Learning Technologies

Prototype classroom project

ABSTRACT

During the 2001 summer holidays, the main Social Science classroom at St Ursula's College, a Catholic Secondary Girls' school of 740 pupils in Toowoomba, Queensland was renovated. A mini-computer laboratory of four nests of computers was incorporated into the traditional teaching space. (See Diagram 1 and photograph). This room was named the Learning Technologies Prototype Classroom (LTPC). An action research project was launched to enable teachers to change their pedagogical practices to integrate information technology (IT) into learning.

Combined with this refurbishment, a Multimedia laboratory containing 54 computers was established in order to cater for the demand for IT. The introduction of these spaces meant that student research and use of IT was extended beyond the two computer laboratories (each with 30 computers) and the Resource Centre offering limited IT access and three teaching spaces. This refurbishment meant that the student computer ratio increased to 5.7:1. The College is networked with fibre-optic cabling and Internet access is available on all computers.

This article explores:

1) The impact of information technology on the use of space within the College.

2) The change to student research patterns because of increased access to IT through the LTPC and the Multimedia laboratory.

Research was conducted throughout the 2001 school year. Quantitative data was collected from staff and students involved in Social Science courses.

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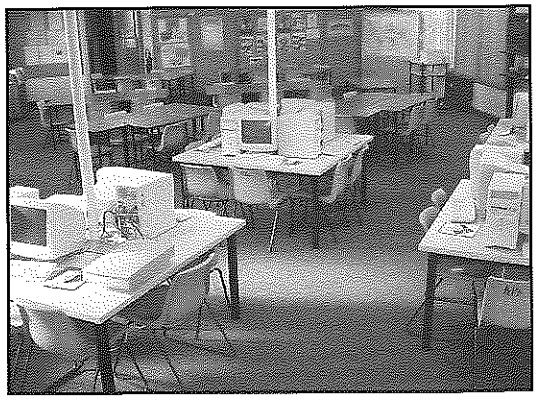
LTPC design

The Learning Technologies Prototype Classroom allows for spontaneous and easy access to Information Technology for Social Science classes timetabled into the classroom.

The number of computers placed in the LTPC and the furniture design facilitates cooperative learning. Fifteen computers placed in the LTPC means teachers can employ teaching strategies that require group work in their curriculum delivery. The design of furniture where the keyboard is central and two students sit side by side to access the computer has allowed for student interaction when using computers.



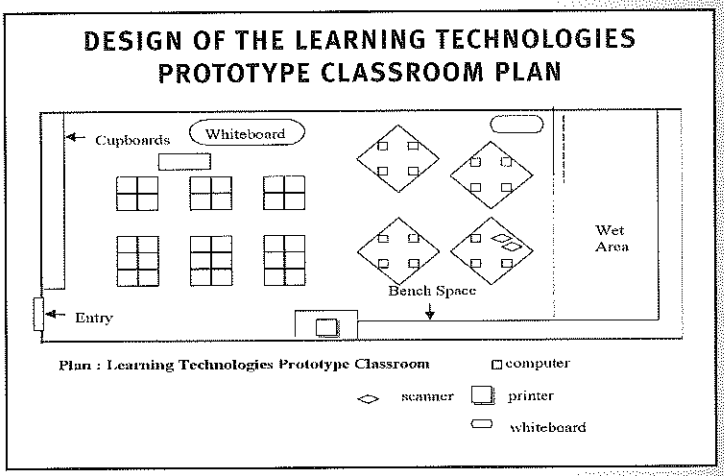


Diagram 1

Quantitative data collection

Log books and booking sheets

Log books were placed in the school computer laboratories and in the LTPC to collect data on room usage.

- Computer laboratory data collected was for non-timetabled class use.
- LTPC data collected was for both timetabled and non-timetabled class use

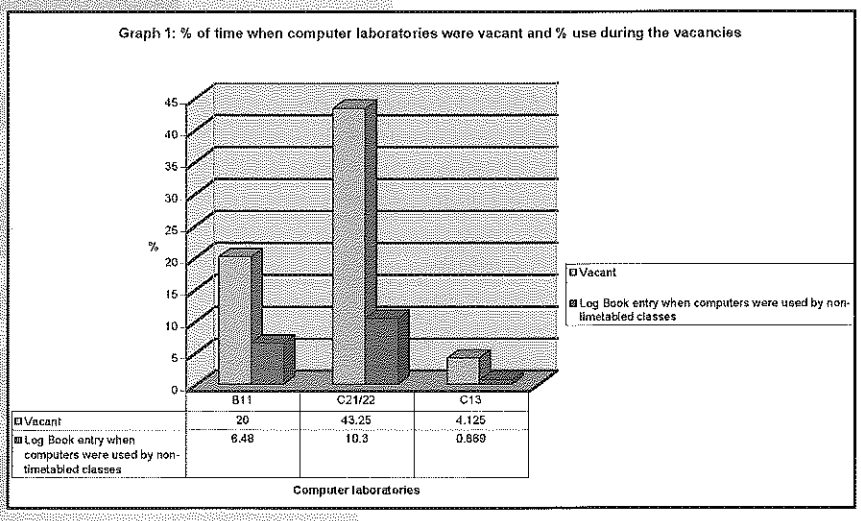
Resource Centre booking sheets data were collated to quantify use of the three available spaces.

Student research tasks

71 students were surveyed about the number and type of resource used when they completed research tasks. Students were randomly selected from Social Science classes timetabled in the LTPC and other classrooms. The students were also asked to indicate the time spent on the types of resource and the type of resource that provided the most useful information.

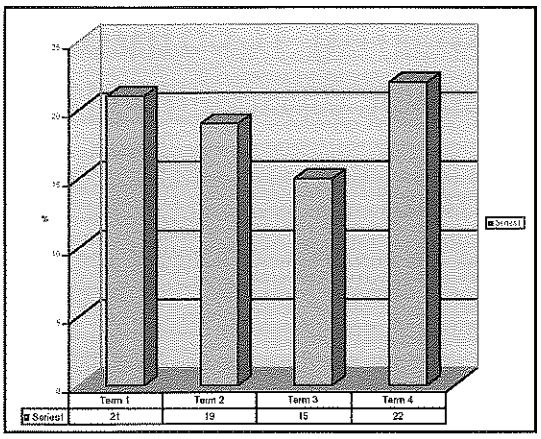
Data collection - Log books and booking sheets

The school has three computer laboratories, B11 and C13 each containing 30 computers and C21/22 containing fifty computers. Graph one indicates a substantial proportion of class times when access to a computer laboratory was possible during 2001. Log Book entries cross-referenced with the Computer Room Booking sheets indicated that these spaces were not being used to their maximum capacity. There were times when computers were available, but not utilised.



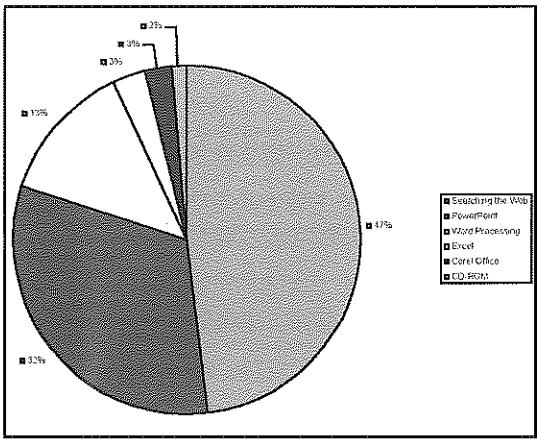
Graph 1: % of time when computer laboratories were vacant and % use during the vacancies

The LTPC classroom was timetabled fully with the computers being used, on average, 19.25% of the time. The usage according to logbook entries changed marginally over the course of the year. (Refer to Graph 2). While there was a steady decline in use from term 1 to term 3, there was a marked increase in use during term 4.



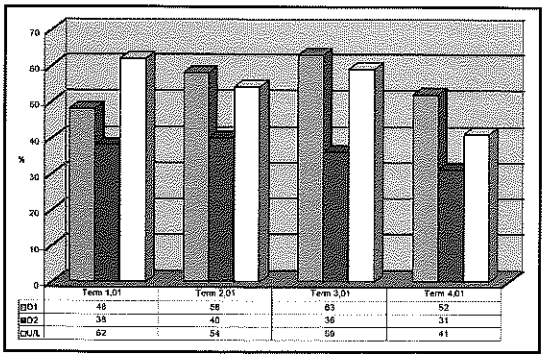
Graph 2: Utilisation of computers in the Learning Technologies Prototype Classroom (LTCP)

Teachers were asked to indicate how the computers were used in the LTPC. Graph 3 indicates that almost half the computer use was to research via the Internet.



Graph 3: The use of the computers in the LTPC, according to Log Book data

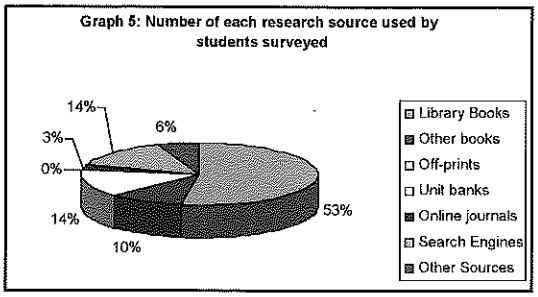
The Resource Centre was available for class use 100% of the time. Downstairs Library One (D1) was the most booked space in the Resource Centre with terms 2 and 3 being the busiest. The occupancy rate peaked at 63% for term 3, but this rate had dropped by Term 4 by 11%. Up to 30 students can occupy D1 and students are largely accessing printed texts and off-prints. (Refer to Graph 4). In the Downstairs Library Two (D2), which seats 25 students, use remained stable throughout the research period, although the average occupancy rate of 36% indicates that this space was available most of the time. The Upstairs Library (U/L) seats up to 50 students and houses the fiction collection. A data projector is available for use in this space and study classes are timetabled into it. U/L use peaked in Term 1 at 62% and declined to 41% in Term 4. Given the versatility of this space the researchers were surprised that the use was not greater.



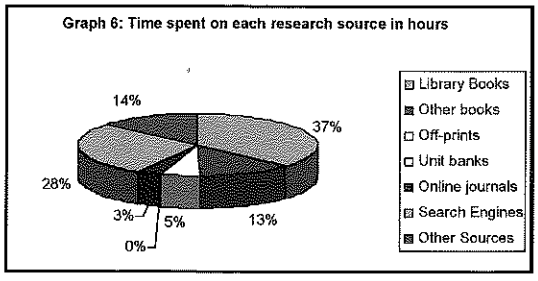
Graph 4: Use of the Resource Centre in 2001

Data collection- Student research tasks

Graph 5 indicates that students were still predominantly using library books, other books and articles (off-prints) in order to access information for research, with 77% of their information acquired from these printed materials. The data also showed that 17% of the research source was using Online journals and search engines.



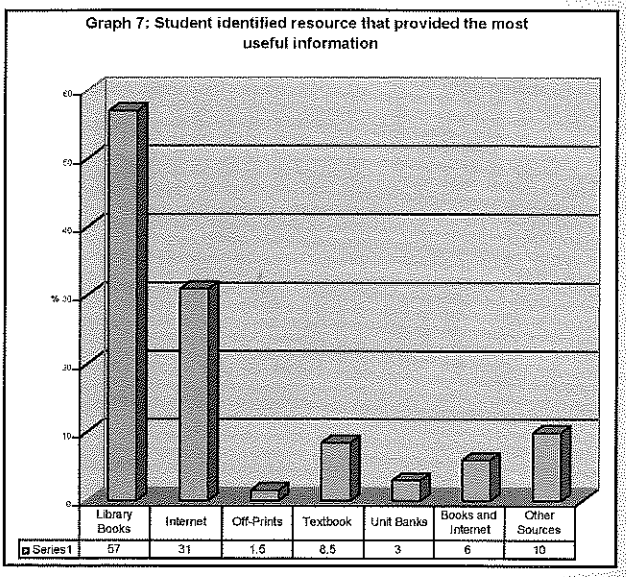
Graph 5: Number of each research source used by students surveyed



Graph 6: Time spent on each research source in hours

According to the findings in Graphs 5 and 6, the students were spending 55% of their time on researching print material, which comprised 77% of the accessed information. Alternatively, 31% of their time was spent searching via the Internet, which comprised 17% of the accessed information.

When students were asked for the resource type that was most useful in providing information on the topic, 57% of students stated library books and 31% the Internet as Graph 7 indicates.



Graph 7: Student identifies resource that provided the most useful information

CONCLUSIONS

Information technology and the use of space

Although information technology has increased the number of spaces available to the classroom teacher, the full potential of these areas is still to be realized. Computer laboratories are available for use and this availability had removed one of the obstacles that classroom teachers state as the reason for not permeating IT into their pedagogical practices. The use of IT in research and multimedia productions has increased. Staff members are moving their classes around the College to use a variety of spaces and the resources; however, the access was not spontaneous. Teachers had to book their classes into the laboratories and the Resource Centre. Planning was needed on behalf of the teaching staff to incorporate IT. Teachers, having this increased access, were exploring the use of IT and increasing their use of the available spaces at the College; however, available spaces and willing teachers of timetabled classes did not always correlate. This goes part way to explaining why vacancies were not always filled.

In the space that offered seamless and spontaneous access (the LTPC), it could be speculated that this facility was being under utilised. Is a 19.25% use of IT in the LTPC enough to warrant similar teaching spaces being established within the College? The teachers with classes timetabled in this space were prepared to experiment and willingly committed

preparation time to develop units of work in the Social Science area to utilise the IT available. The learning experiences offered in these units were more student centred. Teachers in this space found that the spontaneous access was an advantage in their efforts to integrate IT into their pedagogical practices. Teacher readiness to make changes in their pedagogy improved with this continual access.

While the use of the Resource Centre remained reasonably stable throughout the research period, the changes to student research patterns (with the use of library and Internet for research) demonstrated a need to upgrade the IT in this Centre. As a result, the College fitted the Upstairs Library with 15 computers with Internet access in 2002.

Student research and the use of space

Although students had a variety of spaces in which to conduct research they indicated that the Resource Centre print materials provided the most useful resource. They spend 37% of their research time on a resource that provided 57% of their most useful information. (See Graph 8). The researchers have concluded that:

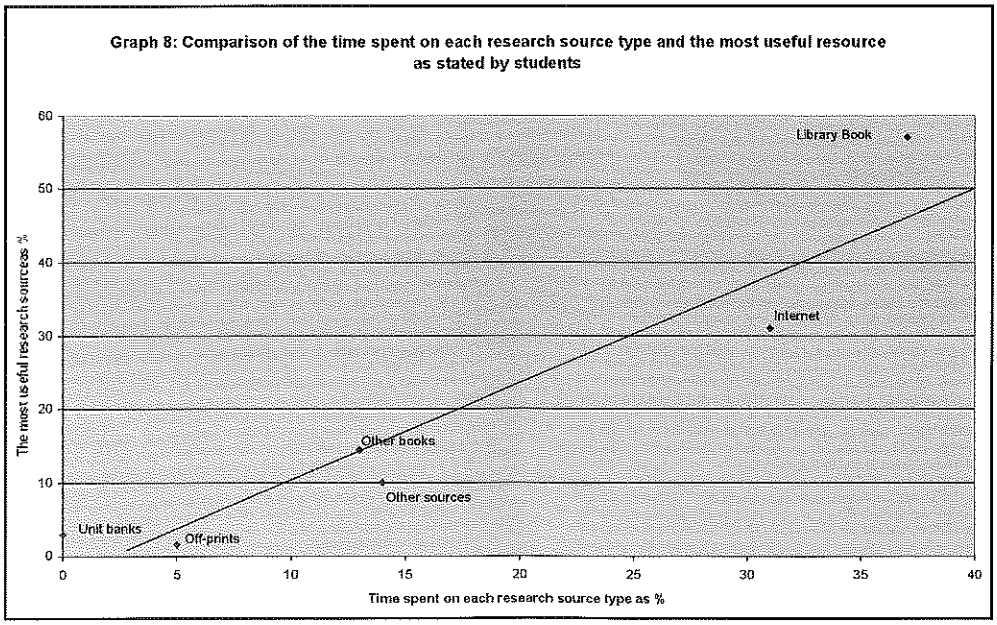
- As books are portable they can be used in a variety of spaces
- Summarizing, analyzing and synthesizing information from books are skills embedded in Social Science units.

31% of their search time was spent using search engines and online journals that provided 31% of their most useful information. (See Graph 8). The researchers have concluded that:

- Students' skill levels in sourcing information from the Internet needs development. This applies particularly to online journals.
- Social Science units taught need to be reviewed regarding the skills of summarizing, analyzing and synthesizing information from the Internet.

While students were using IT for searching the Web, details of how the Web was searched were not recorded. The evidence suggests that although students had seamless and spontaneous access to IT they are yet to achieve sufficient information literacy skills to maximise their use of IT. With the changing pattern of research and increased use of the Internet, there is a need for an effective program to impart information literacy skills to the students.

The LTPC, computer laboratories and the Resource Centre provided teachers with a variety of spaces in which students can access both print and online resources. To use these facilities more often and in a smarter way is an ongoing challenge.



Graph 8: Comparison of the time spent on each research source type and the most useful resource as stated by students