

Are diplomas being supplanted by bachelor degrees?

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Abstract

Recent research has suggested that diplomas and advanced diplomas are being supplanted as credentials in the labour market by bachelor degrees. This presentation will examine the role of mid-level qualifications in the labour market by analysing patterns in enrolments and employment outcomes over 2002–2011. Diplomas retained their share of enrolments while associate degrees have increased considerably. Employment rates of recent graduates do not seem related to enrolment rates but dropped noticeably after 2007, perhaps an effect of the global financial crisis. These patterns however vary markedly by field, reflecting the segmented nature of the labour market and the need for policy to account for the differing roles of each qualification level in different areas of education and work.

Introduction

Patterns of engagement with tertiary education are clearly changing towards greater participation overall, a greater extent of multiple qualifications and a larger proportion of higher education programs as distinct from VET programs, with however patterns quite different in different fields of education (Fredman, 2012). What does this mean for the role of qualifications in the labour market? Is there, for example, a generalized pattern of diplomas being supplanted by bachelor degrees as currency in the labour market? This has been argued particularly by Karmel (2008, 2010, 2011). This paper seeks to further explore this question by analysing available data on changing patterns of enrolments in mid-level qualifications and their employment outcomes.

While Karmel argued that diploma graduates were being displaced by bachelor graduates in employment, it is also worth examining whether diplomas are being displaced by associate degrees which have increased very strongly since 2005, though they remain a small proportion of enrolments. It is also possible that diplomas are losing enrolment share to certificates, or that enrolments in one level change independently of enrolments in other levels. This paper therefore defines as mid-level certificate IVs, diplomas, advanced diplomas, associate degrees and bachelor degrees and compares enrolments and outcomes for these qualifications.

Literature review

The chief work considering the labour market currency of diplomas with respect to that of bachelor degrees has been undertaken by Karmel and colleagues. Karmel and Nguyen (2003) argued that the diploma has two roles: as a mid-level qualification preparing graduates for mid-level occupations and also as a 'cross over' qualification between vocational and higher education. In 2008 the Council of Australian Governments (2008, p. 7) 'agreed to double the number of higher qualification completions (diploma and advanced diploma) between 2009 and 2020'. However, Karmel (2008) observed that diploma enrolments had been static from 2003 to 2007 and that diploma graduates' occupation progression was being displaced by bachelor graduates. In further work Karmel (2010, 2011) showed that many of the jobs that required diplomas as the entry-level qualification now require degrees, and argued that diploma and degree graduates now compete for the same jobs.

Karmel's relevant work to date has not considered differences by field of education. Stanwick (2006) investigated the occupational and further education outcomes of

upper-level VET qualifications — defined as diplomas and advanced diplomas. Stanwick considered whether such qualifications were successful in leading to employment at associate professional level or higher or to university study, using the 2003 Student Outcomes Survey. These two outcomes were found to vary markedly by age group and field of education. Investigating differences by field of education in tertiary education participation and occupational outcome importantly reinforces the evidence of labour market segmentation (Yu et al. 2012). It is argued by Wheelahan, Moodie and Buchanan (2011) that segmentation and barriers to advancement in the labour market are related to a lack of coherence between education and work in Australia, a lack which is however evident to quite different extents in different fields of education and work. Such arguments reinforce the need to consider processes within educational systems by field of education.

Karmel's theses were based on enrolment data from 2002 to 2007 and on census data on the jobs that holders of differing qualifications hold. As will be seen below, patterns in enrolment evident from 2002 to 2007 have not necessarily continued from 2008. This paper considers patterns of enrolment by level and field of qualification, and also the employment rates of graduates by level and field of qualification, to further examine the contention that diplomas are being displaced by degrees in the labour market.

Method

This paper uses NCVER and Commonwealth enrolment data, data from the NCVER's Student Outcomes Survey and data from the higher education Graduate Destination Survey. Note that as only course enrolments are considered, module completers are excluded from the NCVER data. Also note that NCVER enrolment figures for 2011

were adjusted slightly in August 2012, after the data for this paper were collected. The actual figures for VET enrolments may then be slightly different from those presented here, but this would not affect the overall analyses and arguments. The method is the examination of descriptive statistics consisting of time series of enrolment and outcome variables, and cross-tabulations of these with fields of education, to consider overall patterns and change therein.

Findings and discussion

Patterns in enrolments

We first consider full year training equivalents (student load) from 2002 to 2011 (Table 1) by qualification level. We note that vocational advanced diploma load fell by 4% over the period. However, vocational diploma load increased substantially since 2008, after Karmel (2008) asked what has been happening to vocational education and training diplomas and advanced diplomas, and by 68% from 2002 to 2011. However, student load in certificates IV increased by a much bigger 83%.

Table 1 Mid-level qualifications' student load reported by NCVET by broad program level, 2002–2011

Year	Certificate IV	Diploma	Advanced diploma	Sub total VET dips	Associate degree	Bach deg (pass)	Bach deg (honours)
2002	71,891	75,122	27,423	102,545	24	731	0
2003	75,775	74,492	28,145	102,637	0	938	3
2004	74,903	72,701	25,388	98,089	0	1,028	14
2005	74,567	74,189	24,565	98,755	0	1,036	57
2006	77,429	75,232	23,483	98,714	113	1,041	17
2007	82,753	79,619	21,905	101,525	157	528	0
2008	84,037	84,797	21,755	106,552	0	526	0
2009	100,531	96,422	25,441	121,863	91	1,358	0
2010	114,813	113,232	26,995	140,227	94	1,212	0
2011	131,289	126,248	26,362	152,610	72	1,310	0
Change 02–11	59,399	51,126	-1,061	50,065	47	580	0
% change 02–11	83	68	-4	49	195	79	0

Source VOCSTATS (www.ncver.edu.au/resources/vocstats/intro.html) extracted on 1/5/2012

Next we consider undergraduate student load at Table 2.¹ ‘Other undergraduate’ includes mostly higher education diplomas and advanced diplomas, and these have increased strongly from 2002 to 2011. Even bigger has been the almost fivefold increase in student load in associate degrees, although they were still only 1% of total undergraduate higher education load in 2011. Nonetheless, baccalaureates remain 96% of higher education undergraduate student load.

Table 2 Undergraduate student load reported by the Commonwealth by broad program level, 2002-2011

Year	Other undergraduate	Associate degree	Bachelor	Total undergraduate higher education
2002	8,083	1,175	487,866	497,124
2003	7,838	1,031	499,701	508,570
2004	5,769	913	504,658	511,340
2005	5,687	1,778	512,858	520,323
2006	5,003	3,479	525,717	534,199
2007	14,994	3,991	542,602	561,587
2008	18,373	5,194	559,440	583,007
2009	20,990	5,207	598,245	624,442
2010	23,294	6,640	634,179	664,113
2011	21,500	6,891	655,250	683,641
Change 02–11	13,417	5,716	167,384	186,517
% change 02–11	166	486	34	38

Source DIISRTE (2012) Table 4.1: actual student Load (EFTSL) for all students by State, higher education provider and broad level of course, full year 2011 and corresponding tables from previous years

Vocational and higher education student load in associate degrees and baccalaureates shown in tables 1 and 2 are aggregated to give mid level qualifications’ student load shown in Table 3.

¹ There’s probably some double counting of bachelor student load reported by NCVER and the bachelor student load reported by the Commonwealth. Bachelor student load reported to NCVER increased by 79% from 2002 to 2011 but was still only 0.1% of total undergraduate load in 2011 and so any double counting is unlikely to affect proportions of load in other undergraduate programs significantly.

Table 3 Mid level qualifications' student load 2002 to 2011

Year	Certificate IV	VET diploma	VET advanced diploma	Sub total VET diplomas	HE other undergraduate	Associate degree	Bachelor
2002	71,891	75,122	27,423	102,545	8,083	1,199	488,597
2003	75,775	74,492	28,145	102,637	7,838	1,031	500,642
2004	74,903	72,701	25,388	98,089	5,769	913	505,700
2005	74,567	74,189	24,565	98,755	5,687	1,778	513,951
2006	77,429	75,232	23,483	98,714	5,003	3,592	526,775
2007	82,753	79,619	21,905	101,525	14,994	4,148	543,130
2008	84,037	84,797	21,755	106,552	18,373	5,194	559,966
2009	100,531	96,422	25,441	121,863	20,990	5,298	599,603
2010	114,813	113,232	26,995	140,227	23,294	6,734	635,391
2011	131,289	126,248	26,362	152,610	21,500	6,963	656,560
Change 02-11	59,399	51,126	-1,061	50,065	13,417	5,764	167,963
% change 02-11	83	68	-4	49	166	481	34

Source Calculated from Tables 1 and 2

Table 4 shows certificate IV, diploma, advanced diploma, associate degree and baccalaureate programs' share of all mid-level programs' student load from 2002 to 2011. Vocational diplomas had a net increase for all of 0.4 percentage points, and if higher education's 'other undergraduate' student load is mostly higher education diplomas, all diplomas have increased their share of mid level qualifications' student load by 1.3 percentage points. Diplomas' share of mid-level qualifications have not been reduced by baccalaureates' increased share, since baccalaureates lost 4.5 percentage points share. Baccalaureates lost their share of mid-level qualifications even after 2009 when higher education bachelor enrolments were starting to increase strongly with the phased introduction of the demand driven system. Certificates IV increased their share of mid level qualifications' student load markedly, by 2.4 percentage points.

Table 4 Mid level qualifications' share of student load 2002 to 2011

Year	Certificate IV	VET diploma	VET advanced diploma	Sub total VET diplomas	HE other undergraduate	Associate degrees	Bachelor
2002	9.3	9.7	3.5	13.2	1.0	0.2	63.1
2003	9.6	9.4	3.6	13.0	1.0	0.1	63.3
2004	9.6	9.3	3.2	12.5	0.7	0.1	64.5
2005	9.4	9.3	3.1	12.4	0.7	0.2	64.8
2006	9.6	9.3	2.9	12.2	0.6	0.4	65.0
2007	9.8	9.4	2.6	12.0	1.8	0.5	64.0
2008	9.5	9.6	2.5	12.1	2.1	0.6	63.6
2009	10.4	9.9	2.6	12.6	2.2	0.5	61.8
2010	10.8	10.7	2.5	13.2	2.2	0.6	59.9
2011	11.7	11.3	2.4	13.6	1.9	0.6	58.5
Change 02-11	2.4	1.6	-1.2	0.4	0.9	0.5	-4.5

Source Calculated from Table 3

Mid level qualifications' employment outcomes

In this section we look for any relation between student load and employment rate in mid-level qualifications by plotting the measures together. The general and descriptive examination of student load and graduate employment rates undertaken here follows that of Aamodt and Arnesen (1995). A more analytic approach which seeks formal evidence of a causal relation by regressing one time series against a time-lag of another time series is precluded here because the yearly observations between 2002 and 2011 are too few to generate robust results.

Employment data for higher education graduates is available from the Graduate Destination Survey (GDS), which is administered four months after graduates complete their program. Table 5 shows the proportion of bachelor graduates who reported being employed full time, which is around half. While this seems low, very high proportions of bachelor graduates proceed to further study, particularly arts and sciences graduates who proceed to postgraduate study in education, law and other vocational fields.

Table 5 Estimated bachelor degree graduates in full time employment, 2002–2011

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
53.2	53.7	52.9	54.5	54.7	56.5	56.4	52.2	49.3	49.4

Source Derived from Graduate Destination Survey

Perhaps a better indicator of employment outcomes for bachelor graduates is the number of graduates in full time employment as a percentage of graduates available for full time employment. These are set out in Table 6.

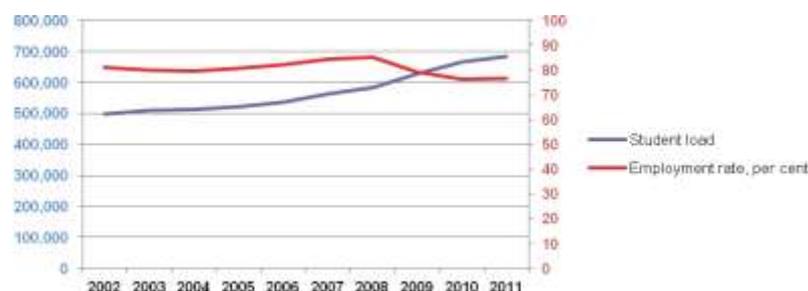
Table 6 Bachelor degree graduates in full time employment as % of available for full time employment, 2002–2011

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
81.3	80.1	79.7	80.9	82.4	84.5	85.2	79.2	76.2	76.6

Source Graduate Careers Australia (2011) Table 2: breakdown of bachelor degree graduates available for full-time employment, by field of education, 2011 (%), and corresponding tables for previous years

Figure 1 shows baccalaureate student load on the same graph as the employment rate. Both bachelor student load and bachelor graduates' employment rate increased gradually from 2002 to 2008, but changed markedly after the onset of the global financial crisis in 2007 when the bachelor employment rate fell sharply and their growth in student load increased markedly.

Figure 1 Baccalaureate student load and graduates employed full time as a % of those available for full time employment, 2002-2011

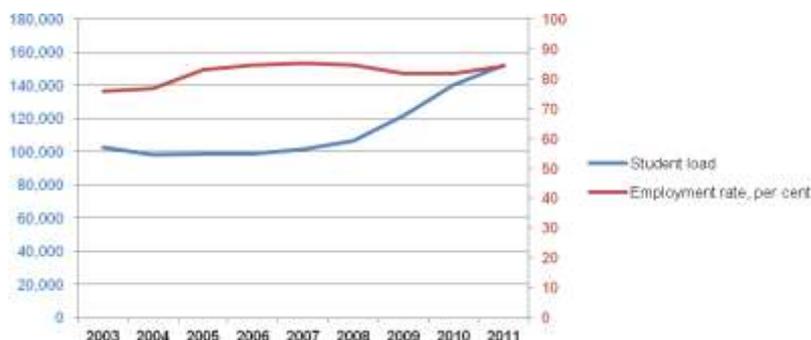


Source As for Tables 1 and 6

Employment data for vocational education graduates are available from the Student Outcomes Survey (SOS). Unfortunately the vocational and higher education employment data are collected and reported differently, so they can't be compared with each other. The GDS distinguishes between those working part-time and looking

for full-time work and those working part-time and not looking for full-time work. Unfortunately, the SOS does not make this distinction. Hence for the vocational education data the proportion employed at all is used for simplicity. Also note the scope of the SOS changed in 2005. Prior to 2005, this survey only included students who had studied in publicly funded programs through TAFE and other public providers. From 2005 the survey also included publicly funded students in private providers and fee-for-service students at public and community providers. While the results for the two sectors can't be compared directly we may compare results for each survey over time. Vocational student outcomes data are available from 2003. For clarity of presentation, data are aggregated for graduates of diplomas and above. While this includes baccalaureates and vocational graduate certificates as well as diplomas, diplomas are the big majority of these graduates and thus dominate employment rates. Figure 2 plots vocational diploma and above student load and the proportion of graduates of vocational diplomas and above employed after training for 2003–2011. There doesn't seem to be a good relation between student load and employment rate. But as with baccalaureates shown in figure 1, student load for vocational diplomas and above increased markedly following the onset of the global financial crisis after 2007.

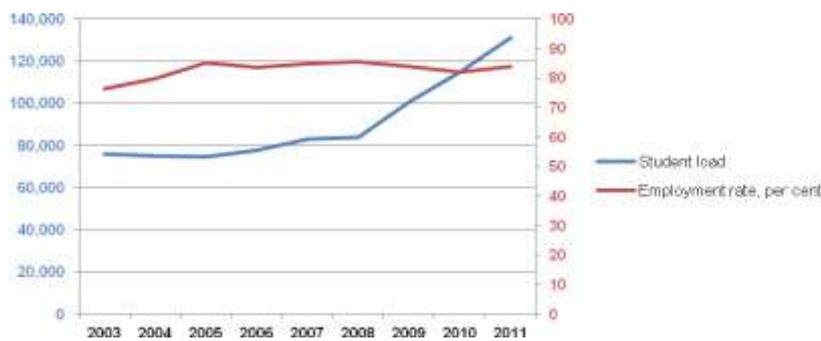
Figure 2 Vocational diploma and above student load and % of graduates employed after training, 2003–2011



Source VOCSTATS (www.ncver.edu.au/resources/vocstats/intro.html) extracted on 1/5/2012, NCVER (2003) and NCVER (2004)

The results for certificates IV are given in Figure 3. Again, it doesn't show a strong relation between student load and employment. Indeed, the most striking aspect of Figure 3 is the stability of the certificate IV employment rate notwithstanding a strong increase in student load after 2007.

Figure 3 Certificate IV student load and % of graduates employed after training, 2003 - 2011



Source VOCSTATS (www.ncver.edu.au/resources/vocstats/intro.html) extracted on 1/5/2012, NCVER (2003) and NCVER (2004)

The graphs of student load and employment rates for baccalaureates, diplomas and certificates IV show little relation between student load and employment rate. However, these figures for all fields may disguise closer relationships for some fields of education. We now examine the same data by broad field of education to determine whether there are any distinctive patterns by field or industry. The broad fields of education with the biggest student loads in mid level qualifications in 2011 were society and culture (237,699 equivalent full time students) and management and commerce (213,918) (Table 7). Health was also big, with 115,057 equivalent full time students. Small fields were food, hospitality and personal services (10,966) and agriculture, environmental and related studies (16,089). Diplomas are very important in food and hospitality, where they are 34% of all mid level qualifications' student load, and in agriculture and environmental studies (28%). Diplomas are substantial in architecture and building (20%), management and commerce (17%), society and culture (14%), creative arts (14%), health (14%) and information technology (10%).

Advanced diplomas are substantial in engineering and related technologies where they are 8.8% of all mid level qualifications' load, and architecture and building (8.7%), and are sizeable in management and commerce (4.9%), creative arts (4.4%), and agricultural and environmental studies (3.3%)

Table 7 Mid level qualifications' student load by qualification level and broad field, 2011

Broad field	Certificate IV	VET diploma	VET advanced diploma	HE diplomas, all assoc degrees	All bachelor	Total
Agriculture, environmental studies	3,274	4,499	535	310	7,471	16,089
Architecture and building	6,488	5,927	2,583	165	14,663	29,826
Creative arts	8,275	11,533	3,665	3,273	56,348	83,094
Education	9,059	809	39	499	43,793	54,198
Engineering and related	12,620	6,146	6,172	2,089	42,911	69,939
Food, hospitality, personal	6,089	3,680	0	181	1,016	10,966
Health	9,363	15,826	726	868	88,274	115,057
Information technology	7,042	4,332	601	4,275	26,611	42,861
Management and commerce	34,868	37,255	10,426	8,250	123,119	213,918
Natural and physical sciences	1,784	1,850	102	2,355	84,816	90,906
Society and culture	27,122	33,704	1,512	8,058	167,302	237,699
Total	125,984	125,561	26,361	30,323	656,324	964,553

Source: Calculated from VOCSTATS (www.ncver.edu.au/resources/vocstats/intro.html) extracted on 1/5/2012 and DIISRTE (2012) Table 4.1: actual student Load (EFTSL) for all students by State, higher education provider and broad level of course, full year 2011

The biggest volume increase in student load in mid level qualifications from 2002 to 2011 was in baccalaureates, which increased by 167,794 equivalent full time students (Table 8). The biggest bachelor increases were in management and commerce (43,090) and health (42,688). Student load increased substantially in both diplomas and advanced diplomas in architecture and building, increased substantially in society and culture, creative arts, health, and agriculture and environmental studies. Student load increased substantially in diplomas but fell in advanced diplomas in management and commerce, and food, hospitality and personal services. Student load fell substantially in diplomas and modestly in advanced diplomas in information technology. These rather different outcomes for diplomas and advanced diplomas in

different fields suggest that student load is changing not because of the characteristics of the qualification type, but because of different factors in each field and industry.

Table 8 Change in student load of mid level qualifications from 2002 to 2011 by qualification level and broad field

Broad field	Certificate IV	VET diploma	VET advanced diploma	HE dips, all assoc degs	All bachelor	Total
Agriculture, environmental studies	292	1,252	224	-608	1,783	2,943
Architecture and building	3,280	1,651	1,857	142	4,158	11,089
Creative arts	3,230	3,416	48	2,577	15,577	24,847
Education	2,395	388	33	131	6,310	9,255
Engineering and related	6,891	103	-779	1,624	13,268	21,108
Food, hospitality, personal	2,415	3,072	-113	181	925	6,479
Health	3,959	13,323	274	375	42,688	60,619
Information technology	-2,856	-4,856	-416	4,003	-14,882	-19,006
Management and commerce	19,496	14,853	-2,861	7,634	43,090	82,392
Natural and physical sciences	1,271	190	97	1,826	22,129	25,512
Society and culture	15,732	17,102	395	3,156	32,686	69,071
Total	59,399	50,494	-1,241	18,796	167,794	296,054

Source Calculated from VOCSTATS (www.ncver.edu.au/resources/vocstats/intro.html) extracted on 1/5/2012 and DIISRTE (2012) Table 4.1: actual student Load (EFTSL) for all students by State, higher education provider and broad level of course, full year 2011 and corresponding tables from previous years

While student load in food, hospitality and personal services is still small, it grew strongly proportionately from 2002 to 2011, the biggest proportions in baccalaureates and vocational diplomas, which were offset somewhat by a fall in advanced diplomas (Table 9). Health also grew very strongly, also proportionately greatly in vocational diplomas. Advanced diplomas grew proportionately very strongly in natural and physical sciences, education, and architecture and building, although off very small bases.

Table 9 Percentage change in student load of mid level qualifications from 2002 to 2011 by qualification level and broad field

Broad field	Certificate IV	VET diploma	VET advanced diploma	HE dips, all assoc degs	All bachelor	Total
Agriculture, environmental studies	10	39	72	-66	31	22
Architecture and building	102	39	256	617	40	59
Creative arts	64	42	1.3	370	38	43
Education	36	92	490	35	17	21
Engineering and related	120	1.7	-11	349	45	43
Food, hospitality, personal	66	505	-100	0	1,016	144
Health	73	532	61	76	94	111
Information technology	-29	-53	-41	1,472	-36	-31
Management and commerce	127	66	-20	1,239	54	63
Natural and physical sciences	248	11	1,787	438	35	39
Society and culture	138	103	35	64	24	41
Total	83	68	-4	202	34	44

Source Calculated from VOCSTATS (www.ncver.edu.au/resources/vocstats/intro.html) extracted on 1/5/2012 and DIISRTE (2012) Table 4.1: actual student Load (EFTSL) for all students by State, higher education provider and broad level of course, full year 2011 and corresponding tables from previous years

Baccalaureates had the biggest share of student load in mid level qualifications in most fields of education in 2011, overwhelmingly so in natural and physical sciences (93.3%) and education (80.8%) (Table 10). Advanced diplomas had substantial shares of student load in engineering and related technologies (8.8%) and architecture and building (8.7%). Vocational diplomas had big shares of student load in food, hospitality and personal services (33.6%), agriculture and environmental studies (28.0%), and substantial shares in architecture and building (19.9%) and management and commerce (17.4%). Certificates IV had the biggest share of student load in food, hospitality and personal services (55.5%) and substantial shares of student load in all fields except natural and physical sciences (2.0%) and health (8.1%). Again, this suggests that fields are very important in shaping their qualification profile.

Table 10 Mid level qualifications' share of student load by broad program level, 2011

Broad field	Certificate IV	VET diploma	VET advanced diploma	HE dips, all assoc degs	All bachelor	Total
Agriculture, environmental studies	20.3	28.0	3.3	1.9	46.4	100.0
Architecture and building	21.8	19.9	8.7	0.6	49.2	100.0
Creative arts	10.0	13.9	4.4	3.9	67.8	100.0
Education	16.7	1.5	0.1	0.9	80.8	100.0
Engineering and related	18.0	8.8	8.8	3.0	61.4	100.0
Food, hospitality, personal	55.5	33.6	0.0	1.7	9.3	100.0
Health	8.1	13.8	0.6	0.8	76.7	100.0
Information technology	16.4	10.1	1.4	10.0	62.1	100.0
Management and commerce	16.3	17.4	4.9	3.9	57.6	100.0
Natural and physical sciences	2.0	2.0	0.1	2.6	93.3	100.0
Society and culture	11.4	14.2	0.6	3.4	70.4	100.0
Total	13.6	13.0	2.7	2.9	67.8	100.0

Source Calculated from VOCSTATS (www.ncver.edu.au/resources/vocstats/intro.html) extracted on 1/5/2012 and DIISRTE (2012) Table 4.1: actual student Load (EFTSL) for all students by State, higher education provider and broad level of course, full year 2011

Vocational diplomas had a big increase in their share of student load from 2002 to 2011 in food, hospitality and personal services, of 20.0 percentage points (Table 11). Another marked increase was in health (9.2). Diplomas lost shares in information technology (-4.5), engineering and related technologies (-3.6) and architecture and building (-2.9). Again, there was considerable variation by broad field of education.

Table 11 Mid level qualifications' change in share of student load from 2002 to 2011, by broad program level, percentage points

Broad field	Certificate IV	VET diploma	VET advanced diploma	HE dips, all assoc degs	All bachelor	Total
Agriculture, environmental studies	-2.3	3.3	1.0	-5.1	3.2	0.0
Architecture and building	4.6	-2.9	4.8	0.4	-6.9	0.0
Creative arts	1.3	-0.1	-1.8	2.7	-2.2	0.0
Education	1.9	0.6	0.1	0.1	-2.6	0.0
Engineering and related	6.3	-3.6	-5.4	2.0	0.7	0.0
Food, hospitality, personal	-26.4	20.0	-2.5	1.7	7.2	0.0
Health	-1.8	9.2	-0.2	-0.2	-7.0	0.0
Information technology	0.4	-4.7	-0.2	9.5	-5.0	0.0
Management and commerce	4.6	0.4	-5.1	3.4	-3.3	0.0
Natural and physical sciences	1.2	-0.5	0.1	1.8	-2.6	0.0
Society and culture	4.7	4.3	0.0	0.5	-9.4	0.0
Total	2.9	1.6	-1.2	1.5	-4.9	0.0

Source Calculated from VOCSTATS (www.ncver.edu.au/resources/vocstats/intro.html) extracted on 1/5/2012 and DIISRTE (2012) Table 4.1: actual student Load (EFTSL) for all students by State, higher education provider and broad level of course, full year 2011 and corresponding tables from previous years

Summary of employment rates by broad field of education

Higher education baccalaureate graduates in full-time employment as a proportion of those available for full-time employment are shown in Table 12 by discipline. Graduate Careers Australia has maintained this discipline categorization since the 1980s, well before the revised standard groupings were adopted, which reduces direct comparability with other tertiary education statistics. So the table shows only fields which may be compared with vocational education employment outcomes. Employment rates differ markedly by field and change substantially over time.

Table 12 Bachelor graduates in full time employment as % of available for full-time employment, by selected aggregated field of education and employment status

Field of education	2003	2005	2007	2009	2011
Agriculture	73.5	80.3	78.5	77.0	70.9
Building	83.4	91	91.2	83.2	81.8
Visual/performing arts	54.2	60.3	66.3	51.6	52.3
Business studies	76.9	81.1	85.1	76.8	76.4
Accounting	87.5	86.9	86.4	85.1	78.6
Education – initial	82.7	77.9	80.2	78.1	74.3
Aeronautical engineering	83.9	89.1	92.1	78.4	75.2
Civil engineering	94.3	95.7	97.8	94.4	89.5
Electrical engineering	82.1	87.3	89.9	85.4	86.1
Electronic/computer engineering	73.5	78.3	86.9	78.3	82.5
Nursing, initial	97.5	96.2	97.4	96.3	92.0
Computer science	68.1	73.7	83	80.0	77.9
Veterinary science	92.5	94	94	92.1	88.4
All	80.1	80.9	84.5	79.2	76.6

Source Graduate Careers Australia (2011) Table 2: Breakdown of bachelor degree graduates available for full time employment, by field of education, 2011 (%), and corresponding tables for previous years.

Table 13 shows the proportions of graduates of vocational diplomas and above employed after graduating for each broad field of education, and selected narrow fields of education that are related to case studies examined in the project of which this paper is a part, from 2003 to 2011. These are not directly comparable with the baccalaureate employment rates shown in Table 12 because of the differences in the

relevant surveys explained in the previous section (and as explained previously the scope of the survey changed in 2005). Nonetheless, rates also differ markedly by field and over time for the same field.

Table 13 Proportion of vocational diploma and above graduates employed after graduating, by field of education, 2003 - 2011

Field of education	2003	2005	2007	2009	2011
Natural and physical sciences	70.3	69.7	75.5	64.0	61.4
Information technology	59.9	68.4	65.6	55.2	63.1
Engineering and related technologies	78.7	83.1	86.7	81.8	83.0
Process and resources engineering	80.3	93.9	100.0*	86.6	87.7
Electrical and electronic engineering and technology	76.9	73.5	77.8	87.3	76.9
Architecture and building	82.3	90.1	88.7	77.5	83.9
Agriculture, environmental and related studies	82.1	88.7	88.3	89.6	92.3
Agriculture	76.1	93.2	92.8	97.6	94.2
Health	88.5	90.9	89.3	89.1	91.0
Nursing	94.8	95.2	95.9	93.6	91.0
Veterinary studies	100.0*	100.0*	100.0*	100.0	100.0*
Education	92.0	96.2	96.1	89.9	98.2
Management and commerce	81.0	84.6	85.9	82.4	85.7
Accountancy	75.4	88.0	100.0*	100.0*	100.0*
Banking, finance and related fields	63.1	71.1	66.0	64.8	68.6
Society and culture	81.1	83.9	87.2	86.7	83.7
Creative arts	65.2	68.5	77.5	66.0	68.2
Food, hospitality and personal services	82.6	85.8	90.3	81.6	71.8
Total	77.7	82.2	84.7	80.8	83.4

Source NCVET (2003, 2005, 2007, 2009, 2011)

Note * Result unreliable as cell size less than 10.

Table 14 shows the proportion of certificate IV graduates employed after graduating by field of education from 2003 to 2011. Again, rates vary markedly by field and time.

Table 14 Proportion of certificate IV graduates employed after graduating, by field of education, 2003–2011

Field of education	2003	2005	2007	2009	2011
Natural and physical sciences	83.1	75.9	77.7	70.7	59.6
Information technology	52.3	61.7	58.2	61.3	58.2
Engineering and related technologies	84.8	87.7	90.8	89.4	94.6
Process and resources engineering	90.1	95.0	97.5	96.1	95.9
Electrical and electronic engineering and technology	89.0	90.1	89.9	87.4	96.1
Architecture and Building	87.1	91.8	89.8	91.3	88.3
Agriculture, environmental and related studies	80.5	86.4	86.2	89.9	90.1
Agriculture	85.7	80.3	88.3	90.5	91.1
Health	86.9	87.4	90.8	86.6	87.7
Nursing	88.3	88.1	90.2	85.9	86.0
Veterinary studies	88.3	92.3	96.4	89.6	96.4
Education	93.8	92.7	94.8	93.1	91.2
Management and commerce	80.0	88.0	87.7	84.2	83.7
Accountancy	90.9	100.0*	100.0*	79.6	77.6
Banking, finance and related fields	53.3	90.4	82.6	71.9	72.9
Society and culture	71.2	82.7	85.0	82.9	83.0
Creative arts	60.7	69.4	66.1	64.5	60.3
Food, hospitality and personal services	73.6	83.8	85.3	81.9	85.8
Total	76.4	85.3	85.1	83.6	83.1

Source: NCVET (2003, 2005, 2007, 2009, 2011).

* Result unreliable as cell size less than 10

A comparison of employment rates for each level of qualification in each field of education from 2003 to 2011 with student load in each level of qualification in each field of education from 2003 to 2011 discloses no obvious pattern. While student load and employment rates from 2003 to 2011 seemed to be related in some fields and qualification levels they did not seem to be related in other fields and qualification levels. At this stage of analysis the most that can be concluded is that there is no simple relation between student load in a qualification field and level and the employment rate of its graduates.

Conclusions

This study considered the contention that diplomas' currency in the labour market were losing out to baccalaureates or to other mid-level qualifications. It was found that vocational diplomas maintained their share of the student load of mid-level

qualifications from 2002 to 2011. However, this varies by broad field of education. Diplomas and advanced diplomas together increased their share of mid level qualifications in food, hospitality and personal services (by 17.5 percentage points, off a very small base), health (9.0), society and culture (4.3) and agriculture, environmental and related studies (4.2). Vocational diploma student load shares fell in engineering and related technologies (-9.0), information technology (-5.0) and management and commerce (-4.7).

Diplomas did not lose student load share to baccalaureates: in fact, bachelors lost 4.9 percentage points' share of mid-level student load. Certificates IV increased their share of mid level qualifications' student load, by 2.9 percentage points. The biggest gains in certificates IV shares were in engineering and related technologies (6.3), society and culture (4.7), architecture and building (4.6) and management and commerce (4.6).

Changes in shares of mid level qualifications' student load does not seem to be related to employment rates, either for qualifications as a whole or in each broad fields. Aamodt and Arnesen (1995) examined the relation between increasing enrolment in higher education and decreasing rates of graduate employment in Norway in the 1980s and early 1990s. They found that patterns varied by field of education. There was, in a period of economic stagnation a general pattern of increasing higher education enrolment and falling graduate employment rates. However, this did not hold true for health fields, in which student numbers were tightly capped and stable and occupational progression was highly regulated, and in which high graduate employment rates continued. While enrolments in agricultural science were also

stable, employment of graduates in this field fell considerably. Agricultural science graduates, unlike health graduates were not protected from competition from graduates of other fields such as maths and natural sciences.

Similarly, this study found a general pattern of increasing enrolments at all levels but particularly in certificates IVs after the 2008 global financial crisis, and a marked combination of increasing enrolment and decreasing graduate employment in that time in baccalaureates. The study also similarly found considerable variations in enrolment patterns and employment rates between graduates of different fields of education at different levels. This paper is derived from a broad three-year project entitled *Vocations: Post-compulsory education and the labour market*. In examining occupational progression, researchers in another strand of the *Vocations* project have emphasised that labour markets are segmented and that it is necessary to examine institutional arrangements and modes of occupational progression (or more frequently lack thereof) (Yu, et al., forthcoming). The evidence presented in this paper suggests that if there is a general pattern of diplomas being supplanted by bachelor degrees, this contention needs to be considerably amended by an analysis segmented by field and considering other levels of qualification. The implications for relevant stakeholders — policy makers educators institutions, employers and students — are that diplomas, and qualifications generally, should be seen as playing different roles in different fields and work. While Karmel and Ngyen (2003) were no doubt correct in observing that diplomas play both a direct labour market role and a ‘cross-over’ role, the balance between these two roles should be seen as different in different fields, and perhaps as changeable as fields develop. The current role and effectiveness of mid-level qualifications will be tested by further work in the *Vocations* project

which examines descriptively and analytically relations between field, level of qualification, employment and the occupation and skills levels of graduate employment for the latest vocational student outcomes data.

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