On-line Learning Systems in Introductory Physics: How Do Students Use Them and Why?

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BACKGROUND

On-line educational technologies are becoming increasingly important across a range of tertiary studies. Swinburne University of Technology, for example, has the aim of 20% of all student learning taking place on-line by the year 2015. In many situations this involves taking existing traditional teaching and learning activities and adapting them to an on-line environment, whilst in other cases the technology allows for completely new approaches to learning. Important in all cases is an understanding of how students interact with the on-line learning system, since it may be present a range of new issues, both positive and negative.

PURPOSE

This work investigates how students interact with an interactive on-line learning system for an introductory physics unit, both in terms of their observed behaviour and their underlying motivations.

DESIGN/METHOD

Weekly on-line assignments were introduced as a substantial part of the assessment for the introductory physics unit at Swinburne. The on-line system routinely collects data on student behaviour, such as time-on-task, relative timing of completion, amount of not-for-credit material completed. This is analysed in terms of class averages, as well as trends across the duration of the semester. This is complemented by data from student surveys and focus groups, aimed at eliciting some of the issues and reasons behind the observed student behaviour.

INTERIM FINDINGS

Quantitative data from the on-line assignments indicate a pattern of student behaviour that differs from the typical “last-minute” “bare minimum” completion. The survey data, still being analysed, contains a variety of responses indicating possibly a rich and complex set of issues that affect the way students interact with the on-line learning system.

FURTHER RESEARCH

The survey questions need refinement to draw out some of the more subtle points concerning the “how” and “why” of student approach to the on-line assignments. This refinement will be directed partly by the responses to previous surveys as well as from the analysis of focus group responses.

CONCLUSIONS & CHALLENGES

Whilst the students undertaking the on-line assignments can be readily sorted into one of several categories by the quantitative data gathered so far (i.e. students who complete all of the assignment questions, those who complete the bare minimum for full marks, the students that struggle to complete any of the assignment questions), it has become apparent that the motivations and constraints for the students cover a much wider and more complex

range. The challenge is to use the initial findings to develop more appropriate techniques to explore the various student behaviours. Ultimately this will be able to inform the ongoing development and implementation of the on-line learning system itself.

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KEYWORDS

On-line learning, introductory physics, engagement