Entry profiles as Predictors of Retention and Success of HE students within an FE context
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Introduction

With the post-Dearing developments in education leading to an expansion of delivery of Higher Education qualifications in Further Education colleges (NCIHE, 1997), it is necessary to reflect on these changes and monitor the outcomes. The advent of the Foundation Degree in trans-disciplinary subjects with a more vocational slant are offering greater opportunities for non-traditional learners to study to HE level than ever before (Watson and Taylor, 1998).

Although the government may be encouraged by the 12% increase in participation in HE between 2002 and 2006 (HESA, 2007), the impact of the policy making should not be measured by the numbers of HE student registrations, but rather the increase in students successfully completing these qualifications. To this end this paper will examine attrition rates within Higher Education courses and try to offer some explanations that may help in recruitment procedures.

Attrition rates

As expectations of the course may actually differ to the experience at the institution, it may be misguided to expect that no students will drop out of a course. Not all learners are suited to all courses. We must also consider that during a two or three year course many domestic or personal issues, as well as potential academic problems, may arise that prevent course completion (Cantwell, Archer and Bourke, 2001).

In order to better understand these potential problems, it may be helpful to draw upon definitions of dropout based on internal and external motives. Jeffreys (2007) identified six types of progress through a course; three types of retention and three types of attrition. Not all types of retention are smooth and problem free and Jeffreys identifies two problematic routes as well as Ideal Programme Retention. The less ideal routes are Interim Programme Retention, where the student achieves the qualification after a period of interruption, and Continuous Programme Retention where there is ultimate success after a period of extension due to referral and module repetition. Just because these students have ultimate success, it does not
mean that the data should be ignored when studying retention rates. It is the careful management of these students that prevents them from being a retention issue.

The different definitions of attrition that Jeffreys (2007) highlights are based on different motivational factors. Voluntary Attrition is when the student chooses to withdraw from a programme of study, Failure is when the student has failed to meet the assessment requirements of the course; and finally, Dismissal is involuntary attrition where the student has contravened the course or institutional regulations.

Although Jeffreys’ (2007) research, focused on retention rates of student nurses in America, the research indicated a law of quarters, where roughly one quarter follow the ideal progression route, one quarter will interrupt before ultimate success, one quarter will follow a more extended continuous route and the final quarter being the attrition route. Within the latter group, 14% withdrew and 9% failed. However, this paper argues that figures such as these may need more consideration if those who withdraw may be withdrawing as a way of pre-empting a failure.

**Achievement**

Jeffreys (2007) found that the level of student achievement on the course may have some relationship with the retention route taken. She found that those nurses who followed the Ideal Programme Retention profile scored higher on the first module, those who would ultimately resit modules scored in the midrange of the first module and those who had interrupted patterns of study scored lowest. Additional research has also explored a range of other characteristics associated with success, including age, gender and previous qualifications.

**Age**

There is much evidence to support the fact that mature students show a higher dropout rate than those under the age of 21 (Arulampalam, Naylor and Smith, 2004; NAO, 2007). Jeffreys (2007) also showed that the route that was most common for older students was Voluntary Attrition and that the average age of withdrawing students was thirty-three, older than the average age for retained students (twenty-eight).

Of those who are retained, Cantwell, Archer and Bourke (2001) found that Australian mature students did better than normal entry level students, where each additional ten years equated to a quarter Grade Point Average increase.

**Gender**

The National Audit Office (2007) found that females were more likely to progress onto the second year than males. Specifically, Arulampalam, Naylor and Smith (2004)
found that of a sample of 51,810 medical students, male students were 8% more likely to drop out than females, whereas Jeffreys (2007) found that within her non-retained nursing cohort females were more likely to interrupt than their male colleagues. However, consideration must be given to the fact that 83% of the sample were female. Interestingly, according to Arulampalam, Naylor and Smith (2004) the males that did leave were less likely to seek an alternative course, suggesting that they believed themselves unable to cope with academic requirements rather than focus on an inability within the subject area. With reference to achievement, Cantwell, Archer and Bourke (2004) found that females achieved a higher grade point average (GPA). This is supported by statistical data showing that a higher proportion of females gained higher second class degrees and a higher proportion of males gained a lower second and third class degrees between the years 2001 and 2006 (HESA, 2007a).

Qualifications
A range of factors could influence the decision to embark upon a HE course. It could be previous knowledge that helps inform students’ decisions about what degree to study. Equally, it may be the type of course; be it academic or vocational, traditional or non-traditional. Lastly, academic success at Further Education level could have had an impact upon the level of achievement in higher education.

Dent’s (2007) report on the progression of all students from year 1 to year 2 of their degree showed that entry route affected retention. Those progressing through the traditional A-Level route had a lower attrition level (12%) than non-traditional routes, Access to HE courses (14%) and vocational routes (16%).

Although it may seem predictable that level of entry qualification plays a part in the level of success, there also appears to be a relationship between entry qualification levels and retention. NAO (2007) found that those with three grade A at A-Levels were more likely to progress to the second year than those who had only two A-Levels at grade D. Arulampalam, Naylor and Smith (2004) also showed that the lower the A-level entry profile the higher the potential dropout rate in medical students. Only 2.9% of students with over 340 UCAS points (equivalent of three grade As) left, whereas those with less than 200 UCAS points produced an attrition rate of 5.2%.

Increasingly, HE courses are being delivered in a non-traditional setting to a new demographic of learner, so it seems valuable to study the first year retention and success of students undertaking their HE course in an FE institution. Analyses of their entry characteristics will be conducted in order to establish whether there are discernable patterns that may help course managers predict problem students at the outset.
Method
Data were obtained for 457 students enrolled on stage 1 of over 27 Foundation Degrees and HNDs at a Southwest tertiary college. The sample included 251 females (average age 25.4) and 206 males (average age 22.7).

Entry profiles
The entry data extracted from their UCAS forms included the course that the student was registered on, and demographic data including age at application and gender. An indication of the student’s educational path was observed by looking at the date of their UCAS or clearing application.

Students’ educational background was established using their last qualification type and subject, and how long ago this qualification was completed. This variable also took into account those who had transferred or completed a Higher Education qualification and those who had no recent qualifications, but were admitted based on their recent employment. The students’ entry level was measured according to UCAS points on application. This data was not available for all previous course types (such as ITEC qualifications) and for Access courses, a default of 240 UCAS points was applied as an equivalent of 3 grade C A-levels.

Outcome data
The entry data were then matched to the outcome using data from Award Board results at the end of stage 1. Three possible outcomes were possible; completed, withdrawn or failed. Those deemed to have completed were those allowed progression on to stage 2 and their success was measured in the percentage grade average for the year. Those who had withdrawn, had data retrieved from the withdrawal form and the date of withdrawal was taken from this which allowed the time on the course to be calculated in months. Failure was defined as those who could not progress onto stage 2 at the summer exam board. Ultimately some of these students will have progressed after successful completion of referral work, but this measure allows us to see those who have struggled to the point of module failure. The level of failure was measured in terms of the number of credits achieved on the modules passed at that point (140 required for Foundation Degrees and 120 for HNDs).

At no point were names attached to entry data or outcomes and the anonymity of all students was preserved.
Results

Previous academic background

Analysis of the last qualification type that the student had experienced showed that the type of entry qualification did not seem to play a significant role in the outcome ($\chi^2 = 16.336$, df = 22, $p = 0.799$).

Figure 1: Proportionate outcomes based on previous academic experience

Figure 1 shows that in terms of the overall outcome, A-Level students were most likely to complete and least likely to fail. The students transferring from other HE programmes were also highly likely to pass and less likely to withdraw. Vocational students were more likely to withdraw, whereas students who entered directly from the workplace were least likely to complete and most likely to fail.

Table 1: Outcomes based on previous qualification type

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Completed</th>
<th>Failed</th>
<th>Withdrew</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Stage 1 grade (%)</td>
<td>Amount of credits achieved</td>
<td>Number of months attended</td>
</tr>
<tr>
<td>A Level</td>
<td>57.8</td>
<td>63.7</td>
<td>3.8</td>
</tr>
<tr>
<td>GNVQ</td>
<td>55.3</td>
<td>86.1</td>
<td>3.2</td>
</tr>
<tr>
<td>ND</td>
<td>56.5</td>
<td>57.1</td>
<td>2.7</td>
</tr>
<tr>
<td>Access</td>
<td>65.9</td>
<td>75.7</td>
<td>2.6</td>
</tr>
<tr>
<td>HE transfer</td>
<td>64.1</td>
<td>36.7</td>
<td>3.1</td>
</tr>
<tr>
<td>Employment</td>
<td>63.8</td>
<td>78.3</td>
<td>1.0</td>
</tr>
</tbody>
</table>
A Univariate ANOVA shows that the qualification type had a significant effect on the level of achievement ($F_{(11,244)} = 5.81, p < 0.0005$). Table 1 shows that Access students achieved higher grades, and that GNVQ students achieved ten percent less on average. There appeared to be no significant difference between the amount of credits that the failing students achieved ($F_{(10,109)} = 1.461, p = 0.164$), although those that transferred from other HE courses appeared to pass half the amount of modules than those with any other entry qualification type. Equally there was no significant difference in how long students remained on their course prior to withdrawing ($F_{(7,70)} = 1.113, p = 0.365$). However those that enrolled without recent educational experience withdrew earlier than those with qualifications; the A-Level students appeared to persevere for the longest.

Table 2: Average UCAS points of students based on outcome

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Sd</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete</td>
<td>196.2</td>
<td>101.8</td>
<td>208</td>
</tr>
<tr>
<td>Failed</td>
<td>164.5</td>
<td>90.4</td>
<td>107</td>
</tr>
<tr>
<td>Withdrew</td>
<td>166.4</td>
<td>98.0</td>
<td>62</td>
</tr>
</tbody>
</table>

The average entry-level qualification was 182 UCAS points (excluding 12% of the students whose courses did not have a UCAS equivalent). Table 2 shows that those who completed their course had achieved a thirty point higher UCAS point on entry than those who withdrew and failed. The Univariate AVOVA indicated that this was a significant difference ($F_{(2,374)} = 4.65, p = 0.01$).

**Planning the educational career**

Students made their applications to the course on average four months prior to the start of the academic year and 40% of applicants applied during the summer holiday period (0-2 months). The advanced planning, shown in figure 2, was similar across the outcomes, despite that fact that twice the proportion of students who came through clearing either failed or withdrew.
Figure 2: The distribution of planning that had been carried out in advance of commencing the course by outcome.

**Gender differences**

The chi-square calculation showed significant gender differences in outcome ($\chi^2 = 8.352$, df = 2, $p = 0.015$). As Figure 3 illustrates, when comparing outcomes according to gender, women were more likely to complete than males and males were more likely to withdraw than females.

Figure 3: Differences in outcome by gender.
Factors that may affect this success might be that females were significantly older than males \( (t = -3.628, df = 454.9, p = 0.0005, \text{two-tailed}) \) and that women had a significantly higher entry level indicated by their UCAS points \( (t = -4.365, df = 375, p = 0.0005, \text{two-tailed}) \) as can be seen in table 4.

Table 4: Average (standard deviation) gender differences in age and entry level

<table>
<thead>
<tr>
<th></th>
<th>Age in years</th>
<th>UCAS points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>25.4 (8.8)</td>
<td>203.0 (99.1)</td>
</tr>
<tr>
<td>Male</td>
<td>22.7 (7.2)</td>
<td>159.4 (94.1)</td>
</tr>
</tbody>
</table>

**Age differences**

Although Table 5 shows that the failing student appeared to be consistently younger than the completing and withdrawing students, the Univariate ANOVA indicated that there was no significant difference in outcome based on the age of the student \( (F_{(2,454)} = 2.865, p = 0.058) \). However a positive significant relationship was found between age and end of year grade \( (r = .316, n = 256, p < 0.01, \text{two-tailed}) \), and an independent t-test showed that the mature students achieved a significantly higher end of year grade (65%) than the younger students (57%) \( (t = -6.766, df = 231, p < 0.005, \text{two-tailed}) \).

Table 5: Average age of students based on outcome

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Sd</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete</td>
<td>24.6</td>
<td>8.8</td>
<td>257</td>
</tr>
<tr>
<td>Failed</td>
<td>22.7</td>
<td>6.4</td>
<td>119</td>
</tr>
<tr>
<td>Withdrew</td>
<td>25.2</td>
<td>8.6</td>
<td>81</td>
</tr>
</tbody>
</table>

**Educational outcomes**

By the summer Award Board, 56.2% successfully completed their stage 1 qualification, whereas 26% had failed and 17.7% had withdrawn or had interrupted. For those who successfully completed stage 1, they achieved an average of 58.8%, whereas those who failed had on average only passed 60 credits out of the 140 required from Foundation Degrees and the 120 required for HNDs. The average amount of time a non-completing student spent on the course was 2.8 months, with 22% leaving in the first month and over half the potential leavers doing so in the first two months.
A Discriminant Analysis was conducted on 361 cases from the three outcome groups to establish whether there were predictors of Completion, Withdrawal and Failure. The predictor variables included were age, the educational level through the UCAS points at entry, the length of time between previous qualification and commencing their current qualification and time spent planning between application and commencement of the course.

The results suggested a significant difference between the Completed and Non-completed groups ($\chi^2 = 19.94$, df = 8, $p = .011$), but no significant difference between the Failed and Withdrawn groups ($\chi^2 = 6.63$, df = 3, $p = .085$). The correlation between predictor values and the function of completion was the level of entry through the amount of UCAS points achieved prior to entry (.977), whereas the correlation between unsuccessful outcomes was both a shorter time between FE and HE qualifications (-.671), and more last minute applications being made (.632).

The discriminant functions only successfully predicted the outcome for 43% of the cases. This was most effective in relation to the Completed outcome (47%) and the Withdrawn group (43%). The failed group was the most poorly predicted at 28%.
Discussion
The most conclusive characteristic as a predictor of retention and achievement was that of previous academic level, as indicated by UCAS grades. Students completing the first year and progressing onto year two of the Fd/HND had a 20% higher UCAS score on entry, whereas there was no difference between the UCAS level of those who have failed and those who withdrew. This is interesting because at the point of data collection, those students referred to as failed may have subsequently progressed to the second year after completing referral work over the summer period. This suggests that there are academic differences, not only between passed and failed students, but between those that progress through Ideal Programme Retention routes and those who follow Continuous Programme Retention. This was further supported by the fact that the discriminant analysis found no significant differences between the characteristics of failed and withdrawn students. This suggests that those who struggled academically at the FE level may find the progress through the HE route more challenging.

The pattern observed may be due to a variety of factors. Successful students may have advanced study skills that were developed during their FE experiences, or a better subject knowledge that laid a firmer foundation for development at HE, or increased levels of confidence due to their prior successes.

Age was also a factor that appeared to contribute to the higher levels of retention and success. Arguably, what the mature students miss out on in terms of academic background, they make up for with life experience and transferable skills. Many jobs will require you to organise, plan and execute even the simplest projects, as well as establishing the consequences of not doing this efficiently. These are the types of skills that may help students with an untraditional learner background become more successful than their younger counterparts.

The type of previous qualification played an indirect role in the ultimate success, but this may be better explained again by the maturity of students. Although there were no significant differences in the retention of students based on their previous qualification type, there were some differences in success that can be attributed to age. Those students with the highest stage 1 averages were from three progression routes that produce mature students by definition; Access students, those transferring from other HE courses and these coming directly from employment. Mature students were also more likely to withdraw than the A-Level students, and to do so earlier in the course. Together this seems to indicate that mature students either believe that they do not have the ability to pass, or that they are more compromised by external forces. Without these sorts of pressures, A-Level students
appeared to persevere for longer before withdrawing. Moreover, failing students tended to be the youngest at 22 years old.

Early intervention could help illuminate the perceived causes of attrition and potentially help encourage adherence with more pastoral or study skills support. This intervention could turn the failing students in to successes, and give confidence to the withdrawing student enough to retain them. This is very important when we consider that, like Cantwell, Archer and Bourke (2001), those mature students who were retained showed a higher level of ultimate achievement; Access students topping the table at 66% average compared to 58% grade average of A-Level students. This suggests that maturity in age may lead to a maturity in approach to their studies.

There were significant patterns in retention when gender was considered. In line with previous studies (Arulampalam, Naylor and Smith, 2004; Wintre and Bowers, 2007), females were more likely to be retained, and men are less likely to be successful. Again we must consider that the average age of the females was higher than the males so the maturity factor may also have played a role. It must also be noted that females had higher UCAS points on entry, so identification of cause and effect cannot be identified accurately.

Conclusions
This research can help to inform Programme Managers looking to identify students who may need early intervention. Tailoring study skills to meet the profile of learners rather than offering a generic or inflexible package may make a considerable difference to levels of retention. Overall, the findings show that the incoming entry level plays a major role in the ultimate success on the first year of a HE course delivered in an FE institution. In other words, the higher the entry level, the better retention and success. A second factor impacting upon retention appeared to be age. Those who were older were more likely to achieve higher grades at stage 1 than the younger students. A third factor was gender, but as the female within the cohort were older than the male sample it was not possible to extract one causal factor.

An extension of this research would allow for retention and achievement patterns to be established that are not institution dependent, and allow a more accurate explanation of the behavioural differences based on entry profiles. Ideally this project should be extended to include stage 2 progress, as well as stage 1, so the longer term impact of the variations in entry profile can be established. There was also an unfortunate lack of UCAS-style grading for Access students. This issue will be
addressed in the next few years as a tariff is currently being constructed to give parity between qualification types.

Additional work could be carried out to establish what it is that makes the mature student more likely to achieve success compared to the younger students who have followed the traditional route, and what factors make them more likely to withdraw rather than pursue until they fail.
References


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