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DESCRIPTIVE ACCOUNT

Enhanced Induction into a Science Top-up Degree – Easing Transition from Further Education Institutions

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Abstract

Induction for students entering university at level six is often less in-depth than that for students experiencing higher education (HE) for the first time. A week-long 'Enhanced Induction' was developed specifically tailored to the concerns of the staff and students involved in an Animal Science 'Top-up' at the University of Worcester. The concerns raised are examined and related to potential causes and remedies. The materials that were developed successfully broke down perceived or actual barriers and came in three categories: institution specific, subject specific and level specific and used relevant topical examples throughout. There was an emphasis on student-centred learning and dialogue that proved very successful. The success of the Enhanced Induction was assessed by comparing the module results, final awards and withdrawal rates of these students with those of the previous five cohorts who had not received such a structured induction. These indicated that the Enhanced Induction was successful in achieving its aims. The materials are easily adaptable to other institutions and are available for dissemination.

Keywords: FEI, HE, induction, barriers, top-up

Introduction

While there are a lot of induction courses and summer schools preparing students for their first year of tertiary education, especially at university, and much literature has been published about this (e.g. Tansey & Keane 2012, Lowe & Cook 2003), much less support is generally being provided to students entering university science courses at a later stage. Partly this may be due to relatively small cohort sizes and also that the students have already signalled a firm commitment to study at the relevant Higher Education Institution (HEI) and thus related efforts would not contribute to recruitment of new students. Barron & D'Annunzio-Green (2009), provide an account of the range of learning, personal and working issues experienced by a group of direct entry students to a business school of a Scottish university and their findings are similar to those of this study.

Top-up degrees are one-year, level six courses. This puts the students in quite a different situation from their peers who 'merely' enter the final year of a three year full-time undergraduate BA or BSc Honours degree. Students move onto a top-up mostly after having completed a two-year vocational qualification such as an Higher National Diploma (HND). HNDs can be undertaken in HEIs or in Further Education Institutions (FEIs) such as colleges. In 2005–2006, almost 94,900 students were enrolled on around 4800 higher education (HE) programmes at 260 further education (FE) colleges (QAA 2006). In 2007–2008 113,000 students (based on full person equivalents) undertook HEFCE-funded HE programmes in FEIs (HEFCE 2012). The project reported on here aimed at easing the transition of some of these students to Top-ups (level six academic study) of science on the foundation of such a two-year vocational qualification.

Brick (2006) states that universities are complex public institutions with distinctive culture, where new students face several challenges at the early stages to adapt a new ethnicity. This seems to be still the case for students that have experience of study at HE level but are new to university. The adjustment to a new institution itself presents a challenge with students often lacking appreciation of what life, work and expectations at the new place of study entail. In the past, students who progressed from a variety of externally provided courses [HND and Foundation Degrees (FDs)] to the BSc (Hons) Animal Care Science Top-up at the University of Worcester (UW) were generally found to be less well prepared to meet third year expectations than students that had completed the first two years of HE study at UW. To some extent this reflected a lack of confidence on the part of the students with regard to entering an institution dedicated exclusively to HE, as many had come from FE colleges teaching some HE. However, our experience is that these learners tend to be very receptive to support. Previously the support and skills needed for this course had been delivered over the year. However, there were clear advantages to equipping the students with these beneficial tools during a dedicated intensive period at the beginning. The reasons for, and validity of, these concerns, and ways to overcome the perceived barriers, are discussed later and reference is made to which pedagogic concepts were used. Benefits of the approach described included that it allowed integration, embedding and practice of skills before summative assessments as well as catching the students at a receptive time (when they are attentive and motivated), when other pressures on them were less, as well as instilling a sense of community and confidence in them. The 'articulation across the further education/higher education (FE/HE) interface' was investigated by Knox (2005) who also reports on a dedicated generic module.

A pertinent quote reveals the importance of good induction for the institution involved: 'Poor induction practices have been linked to poor retention. It has been noted that the quicker a student settles into university life and makes friends the more likely they are to stay and achieve to the best of their ability' (Stone 2004).

Following student and lecturer feedback, an 'Enhanced Induction', targeted specifically at Top-up students, was developed with funding from the Hereford and Worcester Lifelong Learning Network and delivered to a cohort of students in September 2009 to prepare the students for entry to level six academic study and ease transition to the new learning environment. A referencing quiz was designed as an e-learning game to make it fun and therefore encourage engagement, to bring the students up to the standard of referencing needed at degree level in a way that allowed them to work at their own pace and to allow them to revisit it at any time. The quiz was taken up by other departments and by Student Services for wider use across the University which indicates that it was widely considered to be a useful and effective tool. This is available for adaptation or use.

Materials were developed or adapted specifically to target the educational and subject specific concerns of the students and the staff. The overall aim was to bring the students'

abilities and confidence levels in line with that of the students on the three-year UW courses.

Our objectives were to:

1. raise the level of subject knowledge and practical skills
2. support the students in their endeavour to become independent learners
3. raise awareness of their responsibility to engage with the subject of their studies
4. create an understanding of expected levels of academic achievement
5. build their confidence in a new, supportive, learning environment
6. facilitate an appreciation of the value of the UW learning community

Background to the Sessions

The sessions were designed to respond to the concerns of both students and staff.

Concerns raised by staff

A perceived lack of academic rigour in student work, referencing and 'learner incompetence' issues (mostly relating to ethical use of others' work); student expectation of guidance provided is too high, confounded by a lack of independent research and learning skills; insufficient experience of some practical (mostly laboratory-based) skills.

Challenges perceived by the students

The programme was developed on the basis of past students' concerns and then adapted to the specific needs of the present cohort who were invited to identify their needs and concerns in early dialogue with the tutors. These centred largely around 'what makes the year different from what they have experienced before'. They conveyed that they felt unsure about expectations placed upon them, the availability and approachability of lecturers, what options they had after the Top-up, how their grades would be affected by the new environment and how regulations might be different at HE level. More generic issues were that of being in a HEI in general, finding things, fitting into established groups and, simply, 'how to cope'.

The areas covered in sessions

The sessions were developed by two senior lecturers in Biology specifically in order to address the concerns voiced by staff and students. They were delivered over the course of a week and can be subdivided into three categories, albeit with some overlap.

Category one (institution specific)

- Course documentation, general induction (similar to that for level four students new to the institution)
- Familiarising with campus and personnel
- The role of student services and ILS (UW Information and Learning Services)

Category two (subject specific)

- Advanced laboratory skills (including Health and Safety)
- Scientific method and application
- Writing of scientific reports and essays

Category three (level specific and transferable but using science-related materials):

- Advanced referencing and avoidance of plagiarism
- Study skills
- Careers information (important particularly to learners at level six)
- Critical thinking: logic, argument, challenges and advantages of team work (introducing the idea of building a team to fall back on in challenging times), questioning and evaluating information, scientific method
- Extended session on academic expectations: providing examples of typical assessments, NICATS levels (NICATS 2002), peer assessment using grading criteria, evaluating and adapting assessment briefs. Assessment templates and past student work were discussed.

There was also a conclusion and feedback session.

Approaches used for delivery of the material described in the categories mentioned earlier

Institution specific resources were presented to the students and they were encouraged to engage in collaborative work on these in order to build confidence and introduce them to others in their cohort and enhance their team working skills. For materials, cooperation with other sectors within the institution was utilised as some sessions created for level four students could be adapted for the Top-up entrants. Interactive materials and fact-finding missions made various parts of this student-centred and fun. Introducing the students to the concept of a 'learning community' made them aware of support available not just from the academic and pastoral side but also from their own environment, as well as suggesting to them how they could contribute to the learning community. Interaction with relevant staff in their normal working location lead to familiarity with campus and staff as well as breaking down perceived boundaries and encouraging dialogue.

The project aimed to be subject-specific in order to cater for the student cohorts' shortfalls. Lack of resources, time and staff expertise at the feeder institutions can result in deficiencies in practical laboratory-based activities although the students were confident in other areas important in vocational qualifications without being particularly aware of having those skills. Part of a session was dedicated to enabling the students to realise which skills they had already developed and how these would be best presented at an interview or on a CV; the emerging lists boosted the students' confidence. The laboratory-based activities were chosen with reference to student demand, and included laboratory safety, microscopy, staining and other wet bench work, colorimetry, titrimetry and gravimetry followed by a tour of the facilities demonstrating other equipment and making them aware of the potential for use in their dissertation projects. This session was particularly well received and this was perceived as resulting from the students coming from vocational backgrounds. Many identified themselves as having strong kinaesthetic learning abilities. It also introduced them to options for their research project and to the technical staff available to support them.

Referencing and plagiarism policies can differ between institutions and in order to be able to enforce UW rules these had to be explained. An interactive program was created specifically utilising scientific articles with a relevant biological background to refresh and update the students' skills.

Subject specific careers information was provided highlighting the importance of presenting a confident image based on the skills developed. The session on critical thinking was designed to make the students more aware of the critical engagement expected at

level six by first formalising principles of logic, argument and problem solving and then putting these into practice in a non-threatening environment on science-based applied examples that appealed to the cohort. Students learnt to question data put before them and to search for any hidden agenda that could lead to biased or non-evidence-based information. The difference between a mere understanding of factual information versus its discussion and evaluation was particularly emphasised.

The session on academic expectations covered several parts, amongst which were peer assessment and use of UW specific templates for assessments to create familiarity with the system. The session utilised the concept of 'constructive alignment' (Biggs 2003) without expressly mentioning it to the students. An insight was provided to the lecturer's perspective, by getting the students to adapt grading criteria and criticise an assignment brief in the light of the appropriate NICATS levels.

The enhanced induction program was designed to be student-centred and to further the student's confidence in their own abilities and skills and to stimulate their feeling of responsibility for their own learning by using directed study, discussions and activities. Particular emphasis was placed on providing a supportive learning environment through informal delivery (making use of the concept of 'transactional analysis' as developed by Eric Berne in the 1950s) and team teaching (which also created a good rapport with key staff and allowed instant feedback between members of staff on pedagogic value).

Results

Apart from verbal and written feedback directly from the students participating in the Enhanced Induction, their academic performance was assessed by comparing their results to those for the Top-up students from the previous five years (who had not received the specifically tailored Enhanced Induction). This included achievement for all individual modules taken, final awards and for withdrawal rates. No statistical tests were carried out as the groups were too small to render statistical test meaningful.

Each student took six 15-credit modules, of which four were compulsory and the other two were selected from a choice of four. Additionally they completed a 30-credit dissertation in their Top-up year at UW, allowing them to achieve the necessary 120 credits for the year. The grading system used for all modules has ten points to each grade, for example D+ is 95 to 114 points, C- is 115 to 124. In four of the five modules from semester one, the Enhanced Induction students achieved higher results than the means of the Top-up students for the previous five years who had not experienced a tailored in-depth induction. The results were 21.9, 24.5, 13.8 and 12.4 points higher than the mean for the earlier groups, i.e. one or two grades higher. In the fifth module, the Enhanced Induction group fell 4.7 points below the mean. This was a module with a vocational emphasis, similar in nature to their HND modules. Indeed, it was taught by one of their previous HND lecturers, so it is possible that the student's newly acquired HE skills were not fully tested in the assignments for this module.

In the second semester the Enhanced Induction students also gained higher results than the mean of those of the previous five years in three modules, but by a smaller margin (14.7, 4.1 and 7.6 points). However, there was a marked improvement in the 30-credit dissertation results. This dissertation comprises a work of independent study (with some staff support and guidance) and is based on a practical investigation which is planned in semester one and completed and written up in the following semester. The Enhanced Induction students gained considerably higher results than those of the preceding five groups and achieved 25.1 points more than the mean. These results seem to have been reflected in the degree awards with all the Enhanced Induction students obtaining a First or Second class honours. However, caution is needed because of the small numbers of students involved. Withdrawal

rates were 5% lower than the mean of the previous five cohorts of Top-up students, but this figure varied greatly.

The Enhanced Induction programme seems to have led to a general improvement in results. This was greater in the first semester indicating that the students had acquired the necessary skills and approach to independent learning much more quickly than the previous cohorts and this had enabled them to perform better in assessments, i.e. the programme had successfully eased the students' transition into HE. Certainly their academic and pastoral tutor noted that they seemed to be less anxious than students from earlier cohorts, and this was particularly noticeable towards the end of semester one when the first assignments were due.

Although the students who had been on the Enhanced Induction achieved higher results than the previous cohorts, the difference was less marked in the second semester. It is conceivable that, by this stage, the students in the previous cohorts had started to acquire the skills and attributes needed for HE level which those who had been given the Enhanced Induction had developed much sooner.

Feedback and plans

Challenges perceived by the students at the beginning of the induction had all been addressed very successfully by the end. Similarly, issues that the students had not been aware of, but that were apparent to the lecturers from past experience, were addressed. It proved valuable to assign all Top-up students to the same academic and pastoral tutor and to make other academic staff aware of the presence of top-up students on their modules.

Materials were adapted for wider use in the light of the first run and most were found valuable for use in other contexts; e.g. 'critical thinking' for second year student tuition in transferable skills (in a dedicated personal development plan programme developed in the Institute of Science and the Environment) or in an introduction to second year to emphasise higher level academic skills. Other materials could be modified with ease to improve practicals and lesson material for other cohorts as the materials contain many examples for applied problem solving.

Discussion

The Enhanced Induction required a large input of staff time throughout the week. However, there appear to have been significant benefits to the students, which made this a very worthwhile exercise. In FE staff are often selected on the basis of their expertise in the industry and versatility in teaching at various levels of FE. The students were aware that (in the Top-up) they were likely to be exposed to academic staff with more experience in research and HE pedagogy. In the cohort examined, most of the students happened to originate from one institution where 25% of their HND modules had been taught by UW staff as the relevant HE provision of the college was validated through the UW. Thus these students had already experienced some differences in teaching and lecturing styles, academic expectations and the requirement to take responsibility for their own learning (albeit adapted to HND level) while having the 'safety' of a small department, a vocational course, and well known, accessible key staff. This somewhat lessened their anxiety about their ability to cope with the academic demands of a science degree course but did not reduce their concerns about feeling isolated and lost in a large community. The Enhanced Induction was able to allay those fears by clearly demonstrating the expected level of achievement at the University (with regard to academic standards, independent learning, etc.), increasing their confidence by making them aware of the skills that they already possessed and impressing on them that staff were still aware and supportive of students' concerns.

The students did not appreciate the short-time frame available to develop the higher level skills needed for their level six assignments. Clearly, clarifying the level of expected

academic achievement using NICATS before the course started was therefore beneficial. During the Enhanced Induction they fine-tuned their independent study skills by becoming more confident in literature searches, using inter-library loans, critical engagement with facts and data and logical thinking and argumentation. The work on grading criteria and NICATS levels particularly clarified the differences in emphasis between level five and six work. The students commented that all students would benefit from being made aware of grade descriptors very explicitly such as the NICATS version (NICATS 2002).

The difference in academic ability of students who have undergone initial years of tertiary education in an FE environment compared to those in a pure HE environment may be due to:

1. the different staffing strategies at the institutions, staff teaching loads and their experience in HE teaching and research versus their experience in the vocational field and their access to continuing professional development (CPD) (e.g. subject specific conferences and HE learning and teaching strategies).
2. applicant profile: student confidence based on previous experience in education, their perceived academic ability and sometimes their socio-economic background. The external examiner for the UW Top-up commented that: 'The course is demonstratively providing an excellent opportunity for students with a non-traditional or weak academic background to find a route to success'. Issues surrounding academic self-concept, self-esteem and academic stress are student-centred variables that have been found to influence students' experience in HE and were investigated in a study of direct and re-entry students (Michie *et al.* 2001).
3. the differences in interaction between lecturers and students – pure HE institutions placing more emphasis on independent and reflective work practice.

While FEIs can have a valuable role in bringing HE to under-provided areas (HEFCE 2009), Top-ups can provide a valuable tool for widening participation and allowing students who may initially have been wary about attending university to achieve their potential. However, there can be a perceived, or actual, gap between the levels expected at HND/FD and those required for a science degree course which could limit the success of students following this route. It would seem that this gap can easily be bridged by a dedicated enhanced induction as presented above.

Conclusion

The Enhanced Induction has been successful both in the eyes of participating students as evidenced by: informal and formal student feedback; student academic performance compared to that of previous cohorts who did not experience such an in-depth induction; and, the experiences and opinions of the lecturers teaching the Top-up students who were able to compare them with students who had already been studying at the Institution for two years. The Enhanced Induction caters for students who have experienced HE at FEIs as well as those that entered a different university for the last year of their undergraduate study. The materials developed are generic enough for use in other institutions teaching Biology, apart from those materials that are institution-specific, e.g. relating to local resources and regulations. However, the latter are usually already developed for induction of first year students. The materials ease transition to the new environment and show how university can better cater for students that join later in their academic career.

Availability of resources

There is a useful 'good practice guide' for Induction, specifically for top-ups online in the Uplace Repository (Uplace 2011). The resources used in the Enhanced Induction

programme are adaptable and contain many further options in some subsections (e.g. for problem-solving) and they are also available on a DVD structured as follows:

1. Course documentation
2. General introduction to Top-up
3. Advanced referencing and plagiarism
4. Academic expectations (part one, two and three)
5. Finding your way
6. Critical thinking (part one and two)
7. Life after Top-up
8. Advanced laboratory skills
9. Student services and Information and Learning services session
10. Conclusion and feedback

Resources can be obtained by contacting the Institute of Science and the Environment at the University of Worcester via ise@worc.ac.uk, including s.prankel@worc.ac.uk and l.weaver@worc.ac.uk or ringing relevant staff at the University of Worcester.

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