



Ignoring the web?: Use of learning resources by psychology and biology students

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Does educational technology help?

Are our first-year students in science ignoring the Web? No, indeed they are not. Their use of web-based lecture notes, for example, approaches the frequency of use of the course textbook in the courses that we surveyed. However, students' reception of the range of educational technology components of these courses varies significantly. We researched the impact of educational technology on students' learning at an aggregate level to find out whether it is necessarily helping those university science students who use it more frequently to learn more effectively, all else being equal. We found that the simple answer is no, at least not for the students whom we studied, who are in large classes in first-year biology and psychology at The University of New South Wales (UNSW is one of Australia's more research-intensive universities). In and of itself, educational technology does not appear to boost the performance of these students across the board, a result foreshadowed decades ago on the introduction of television and video into classrooms (Clark 1983). There is no premium in marks that is predominantly attributable to use of a specific mix of print and online educational resources. What we can say is that the students who receive high marks have entered university with a higher UAI admissions score than their classmates with lower marks.

The apparent lack of correlation between resource use and marks does not prove that educational technology lacks value. Indeed, it suggests that students are finding numerous ways to navigate through the print and online educational resources that we provide. A given set of resource use strategies can produce high marks for some students while the same strategy will not yield high marks for other students of equivalent ability, as gauged by their UAI. In view of this result, one can ask, what exactly is going on in our classes in relation to these new resources—CD-ROMs, online notes, interactive exercises, etc.?

Questions about the educational impact of educational technology—and its frequency of use by students—are rising in importance as lecturers are being urged to make more and more of their material available to students online. For example, half of the lecturers at our university now have an online component in at least one of their courses, specifically via the platform, *WebCT*. Academics are preparing online collections of lecture notes, quizzes, interactive discussion forums, course calendars, submission of assessments, and reading material. Textbook publishers have added CD-ROMs and web sites containing up-to-date supplementary materials. The question remains, though, to what extent is creation of this additional online and multi-media material enhancing students' learning as reflected by their overall mark for a class? According to our study, a textbook web site, for example, does not boost final marks, nor do the students whom we studied seem to employ this resource frequently.

Our study

We addressed these issues by surveying two large (600+ students), first-year classes in science, one in Psychology and one in Biology at UNSW. Our analysis was designed to identify the strategies of resource use that most strongly correlated with higher marks after taking into account other



significant factors, such as a student's UAI, their gender, or their linguistic background (NESB versus native English speaker). The analysis revealed, though, that UAI far outweighed all other factors in both courses as an influence on students' final marks. This result should, for now, be seen as limited in relevance to large, first-year classes in science, where the learning of large amounts of content often seems to be stressed, and a significant portion of assessment is via a multiple-choice exam.

Details on the methods and results of this study can be found in two publications, Huon, Adam, Spehar, and Rifkin (2003) and Huon, Spehar, Adam and Rifkin (2004). In this conference paper, rather than reiterating the range of correlations found in the study, we would like to frame questions stimulated by our research, ones that require further examination and discussion based on our findings.

Questions for Discussion

1. Our study's results indicate that students use more frequently the resources that provide information that is assessed, and they tend to avoid resources that cater to free discussion and unguided exploration, such as a textbook's supplementary web site. To what extent can online resources for large, first-year classes in science help to foster an environment of 'deep learning' in place of what appears to be instrumental, 'surface learning'?
2. Does the array of resources that are currently available—textbooks, CD-ROMs, web sites, online quizzes, online discussion forums, etc.—permit students with a wider array of learning styles, learning preferences, and learning goals (i.e., achieving, satisfying modest goals, or merely struggling through) to learn science in an effective and engaging way?

More broadly, what can be learned about successful strategies for using educational resources, and other aspects of life at university, from studying students who 'out-perform' their UAI and those who 'under-perform' their UAI?

Is the growth of the Internet and of online components of university courses trapping lecturers between a 'rock'—student expectations—and a 'hard place'—institutional initiatives to adopt educational technology more widely? How can this tension stifle and how can it creatively enhance advances in teaching and learning?

References

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