Colloquium

Students’ use of computers in UCT’s ‘walk-in’ laboratories

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Introduction

In a time of decreasing resources for higher education, South African universities are required to respond to the myriad inequities of the past while simultaneously ensuring participation in an Information and Communication Technology (ICT)-enabled future. As pressure mounted at the University of Capetown (UCT) to extend student access to computer laboratories, build bigger and better laboratories, wire residences, improve networks and provide faster computers, we asked what students do with the computers they already have access to, and whether they are using those computers to support their learning.

We realised that our own assumptions about students’ use of computers were based on anecdotal evidence, since a comprehensive survey had not been done at UCT. Nor had the use of ICTs to support teaching and learning been audited in higher education in either the province or the country at the time of the research.

We therefore set out to answer two questions about UCT’s ‘walk-in’ computer laboratories (ones not reserved for teaching): What activities do students engage in, and to what extent do these activities support or relate to UCT courses?

Methodology

We gained a fairly accurate snapshot impression of what was going on through observing and questioning students in five laboratories at different times of the day over six months in 2002. For bureaucratic and geographical reasons, these laboratories were skewed towards the commerce and humanities faculties, but were spread across undergraduate and postgraduate levels. We were able to conduct research in a Humanities laboratory for undergraduates, the Humanities postgraduate laboratory, the Commerce laboratories (ostensibly open to Commerce students only), the Knowledge Common laboratory attached to the library and therefore open to all students, and the laboratory attached to the Centre for Higher Education Development (CHED) and available to all students (from all faculties) taking CHED courses.
Using a mixture of quantitative and qualitative methods, we asked each student if we could observe what he or she was doing at that moment, and if we could ask a few questions. Out of more than 1,000 students, less than a handful said that they were too busy to be interrupted. In each case we observed the activity being undertaken and noted how it fitted into our prepared activity categories. We also noted the software being used. We asked students what they were doing, why they were doing it and whether it was an activity linked to a particular course. Their answers were noted in a useful open narrative space.

Sample
We observed 1,023 students of whom 56% were female and 44% male. Most were undergraduates; only 14% were postgraduates. Given that there are few facilities available only to postgraduates, this suggests they are more likely to have their own computers at home than undergraduates, but we did not collect data on ownership.

About half the students were studying Commerce courses, 39% were from Humanities and 9% were from other faculties. Given that far fewer than half our observations were in the Commerce laboratories, the Commerce percentage was interesting but perhaps unsurprising given Commerce has more web-supported courses than any other faculty (Czerniewicz, 2002). Of the students observed, 21% were not South African. Possibly our international students are more techno-active or perhaps they have less access to computers off campus.

Conceptual categories
Computers and their related networks are used primarily for content or information and for communication. We adapted Laurillard’s (2001) broader conversational framework and set up five categories of learning activities.

Reading content meant students were engaging with a specific text, usually consisting of words, but it could also include numbers, images, sound, and so forth. Reading also included taking of notes and any activities that helped students to become familiar with specific content.

Accessing content meant students were engaging with non-linear interactive media forms, usually the Web, looking for and finding content and information in the broadest sense. This content could be academic and course-related, or not. The activities included perusing, skimming and searching, but not reading as in engaging with a particular text.

Communication meant students were engaging in person-to-person communication, in all forms, including one-to-one, one-to-many and many-to-many.

Application referred to guided tasks or to practising tasks, in which students were applying or implementing what had been read about, demonstrated, explained or modelled. These activities were likely to be structured and completed in a short specified time.
Synthesising activities were those in which students used productive media forms. Their tasks involved bringing together a range of content and skills and often included several sub-tasks, but the activities were not specific and guided, as in application-type practising activities.

Support activities were students’ housekeeping and administrative activities.

Findings
Table 1 shows that the most frequently observed activities were synthesising content. This is unsurprising in a university which does not accept handwritten projects and essays, and where the majority of students do not own their own computers. Communication activities were observed nearly as frequently.

We observed that 66% of students’ activities in the laboratories were directly related to courses they were studying. Many activities considered not to be course-related had important learning support functions.

Reading content
Of the students reading content online, 29% were reading course-related material (lecture slides or course notes) provided or written by a lecturer. Almost a quarter of these activities (23%) involved reading an assigned article online or content in a given web site. Most of the reading activities (73%) were done using a web browser. Almost half (48%) of those reading content online were reading a newspaper or news sites (in English and other languages). While such reading was not reported as course-related, it could certainly be considered broadly educational.

Accessing content
The students accessing content were involved in guided course support activities (9%), general (non-guided) course-related activities (49%) and non-course-related activities (45%). The first group performed guided searches or retrievals based on URLs and specific guidance from lecturers. This sub-category included finding information on the speed of sound in air using a list of provided URLs and checking share prices at a given site for a tutorial.

<table>
<thead>
<tr>
<th>Category</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessing content</td>
<td>178</td>
<td>17.5</td>
</tr>
<tr>
<td>Reading content</td>
<td>105</td>
<td>10.3</td>
</tr>
<tr>
<td>Communication</td>
<td>240</td>
<td>23.6</td>
</tr>
<tr>
<td>Application of knowledge</td>
<td>130</td>
<td>12.8</td>
</tr>
<tr>
<td>Synthesising content</td>
<td>268</td>
<td>26.3</td>
</tr>
<tr>
<td>Support</td>
<td>96</td>
<td>10.0</td>
</tr>
</tbody>
</table>

The second group conducted their own searches in support of specific courses. Examples here included searching for information about religious creeds for a tutorial and looking for articles about science education. We observed many instances of poor searching techniques and felt that at times students reportedly browsing or doing general searches actually did not know where and how to look. There is a need for more guided activities integrated into courses.

The third group’s activities were not course-related and included checking a personal web site overseas and performing job searches.

**Communication**

Almost all (86%) of the activities in this category were not directly related to courses that students were studying. Yet these activities could not be considered entirely irrelevant given that they included job-searching, writing about curriculum vitae, and researching companies. Moreover, the affective aspects of learning cannot be ignored: communication activities that provide emotional support can be counted as necessary educational elements.

Among the few students pursuing course-related activities in this category, very few indeed (4%) were involved in asynchronous or synchronous discussions. This is not remarkable in a campus-based institution, but perhaps surprising in a context where contact and online educational elements are supposedly merging (Burbules and Callister, 2000).

We did notice that almost two-thirds of those engaged in communication activities were female. This is particularly interesting in the light of studies which suggest that males are more active online (see, e.g., McConnell, 2000, and Barrett and Lally, 1999). Given that females accounted for just over half of the total sample, it might be worth investigating this phenomenon. Less surprisingly, almost a quarter of international students were communicating online; they probably lack access off campus.

**Application**

Given that computers offer opportunities for application, practice, automated feedback and online simulations of situations that may be difficult in the real world, it is disappointing that there is so little evidence of these possibilities being exploited. Such activities made up only 12% of those reported. What was interesting was that the application activities tended not to be text-based but rather involved non-text activities such as building a web site in FrontPage, practising financial statements in Excel and doing calculations of calories as part of an assignment (in Visual Basic).

It is possible that such activities are taking place in teaching (rather than walk-in laboratories) or in the laboratories of other faculties such as Engineering or Health Sciences. It is also possible that lecturers are not yet sufficiently aware of the possibilities of networked technologies to support these kinds of activities.
Synthesis

Synthesis activities were strikingly dominated by writing tasks, with 62% of students writing and 12% editing on-screen. Only 3% were using anything other than Word, and they were preparing presentations. Once again we considered that such activities might be taking place in labs supporting students in different disciplines, given that 91% of our sample were in Commerce or Humanities.

We were interested in the range of writing types that we noted. Some students were literally copy-typing from complete handwritten scripts, which they could not hand in due to the university’s requirement for typed assignments. Others were writing directly on-screen. Most were somewhere in between, using a mixture of notes and reference materials. We also noticed that even those who were writing on-screen were not using functionality in Word that could assist them. We need to find out whether lecturers are aware of the range of possible synthesis activities that can be set for students. There is also clearly a need for better integration of functionality that can support the development of writing skills in the curriculum.

Support

Of the students who were involved in administrative support activities, most were downloading files or printing documents, suggesting that they were getting content into a form that they could take away from the laboratory situation.

Conclusion

What activities do students engage in, and to what extent do these activities support or relate to UCT courses? Our research shows that students are using the walk-in laboratories for course-related purposes a significant amount of the time. It also indicated that non-course-related activities were predominantly educational. We saw no online shopping, no online bookings, no game playing. It is clear that these laboratories are being used almost entirely to support education at UCT and that the investment was a sound one.

We were also able to get a good sense of which computer-based activities students engage in. Our research revealed clear gaps in lecturers’ understanding of the potential of online learning for students, and suggested areas for further staff development.

Among useful unintended outcomes, we found that students were accessing online databases only from the laboratory attached to the library, under the misapprehension that these were not accessible elsewhere. We also noted the dominance of web-based email accounts that use up scarce bandwidth, despite the allocation of local email addresses to students.

Finally, given our primary interest in using computers to support students’ learning, this survey flagged for us important areas of concern, suggested topics for further research, and clarified for us where useful interventions can be made.
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References