ARTICULATION AND CREDIT TRANSFER ACROSS THE COLLEGE AND UNIVERSITY TERTIARY EDUCATION SECTORS: A STUDY OF RELATIVE PERFORMANCE AND RELATED ISSUES

Mr Jitendra Chandr
Course Administrator
Swinburne University of Technology, Melbourne, Australia

Dr. Raj Sharma
Associate Director, Resource Planning and Analysis
Swinburne University of Technology, Melbourne, Australia

INTRODUCTION
Historically, the Australian higher education and vocational education have been divided into universities and TAFE. In 1987, the Federal government released the first “green paper” titled “Higher Education, A Policy Discussion Paper” pushing for a “Unified National System”. This was followed by the “white paper” in 1988.

The government’s White paper put forward the principles of credit transfer policy. Some of the relevant principles articulated were:

- Enable automatic transfer of credit if subjects were comparable between the receiving and the originating institutes
- The receiving institute are to ensure that maximum possible credit is granted
- The awarding institutions are to set a minimum proportion of work that must be completed
- Publication and distribution of such information to enable students to get information easily (White Paper, pp 36-38)

This led the Australian Vice-Chancellors’ Committee (AVCC) to set up a pilot project to establish a nationwide credit transfer system in 1992.

Ng and Sharma (1993) outline a number of reasons for the interest in credit transfer:

- Savings made by not teaching the same material twice
- Providing a variety of pathways
- Reduce the high wastage of human resources
- Provide opportunity for higher education graduates to reverse articulate into TAFE courses

As Ng and Sharma show, the benefits to all the stakeholders (e.g. students, universities and government) can be quite substantial.

Sommerlad, Duke and McDonald (1998) show that a number of approaches for fostering collaboration between TAFE and higher education sectors. They argue that institutions could be positioned as tending towards one of the four positions, namely, amalgamation, partnership, association or separation. Wheelahan (2000) states that the amalgamation approach is “represented by the five major dual sector universities. Dual sector universities could be defined as those universities that have both the TAFE and the higher education divisions – both divisions are said to co-exist within one institution (Wheelahan (2000), 15). Partnership and association
approaches also exist – the main difference between the two being that “partnership...sees blurring occurring between the sectors, whereas the (association) approach attempts to maintain distinct boundaries between the two (Wheelahan (2000), 15).

Universities have established different arrangements to allow students to move between sectors. Some of the arrangements identified by Wheelahan (2000) are learning pathways, dual awards, nested programs and integrated awards. Learning pathways are “standardised and formal arrangements for students to transfer between courses … pathways may link sequentially two courses from either the same or different disciplines”(Wheelahan (2000), 18).

In a dual award, two courses from different sectors are combined into a single accredited course. Normally, a student would start the course with most of the studies being taken in the TAFE division. In the final two years of the four year course, the emphasis shifts to the higher education division.

This study compares the performance of students who are enrolled as dual award students, with the students who enrol in higher education courses via 'standardised learning pathways’ and the students who enrol in higher education courses after completing secondary school.

**METHODOLOGY**

Data was obtained from the University Student Administration System. Invalid data such as Enter Scores with zero values were excluded. Calculations of Student Progress Units (SPUs) also excluded students who had withdrawn from the subject before the census dates.

Students entering higher education course via standardized learning pathways were identified by the admission code (13) recorded on the student information system. School leavers were also identified by their admission code (12). Dual Award students were identified by the course codes.

SPU was calculated as

\[ SPU = \frac{\text{EFTSU with Pass or better Grade}}{\text{Enrolled EFTSUs}} \]

Where EFTSU = Equivalent Fulltime Student Unit.

Mean marks obtained by the students were calculated as a second measure of the student performance. Same statistical tests were performed on both the SPU and the mean mark.

SPSS was used to calculate the required statistics.

**LITERATURE REVIEW**

Dobson and Sharma (1994) gave prominence to the study of student progress in the Australasian region in terms of higher education. They defined one Student Progress Unit (SPU) as being generated by the successful completion of subjects weighed at one equivalent full time student unit. Dobson and Sharma (1994) study focussed on relative student performance by gender and found that women invariably outperform men.

Burns (1994) undertook a study of student performance in the Accounting degree at an Australian university. In particular it compared the performance of TAFE Experience Students with other
undergraduate Accounting students and came to the conclusion that ‘ex-TAFE students perform academically at about the same level as their colleagues’ (Burns, 1994, p.25). This paper is somewhat similar to the Burns (1994) study but in fact goes beyond that study in that it considers more than one program and also segments TAFE students according to those in fully articulated Degree/Diploma programs and other TAFE students. Further this study uses the more (now) accepted measure of student performance in Australasia, namely, the SPU.

Dobson, Sharma and Haydon (1996) reported on a national study of student performance. They studied relative student performance for 1993-94 and found that overall, nationally, students with prior TAFE qualifications performed on par with a range of other students including school leavers. Again this study did not distinguish between fully articulated Degree/Diploma courses from other TAFE transfers and hence was limited in scope from the present study.

Dobson and Sharma (1999) examined the relationship between student performance and the cost of failure of Australian students. They found that the public cost of failure for Australian higher education students was just over a quarter of a billion Australian dollars and over one third of a billion dollars when the quantifiable private cost of failure was included. These very high costs provide cogent reasons for pursuing on-going institutional research into student performance in higher education.

COMPARISON OF STUDENT PERFORMANCE

Study of Student Progress Unit

Before turning to detailed examination of relative output of Student Progress Units for dual sector, some comments on overall student progress by age and gender at this regional university campus. It was found that the younger students (those below 22 years of age) experienced about two per cent lower student progress rate (0.824) than older students (0.843) but the difference was not statistically significant (t=1.41, p>0.05). However, overall the female students (0.854) experienced significantly better progress rate than males (0.807, t=3.78, p<0.01) at the case study institution. This finding is consistent with the Dobson and Sharma (1994) study that established that women invariably outperform men in Australian higher education.

Turning now to dual award program, our attention shall initially focus on some broad student performance analysis (as measured by SPU) before proceeding to detailed comparisons at the program level. Unlike the overall situation, dual award program younger students (less than 22 years old) had a greater SPU (0.823) than their older colleagues (0.715) but the over 15% student performance advantage of younger dual awardees was not statistically significant (t=1.21, P>0.05). However, as per the overall situation, female dual awardees (0.828) outperformed their male counterparts (0.797) but the nearly 4% superiority factor was not statistically significant (t=0.59, P>0.05). Dual sector student performance (0.813) was lower than that of others enrolled at this regional university (0.83) but the nearly two per cent difference in mean SPU was not statistically significant (t=0.81, P>0.05). The dual awardees (0.813) did not perform as well as other students transferring from TAFE to higher education (0.897) but the over ten per cent difference in performance was not statistically significant (t=1.57, P>0.05).

Student performance can and does vary by program and so it is interesting to focus on dual awardees performance in terms of SPU at the program level. Accounting program dual awardees (0.823) outperformed other students enrolled in dual sector programs (0.796) but the over three per cent superior performance was not statistically significant (t=0.54, P>0.05). Marketing dual
awardees (0.75) under-performed relative to other dual sector students (0.817) but this nine per cent difference in performance was not statistically significant (t=1.44, P>0.05). Social Science program students (0.693) under-performed relative to dual awardees (0.823) and the nearly 19 per cent difference in SPU was highly significant (t=2.46, P<0.01). Students enrolled in Tourism programs (0.865) outperformed dual awardees (0.757) and the 14 per cent performance difference was highly significant (t=2.69, P<0.01). Marketing students (0.786) only marginally outperformed dual award accounting students (0.782) but the 0.5 per cent performance difference was not statistically significant (t=0.05, P>0.05). Tourism students (0.858) outperformed accounting dual awardees (0.782) but the nearly ten per cent difference was not statistically significant (t=1.22, P>0.05). Tourism students also outperformed marketing dual awardees (0.786) but the nine per cent difference was not statistically significant (t=1.12, P>0.05). Accounting dual awardees (0.782) slightly outperformed Social Science students (0.778) but the small difference in SPU was not statistically significant (t=0.04, P>0.05).

In the State of Victoria where this case study university is located, students undertaking matriculation or equivalent studies are assigned an ENTER score by the Victorian Tertiary Admissions Centre (VTAC) ranging downwards from 99.9. A VTAC ENTER of 99.9 implies that the student is in the top 0.1% of the secondary school graduating cohort. Students were divided into four groups according to their ENTER scores including those with low scores (≤25), lower middle (26 to 50), upper middle (51-75) and high (>75), that is, according to quartiles. Only 0.4% was in the low quartile, 14.7% in lower middle, 69.6% in upper middle and 15.4% in the top quartile. The skewed distribution to the right for the ENTER scores is expected since the university mainly recruits at the top end but for equity and related reasons needs to take some students at the lower end of the VTAC score range.

The mean SPU outcome tends to increase as one moves from the low (.696) to the lower middle (.814), upper middle (.817) and the top quartile of ENTER scores (.905). However, statistical testing of the student progress outcomes of these four groups suggests no significant difference between the mean SPU of the low or lower middle group (t=1.52, P>0.05) or indeed lower middle and upper middle entry score quartile groups (t=0.15, P>0.05). Indeed statistically significant results were only obtained between the three lower quartiles and the top entry score quartile. In particular, the mean SPU of the lowest quartile ENTER score (0.696) was significantly below that of the highest quartile (0.905, t=2.29, P<0.05); the differences in mean SPU between the lower middle quartile (0.814) and the top quartile was highly significant (t=4.95, P<0.001); similarly the differences in mean student progress between the upper middle (0.817) and top quartile was highly significant (t=4.90, P<0.001).

Mean Examination Marks

The SPU is a crude measure of student performance that does not distinguish between the different grades assigned to students; but nevertheless it is an important one that is monitored by the national Australian Government since it provides an effective measure of subject pass rates. Accordingly, the study of student performance using a finer measure in terms of university assessment (mean marks) may be prove useful.

Turning firstly to the effects of student final year high school grading on undergraduate student performance (again using the four quartiles for entry scores) revealed a progressively higher mean university mark as one moves from the lowest quartile (mean mark= 52.9%) to lower middle quartile (56%), upper middle (58.1%) and top quartile (68.7%). However, statistical testing indicates no significant difference between the mean mark of the lowest and lower middle quartiles (t=0.57, P>0.05); but the differences in mean mark between the lower middle and upper
middle quartiles were statistically significant (t= 1.69, P<0.05); off course as per SPU all the three lower quartiles experienced significantly lower mean marks to the top quartile of VTAC ENTER scores establishing their superiority in terms of student performance.

Since a major emphasis in this study is the performance of students in dual sector programs, it is useful to consider whether mean marks vary according to young (< 22 years old) and older group of students (those at or above 22 years of age). In the dual award Tourism degree program the younger age group (Mean mark= 60.4%) had a over 23% advantage in assessment score in comparison to the older group (49%) but the differences in means was not statistically significant (t=1.58, P>0.05). Similarly, the dual sector Marketing degree younger students (57.1%) enjoyed 18% better mean mark than the older students (48.3%) but again the difference in student performance was not statistically significant (t= 0.96, P>0.05). But this trend is reversed in the dual award Accounting course where the older student population (61.5%) had a 6% superior mean mark than their younger counterparts (57.9%) although the mean difference was not statistically significant (t= 0.27, P>0.05). Finally in the dual award Social Science program the younger students (49.3%) enjoyed a 12% superior mean examination result in comparison to the older group (43.9%) but again the difference was not statistically significant (t= 0.3, P>0.05).

As previously established by Dobson and Sharma (1994) gender differences in terms of higher education student performance can be marked. Accordingly attention now focuses on possible gender differences in student performance within dual award programs. In the Tourism dual award program female students (60.4%) enjoyed a 4 % better mean mark than their male colleagues (58.1%) but the difference was not statistically significant (t=0.6, P>0.05). In Marketing dual award degree studies the female students (59%) had a 12% superiority in mean mark over male counterparts (52.6%) although the difference was not statistically significant (t= .91, P>0.05). In a similar way the Accounting dual award program reveals female students (62.5%) holding 10% performance advantage over their male colleagues (56.6%) but again the difference was not statistically significant (t= 0.88, P>0.05). It is difficult to draw any meaningful conclusion in terms of gender difference in performance within the Social Science dual award program since there were only three male students enrolled in this degree studies. For students enrolled in all university programs female students (61.5%) enjoyed a superiority factor of 7% in terms of performance over their male colleagues (57.5%) with the observed difference in mean being highly significant (t=4.7, p<0.001).

Attention is now turned to some overall comparison of mean marks achieved by the three broad groups of students, namely, dual award, TAFE transfers and other students (mainly school leavers). It was found that female other students (62.1%) had a 8% performance advantage over dual award female students (57.4%) with the differences in mean marks being statistically significant (t= 2.3, P>0.05). Similarly female TAFE transfer students (60%) experienced a nearly five per cent superior performance relative to dual award female students (57.4%) but the difference in mean was not statistically significant (t=0.7, P>0.05). Similar results were obtained with male students though none of the differences were statistically significant. In total, other students (59.6%) enjoyed a nearly five per cent student performance advantage over dual awardees (56.9%) with the difference in mean marks being statistically significant (t= 1.9, P<0.05). In total the TAFE entrants (60.6%) outperformed the dual sector students (56.9%) by 6% but the difference in means was not statistically significant (t= 1.2, P>0.05). There was a very small difference in overall performance of TAFE transfer and other students (the latter had 1.6% performance advantage) but was not statistically significant (t = 0.3, P>0.05).

Detailed comparisons were made between dual award and other students at the subject level without revealing statistically significant results except in four cases. In Marketing
Communications the dual awardees (65.5%) outperformed others (60.8%) by nearly 8% with the difference in mean marks being statistically significant (t=1.9, P<0.05). Similarly in Science, Technology and the Society the dual award students (52.4%) outperformed the others (40.3%) by a very wide margin of 30% with the differences in mean marks being highly significant (t= 3.8, p<0.001). In Human Resources Management the results were reversed with other students (65.5%) outperforming dual awardees (59.3%) by over 10% with the difference in means being highly significant (t= 4.6, P<0.001). Finally in Tourism Destination Management the other students (67.3%) experienced over 6% better performance than the dual awardees (63.3%) with the observed difference in mean being highly significant (t= 2.5, P<0.01).

Yet another factor that may be important in terms of student performance is the regional source of the students. This organisation is like a regional degree granting University College, being a Division of a larger University that is headquartered in an inner suburb of a megapolis. Students were divided into two regions - one adjoining the location of this University Division and the other being the residual group. Overall the Local area students (71%) out-performed students from outside the local area (57.6%) with the difference in mean mark being highly significant (t= 4.7, P<0.001). Similarly the local dual award students (58.4%) achieved a higher mean mark than those emanating from other geographical regions (55.9%), but the difference in means was not statistically significant (t= 0.8, P>0.05). The local students transferring from other TAFE programs (62.2%) out-performed the TAFE transfers from outside the local area (58.7%) with the differences in mean being highly significant (t= 3.4, P<0.001). Finally other students from within the local area (62%) also generated a greater mean score than those from outside the region (57.8%) with the difference in mean marks being highly significant (t=4.5, P<0.001).

CONCLUSION

Overall, students older than 22 years had a better SPU than the younger students. However, for the Dual Award courses the younger students performed better than the older students. If one looks at the mean marks obtained by the group, the students for the three Dual Award courses, the younger students had a higher mean mark. However, for Accounting Dual Award, the reverse was true – the older students had a higher mean.

Gender seems to determine both the SPU and the mean marks obtained by the different groups. The female students had a better SPU than males for the overall sample. Similarly, the female Dual Awardees had a better SPU then the male students. For all the Dual Award courses, the mean mark for the female students was higher than that of the male students. For the overall population, the female students had a higher mean than the male students. So both the SPU and the mean marks confirm that the females perform better than their male counterparts. This finding confirms the findings of Dobson and Sharma (1994).

As would be expected, the mean mark increases with the increase in Enter Scores. The most significant difference is between the lower middle Enter category and the highest Enter category. Similar effect is obtained with the other measure, the Student Progress Unit. SPU tends to increase with Enter category.

The Dual Awardees had a lower SPU than all other students. Similarly, the mean mark for the “Other” students was higher than the mean mark for the Dual Award students. Comparison of the Dual Awardees with the TAFE articulants show that the Dual Awardees did not perform as well as the TAFE articulants in terms of the mean marks obtained by the students.
Comparison of courses within Dual Award programs shows that there are differences in performance of the student within the different courses. Analysis shows that the Marketing Dual Award students under performed other Dual Award students. Tourism Dual Award students were the top performers followed by the Accounting Dual Awards.

It was observed that the students living in the local area, that is, close to the campus performed better than students from other areas of the city. Both the Dual Award students and the other students observed this result. It may be speculated that the local students find the location of regional campus convenient and therefore, the high achieving students do not travel to universities located closer to the city while the students from other areas only attend the campus if they are unsuccessful in obtaining a place at the metropolitan universities. Current work in progress suggests that students withdrawing from courses at the regional university cite the location of the campus as one of the main reasons for withdrawing from the course. Further work needs to done to identify if there is any difference between the local and other withdrawing students. One may expect that students from other areas to that of the location of the campus is an incentive to withdraw from the course but the local students may not find that the location of the campus is an issue.

FUTURE DIRECTIONS
This exploratory study provides some answers to how the Dual Award students perform in relation to the students who enter university after completing the final year of secondary school and those students who enter universities after completing a TAFE course. As this study was carried out at a relatively small regional campus, it would be interesting to compare the performance of the Dual Award students based at the main campus of the university. Factors such as different entry criteria, different levels of student support at the two campuses and differences in student socio-economic factors could be considered.

It is interesting to note that the students living close to the regional campus perform better than the students living outside the local area. One may ask whether the students living close to the main campus perform better than students coming from outer areas of Melbourne. This could be done by comparing the performances of students between the two campuses and the students’ home location.

As mentioned earlier there are differences in performances between different courses. One of the reasons may be that there are different entry requirements for different courses or in fact the courses would be attracting students with different levels of educational attainment. Future research could focus on this to explore the reasons for the differences between courses.

REFERENCES


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