Changing patterns in vocational entry qualifications, student support and outcomes in undergraduate degree programmes

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Executive summary

The range of qualifications available to 16 to 18-year-old students has grown considerably, raising the question of how well different qualification types prepare students for studies in higher education. In particular, the number of students entering higher education with a BTEC qualification (named after the previous awarding body, the Business and Technology higher education environment. This suggests that universities might better support their learning.

Recommendations

The findings of this study have a number of important implications for secondary and higher

1. Context and goals of the study

This study is situated in the context of several interrelated changes in the education landscape. First, progression of 16 to 18-year olds into further study and employment has received growing attention. This shift has taken the form of an increased emphasis on apprenticeships (BIS 2015) as well a review on 16 to 18-year-old participation in education and trai

2 A qualitative study of the experiences, needs and expectations of undergraduate students; both those recently transferring from secondary and further education and those in the mid and final stages of their undergraduate programmes. A qualitative study of the extent to which relevant university academic staff are aware of differences in VWXGHQWV· HQWU\ TXDOLILFDWLRQV DQG ZKHWKHU DQ PLJKW LPSDFW WKH VWXGHQWV· OHDUQLQJ DQG WKHLU

Taken together, the analyses entailed in these objectives provide a comprehensive picture of how contemporary higher education supports students with vocational qualifications. In our conclusion, we identify the policy implications of these findings and make corresponding recommendations.

Another key question is whether the success of students with vocational qualifications differs by institution as it is quite possible that in some institutions there is little difference in outcomes between students with different qualification types, while in others the difference might be quite large. A related question is what type of institutions support students with vocational qualifications well: higher education in the UK is characterised by a marked distinction between those institutions that historically focused on vocational education and attained university status following the Further and Higher Education Act 1992, and those universities that existed prior to 1992 and have traditionally focused more on academic research (Hoelscher et al.2008). This division has implications for the labour market, and so it is important to test how it relates to degree outcomes for different qualification types. Thus a second goal of the analysis is to establish the extent of variation between institutions and to associate this variation with institutional characteristics such as research intensity and employment of graduates.

7KH GDWD XVHG LQ WKH DQDO\VLV FRPH IURP WKH +LJKH +(6$·V VWXGHQW SRSXODWLRQ GDWDEDVH 6SHFLILFDO analysis investigates the following variables:

- Degree outcome: a binary variable indicating whether a student received an upper-VHFRQG RU ILUVW FODVV GHJUHH :H KHUHDIWHU XVH W positive outcome on this variable.
- Entry qualifications: ZH FRGH WKH TXDOLILFDWLRQV LQ +(6$·V G ¶DFDGHPLF· ¶YRFDWLRQDO· DQG ¶RWKHU· 7KLV DSSUR Hoelscher et al. 2008) and is further elaborated in Appendix 1. Because students can have multiple qualifications, graduates are coded as entering with either (1) academic qualifications only, (2) vocational qualifications only, (3) a mix of vocational, academic and other qualifications, and (4) other qualifications only.
- University entry tariff: WKH HQWU\ WDULII IURP WKH VWXGHQW·V is calculated according to criteria set by UCAS, which aim to provide comparability

intensive universities receive 50% of their funding from QR, while many institutions receive less than 1% of their budget from this source.

- Graduate employment: the percentage of graduates employed or in further study six months after graduation.
- Pre/post-1992: a binary variable indicating whether the institution attained university status before or after 1992.

Our analysis begins with descriptive statistics summarizing key characteristics of the data. We then proceed to present outputs from statistical models of the data. These models use a multi-level or mixed-effects approach, which presents an accurate balance of group-level effects (i.e. institutional differences) and individual characteristics (i.e. student qualifications and background). Our models use random intercepts and slopes (Pinheiro and Bates 2000; Goldstein 2003), with a full mathematical specification of the model provided in Appendix 2.

3.3 Qualitative design

The qualitative component of the study focuses on the experience of undergraduate students and their academic tutors in order to determine both how university students feel their secondary and post-16 education (school sixth form, sixth-

in entry qualification existed (e.g. BTEC versus A-level) where possible, thus allowing us to

Table 2.2: Focus group make up by university, discipline cluster, and entry qualification type [2] Pre-1992 university

Discipline cluster	Total n by cluster	Academic	Vocational	Combination (Acad/Voc)	Int.

flexibility in response. The staff interviews were staggered, taking place prior to, during and following the focus group data collection, in order that ideas emerging from the student narratives might be drawn upon in an iterative manner within the staff interviews and vice versa.

3.3.3. Analysis and reporting

The staff interviews and focus group discussions were transcribed by a professional audio
WUDQVFULSWLRQ VHUYLFH XVLQJ ZKDW LV WHUPHG DPR
YHUEDWLP· ZKLFK JDWKHUV WKH PDLQ HVVHQFH RI WKH
GLVIOXHQF\ QDPHO\ XQQHFH vouchs, pauses, etc. The data were
then analysed using a two-stage process; being first coded into 30 thematic fields using an analytical grid/matrix, followed by analytical grouping and data reduction into four key themes: (i) post-16 qualification pathway; (ii) learner identity; (iii) preparedness for higher education study by qualification (mix); and (iv) student support post-16 and at university. The qualitative findings in section five of this report deal with these four themes in turn, each reporting on a complex nexus of interlinking facets that underpin each respective theme. The inclusion of verbatim quotations in section five are used primarily to deepen understanding and provide explanation as well as illustration (Corden and Sainsbury 2006).

4. Quantitative findings

4.1 Descriptive analyses

Before modelling our data, we first present a descriptive analysis of key relationships within the data. This descriptive analysis helps to better understand the data and inform subsequent testing of ideas through multi-level logistic regression in the subsequent section. The analysis begins with a description of variables and their central tendencies (either the mean or proportion in each category), which is given in Table 3. This provided an overview of the dataset and shows sufficient variation in each variable to permit analysis.

Table 3: Summary statistics for variables used in the quantitative analysis

Variable	Summary Statistics
Degree classification	First or upper-second class (68%), all others (32%)
Coded qualifications	Vocational (4%), Academic (91%), Mixed (3%), Other (2%)
Low participation neighbourhood	Yes (8%), No (86%), Unknown/missing (6%)
Gender	Male (44%), Female (56%), Other (< 0.001%)
Age on entry	Mean: 21.75 Years, Standard deviation: 6.2 Years
Entry tariff	Mean: 338.75, Standard deviation: 125.5
Part-time study	Part-time (1%), Full-time (99%

The primary focus of the investigation is on how vocational qualifications relate to degree outcomes. This information is summarised in Table 4, which shows that just 51% of students with vocational qualifications receive a first or upper second-class degree, compared to 70% of students with academic qualifications. While these results appear to point to a strong effect associated with vocational qualifications, this interpretation is potentially erroneous, as it is possible that the difference is actually caused by demographic factors associated with vocational qualifications. These demographic factors are summarised in Table 5, which shows that demographic variables appear to be related to qualification types. Specifically, students with vocational qualifications are predominantly male (51% versus 44%), more likely to be from areas with low higher education participation, and are slightly older on average. Furthermore, the difference in entry tariff is over 80 points, indicating that the level of preparation for higher education is notably different between the two groups.

Table 4: Summary of qualifications groups and degree outcomes			
Qualifications group	2:2 or Below	2:1 or Above	% of group
Vocational only	16,090	16,685	51%
Academic only	233,499	537,373	70%
Mixed academic/vocational	10,208	14,957	59%
Neither	8,728	8.906	51%
Totals	268,525	577,921	68%

For all these demographic factors,

participation neighbourhood, etc.). Our key question for modelling is whether outcomes for students with vocational qualifications are lower when we control for these factors: If we take two hypothetical students with the same set of qualifications and demographic characteristics, are we likely to see a difference in outcomes that cannot be explained by chance alone (i.e. a statistically significant relationship)? It should be noted this model would not be designed to predict outcomes for individual students, but rather to test the hypothesis that there is an effect particular to vocational qualifications when we account for other background characteristics.

4.2 Statistical modelling

4.2.1 Model 1

Model 1 expresses the probability of a student in the dataset receiving an upper degree based on their entry qualifications and individual background characteristics described in section 3.2. Results show that controlling for background characteristics, the students with vocational qualifications were significantly less likely to achieve an upper degree outcome, than were students with mixed qualifications (although in this case the decrease in probability is smaller). The size of this effect is notable: the expected change in degree outcomes associated with vocational qualifications is much larger than that associated with low participation neighbourhoods, age, or gender [2] only the effect of part-time study is larger.

Table 7: Results from Models 1 and 2.

	Model 1	Model 2
(Intercept)	-2.69**	-2.64**
Academic qualifications (ref.)	(0.00)	(0.00)
Vocational qualifications	-0.69**	-0.71**
Mixed qualifications	-0.49**	

4.2.2 Model 2

Model 2 extends Model 1 by introducing a random intercept for each institution. This compensates for overall differences in degree outcomes between institutions, as the proportion of upper degrees awarded will likely vary between institutions. The results follow the same pattern identified in Model 1, as the change in probability associated with vocational qualifications is negative. The goodness-of-fit is measured in the Bayesian Information Criterion (BIC), with lower numbers corresponding to a better fit; thus, the introduction of institutional differences into the model improves its fit when compared to Model 1. The standard deviation in institutional effects (0.408) shows that an institution will typically raise or lower the chances of an upper degree by +/- 3.3% (see Appendix 2 for translating effect-sizes to changes in probability).

Together, Models 1 and 2 provide a good test of whether there are differences in degree outcomes for students with vocational qualifications across the sector. Even controlling for demographic variables and institutional variation, it appears that there is strong evidence that vocational qualifications are associated with a decreased chance of obtaining an upper-second or first class degree. This effect results in a 0.714 decrease in the log-odds of receiving an upper degree, or in more intuitive terms a decrease in 3.3% of an upper degree.

Table 8: Results from Models 3 and 4.		
	Model 3	Model 4
Level 1 variables		
(Intercept)	-2.59**	-2.74**
Vocational qualifications	-0.71**	-0.55**
LPN	-0.08**	-0.08**
Tariff	0.01**	0.01**
Gender [2] male (ref.)	(0.00)	(0.00)
Gender [2] female	0.23**	0.23**
Gender [2] other	0.82*	0.82
Year	0.09**	0.09**
Age on entry	0.08**	0.08**
Part-time	-1.72**	-1.72**
Level 2 variables		
Research intensity		-0.01**
Post-1992		-0.05
Grad employment		-0.0
Standard deviations		
Intercept	0.406	0.405
Vocational qualifications	0.140	0.114
N	764,810	764,810
BIC	855,211	855,209

5. Qualitative findings

5.1 Student focus groups

5.1.1 Post-16 qualification pathways

The qualifications with which students in the sampling frames entered university are set out in Table 1. While traditional A-levels were far and away the most common form of entrance qualification for students from each university (Table 1), participants (identified in this section by use of pseudonyms) were chosen to take part in the focus groups in order to represent the broadest range of entry pathway (i.e. qualifications), experience and academic discipline; which for the purposes of this study have been divided in to academic bandings (see Table 2) in line with predetermined HEA discipline clusters (see Appendix 3). Students were therefore drawing on their experience of studying for:

- internationally recognised academic qualifications that included the International Baccalaureate (IB), European Baccalaureate (EB), the baccalaureate of various national systems and the Cambridge Pre-U;
- an international foundation year, which enables degree programme entry for international students whose qualifications are not accepted for direct entry to an undergraduate degree programme or whose first language is not English;
- vocational qualifications that included BTEC, Higher National Diploma (HND), National Vocational Qualification (NVQ) ² achieved through their role in a paid or voluntary position, Council for Awards in Care, Health and Education (CACHE), City and Guilds, as well as linked apprenticeships;
- an Access to Higher Education Diploma, where students had entered without traditional qualifications and/or had been out of any formal education for some time;
- a combination of the above. Several students in each focus group possessed different types of qualifications ² most often, though not exclusively, BTEC and A-level. This reflected the relatively high numbers of those in the sampling frame for the post-1992 university that had entered HE with a mix of academic and vocational qualifications (see Table 1).

It would be easy to assume that post-16 pathways are determined solely by GCSE or equivalent (exam) results, those doing less well opting for more vocational routes where they have not met the requisite grades. However, thinking in terms of a straightforward academic versus vocational progression through notions of academic ability alone can act to mask an array of factors that can influence decision- P D N L Q J D Q G V W X G H Q W ¶ F K R L explains:

> , G L G 2 . L Q P \ * & 6 (V V R , G L G Q · W F K R R V H > P \ % 7 (& @ I U R P W K D W
> choose A-levels, b X W , F K R V H > W K H % 7 (& @ E H F D X V H W K H U H Z H U H Q · W H Q F levels that I really
> wanted to do.

Students spoke not only of their qualifications, interests and skills but also of the desire to move from a school setting to a college one as having influenced their decision to opt for a vocational qualification. Sometimes, these choices were determined in discussion with parents and schools, though students spoke also of the influence of friendship groups, where D U J X D E O \ D F H U W D L Q D P R X Q W R I ¶ F R O O H F W L Y H · G H F L V L -making appeared to be taking place.

The notion that different pathways represent default ability levels, can serve to reinforce the notion that one type of qualification is superior to another, whether or not they are, in theory at least, of equal value in respect of the UCAS point system. The type of secondary institution attended could also send important messages to students about appropriate pathways to HE. For those taking the IB and Cambridge Pre-U, these were often the only options if they intended to stay at school sixth form. For David and a number of other A-level students, they were unaware that other non-A-level pathways to university existed:

> , GLGQ·W NQRZ LW H[LVWHG EHIRUH , FDPH WR XQLYHUVLW\ %HI
> you could get in was A- OHYHOV , GLGQ·W NQRZ WKH XQLYHUVLWLHV ORRNH
> because no one told us. Then, when I came here I realised, of course, yes, it makes perfect sense.

Whether a greater range of qualification options would have influenced the decision-making of these students is a moot point. However, there were indications that where an element of choice existed, some students would avail themselves of a mix of qualification pathways in order to maximise their chances of obtaining the necessary entry points for accessing higher education and/or their university of choice; in particular where exam technique was perceived (by themselves or by their schools) to be weaker.

Rita: A lot of my friends all went to a school where you could only take IB and it was a very

An international foundation year student, Christoph, explained that:

> [The Foundation Year is] basically to equip us for uni. The exams and all that was pretty similar to how it is in uni VR ZKHQ , FDPH KHUH LW ZDVQ·W WKDW PXFK RI D GLI
> The workload, too, was pretty similar. So it was very uni-like.

Those students coming through an IB, Access to HE, and Cambridge Pre-U route, in the main, all felt well prepared in terms of essay-based and presentation-based assignments. 5RE D PDWXUH VWXGHQW LQ KLV V H[SODLQHG -based KRZ KLV
and presentation-

Colin, a teaching fellow on a degree programme within a Health and Social Care programme in the pre-1992 university, explained that in his previous role as admissions tutor, he would see every student application form but that admissions over the past few years had become a much more centralised exercise. As a result, the only forms he would now see were those where the predicted grades were on the entry tariff borderline:

> ZKHWKHU WKH\·UH GRLQJ %7(&V RU $-levels or a combination, if they are predicted to get what we ask for, I don·W VHH WKH IRUP 6R IURP DQ DGPLVVLRQV WXWRU·V SRL

For Paul, also teaching at the post- XQLYHUVLW\ WKH LVVXHV ZHUH PR
SUR[LPLW\ DQG VRFLDO FODVV DQG JHQGHU , WKLQN WK

> E H F D X V H W K H \ · U H F R P L Q J X S D J D L Q V W H [S H U L H Q F H V R I O L I H H [S
> G L I I H U H Q W Z D \ V R I W K L Q N L Q J W K D W P D \ E H W K H \ K D G Q · W F R P H D F
> at universi W \ « 6 R D V V X P S W L R Q V D U H F R Q V W D Q W O \ E H L Q J F K D O O H Q J H G
> U H I U D P L Q J W K H Z D \ W K H \ · U H W K L Q N L Q J

Participants felt that programme assessment played a large part in how well students from different educational pathways fared. Programmes that relied solely on written coursework D Q G J U R X S S U H V H Q W D W L R Q V Z L W K Q R H [D P V F R X O G E H vocational entry students as well as those coming through more traditional academic routes:

> I think people who have gone through certain kinds of qualifications where exam-based assessment is marginalised or has been taken out of the qualification completely, they might be T X L W H U H O X F W D Q W W R D S S O \ I R U > F H U W D L Q F R X U V H V @ , G R Q · W word, but t K H \ P L J K W I L Q G W K H \ · U H P R U H S U R E O H P D W L F V L P S O \ E H F D and there is a kind of fear for some people of this notion of the exam.

Michael explained that some courses have more exams and that others, such as his own, did not have any and there were not any plans or discussions on any level seeking their inclusion. He conceded that there may be some benefit in his education studies students having some exams, because very often the students go on to work as teachers and will therefore have to teach to exams or timed tests of various kinds quite early on in their educational career.

Most of the courses described by participants also had an element of assessed presentation through group work, which ² it was argued by one participant ² could mean that they were very much geared towards making themselves open for people who come from vocational backgrounds.

> , W K L Q N L Q V R P H Z D \ V W K H U H L V D G L V W L Q F W L R Q « E H W Z H H Q S vocationally-orientated FE college route and people who are coming through a school route. I think there are some differences there, because of the ways that colleges operate. It depends which, because FE colleges are quite different in different parts of the country as well, which is something th D W L V Q R W D O Z D \ V S L F N H G X S < R X · Y H J R W V R P H S O D F H V 16-18 sixth form colleges, which generally have a very different environment from your standard FE college. Some people who have come from that more general FE college route, have been doing vocational qualifications, a lot of them then go on to do college-based foundation degrees, some of them may be coming into universities like ours and the first year of full-time undergraduate degrees. I think there is, maybe, a slightly different expectation in terms of what the course is going to be O L N H D Q G K R Z W K H \ · U H J R L Q J W R O H D U Q W K U R X J K L W %XW , W K

Although no students taking part in the focus groups had come through a foundation degree, the issue was raised that some students progressed to the university throul pect

In terms of student retention, Barbara indicated that as an undergraduate programme they ´GR TXLWH ZHOOµ ZLWK WKRVH WKDW GR OHDYH in first year through JHQHU IHHOLQJV RI ´KRPHVLFNQHVVµ ´QRW IHHOLQJ WKH\ ILW L conversations that had taken place between Barbara and her students, there were instances where students went on to defer for a year or to leave the university but there was nothing in her mind to suggest that retention was linked with entry qualifications in any way. As far instrumental frameworks that are being set by external authorities. So, for example, in our case

6. Conclusion

Taken together, the findings from this research present an interesting and complex picture of outcomes for students with vocational qualifications in higher education today. Quantitative analysis shows that across the sector, students with vocational qualifications (who predominantly hold BTECs) are less likely to receive a first or upper-second class degree, even controlling for relevant demographic background characteristics. Furthermore, differences in outcomes are largest at research-intensive universities, where there are fewer students with vocational qualifications.

However, results from qualitative analysis paint a far more nuanced picture; the voices of students show that those from vocational pathways can feel more independent, self-motivated and capable than their counterparts with A-level qualifications. They are also aware of a clear hierarchy of qualifications, both within their peer groups and across universities to which they apply. Consistent with the findings of Ball, Maguire and Macrae (2000), the choices they make regarding qualifications are complex and not necessarily shaped by academic ability, but rather a combination of interests, dispositional qualities, and the influences of peers and families. Although students experience this hierarchy, its rules and structures are not necessarily clear or easy to navigate ² those who can do so may be at a distinct advantage in higher education.

The views of both students and staff suggest that, above all, it is important to avoid a deficit PRGHO ZKHQ WKLQNLQJ DERXW YRFDWLRQDO TXDOLILFDW perceptions and the views of staff show that students bring a wide range of different experiences and learning abilities to their higher education studies, and that all of these abilities can be useful in helping them to succeed.

On a broader level, the results indicate that there is a continued need to examine how choice in secondary education relates to the reproduction of social inequality. While they are posited as a flexible option for entry to higher education, both the qualitative and quantitative evidence in this project suggest that an engrained qualifications hierarchy exists, and that a successful approach to XQLYHUVLW\ VWXG\ PD\ UHO\ RQ VWXGH and navigate largely unwritten rules. It is important to note that these rules themselves are changing: the growth of the International Baccalaureate as a comparatively elite qualification is one example of how the landscape of qualifications is changing. Another might be seen in the increase in students opting for, or being advised by their schools to pursue, a qualifications mix (BTEC/A-level) in order maximise their chances of gaining a higher tariff profile than might otherwise have been the case through a purely academic route alone.

Successful strategies therefore depend not only on knowing the rules of the game, but also decoding how the rules are changing. More transparent evidence on long-term outcomes from students with vocational qualifications (or mixed qualifications) are therefore essential to creating an equitable and fair education system.

6.1 Recommendations

In relation to the wider landscape of secondary and higher education, the study holds a number of important implications relating to the marketing and regulation of qualifications,

7. References

Ball, S., Maguire, M. and Macrae, S. (2000) Choice, Pathways and Transitions Post-16: New Youth, New Economies in the Global City. London: Routledge-Falmer.

Browne, J. (2010) Securing a Sustainable Future for Higher Education: An Independent Review of Higher Education Funding and Student Finance. Department for Business, Innovation and Skills.

Appendix 1: Qualifications coding scheme

Academic qualifications

Traditional academic [2] Arts academic			
Music Practical Level 8	16,222	Level 3 Certificate in Speech and Drama	295
Music Practical Level 6	8,454	Music Theory Level 7	224
Music Practical Level 7	7,754	Graded Dance: Grade 6	36
Speech and Drama Studies Grade 8	2,386	Music Practitioner Extended Diploma	16
Speech and Drama Studies Grade 7	988	Graded Dance: Grade 7	15
Speech and Drama Studies Grade 6	961	Music Practitioner Diploma	11
Music	550	Graded Dance: Grade 8	10
Music Theory Level 6	497	Music Practitioner Certificate	4
Music Theory Level 8	372	Music Practitioner Subsidiary Diploma	1

Traditional academic [2] Other academic			
Advanced Extension Award	93,668	Asset Languages - Listening	278
Scottish Standard Grade	36,797	Certificate of Proficiency in English (CPE)	273
Foundation Studies	16,078	Certificate of Advanced English (CAE)	171
Irish Leaving (Ordinary)	15,467	Asset Languages - Reading	155
AQA Enrichment	13,998	Pre-U Short Course	115
Pre-U Certificate	5,790	Asset Languages - Writing	110
CACHE Theory	5,337	CIE AO (Advanced Ordinary)	103
SQA CSYS	1,735	Asset Languages - Speaking	100
Pre-U GPR	1,251	Graded Speech and Drama Examinations	72
AICE	645	GCE Advanced Level with Advanced Subsidiary (9 units)	53
AAT Diploma in Accounting	309	Pre-U Diploma	44

Vocational qualifications

Vocational [2] BTEC	
BTEC National Award [2] where not coded separately	240,308
BTEC Level 3 Extended Diploma. (was National Dip. 180+) (QCF)	37,426
BTEC Level 3 Subsidiary Diploma (was National Award 60+) (QCF)	12,380
BTEC Level 3 Diploma (was National Certificate 120+) (QCF)	10,053
BTEC National Diploma (NQF)	4,715
BTEC Level 3 Foundation Diploma 120 (QCF/FAD)	3,267
BTEC Level 3 Cert (= 50% of National Award 28-36) (QCF)	2,055
BTEC National Award (NQF)	1,711
BTEC National in Early Years (NQF)	1,610
BTEC National Certificate (NQF)	1,238
BTEC Specialist Diploma (QCF)	783
BTEC Level 3 National Diploma (NQF/CQF)	723
BTEC Level 3 Extended Diploma (was National Dip. 180+) (QCF/CQF)	610
BTEC Higher National Diploma (NQF)	534
BTEC Level 5 HND Diploma 240+ (QCF)	404
BTEC Specialist Award (QCF)	294
BTEC Level 4 Foundation Diploma 120+ (QCF/FAD)	268

Appendix 3: HEA discipline clusters

HEA discipline clusters			
Arts and Humanities	Health and Social Care	Science, Technology, Engineering and Mathematics (STEM)	Social Science
Archaeology and Classics	Health	Biological Sciences	Anthropology
Area Studies	Medicine and Dentistry		

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