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To cite this article: Amy Tomlinson, Lois Smith, Chris Wilcox & Andrew Simpson (20 May 2024): Academic survival: student retention in sport and exercise sciences, Journal of Further and Higher Education, DOI: [10.1080/0309877X.2024.2356567](https://doi.org/10.1080/0309877X.2024.2356567)

To link to this article: <https://doi.org/10.1080/0309877X.2024.2356567>



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Published online: 20 May 2024.



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Academic survival: student retention in sport and exercise sciences

Amy Tomlinson , Lois Smith, Chris Wilcox and Andrew Simpson

Faculty of Health Sciences, University of Hull, Hull, UK

ABSTRACT

Retention of higher education students is of major concern within the United Kingdom due to the financial and reputational impact on institutions, financial and personal impact on students and loss of potential skills and knowledge within society. Student background characteristics are acknowledged as the initial factors influencing retention within various models, however subject specific understanding is limited. This study aimed to identify pre-enrolment factors associated with student retention in Sport, Health and Exercise Science programmes. Student retention at department and programme level were calculated by 'time to event' analysis using Kaplan–Meier survival trend curves and log rank (Mantel–Cox) analysis for; gender, age, locality to the university, highest qualification on entry and participation of local areas in higher education (POLAR4) classifications. Results identified that male students, students from low Higher Education participation neighbourhoods and students who enter Higher Education without A-Level or foundation qualifications were at an increased risk of degree non-completion. Importantly, these characteristics were also disproportionately high in the student populations considered here. It is imperative that initiatives to improve retention, particularly in these populations, are sought and implemented at department level to improve student and institutional outcomes.

ARTICLE HISTORY



Received 30 March 2023
Accepted 12 May 2024

KEYWORDS

Sport science; retention;
higher education

Introduction

Over the last decade, the successful widening participation agenda has seen a significant rise in the number of disadvantaged and under-represented young people in Higher Education (HE), however inequalities regarding the retention and successful completion of specific demographic groups still exist (Connell-Smith and Hubble 2018; Eather et al. 2022). In March 2019, the Education Secretary warned Universities about the high drop-out rates in the United Kingdom (UK) Higher Education Institutions (HEI) (Department for Education and Hinds 2019), citing data from the Higher Education Statistics Agency (HESA) which highlighted that 7.6% of full-time first-degree entrants at English HEIs were no longer in HE the following year (Higher Education Statistics Agency [HESA] 2019). This is a rising issue, with the national non-continuation rate for full-time first-degree entrants at 7.3% and 7.4% for 2015/16 and 2016/17, respectively (HESA 2019). The Department for Education continues to challenge UK universities to focus on successful participation and admissions in disadvantaged and under-represented groups, but acknowledges that dropout rates within them are notably higher (Department for Education and Hinds 2019). Young white males from the lowest socio-economic

CONTACT Amy Tomlinson  Amy.Tomlinson@hull.ac.uk  Faculty of Health Sciences, University of Hull, Cottingham Road, Hull HU6 7RX, UK

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backgrounds have been highlighted as a specific focus, with widening participation strategies aiming to address their participation further (Connell-Smith and Hubble 2018). Consequently, efforts to understand the retention of these students may be useful for institutions in facilitating support, participation and continuation.

Retention is a major concern within HE, broadly defined as students consistently re-enrolling and remaining all the way through to graduation (Kerby 2015; Manyanga, Sithole, and Hanson 2017). Despite decades of research, institutions are still looking for effective methods to reduce attrition, which can be defined as the loss of students from higher education before completion of their programme (Manyanga, Sithole, and Hanson 2017). The retention of students is essential for institutional success both financially and reputationally, as a higher retention rate results in higher tuition fee income and a higher number of students to generate academic achievements (Aljohani 2016; Burke 2019). Early withdrawal of students will also affect influential league table rankings, for example, the UK's Times and Sunday Times Good University Guide, which are often instrumental in informing decisions on HE providers for prospective students and their families (The Times, 2019). Aside from the institutional impact, the personal and financial impact of attrition on the individual students and loss of potential skills and knowledge within society must be considered (Crosling, Heagney & Thomas, 2009.). As a result of this, interest among researchers has risen, with a recent review identifying only three papers with student retention in the title pre-1960, compared to 92 from the year 2018 (Tight 2020).

Modelling and predicting student retention has received significant attention since the early 1970s, and aims to understand the phenomenon and inform improvements (Tight 2020). Attention in this area is thought to have increased due to the post World War II HE expansion and subsequent influx of new students, triggering the creation of a variety of student retention models (Burke 2019, Crosling, Heagney & Thomas, 2009; Manyanga, Sithole, and Hanson 2017). The authors of the three most distinguished student retention models being Spady, Tinto and Bean (Aljohani 2016). Spady's (1970) Undergraduate Dropout Process Model is considered to be one of the first, attributing attrition to four main variables: intellectual development, social integration, satisfaction and institutional commitment, within two main institutional systems: the academic and the social (Aljohani 2016; Burke 2019). Tinto's Institutional Departure Model (1975) built upon Spady's (1970) theory and is considered to be one of the most influential. It further highlights the importance of integration within both the academic and social systems, suggesting that withdrawal decisions are based within one of these two realms and are influenced by a combination of commitment to personal goals and the institution (Aljohani 2016; Burke 2019). Unlike Spady (1970) and Tinto (1975), Bean's (1980) Student Attrition model is grounded in statistical analysis, and aimed to create a direct path of causality from a specific variable to dropout. Interestingly, Bean (1980) argues that the reasons a student would leave an institution are the same as the reasons a staff member would leave a job, with institutional commitment being the most significant factor and influenced by a variety of organisational determinants, such as job opportunities, development, and practical value. Despite differing views on how variables interact with one another, all three models agree that student retention is complex and difficult to understand, of which some difficulty may be attributed to student background characteristics and experiences (Burke 2019). All three models acknowledge the impact of background characteristics, but particularly Bean (1980), who indicates that background characteristics such as performance, socioeconomic background, state residency, distance to home and hometown size must be considered in order to understand student interactions with the HEI environment. Despite clear acknowledgement, discussion of these background characteristics is somewhat limited. Further understanding of the pre-enrolment factors that influence retention may be valuable in early identification and subsequent support provision.

Whilst factors that may predict and influence retention have received significant attention through the formation, development and utilisation of the aforementioned models, to the authors' knowledge, factors affecting student retention have not been investigated in specific relation to programmes within a Sport, Health and Exercise Science Department. Clear differences in retention

rates across subjects have been identified (HESA 2019), however data exploring differences in student retention across subjects at an institutional level are not widely available, and may be beneficial in informing institutional and/or programme-specific policies. It has also been noted that retention generalisations may be misleading due to the academic, cultural, and other unique characteristics of each institution, further highlighting the benefit of institution-specific research (Manyanga, Sithole, and Hanson 2017).

Within the UK, there are two main academic routes into HE from the ages of 16–18 years old. Advanced-Level Qualification (A-levels) is the most traditional route, with students typically taking three subject-based qualifications. Business and Technology Education Council (BTEC)/Diploma is a less traditional but now popular vocational award designed for those who are interested in a particular sector or industry but who are not sure what career they wish to pursue.

BTEC/Diploma qualifications provide an entry route for many students to HE, and data at national level suggest retention rates are similar between students who enter with a BTEC/diploma or via the traditional A-level route (HESA 2019). This, however, varies substantially when analysing differing subject areas (with multiple programmes/subjects combined) (HESA 2019). For example, Sport and Exercise Science, which sits within Biomedical sciences, shows a slightly different view with 28.1% of BTEC/Diploma students not continuing their studies compared to only 18.9% of students entering university with A-levels (HESA 2019). Students entering HE with a BTEC qualification are more likely to come from a widening participation background, and retention of these students has been noted a key area for concern (Gicheva and Petrie 2018; Hurrell, Shawcross, and Keeling 2019). BTEC qualifications are reported to prepare students well for skills such as report writing, lab work, independent working, and the modular nature of university, however students often require further support with examination skills and revision techniques, and may be less well prepared for the academic nature of university study (Banerjee, Myhill, and Robinson 2017; Hurrell, Shawcross, and Keeling 2019). Pearson, the awarding and regulatory body for BTEC Sport qualifications in the UK, have introduced an externally set and marked examination element as part of the Anatomy and Physiology module which has helped to combat this, however it must be acknowledged that examination exposure remains limited (Pearson, 2016).

Another population highlighted as at a particularly higher risk of non-completion are students who enter from a neighbourhood of low HE-participation, on the Participation Of Local AREas (POLAR4) scale (HESA 2019). POLAR4 classifies local areas across the UK into five quintiles based on the proportion of people aged 18 or 19 years old that enter HE. The 20% of the local areas with the lowest participation rates are quintile 1, and the 20% of the local areas with the highest participation rates are quintile 5 (Office for Students, n.d.). Universities are required to increase the number of students they take from quintiles one and two, the lowest participation areas, in order to aid the widening participation agenda.

As these factors, and potentially others, are present prior to students applying to university, it may be possible to identify students at risk of non-completion prior to enrolment. Optimistically, identifying these factors may provide a window of opportunity for targeted student support services to be offered and implemented, and may also influence strategic decision-making at a wider university level in an attempt to improve student retention.

This study therefore aims to identify pre-enrolment factors that are associated with student retention in Sport, Health and Exercise Science programmes at a HE institution in the north of England. We hypothesise that student characteristics, including; gender, POLAR4 classifications and entry qualifications, will be associated with student retention. Further, we aim to explore differences across three programmes within the department, to identify whether subtle nuances exist at programme level.

Methods

Ethics committee approval was provided by the Department of Sport, Health and Exercise Science Research Ethics Committee at the University of Hull (application no. 1920011). The institution is located in the East Riding of Yorkshire and educates over 14,000 students across over 200 courses. The Department of Sport, Health and Exercise Science has a portfolio of programmes that include; (1) Sport Rehabilitation, (2) Sport Coaching and Performance Science and (3) Sport and Exercise Science. The department recruits approximately 100–150 students per year to these programmes, which consist of a relatively high proportion of local students and students who come from low participation areas (POLAR4 quintiles one and two) (Higher Education Funding Council for England [HEFCE] 2017). Data were obtained from the Strategic Development Unit and included data from students studying at Level 4 (Year 1) in the Department of Sport, Health and Exercise Science in 2013/14, 2014/15 and 2015/16. Retention was calculated from the enrolment report at Level 5 (Year 2) and Level 6 (Year 3) and presented as a percentage of students who enrolled at Level 4 (Year 1). The percentage of students who graduated with a BSc Honours degree was also included in the analysis. Independent (predictor) variables included; gender, age, locality to the university, qualification on entry and POLAR4 quintiles, as described below. Four-hundred and fourteen students were included in the analysis, of which 145 were registered on BSc Sport Rehabilitation, 124 were registered on BSc Sport Coaching and Performance Science and 145 were registered on BSc Sport and Exercise Science programmes.

Age

Students were categorised as young or mature based on their age at enrolment at University. Individuals over the age of 21 at enrolment to University (at either foundation level, if applicable, or Level 4) were categorised as mature.

Locality

Upon enrolment, students with a non-term time address in Hull, East Riding, and North East Lincolnshire were categorised as local. All other non-term time addresses were considered non-local.

Highest qualifications on entry

Students highest qualification on entry were separated into four categories, students with; i) a foundation degree or students who have completed a foundation year, ii) A/AS Level qualifications, iii) BTEC/Diploma at Level 3, or iv) Other, which includes award at level 3, certificate at level 3, Level 3 (non University and Colleges Admissions Service [UCAS] tariff) and other at Level 2.

Local area participation in higher education

Students were separated by POLAR4 quintile. Quintile 1 being the lowest undergraduate participation areas, and quintile 5 being the highest.

Data analysis

Differences across programmes for student characteristics were analysed using Chi-square tests and a Lorenz curve was created to visually present participation within the department and across programmes for POLAR4 quintiles. Where appropriate, pairwise comparisons with Bonferroni adjustments were used to identify where differences occurred. 'Time to event' analysis of retention at Level 5, Level 6 and students graduating with BSc Honours were analysed using Kaplan–Meier survival trend curves and log rank (Mantel–Cox) analysis, with between factor variables; gender, age, locality, highest

qualification on entry and POLAR4 quintiles analysed independently at departmental and programme level. Survival trend analysis was used to explore whether student characteristics are associated with student retention at different time points during their programme of study (e.g. Level 4, 5 or 6). Data were analysed using IBM SPSS (version 25) with significance set at $p < 0.05$ and a trend considered when $p < 0.10$.

Results

Participant characteristics

Student characteristics across programmes were significantly different for gender, age, highest qualification on entry and POLAR4 quintiles, however there was no significant difference in final degree classification across programmes (Table 1). Of note, the positive inflection seen on the Lorenz curves for participation rates across all programmes, suggest proportionally more students from lower POLAR4 quintiles participate on these programmes compared to students from the higher quintiles (Figure 1). Further, there is a significantly higher proportion of students from quintile 1 registered on the Sports Coaching and Performance Science programme compared with the other two programmes (Table 1).

Retention at department level

Retention at Level 5, Level 6 and the proportion of students graduating with a BSc Honours classification was 79%, 69% and 62%, respectively. At department level, no significant difference in retention was noted between age classifications ($p = 0.360$) and locality of students to the university ($p = 0.310$).

Table 1. Student characteristics across programmes.

	Sport Rehabilitation	Coaching & Performance Science	Sport & Exercise Science	All programmes	P
Gender					
Male, n (%)	80 (55) ^a	105 (84) ^b	105 (72) ^b	290 (70)	$p < 0.001$
Female, n (%)	65 (43) ^a	20 (16) ^b	40 (28) ^b	125 (30)	
Age					
Young, n (%)	115 (79) ^a	115 (96) ^b	120 (83) ^a	350 (85)	$p = 0.001$
Mature, n (%)	30 (21) ^a	5 (4) ^b	25 (17) ^a	60 (15)	
Locality					
Local, n (%)	75 (52) ^a	105 (84) ^b	90 (64) ^a	270 (66)	$p < 0.001$
Not local, n (%)	70 (48) ^a	20 (16) ^b	50 (36) ^a	140 (34)	
Qualification at entry					
FDn yr, n (%)	5 (3) ^a	0 (0) ^a	25 (18) ^b	30 (7)	$p < 0.001$
Dip Level 3, n (%)	95 (63) ^a	110 (88) ^b	85 (61) ^a	290 (70)	
A/AS level, n(%)	35 (23) ^a	15 (12) ^b	30 (21)	80 (19)	
Other, n (%)	15 (10) ^a	0 (0) ^b	0 (0) ^b	15 (4)	
POLAR4					
Quintile 1, n(%)	35 (25) ^a	55 (46) ^b	40 (28) ^a	130 (32)	$p = 0.024$
Quintile 2, n (%)	30 (21)	25 (21)	35 (24)	95 (23)	
Quintile 3, n (%)	20 (14)	15 (13)	25 (17)	60 (15)	
Quintile 4, n (%)	30 (21)	15 (13)	25 (17)	70 (17)	
Quintile 5, n (%)	25 (18)	10 (8)	20 (14)	55 (13)	
Degree Classification					
1, n (%)	30 (21)	15 (12)	25 (18)	70 (17)	$p = 0.140$
2:1, n (%)	35 (24)	35 (28)	35 (25)	110 (27)	
2:2, n (%)	25 (17)	25 (20)	20 (14)	70 (17)	
Pass, n (%)	0 (0)	5 (4)	0 (0)	10 (2)	
Ordinary, n (%)	5 (3)	5 (4)	0 (0)	5 (1)	
Other/none, n (%)	50 (35)	40 (32)	60 (43)	150 (36)	

Counts of people are rounded to the nearest multiple of 5 in accordance with HESA guidelines to protect student anonymity (Higher Education Statistics Agency [HESA], n.d.-b). POLAR4, Participation of Local Areas in Higher Education classifications (HEFCE 2017).

^asignificantly different to ^bat $p < 0.05$.

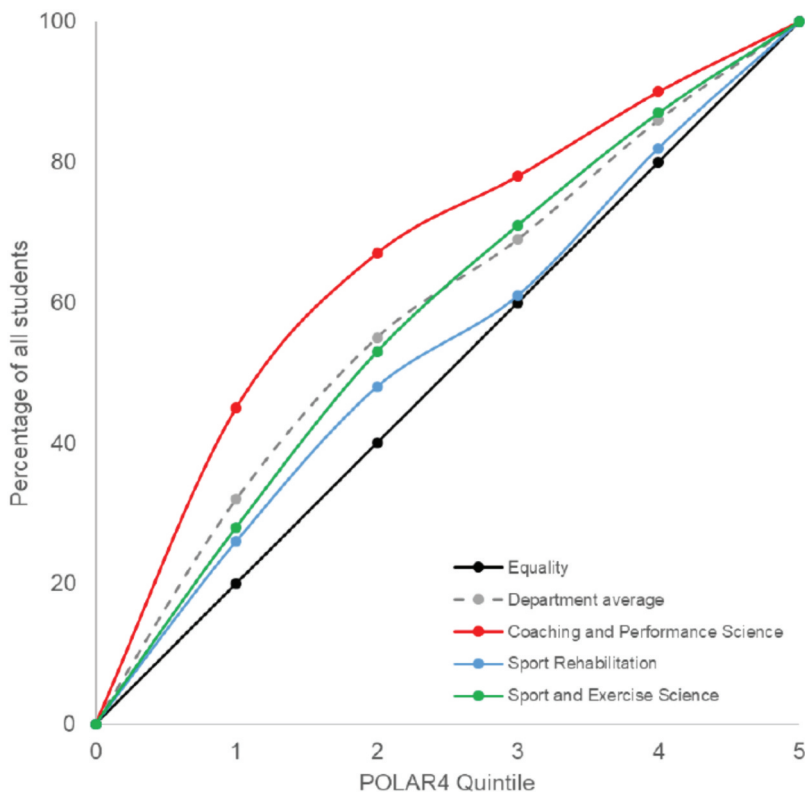


Figure 1. Lorenz curves of participation rate of students across POLAR4 quintiles (HEFCE 2017) in the department of sport, health and exercise science at the University of Hull.

There was, however, a trend for differences in student retention between genders ($p = 0.058$), indicating poorer retention in male students (Figure 2). Significant differences were also noted depending on students highest qualification on entry ($p < 0.001$, Figure 3) and across POLAR4 quintiles ($p = 0.003$, Figure 4). Indeed, higher retention rates were noted in students who enrolled with A/AS levels and those who have a Fdn degree or have completed a foundation year, compared to students where a Level 3 BTEC/Diploma was the highest qualification upon entry (Figure 3). Further, survival analysis of POLAR4 quintiles suggest that retention was lowest for students in the lowest two quintiles (Figure 4).

Retention within and across programmes

There were no significant differences in retention across the three Sport, Health and Exercise Science programmes ($p = 0.455$) (Figure 5). Similar to department-level analysis, there was no significant difference in retention rates for any programmes with regard to; age and locality to the university ($p > 0.05$). Due to small sample sizes in several groups when data were split by programme and by POLAR4 quintiles, analysis was not conducted at a programme level for POLAR4 quintiles.

A level vs. level 3 BTEC/diploma at programme level

When comparing retention within programmes for students who enter with A Level qualifications or Level 3 BTEC/Diploma qualifications, reduced retention rates were noted for those students with a Level 3 BTEC/Diploma qualification on the Sport and Exercise Science ($p < 0.001$) and Sport Rehabilitation ($p = 0.008$) programmes; however, no such difference exists for Sport Coaching and

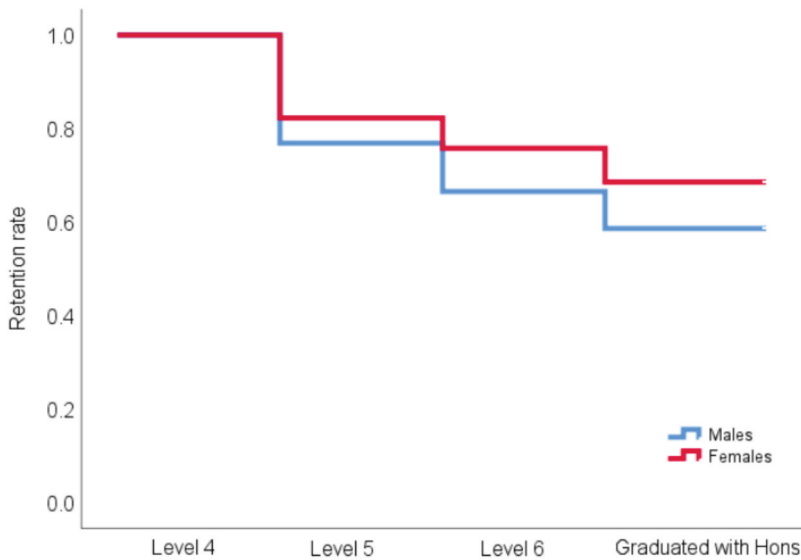


Figure 2. Student retention in sport, health and exercise science programmes between genders ($p = 0.058$).

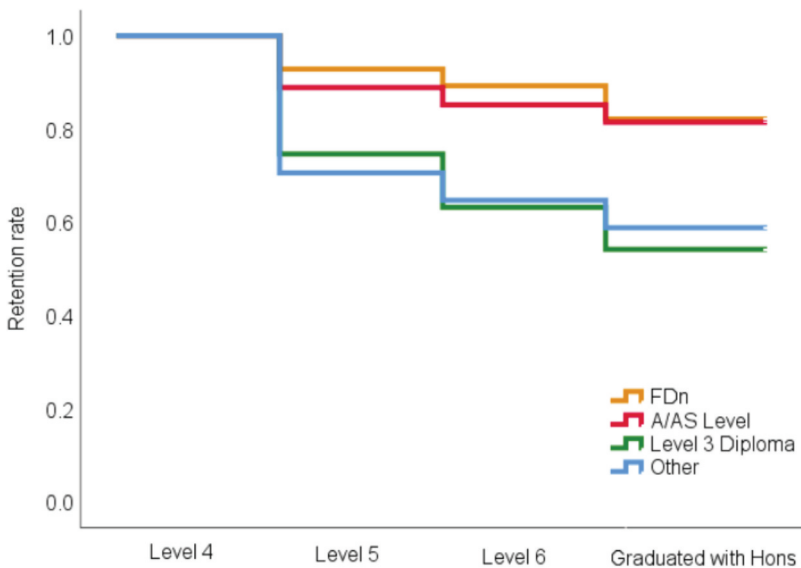


Figure 3. Student retention in sport, health and exercise science programmes dependent on highest entry qualification ($p < 0.001$).

Performance Science ($p = 0.778$) (Figure 5). Comparing across programmes, no difference was noted in retention for students who entered with A levels ($p > 0.05$), however for students who entered with a Level 3 BTEC/Diploma, significantly worse retention was observed in Sport and Exercise Science students compared with Coaching and Performance Science students ($p = 0.022$). Of note, retention rates were lowest for Sport and Exercise Science students entering with Level 3 BTEC/Diploma qualifications; retention was 66% at Level 5, 54% at Level 6 and 47% of students graduated with BSc Hons (Figure 6).

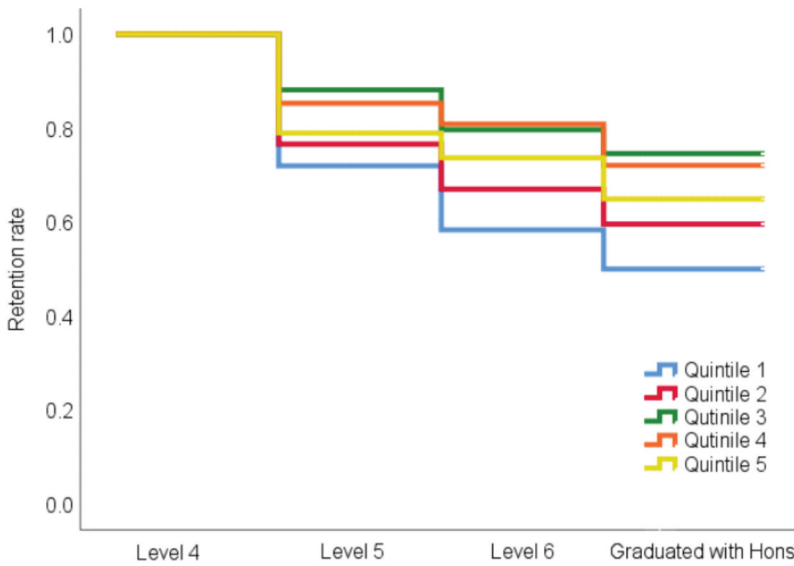


Figure 4. Student retention in sport, health and exercise science programmes across POLAR4 quintiles (HEFCE 2017) ($p = 0.003$).

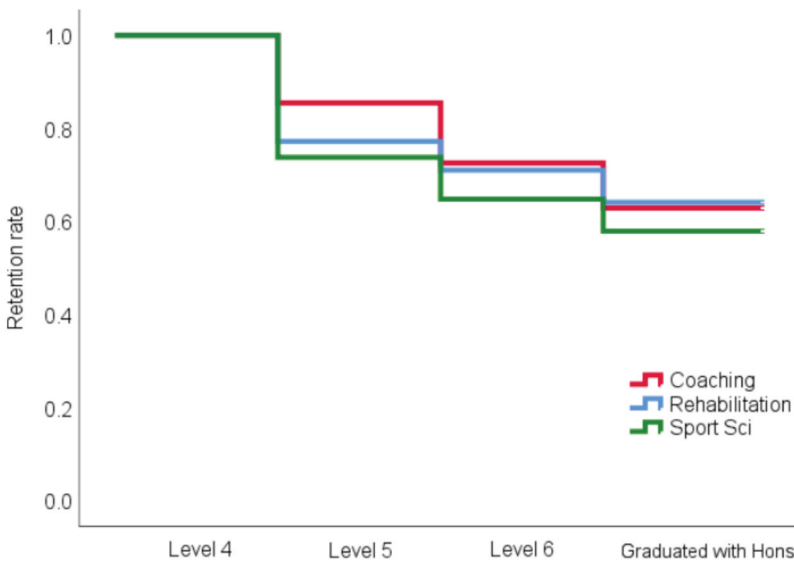


Figure 5. Retention across programmes in the department of sport, health and exercise science ($p=0.455$).

Discussion

HE should be accessible to all individuals who have the potential to benefit from it, with success measured not by the number of students enrolling but by those that are achieving qualifications (Schofield and Dismore 2010). Whilst it has been noted that in some cases dropping out may be the right decision for the student (Tight 2020), all individuals should be afforded equal opportunity to participate and succeed on a programme and within an institution that best fits their needs and ambitions for employment or further study (Office for Fair Access [OFFA] & HEFCE, 2014). Here, we investigate student participation and retention within the Department of Sport, Health and Exercise

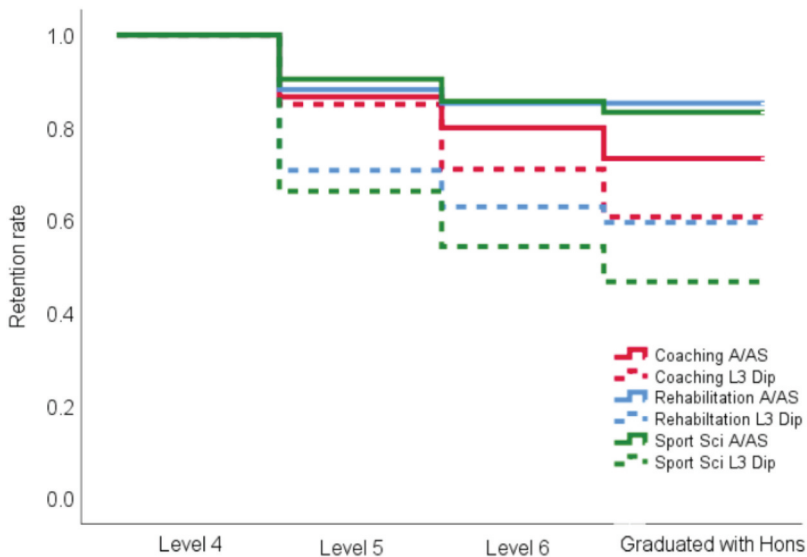


Figure 6. Student retention across programmes and split by highest entry qualification on entry in the department of sport, health and exercise science.

Science at a University in the North of England, with the aim of characterising students at risk of non-completion. Contrary to previous findings, no differences in retention were noted between young and mature students or the locality of students to the institution upon enrolment (Schofield and Dismore 2010; Woodfield 2014). However, a trend was observed suggesting that male students may be at an increased risk of dropping out of their studies compared with their female peers. Further, entry qualifications and geographical regions split by HE-participation were significantly associated with retention. This research adds institution, department, and subject specificity to the background variables identified as initial factors affecting non-completion in Bean's Student Attrition Model (1980). These characteristics should be considered when implementing strategies aimed at improving retention and developing equal opportunities for success for all HE students.

Our results are consistent with a report from the HEA in which the characteristics of students vary considerably across disciplines and institutions (Woodfield 2014). Indeed, at department level, the student population consisted of a greater proportion of male students (70%), compared with the national benchmark for 'hospitality, leisure, sport and tourism' (56%). The gender difference also varied significantly across programmes; with males accounting for 57%, 72% and 83% in Sport Rehabilitation, Sport and Exercise Science and Sport Coaching and Performance Science, respectively. Similar to non-subject specific literature and sector-wide data (Arulampalam, Naylor, and Smith 2005; Woodfield 2011), males in our study cohort appear to be at an increased risk of non-continuation compared with their female counterparts. An observation of increased importance given the high proportion of male students studying these programmes. A report on behalf of the HEA suggests that the gender difference may be explained by male students being less engaged in their studies, as they report working 'less hard' and being less likely to 'recognize the importance of working hard', compared with their female counterparts (Foster and Lefever 2011). Although dated, Bean (1980) highlighted that institution satisfaction does not positively impact retention in males as it does in females, indicating that reasons for attrition may be less institution specific. Previous literature has also reported that male students are more likely to leave HE altogether than seek an alternative course, highlighting that it may be the academic requirements of HE overall rather than a specific subject influencing attrition (Arulampalam, Naylor, and Smith 2004). Similar research at

a department level is required to explore whether the same reasons explain the potential gender differences identified within the current study.

The Department of Sport, Health and Exercise Science studied here enrolls a relatively high proportion of students from low HE-participation neighbourhoods. Indeed, over half (55%) of our study population were categorised in POLAR4 quintiles 1 or 2. Given that students in POLAR4 quintile 1 are three times less likely to participate in HE than their quintile 5 counterparts (HEFCE 2017), it would appear that the programmes investigated here attract a disproportional number of students from areas who typically do not participate in HE. This observation may be partly explained as the North East, Yorkshire and the Humber has the lowest HE-participation in the UK (HEFCE 2017) and the programmes investigated attract a large proportion of local students (66%). Further, at an institutional level, the University has a relatively equal participation rate of students across all POLAR4 quintiles; indeed, in 2016 the University had the most equal spread of students across POLAR4 quintiles of any HEI in the UK (Martin 2018). Thus, it may be inferred that the Department of Sport, Health and Exercise Science attracts a greater proportion of students from POLAR4 quintiles 1 and 2 than both national and institutional norms.

Whilst a participation plan targeting, among others, students from low-HE participation neighbourhoods are an important widening participation initiative, any potential benefits gained from engaging this population in HE would be negated if students fail to complete their studies, thus highlighting the importance of a focus on retention and completion (Schofield and Dismore 2010). Importantly, our research highlights students from POLAR4 quintiles 1 and 2 were at a significantly increased risk of non-completion (Figure 4). Although POLAR4 quintiles are not a direct measure of advantaged and disadvantaged areas, the association between low participation areas and socio-economic disadvantage is known (HEFCE 2005). This is important given the impact of socio-economic status on non-completion highlighted by Bean (1980). Our observations are in keeping with a summary from the Social Mobility Commission (2017) who suggest that despite universities' success in increasing numbers of widening participation students from a working-class background, retention rates, graduate destinations, and outcomes for those same students have barely improved. Improving student retention in low-HE participation neighbourhoods needs addressing at a national level, however given the skew in the student population studied here, which includes a greater proportion of students from low-HE participation neighbourhoods, the impetus to provide support that will improve student outcomes in this population is of increased importance.

The students' highest qualification upon entry is also a factor affecting retention. Indeed, our data highlight clear gaps at department level and across several programmes (Sport Rehabilitation and Sport and Exercise Science) that suggest students who do not possess A-levels or a Fdn degree are at an increased risk of non-completion (Figure 3). Universities should undoubtedly encourage participation and accept applications from students with BTEC/Diploma qualifications, however our data and others identify these students are less successful at University (28.1% non-completion for BTEC/Diploma compared to 18.9% for A-level students) (HESA 2019). Indeed, in 2016, 25% of the students entering HE held a BTEC/Diploma qualification (without additional A-level qualifications), which is twice that from 2008 (Gicheva and Petrie 2018). However, these students were nearly twice as likely to exit without a degree compared with students who possess A-Level qualifications, 12% vs. 6.2% in 2014, respectively (Gicheva and Petrie 2018). Our data present starker differences in both participation and retention, in that around 70% of the students in the current study had a BTEC/Diploma qualification and the successful completion of the programmes (i.e. graduating with Honours) was only 65% in this population compared to 82% of the students who entered with A-levels. This highlights an essential need for increased support provision, of which expectations are reported to be significantly higher in students from a BTEC background (Kelly 2017). Differences in the academic skills and preparedness of A-Level versus BTEC students are likely to be factors contributing to dropout (Banerjee, Myhill, and Robinson 2017; Hurrell, Shawcross, and Keeling 2019); however, sense of belonging could also have a large influence. It has been noted that BTEC students may struggle to establish a sense of belonging within an institution, particularly due to decreased outreach and

preparation opportunities compared to A-Level students (Baker 2020). This is important as a sense of belonging will undoubtedly contribute to institutional commitment, which is one of the final and most significant factors influencing dropout decision in the influential retention models by Spady (1970), Tinto (1975) and Bean (1980). Looking beyond entry qualification type, improved retention has been demonstrated in students who have previously studied subjects relating to their degree (Arulampalam, Naylor, and Smith 2004), another factor that could be contributing to the disparity in completion rates seen in the population studied here.

Taken together, our data is consistent with national statistics that suggest male students, students from low HE-participation neighbourhoods and students who enter HE with BTEC/Diploma qualifications are at an increased risk for non-continuation. However, given that over a third of students registered on the programmes studied here possess all three aforementioned characteristics, it is imperative that initiatives to improve retention, particularly in these populations, are sought and implemented. Such initiatives could be informed by national and institutional strategies, and also driven at department level. Due to the strong associations between entry qualification type and POLAR4 quintiles, identified in our data (analysis not shown) and by others (HEFCE 2014), initiatives aimed at improving retention in students who enter with BTEC/Diploma awards or from a low HE-participation neighbourhood would likely benefit both populations.

Multi-institution initiatives, such as the 'Transforming Transitions' project, are being piloted in an attempt to bridge the gap in retention and performance between students who enter HE via the traditional A-Level route or with a BTEC/Diploma award (Transforming Transitions, n.d.). These initiatives include conducting research into student experiences during the FE/HE transition, academic mentoring, the implementation of an online module to support BTEC/Diploma students prior to university entry and targeted mathematics and academic writing interventions. Similar initiatives are in place or are being introduced at an institutional level, such as a university Participation Plan that aims to; (1) improve welcome and induction programmes and develop online induction packages, (2) identify barriers to study, (3) conduct a review of the academic support tutor framework and identify areas for early intervention, (4) develop peer-mentoring initiatives, (5) encourage engagement in extra-curricular activities and (6) provide financial support, including studentships and scholarships, to disadvantaged students (University of Hull, n.d.-a). A student personal success plan has also been introduced that focuses on (1) reflection, (2) positivity, (3) personal success and maximising opportunities, and (4) health and wellbeing (University of Hull, n.d.-b). Many HE institutions are also employing specialist support advisors, and working with feeder institutions to help careers staff accurately depict university courses (Gordon 2016). Such initiatives are aimed towards increasing retention and reducing non-continuation, however with the focused data presented within our study it may be possible to target specific students within programmes to offer bespoke help and guidance.

Perhaps under-explored is the programme-level differences in retention and how this may inform practice within a HEI at department level. Indeed, as identified with our work, the Sports Coaching and Performance Science programme did not appear to have the same level of disparity in retention between A-Level students and those with BTEC/Diploma awards. One may postulate that the curriculum, teaching style or assessment methods on this programme better suit students with level 3 BTEC/Diploma background, however data supporting this statement are currently lacking and it was outside the scope of our paper. To address this, future research should be undertaken within individual programmes to explore the difference in performance between students with A-Level qualifications and those that enter with Level 3 qualifications across programmes. It is suggested that a similar pattern would emerge as seen within our current work, in that students without A-Level qualifications are not only at a higher risk of non-completion but they perform at a lower level than their peers with A-Level qualification. With this information, it may be possible to identify whether certain modules or types of assessment, better suit students from different entry pathways. Such information could be used to inform strategies both within and across institutions to develop students' skills or, alternatively, may inform inclusive curriculum design.

To the authors' knowledge, this is the first study to explore student retention at department and programme level in HE in the area of sport and exercise science. We have applied novel statistical methods, typically limited to medicine (e.g. survival trend analysis which is typically used to explore survival rates across populations), to identify whether certain student characteristics are associated with student retention. Although this method provides an excellent description of the temporal sequence of student retention across the duration of a degree programme, it does not attempt to identify potential reasoning underpinning students leaving university and whether these reasons differ at different stages of the degree programme. Further understanding of dropout reasoning may highlight a variety of influential factors for consideration, such as the quality of pre-enrolment career guidance, management of student expectations, and inclusivity of learning and teaching practices. Thus, additional information could be sought from a qualitative study aimed at understanding the reasoning behind student retention at department level and at various stages of study. Another important limitation here is that due to several methodological factors, our data are not directly comparable to national statistics on retention (HESA 2019). Firstly, our calculation of retention was simply the percentage of students who enrolled on a programme within the department and subsequently enrolled on the same programme the following academic year (either progressing to the next year of study or repeating the same year). It therefore considers students who may have transferred to another programme or HE institution as having dropped out. This approach is in contrast to statistics from the Higher Education Statistics Agency (HESA, n.d.-a). Further, we did not make allowances for students who drop out before a 'census date'; typically a 50-day census date is applied in national statistics data (HESA, n.d.-a). Consequently, data presented here may show a reduction in retention figures in comparison to national statistics. Finally, it must be acknowledged that the full impact of the externally set and marked examinations introduced as part of BTEC qualifications in 2016 is not yet known (McGrath and Madhvani 2023); therefore, the impact this has had on retention, support requirements, and performance has not been considered as part of this study.

To conclude, here we have identified that male students, students who are from a low HE-participation neighbourhood and students who do not have the typical A-Level background are less likely to attain a degree from the Department of Sport, Health and Exercise Science than their peers who do not possess these characteristics. Importantly, these characteristics also make up over a third of the student population within the department, and the latter two populations constitute areas targeted for widening participation initiatives. Thus, the department and other departments with similar student populations must look at national and institutional strategies to improve student retention; the success of which could improve the outcomes for numerous students on these programmes and will have substantial financial and reputational implications for those departments and the universities.

Disclosure statement

The authors declare that this study was conducted in the absence of any relationships that could be considered conflict of interest.

ORCID

Amy Tomlinson  <http://orcid.org/0009-0004-6491-0027>

References

- Aljohani, O. 2016. "A Comprehensive Review of the Major Studies and Theoretical Models of Student Retention in Higher Education." *Higher Education Studies* 6 (2): 1–18. <https://doi.org/10.5539/hes.v6n2p1>.
- Arulampalam, W., R. A. Naylor, and J. P. Smith. 2005. "Effects of In-Class Variation and Student Rank on the Probability of Withdrawal: Cross-Section and Time-Series Analysis for UK University Students." *Economics of Education Review* 24 (3): 251–262. <https://doi.org/10.1016/j.econedurev.2004.05.007>.

- Arulampalam, W., R. Naylor, and J. Smith. 2004. "Factors Affecting the Probability of First Year Medical Student Dropout in the UK: A Logistic Analysis for the Intake Cohorts of 1980–92." *Medical Education* 38 (5): 492–503. <https://doi.org/10.1046/j.1365-2929.2004.01815.x>.
- Baker, Z. 2020. "The Vocational/Academic Divide in Widening Participation: The Higher Education Decision Making of Further Education Students." *Journal of Further and Higher Education* 44 (6): 766–780. <https://doi.org/10.1080/0309877X.2019.1599328>.
- Banerjee, P. A., D. Myhill, and C. Robinson. 2017. *Does Prior Qualification Affect Degree Outcomes?*. University of Exeter Working Paper. <https://ore.exeter.ac.uk/repository/bitstream/handle/10871/30283/Does%20prior%20qualification%20affect%20degree%20outcomes.pdf?sequence=1&isAllowed=y>.
- Bean, J. P. 1980. "Dropouts and Turnover: The Synthesis and Test of a Causal Model of Student Attrition." *Research in Higher Education* 12 (2): 155–187. <https://doi.org/10.1007/BF00976194>.
- Burke, A. 2019. "Student Retention Models in Higher Education: A Literature Review." *College and University* 94 (2): 12–21.
- Connell-Smith, A., and S. Hubble. 2018. "Widening Participation Strategy in Higher Education in England: Briefing Paper." January 24. House of Commons Library. <https://researchbriefings.files.parliament.uk/documents/CBP-8204/CBP-8204.pdf>.
- Crosling, G., M. Heagney, and L. Thomas. 2009. "Improving student retention in higher education." *Australian Universities Review* 51 (2): 9–18. <https://files.eric.ed.gov/fulltext/EJ864028.pdf>.
- Eather, N., M. F. Mavilidi, H. Sharp, and R. Parkes. 2022. "Programmes Targeting Student Retention/Success and Satisfaction/Experience in Higher Education: A Systematic Review." *Journal of Higher Education Policy and Management* 44 (3): 223–239. <https://doi.org/10.1080/1360080X.2021.2021600>.
- Foster, E., and R. Lefever. 2011. "Male Access and Success in Higher Education: A Discussion Paper." September 30. 20–25. <https://www.heacademy.ac.uk/system/files/maleaccess.pdf>.
- Gicheva, N., and K. Petrie. 2018 January. *Vocation, Vocation, Vocation: The Role of Vocational Routes into Higher Education*. <http://www.smf.co.uk/wp-content/uploads/2018/01/SMF-Vocation-Vocation-Vocation.pdf>.
- Gordon, N. A. 2016. *Issues in Retention and Attainment in Computer Science*. York: Higher Education Academy.
- Higher Education Funding Council for England. 2005 January. *Young Participation in Higher Education*, The National Archives. https://webarchive.nationalarchives.gov.uk/20100303153555/http://www.hefce.ac.uk/pubs/hefce/2005/05_03/.
- Higher Education Funding Council for England. 2014. *Further Information on POLAR3: An Analysis of Geography, Disadvantage and Entrants to Higher Education*. Digital Education Resource Archive. February. https://dera.ioe.ac.uk/19292/1/HEFCE2014_01.pdf.
- Higher Education Funding Council for England. 2017. *POLAR4 Classification: A Local Geography Classification for Young Participation in Higher Education*, The National Archives. October 27. <https://webarchive.nationalarchives.gov.uk/20180322111559/http://www.hefce.ac.uk/pubs/year/2017/201729/>.
- Higher Education Statistics Agency. 2019. *Experimental Statistics: UK Performance Indicators 2017/18*. March 7. <https://www.hesa.ac.uk/news/07-03-2019/experimental-uk-performance-indicators>.
- Higher Education Statistics Agency. n.d.-a. *Non-Continuation Rates – Technical Details*. <https://www.hesa.ac.uk/data-and-analysis/performance-indicators/non-continuation/technical>.
- Higher Education Statistics Agency. n.d.-b. *Rounding and Suppression to Anonymise Statistics*. <https://www.hesa.ac.uk/about/regulation/data-protection/rounding-and-suppression-anonymise-statistics>.
- Department for Education, and Hinds, D. 2019. *Education Secretary Warns Universities Over Dropout Rates*, GOV.UK. March 7. <https://www.gov.uk/government/news/education-secretary-warns-universities-over-dropout-rates>.
- Hurrell, E., E. Shawcross, and E. Keeling. 2019. "How Does a Vocational Qualification (BTEC) Prepare Students for a Degree in Biosciences at a Research Intensive University?" *New Directions in the Teaching of Physical Sciences*: 14 (1). <https://doi.org/10.29311/ndtps.v0i14.3315>.
- Kelly, S. 2017. *Reforming BTECs: Applied General Qualifications As a Route to Higher Education*. Oxford: Higher Education Policy Institute.
- Kerby, M. B. 2015. "Toward a New Predictive Model of Student Retention in Higher Education: An Application of Classical Sociological Theory." *Journal of College Student Retention* 17 (2): 138–161. <https://doi.org/10.1177/1521025115578229>.
- Manyanga, F., A. Sithole, and S. M. Hanson. 2017. "Comparison of Student Retention Models in Undergraduate Education from the Past Eight Decades." *Journal of Applied Learning in Higher Education* 7 (Spring): 30–42. https://doi.org/10.57186/jalhe_2017_v7a3p30-39.
- Martin, I. 2018 April. *Benchmarking Widening Participation: How Should We Measure and Report Progress?* HEPI Policy Note 6. Higher Education Policy Institute. <https://www.hepi.ac.uk/wp-content/uploads/2018/04/HEPI-Policy-Note-6-Benchmarking-widening-participation-FINAL.pdf>.
- McGrath, S., and M. Madhvani. 2023. *Opening Doors, Building Futures? A Life Histories Approach to Exploring the Impact of BTEC*. UP2UNI. http://www.up2uni.org/uploads/7/0/4/7/7047218/opening_doors_building_futures_march_2023_up2uni.pdf.

- Office for Fair Access. & Higher Education Funding Council for England. 2014 April. *National Strategy for Access and Student Success in Higher Education*. GOV.UK. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/299689/bis-14-516-national-strategy-for-access-and-student-success.pdf.
- Office for Students. n.d. *Young Participation by Area: About POLAR and Adult HE*. <https://www.officeforstudents.org.uk/data-and-analysis/young-participation-by-area/about-polar-and-adult-he/>.
- Pearson. 2016. *BTEC Level 3 National Diploma in Sport*. <https://qualifications.pearson.com/content/dam/pdf/BTEC-Nationals/Sport/20161/specification-and-sample-assessments/btec-l3-national-dip-in-sport-spec.pdf>.
- Schofield, C., and H. Dismore. 2010. "Predictors of Retention and Achievement of Higher Education Students within a Further Education Context." *Journal of Further and Higher Education* 34 (2): 207–221. <https://doi.org/10.1080/03098771003695478>.
- Social Mobility Commission. 2017 June. *Time for Change: An Assessment of Government Policies on Social Mobility 1997-2017*. GOV.UK. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/622214/Time_for_Change_report_-_An_assessment_of_government_policies_on_social_mobility_1997-2017.pdf.
- Spady, W. 1970. "Dropouts from Higher Education: An Interdisciplinary Review and Synthesis." *Interchange* 1 (1): 64–85. <https://doi.org/10.1007/BF02214313>.
- Tight, M. 2020. "Student Retention and Engagement in Higher Education." *Journal of Further and Higher Education* 44 (5): 689–704. <https://doi.org/10.1080/0309877X.2019.1576860>.
- The Times. 2019. *Good University Guide 2020 Methodology: How We Compiled Rankings*. September 22. <https://www.thetimes.co.uk/article/good-university-guide-2020-methodology-how-compiled-rankings-bfzgc3qv5>.
- Tinto, V. 1975. "Dropout from Higher Education: A Theoretical Synthesis of Recent Research." *The Review of Educational Research* 45 (1): 89–125. <https://doi.org/10.3102/00346543045001089>.
- Transforming Transitions. n.d. *Transforming Transitions: Interventions*. University of Exeter. <http://socialsciences.exeter.ac.uk/education/research/projects/transformingtransitions/>.
- University of Hull. n.d.-a. *Access and Participation Plan 2019–20*. <https://www.hull.ac.uk/choose-hull/study-at-hull/money/docs/access-and-participation-plan-2019-20.pdf>.
- University of Hull. n.d.-b. *Student Personal Success Plan*. <https://www.hull.ac.uk/beta/articles/student-success-plan>.
- Woodfield, R. 2011. "Male Access and Success in Higher Education: A Discussion Paper, (5–14). *Advance HE*." September 30. <https://www.heacademy.ac.uk/system/files/maleaccess.pdf>.
- Woodfield, R. 2014. *Undergraduate Retention and Attainment Across the Disciplines*, *Advanced HE*. December 18. <https://www.heacademy.ac.uk/knowledge-hub/undergraduate-retention-and-attainment-across-disciplines>.