The Role of Personal Computers in Undergraduate Education

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ABSTRACT

This scoping study investigated the role that personal computers play in supporting undergraduate study practice. Monitoring software was installed on the personal computers of five third year students undertaking a summer school course at the University of Otago in 2012. The data showed students’ daily academic use of their personal computers was significantly lower compared with their non-academic use. There was also no obvious relationship found when comparing overall computer use with course assignment schedules. In addition, students’ perceived use of personal computers as captured through self-reports was found to be contrary to their actual use as recorded by the computer monitoring software. The low level of use for academic purposes indicates that the personal computers did not play a significant role in the daily study practices of these students and that the current perceptions that such devices are vital to student learning may be unsound.

Keywords: e-Learning, Higher Education, Monitoring Software, Personal Computers, Student Use of Technology, Undergraduate Study

INTRODUCTION

Over the past decade, higher education has come under increasing pressure to embrace the opportunities presented in the now pervasive and sophisticated world of computer technologies (Farrington & Yoshida, 2000; Gonick, 2002; Kitzy Aviles, 2005; Nijenga & Fourie, 2010). Much of this pressure comes from the belief that computer technologies can change or even improve the way students study and engage in higher education. Certainly, the use of information and communication technologies (ICT) to support teaching and learning has received considerable attention in recent years (Sharma, 2010), with many researchers agreeing that “there is a common trend toward improving learning through a seamless integration of technology” and that “students learning in the modern technology era are highly competent in general computer skills and are more prepared to learn with technology” (Keengwe, 2007, p. 177 & 178).

Nevertheless, there have been dissenters. As early as 2002 a study of students’ perceptions of e-learning argued that student opinions of

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e-learning were generally discouraging (Keller & Cernerud, 2002). By 2004 while e-learning was being promoted as the cure for many of the problems facing higher education, Bigum and Rowan who published their study in the Economist found that students who regularly used computers did worse on standardised tests (Bigum & Rowan, 2004). More recently, Cowan (2011) stated quite clearly that his research had led him to believe that the students prefer using ICT to learn is simply a myth. It has also been highlighted by a number of studies that despite the huge efforts to position ICT as a central tenet of university teaching and learning, the adoption of ICT technologies has been very low with many university students and faculty making only limited academic use of computer technology (Enrique Hinostroza, Labbé, Brun, & Matamala, 2011; Mtebe, Dachi, & Raphael, 2011; Selwyn, 2007).

The aim of this paper is not to continue the debate on whether ICT in higher education is essential, detrimental, neutral or beneficial to student learning, but to investigate the degree to which students actually use their computers to support their studies. A quick search of recent publications on this topic reveals that most empirical research on students’ use of ICT in higher education is based on students’ self-reports of use (Edmunds, Thorpe, & Conole, 2012; Park, 2009). It is our contention that such findings, while relevant to explorations of students’ perceptions of ICT use, fail to offer an objective picture of student practice. For this reason the data gathered for this study was from students’ actual computer use captured through software loaded onto their computers.

METHOD

Five third year undergraduate students (male-3 and female-2) undertaking a summer school paper at the University of Otago and who self-reported as being competent computer users were selected for the study. Two data sources were created: a short computer-use questionnaire and computer activity logs:

- **Computer-use Questionnaire**: A five question questionnaire was compiled to discover the students’ different experiences in using computer technology for their study. These included:
  1. Is access to a computer really important for your university study?
  2. Which of the following best describes you?
     a. I love technology and am among the first to experiment with as well as use them before most people I know;
     b. I usually use new technologies when most people I know do and sometimes I will be one of the last people I know to use them;
     c. I am sceptical of new technologies and use them only when I have to;
  3. Please indicate the percentage of time you use computers to support your studies compared to non-academic use;
  4. How do you rate your ability to use computers?
     a. Expert and skilful;
     b. Fair;
     c. No at all skilled;
  5. Students were asked to rate their abilities against a selection of software programs and web services (incl. academic & non-academic).

The main purpose of the questionnaire was to rank students for inclusion in the study. We were looking for students who perceived themselves as proficient computer users. The results offer a baseline of our students’ self-perception regarding their personal computer use:

- **Computer activity logs**: Computer activity data was gathered using a software programme that captures computer activities by programme type and duration (ManicTime). The software was installed onto each student’s computer and configured to
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