

Research Article

Student Failure in First Year Modules in the Biosciences: An Interview Based Investigation

Jon Scott and Maria Graal¹

School of Biological Sciences and ¹Student Learning Centre, University of Leicester

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Abstract

Undergraduate retention is a major concern for universities and first year failure is a significant contributor to the overall statistics for non-progression. This report describes an interview-based investigation of students' perceptions for the reasons underlying their failure in 1st and 2nd semester modules. The most commonly cited reasons were misconceptions about the academic expectations both in terms of the volume of work covered during the semester and the level needed to pass the examinations. There was also a frank appreciation, by a majority of the students interviewed of not having done enough work. These findings are discussed in the context of the 1st year transition and approaches to teaching within biological sciences.

Keywords: student retention, transition, assessment, performance

Introduction

Undergraduate retention is a key concern for universities, particularly given the increasing amounts of scrutiny these statistics are given both by the funding councils and the media. The Higher Education Statistics Agency (HESA) publishes annual tables of Performance Indicators for Higher Education (HESA, 2005), including the retention rates for each institution. These rates are set against a benchmark which is calculated from the sector norm, adjusted by specific weighting factors such as the average entry qualifications for that institution (HEFCE, 2004). Retention rates are commonly included in the various league tables of universities constructed by the media (cf. The Times, 2006).

Whilst considerable attention has been directed towards researching the factors contributing to student withdrawal in the first year of higher education (cf. Christie *et al*, 2004; Hall, 2001; Yorke, 1999), less attention has been focused on students failing academically but this is clearly a significant factor contributing to the overall retention rates. Research in this area has often flagged associations between academic success and social and academic integration with the institution (Tinto, 1975; Roddan, 2002), the latter being related to active participation in classes and effective time management.

The School of Biological Sciences at the University of Leicester currently recruits approximately 160 students per year onto a range of Biological and Biomedical Sciences programmes. Most of the intake comes via traditional A level routes with an entry level of 300/320 UCAS tariff points (grades BBB/ABB at A2). About 10% enter via other routes such as access courses. International students are admitted on the basis of equivalent qualifications plus competence in English, as determined by GCSE grade C or above, or an IELTS score of 6.5. Over recent years, there has been a progressive increase in the proportion of 1st year students being required to resit one or more modules. This is occurring against a background of stable

curriculum and assessment structures in terms of the Bioscience teaching but also an increased focus on provision of key skills teaching to aid the process of transition into higher education (Scott, 2005).

As a consequence, a project was set up to interview students who had failed one or more modules at each assessment stage of the first year. The objective was to try to identify any common underlying factors, including their pre-entry experience, course induction, prior academic achievement, study strategies and social or financial situation. Students who failed at one stage and then passed subsequent assessments were also re-interviewed to identify any change in strategy.

This study was supported by the STAR (Student Transition and Retention <http://www.ulster.ac.uk/star>) Project and is forming part of an ongoing review of 1st year teaching in the School with the intention of improving both student retention and performance and thereby facilitating the transition that occurs during the 1st year.

Methods

The project was undertaken by the School of Biological Sciences in conjunction with the Student Learning Centre at the University of Leicester, during the academic year 2004-05. The staff in the Centre have extensive experience in providing consultation and support for students and it was felt that students might be more open in discussing their position with someone who was not an academic member of the School.

During the first stage of the project a semi-structured interview schedule was designed (Appendix 1). This loose structure was developed to address the themes of specific interest whilst also allowing flexibility for the students to expand on their answers and, perhaps, move the focus towards other, less predictable, aspects.

A period of two hours was set aside for each interview and the interviews were recorded (with the students' explicit permission). After the interview, the discussion was transcribed to enable identification of key, emergent issues.

The interviews were scheduled at two stages in the academic year: following the 1st semester and 2nd semester examinations in January and June, respectively. The contact details of all students failing one or more modules, after each examination period, were passed to the staff of the Student Learning Centre, who then made contact with the students and undertook the interviews. As a result, the interviews were fully anonymised with respect to the academic staff of the School. The interviews for the students who failed at the end of Semester 1, or who failed for the first time at the end of Semester 2 were based on the questions listed under Phase 1 Interviews (Appendix I). Students who failed modules in January were invited back for interview in June if they passed all their second semester modules. These students who attended a second time were asked the questions in the Phase Two listing (Appendix I), which included reflections on whether they had done anything different compared with in January.

Results

Overall, 13 1st year students participated in the study, representing 33% of the students who failed one or more modules (Table 1). Four of the students who failed in the first semester attended a second interview, having passed their June modules. Note that the overall proportion of the cohort who failed a module is greater than the proportion scheduled to re-sit one or more modules since the School's progression rules allow for compensation for a failed module within set criteria.

Table 1 Profile of the participating students. Students interviewed in January following module failure were all invited back for interview in June but only four of the nine agreed to attend the second interview. Students who failed modules in June, having passed everything in January, only attended the June interview. Student 12 was invited to attend interview both in January and June but only attended the second interview.

Student/ Interview No. Jan 05	Student/ Interview No. Jun 05	Native Speaker	Family experience of HE?	Previous educational experience	Jan 05 exams: No. of modules failed	June 05 exams: No. of modules failed	Sept. 05 resits: No. of modules failed
1	1	YES	NO	6th Form College	4	0	0
2	2	YES	YES	School	1	0	0
3	3	YES	YES	Access	3	0	0
4		NO	YES	Foundation	3	3	2
5	5	YES	YES	School	1	0	0
6		YES	YES	6th Form College	1	0	0
7		YES	YES	School	3	0	0
8		NO	YES	Access	2	1	0
9		YES	NO	6th Form College	1	0	0
	10	YES	YES	School	0	2	0
	11	YES	YES	School	0	1	0
	12	NO	NO	EU University 1st year	4	4	5
	13	YES	YES	6th Form College	0	1	0

Table 1 shows the educational backgrounds of the students and their numbers of module failures in the examinations in January and June and the September resit examinations. Of the 13 students, three (23%) were non-native English speakers compared with 7% in the year group as a whole. At interview, all three cited use of the English language as having caused them particular problems, despite having attained the required English Language qualifications. All three failed modules in both January and June and two of them also failed the September resit examinations (the only two students to do so).

In terms of their educational and family backgrounds, ten of the 13 came from families with previous experience of higher education. Four of the 13 (30%) came from routes other than A level programmes, which is higher than the 10% in the cohort as a whole. Of those who had taken A levels, four had studied at sixth form colleges and five at schools.

The first two questions, asked of the students, were whether they had been surprised at having failed a module and why they thought they had failed. Only one of the 13 students was surprised at having failed. Seven of the students stated that they had not known how much detail was required of them in their study and for the revision and six freely admitted that they had not done enough work. The main reasons given for this were: poor time management, lack of interest in a particular module or being aware that they only had to pass the first year modules (the first year marks don't count towards the degree class) and they had aimed to pass but had misjudged the level.

Examples of key quotes supporting these points are given below:

'I am going to prepare a lot more. When I had the exams in January it really freaked me out. After that week I was like, I've really done badly. But I think it is good because it really kicked me up the bum. So I will prepare a lot more....'

'I knew the 1st year wouldn't count so I just wanted to pass. I was aiming for above 40, around the 50% mark. A lot of people who were 2nd years said they wished they had partied more in the 1st year, so I had that in mind.'

These points were reinforced by the responses to the follow-up interviews of those students who had passed the second semester examinations. It was evident that, in these cases, the students were much more aware of what was expected of them and that the wake-up call of failure had had an effect on behaviour:

'I was really annoyed that I didn't pass last time, it was embarrassing. So I was determined to pass this time.'

The second set of key questions focussed on the transition between their previous experience and study at university. There was no pattern in terms of the type of institution previously studied in, however, three points came out from almost all the student respondents relating to:

- the effects of class size
- the expectation of independent study, in particular not having someone chasing them to get work done
- the level of work

These points are illustrated by the quotes below:

'Sixth form at a school. Yes, really small school, very informal, good relationship with teachers, socialised with them. Lecturers here can't do enough for you, if you ask a question they will try, but I think I was used to having my teachers driving me forward. Definitely that was a big difference.'

'Academic content was three weeks that I would do at school condensed into an hour lecture.'

In terms of the way the students spent their time, only three of the students had part-time jobs during the first semester. Of the remaining students, several reported fairly prolonged social activities and not a lot of time spent on work.

The follow-up question asked the students how confident they were about the second semester exams. All expressed confidence that they would get through, citing two main reasons: they felt they knew more what to expect and they were going to work harder. In the follow-up interviews in June, all the students who passed on resit did indeed report that the main change had been that they had cut down on their social activities during the second semester and managed their time more carefully in order to fit in more work.

The final pair of questions related to sources of advice about the course. All of the students reported that their first source of advice, if there was something they did not understand, was their fellow students or students from the years above, if they knew them. There were perceived barriers, particularly during the early stages, regarding asking the lecturers questions:

'Firstly friends on the course: if I didn't understand I'd be embarrassed to ask a professor who is like the leading guy on that area, I feel like you should bow down to them, and I felt quite nervous about asking them. Now I feel more confident about asking professors questions and they are really helpful.'

Discussion

This report sets out the findings from structured interviews with a small group of students who failed modules during their first year studies in Biological Sciences. The group was self-selected from amongst the first year failures in that these were the students who responded to the invitation to participate. They are, therefore, not necessarily representative of all the failing students but, as one-third of the cohort of failing students, they do represent a significant grouping. It might also be concluded that, by agreeing to participate, these students are showing a specific intention to remain engaged with the course and a motivation to improve. As such their experiences can provide valuable insights into student transition and the factors contributing to failure in the first year.

In the context of engagement with the course, attendance is recognised as a fundamental indicator of engagement and is correlated with subsequent success (Tinto, 1975; Roddan, 2002). Attendance is monitored at all teaching activities and none of the students interviewed in this study had had an official warning for non-attendance.

The make-up of the group of students does show differences by comparison with the whole year group in that there were higher proportions of students for whom English was not the first language and also of students who had entered the course via non-A-level routes, both of which have been identified as factors contributing to increased risk of failure (Yates and James, 2007). Experience of language difficulties was commented on by the overseas students.

It was noteworthy that only one of the students expressed surprise at having failed. This perhaps reflects the nature of the exams in the first year, which tend to be multiple choice and short answer questions. Particularly in the case of the latter, most students will have been fairly confident, on leaving the exam, as to whether they had been able to answer the questions or not. There may also have been the expression of an appreciation by the students of not having done enough work in preparation for the exams.

Over half of the students claimed they did not really know what to expect in the exams, particularly in terms of the level of detail, and there were comments that the examinations in the second semester were easier because they had the previous experience of going through the system. This observation was rather surprising in that care is taken to help the students prepare for the assessments through the use of formative exam papers and the provision of sample papers, with answers available, posted on the virtual learning environment. The students also undertake a significant amount of coursework for all of the modules, in the form of practical reports, tutorial essays and presentations, all of which receive rapid feedback. However, we will be investigating further the assessment structure, to see whether the lack of clarity of expectation about the level of detail required is more widespread amongst the year group as a whole and to try to ensure that there is no 'hidden curriculum' (Sambell and McDowell, 1998).

Almost half the students recognised that they had not done enough work and for some the failure was clearly a wake-up call. Two of the common reasons, however, could be categorised as potentially de-motivating features of the course structure: firstly, the first year is only a qualifying year, and therefore there is no real external driver to gain high marks. It is well reported that assessment is a key driver for learning (Brown and Knight, 1994; Snyder, 1971; Sambell and McDowell, 1998). As indicated by the responses of some of the students, knowing that they only had to gain a pass mark and that the result did not count towards the degree meant that they adopted a deliberately strategic approach to work, aiming to achieve a pass but not much more (Elton, 1988).

Secondly, one of the aims of the programme is to provide coverage across the breadth of biological sciences, so that the students have a broad foundation. As a consequence, though, there is no choice in the first year. Some students may therefore find that they are studying modules for which they have little interest and so do not engage adequately with these topics (Elton, 1988). There was a counter to this as well, though, in that students also reported spending more time on those subjects in which they felt they were weaker and, as a consequence, not enough on those that they perceived to be their strengths.

The transition of educational styles between school and university was flagged as being of significance in terms of the effects of class size, independent study and the level of work. These are also aspects that have been identified as significant contributors to early student withdrawal, though in this context, class size has been linked with a sense of the lecturers not caring about the students (Harrison, 2006), which was not, though, the perception of the students interviewed in this study.

The level of work and having to study independently were real problems for a number of the first year students who were interviewed. In many schools, the year 12 and, particularly 13 classes are small and students receive significant amounts of individual support and direction, which is not available in higher education. At the same time, the speed of coverage of the material was significantly increased. It is noteworthy that several of the students also reported that their teachers had told them that they would find studying at university was easier than A level!

It is of interest that, although the students recognised that they had not studied the topics in enough detail, not one of them attributed their failure to a lack of understanding of the material. The underlying assumption was that if they had worked harder and been better organised, they would have passed. To a large extent, this belief was borne out by the fact that 11 of the 13 students successfully progressed following resits. Again, this may be a reflection of the self-selecting nature of the group who signed up for the study.

The School is developing a number of additional interventions to try to mitigate some of the main factors identified by the project, these include: introduction of a peer mentor system, which has been run successfully now for one year using trained 2nd and 3rd year mentors and which received very positive feedback from the 1st year students. In the 2007-08 academic year we will be piloting a series of weekly, on-line formative assessments designed to increase early engagement with subject material and to provide very clear guidance regarding expectations of level. We will also be specifically addressing, with the students, the outcomes of the study in the 1st semester module on study and communication skills.

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Communicating author

Jon Scott, School of Biological Sciences, University of Leicester, University Road, Leicester, LE1 7RH.
Tel: +44 (0)116 2523083 e-mail: js50@le.ac.uk

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Appendix 1: Summary list of questions used in interviews

Phase One Interview

- Did the exam results come as a surprise to you?
- Why do you think you failed the exam/s?
- Do you have any family members who have been to University?
- Was Leicester a first choice?
- Do you find studying at University different from studying at school or college?
- Was the subject content different from college?
- How was your time spent in the first semester? (time spent on independent study, paid work, extra curricular activities, domestic responsibility)
- How confident are you about future exams?
- Where did you go for advice and support in the first semester?

Phase Two Interviews

- What were your exam results like for Semester Two? Were you happy with them? Were they what you expected?
- Why do you think they were different/the same from Semester One? (Did you approach your exam preparation differently?)
- What other aspects of your second semester were different from semester one? (time spent on independent study, paid work, extra curricular activities, domestic responsibility)
- How confident do you feel about starting your second year?
- What experiences have you gained from your first year that you think will be useful in helping you to succeed in your second year?
- Do you intend to make any changes to your approach to study for your second year?
- Looking back over the first year, what do you think were some of the best ways in which the School supported you? Where do you think the School could make improvements?