[P38] Development of entry-level formative assessment packages for MSc students

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Due to the nature of science education we (within the University of Wolverhampton, and at other institutions, Gibbs and Simpson, 2004) carry out a considerable number of formative assessments, especially in the form of practical write ups. However, these are very often summative at the same time with grades being assigned to the work. This is especially the case at Masters Level. Assignments that are purely formative in nature are extremely rare within the Forensics and Molecular Biology group (SAS) at postgraduate level. The reasons for this at Masters level may be due to the assumption that the students are well developed before they arrived, and the one year nature of the course leading to strict time constraints. Our recent experience of these students suggests that their previous subject knowledge is variable and patchy. Hence there is an urgent need for early formative assessments that highlight the students' most appropriate learning strategies.

Formative assessment can be defined as a task which is intended to inform students about how to do better (Knight, 2001). Considering the importance of formative assessment it is perhaps surprising that in universities in general we are seeing a decline in this activity. Resource constraints are the main factor leading to a reduction in the quantity, quality and timeliness of feedback (Gibbs and Simpson, 2004). Within the Forensic Science and Molecular Biology group these constraints are also being experienced. This has recently been exacerbated at MSc level by growth of the number of students on MSc Microbiology and Biotechnology and MSc Bioinformatics and Molecular Genetics. Cohorts combined on these degrees have normally been between 10-20 students. At present the combined cohort size is 35. Traditionally these courses have attracted students which are UK based. In the last few years we have seen a large increase in the number of overseas students, such that the vast majority of MSc students are international in origin (**Table 1**). The first degree studied was also very varied. We have found that this has raised a number of concerns for us beyond the obvious worries over levels of English ability, most notable of which is the level of subject specific knowledge. The diversity of students means that far more guidance is likely to be required (Gibbs and Simpson, 2004).

We have undertaken the development of a formative assessment system that both allows the student to assess their current level of knowledge and provides guidance on the material that needs to be covered to improve. Questions were structured according to level (equivalent to undergraduate years one, two and three) and academic topic (e.g. Menedelian genetics, transcription, genetic manipulation). This has been developed on the University's own virtual learning environment (WOLF). The assessment was designed to give immediate feedback on performance and guidance to where to find out more about the topic, as the feedback should be as prompt as possible to engage the student (Black and Wiliam, 1998). An example of the questions and feedback provided is shown in **Figure 1**.

Country of origin	2005/6	2006/7
UK	3	2
India	16	12
Nigeria	2	2
Ghana	1	2
Cameroon	0	1

Table 1: Countries of origin of students registered on a typical MSc module

24. An intron is best described as what?

- ○ A region of DNA always found at the end of chromosomes
- ○ A region of DNA that surrounds nucleosomes
- ○ A region of DNA which controls whether a gene is switched 'on' or 'off' (expressed or not expressed)
- ○ A region of DNA which is found in a gene which codes for "junk" and is removed during mRNA processing
- ○ A region of RNA which interferes with the process of transcription and translation

24. An intron is best described as what?

Feedback

An intron is the region of a gene which does not code for messenger RNA and is often referred to as junk DNA. The exon is the region of the gene which contains the coding information. More can be read about this in Instant notes in Genetics Section A2 or here

Your answer: A region of DNA which controls whether a gene is switched 'on' or 'off' (expressed or not expressed) - Incorrect
Answer feedback:
That is incorrect. A promoter at the front of a gene is responsible for regulating the expression on a gene by contolling the rate at which RNA polymerase binds to the gene and transcribes it.

Figure 1: Example of formative assessment and feedback. The link provided (shown as 'here') in the feedback opens in a new window to **http://en.wikipedia.org/wiki/Intron**.

Initial feedback from the students has been very favourable. They have praised its ease of use and commented on how it both provides a useful learning resource and an incentive to study. An evaluation of this formative assessment will be presented.

References

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