universities, while at the same time approving staff pay rises. Universities were made to demonstrably improve their productivities based on improved systems of measuring outcomes and efficiencies. There was a major squeeze on funding and there were to be significant productivity increases demanded by government. Universities responded in different ways to this change of environment, adopting strategies or combinations of strategies that would allow them to secure existing funding and to meet the government's performance criteria (Table 1).

Table 1: University responses to altered funding arrangements in the mid 1990s.

Some University Responses	Effects of Strategy
Staff downsizing and redundancies	Larger class sizes; loss of expertise
Elimination of small departments	Loss of certain disciplines
Consolidation of subjects	Fewer larger subjects
Elimination of small enrolment subjects	Narrowing of student choice
Setting subject minimum quotas	Loss of small specialist subjects
Increasing University Income	Expand in consulting and enterprises
Charge Fees	Expand fee-for-service delivery
Export Services Overseas	More Overseas fee-paying students

Some universities downsized immediately, others eliminated small specialist departments, especially those in Arts and Science Faculties. The University of Melbourne, of which Burnley College is part, chose not to downsize, but did eliminate small departments, consolidate subjects and set minimum subject quotas. These strategies impacted not only on subjects with small enrolments, but also on streams, such as the arboriculture stream in the diploma course. The minimum quota size set by the University was 16, and the arboriculture stream was usually well below this. It was clear in 2000 that a designated, separate and specialist arboriculture stream would not be viable within the University framework.

Consequently, changes were made to the arboriculture course at diploma level in 2000, and the course was completely restructured in 2001. In one sense, the separate arboriculture stream no longer existed as classes were consolidated into larger subjects. However, there was still an identifiable and separate arboricultural practical component, which preserved some of the integrity of the initial program. Further changes were subsequently made and a new program will be offered in 2006 and there is a likely name change to Associate Degree in Horticulture in 2007.

The original degree subject continues with enrolments above the quotas required by the University, which now stand at 20. Its future for the next few years seems assured. The subject introduced in 2001 has survived but is still to prove itself, and numbers are close to the quota limit. However, it should be noted that a new degree curriculum was introduced by the University in 2001 for full implementation by 2004, and its structure will gradually impact upon all aspects of course delivery and may threaten the viability of elective subjects such as arboriculture...

SOME MEASURES OF SIGNIFICANCE AND SUCCESS

When considering arboriculture education in the tertiary education sector in Australia it may be of interest to give an indication of its relative size and significance. The only data to which the author has ready access is from Burnley. The arboriculture stream in the diploma course at Burnley College only accounted for between 1% and 6% of the higher education student body at Burnley between 1985 and 2005 (Table 2). The data show a downward trend on similar data presented in 2001 (Moore 2001)

Table 2: Data on the TAFE and Diploma courses, and the Degree subject at Burnley College. The final column gives the arboriculture group as a % of the whole higher education student body at Burnley for rows 1-3, the % of diploma arboriculture students articulating to the degree in row 4, the percentage of degree students taking the arboriculture subject as a % of their year cohort and in total in rows 5-6 and the TAFE/VET arboriculture students as a % of the whole TAFE/VET student body at Burnley in rows 7-10.

	Year	Number	%
Number of Diploma arboriculture students	1985	3	1
Largest Diploma arboriculture	1997	20	6.6
Total Diploma arboriculture graduates (approx)	1985-2005	208	3.8
Diplomates articulating to Degree (approx)	1985-2005	29	14
Degree Arboriculture Subject Enrolment average per year	1985-2000	39	93
Total Number of Degree Subject Enrolments	1985-2005	789	91
TAFE Advanced certificate of Arboriculture Graduates	1986-2005	115	5.3
TAFE Cert 2/3/4 Graduates	2000-2005	90	22
TAFE Diploma of Hort (Arboriculture) Graduates	2002-2005	23	10
Total TAFE arboriculture graduates	2986-2005	228	9

The data show that the number of arboriculture students enrolled in the Diploma at Burnley between 1985 and 2005 was 208, In the TAFE sector there were 228 graduates over the period of 1986 to 2005 which represented 9% of the TAFE students graduating from Burnley over this period. Over this period, the average number of higher education students doing Degrees, Diplomas and more recently Masters and PhD study has been 300 effective full-time students per year.

A very high proportion of the students undertaking the degree program at Burnley enroll in the arboriculture subject, with over 92% passing the subject. There is also a significant articulation of arboriculture students, with approximately 1 in 7 students who specialised in arboriculture in their diploma studies subsequently completing the Bachelors Degree. Employment rates for both the diploma and the degree programs have been consistently recorded at above 90% over the period 1985 – 2005, and often the figures have been in vicinity of 94% to 98% of students in employment three months after course completion.

MELBOURNE UNIVERSITY AND THE DELIVERY OF TAFE

In 2005, the University of Melbourne announced that it would be exiting the TAFE/VET sector entirely. While the main focus of these changes has been agriculture education and training, especially at the rural campuses of Longerenong, Dookie, McMillan and Glenormiston, there will be a significant and immediate impact on programs at Burnley, including arboriculture. These changes had been mooted for some years, with an attempt made in 2004 to leave the sector, and so some changes had already occurred that anticipated the decision

Two long-serving lecturing staff of the TAFE program offered at Burnley had retired or resigned in late 2004 and early 2005 and were not replaced. They have a continued involvement in the teaching programs as sessional staff, but there has been disruption

to the courses offered, and some loss of quality. The programs lost will include the Arboriculture Certificate programs at various levels and the Diploma of Arboriculture, all of which catered for part-time student already working in arboriculture. These courses have been very successful over twenty years, with historically low attrition rates. They provided large numbers of skilled staff to Victorian arboriculture industries. The loss of TAFE staff and programs also sees the loss of considerable practical skill and experience.

The loss of TAFE programs may jeopardize the high level of articulation reported in Table 2, although attempts are being made to preserve as much of the articulation program as possible. This highly successful pathway may be lost at a time when articulation is being given a higher priority in both TAFE/VET and University sectors. This loss should also be regretted for the opportunities that will be denied students in future.

The loss of TAFE also has some other impacts that may be of significance:

- The exit of Burnley from the TAFE sector will remove a benchmarking and quality control mechanism from the TAFE sector, which has benefited horticulture across the whole state and indeed nation. The role of Burnley in influencing TAFE curricula over the past two decades has been profound, and this has been particularly so in arboriculture where what has been developed at Burnley has had an effect nationally. There does not appear to be any attempt at preserving the Burnley –TAFE link and this could be detrimental to both the TAFE sector and to the industries that it serves
- The fact that staff were able to feed the latest research results into the TAFE education courses at Burnley meant that the programs were dynamic and up-to-date. Research led teaching is the usual model in Universities, but it is not so easily achieved in a TAFE context. Once again this has been put at risk and there do not seem to be any mechanisms or initiatives to preserve this aspect of the relationship
- Overall there would appear to be a considerable risk that TAFE arboriculture training could face a scenario of stagnation and of losing the initiative that it has had it up-to-date and innovative. This could put arboriculture curricula and programs at risk of survival over the next few years

A GLIMPSE OF THE FUTURE: CAUSE FOR CONCERN AND OPTIMISM

These developments in arboricultural education can be seen as disappointing and a cause for pessimism, however, there have always been cycles that affect education delivery in Australia. The development of specialist arboricultural courses and subjects within universities and colleges of advanced education in the 1980s owed much to the funding and political environments that existed at the time. Arboriculture courses and subjects are inevitably high cost as overheads are high, safety requirements demand small group size and student demand has at best been moderate. Consequently it is not surprising that the programs have had to change as a consequence of broader environmental changes.

The TAFE sector caters for many aspects of arboricultural education better than higher education, and so it is not surprising that delivery is concentrated in the TAFE sector, especially with the departure of the University of Melbourne Burnley Campus from TAFE delivery. While these changes may have negative effect on arboricultural

education and training, especially at the TAFE and Trade level, there is always another side to change.

Most universities now place a greater emphasis on their post-graduate programs such as Masters and Doctoral research degrees. At Burnley post-graduate numbers have grown from 3 in 1993 to 34 in 2005. This growth rate was almost exponential from 1996 to 2000 (Table 3), and has been both stable and sustained over the period 2001-5. There has also been a stable and consistent Honours by research year since 1998, with approximately 10 arboriculture related topics researched over the 1998-2005 period.

Table 3: Details of Student Research Projects at Burnley College.

Year	Honours Total	Honours Arbor. Related	Masters Total	Masters Arbor. Related	Ph D Total	Ph D Arbor. Related
1991	0	0	3	1	0	0
1997	0	0	15	3	1	0
1999	8	3	11	4	10	4
2001	11	2	15	6	15	4
2005	8	4	13	6	21	6

While most of those undertaking post-graduate studies are doing research into matters that are of general horticultural interest, it is worth noting that there are at least eleven research projects that relate directly to arboriculture at Burnley Campus. There have been similar expansions in arboriculture related research projects in Western Australia, New South Wales and to a lesser extent in Queensland and South Australia. Such research was virtually non-existent prior to 1990, and the research will have a significant impact on arboriculture and urban tree management in the future. Furthermore the information generated by the research, and the graduates from these postgraduate programs who have found employment in industry are having a significant effect on industry.

CONCLUSION

The period from 1985 to 2005 has provided some unusual opportunities for arboriculture education at all levels in Australia, but particularly in the tertiary sector. This period is not typical of the last 120 years, and while many may have assumed it was the norm, it should be seen as an atypical period in arboricultural education. The changes of the mid 1990s have dramatically altered the tertiary education landscape in Australia and these have clearly affected arboriculture education. The changes have had a profound effect on course structures and under-graduate program delivery, but they have opened up significant opportunities for post-graduate research in arboriculture related topics. This provides a wonderful opportunity for arboriculture to advance as a discipline and a profession, and once again the most must be made of it.

The focus of arboriculture education and training will be within the TAFE/VET sector, and the exit of the University of Melbourne, Burnley Campus from this level of training is both significant and symbolic. The TAFE/VET sector is better suited to

the delivery of arboricultural education as it copes well with skills training, competency formats and the need for adequate supervision for small groups. For the most part arboriculture has been taught within the TAFE/VET sector, and these synergies see arboriculture training and education returning to the sector where it has traditionally resided.

There is an irony that at a time of expanding arboricultural-related research in the university sector, the links between research and education and training, particularly in the TAFE/VET sector seem to be weakening, and there is little being done to preserve links that have provided so much benefit over the past two decades. Should the same winds of change that have blown through the higher education affect the TAFE/VET sector, the threats to arboriculture training and education within Australia could be profound.

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REFERENCE

Moore G M (2001) *Arboricultural Education Forum: A Tertiary Perspective*, Proceedings ISAAC Conference 2001, Ed C Sorrell International Society of Arboriculture, Australian Chapter, 6pp