MCA Online Implementation:
Supporting mathematics learning with the Web

An Evaluation Report

The MCA Online project was conducted by the Department of Adult Basic Education and aimed at developing a web based learning environment for mathematics to support student learning within the TAFE Division of Victoria University. The successful completion and launch of this website was followed by an evaluation project which aimed at developing a unit of learning (a module) to introduce MCA Online to students and promote its use by nearly 300 TAFE students studying various modules and units. Another aim of the project was to provide professional development to teachers and build their confidence in using new learning technologies to enhance their class room based teaching and to ally fears that increased use of online technology is intended to replace traditional class room contact with students. The evaluation project focused on ongoing evaluation of maths learning support of targeted groups to identify strengths and weaknesses of the MCA online support system.

The project was evaluated with the help of maths teachers and students enrolled in TAFE maths modules. Nearly 140 students and 8 teachers participated in the trials of MCA Online module. These students and staff were located on 3 campuses and came from Electronic Engineering, Business and Marketing, Womens’ Education, Language Studies and Adult Basic Education programs.

In order to understand the impact of using MCA Online as a maths learning environment we sought to evaluate both the MCA Online website and the print based module developed through this project. The MCA Online website provides the content and resources for maths learning in a flexible way. The MCA module is a print-based resource for students. Using this print-based resource students learn to explore various sections of the MCA website and become familiar with the content of MCA Online environment.
During the trials of MCA module both qualitative and quantitative data were collected from the students and teachers. Students who participated in the program were asked to respond to a questionnaire (See Appendix). Classroom observation and postings on the message board were also used to evaluate the pattern of access and usage by students. The evaluation process provided opportunities to teachers to reflect on the content and the usage of MCA Online website and the training module. Personal interviews and a response sheet (See Appendix) were used to collect data from teachers. The project considered it necessary to seek teachers’ reflections of online facilitation of maths teaching in general and the use of MCA website in particular.

Students’ data from the questionnaire was collated for item analysis and based on this data tentative conclusions were drawn. Notes from classroom observation and personal interviews were used to corroborate findings from students’ questionnaire. Some of these findings and results are reported in the next section of this report.
Achievements, Results and Findings

The project was successful in achieving its objective of developing a print-based module to introduce MCA online to nearly 140 TAFE students of Victoria University. The original target of delivery to 300 students was not possible due to time constraint and other logistic factors such as timetabling arrangements with relevant departments and availability of computer labs to teach maths in settings with computer networks. However, more classes within the TAFE are being offered this module in the current year using recurrent funding from the Department of Adult Literacy and Work Education.

The project also enabled the maintenance of MCA online website on a regular basis thereby allowing new content to appear on the website. The updating of links to external sites from sections of learning units was carried out during the project. One of the key sites, www.webmath.com was taken over by www.worldschool.com and our links to relevant parts of this site needed to be updated. In addition, 3 new toolbox resources were also created for the site making it more relevant for elementary level maths students.

Students’ View

Results from the trials with students show an overall positive attitude. Students have found the content of the site useful for their needs and indicate a willingness to use the resource in future. Ongoing use of the resource was affected by the access issue. More than half the participating students did not have access to Internet from home and were not able to access the website from outside TAFE setting.
Data from the questionnaire confirmed the fact that a large population of Victoria University TAFE Division students now use email services and show a readiness to participate in online learning. Most students were found to be using publicly available free email services. The use of Victoria University students email services (available from http://students.vu.edu.au) was not particularly evident in the student groups participating in this project.

Similarly, the data also confirmed that more than 70% of the participants regularly checked their email. About 30% of these claimed to check their email on a daily basis and at least 40% said that they log on to their email accounts at least once a week. These trends suggest that most students value the use of online services but may not have access to these services on a regular basis. Many students revealed that they relied on university computers to access their email accounts. The same trend was noticed on the MCA Online message board service where most students posted messages only from the university computers. Access to network computers at times convenient to students appears to be a significant factor in the use of MCA Online from outside class hours. It is worth noting that for the trials during this project most maths classes had to be moved to a
computer lab to enable students’ access to MCA Online website. However, this was only a temporary arrangement and most classes reverted to their normal classes after the trial period. As a result many students faced significant problems in accessing the website after the trial period. From the experience it is clear that access to network computers plays a crucial role in the success of online based flexible learning methods.

More than 70% students reported that they found MCA’s resources useful for their maths learning needs. Nearly 50% found these resources very useful whereas 30% found them to be sometimes useful. About 10% of the students were still undecided. In response to a related item on the questionnaire (item 9) many students reported that they needed more time to use these services to truly assess its usefulness. It can be argued that the students’ approval and willingness to adapt to the new methodology of online facilitated maths learning is a positive signal and appropriate scaffolding needs to be put in place to optimize learning opportunities offered via MCA online.

The most preferred sections of MCA Online website were found to be the Message Board, the Learning Units and the ToolBox. These finding clearly confirm the view that electronic communication and feedback are a valued part of online learning environments and students prefer content that is supported with communication and feedback services.
**Teachers’ View**

The project collected teachers’ feedback through a response sheet and notes from personal interviews. Participating teachers were contacted before the trials and relevant arrangements about timetabling and rescheduling classes in computer labs were made. As a professional development exercise, individual teachers were given induction sessions on the MCA online website. During this session teachers explored various sections of the MCA Online website and developed skills in using maths tools available at the website. Later, the MCA module was delivered in a team teaching mode with the course teacher.

Teachers were asked to provide feedback on the interface design, the content and the learning methodologies concerned with the MCA Online website and the module. Generally teachers response and comments fall into two categories. One, where the teachers show a positive attitude towards this innovation and appear eager to pursue arrangements that would enable their own professional development in online environments. The other, where the teachers are keen to compare the traditional methods with new methods and show a cautious and reluctant response to this innovation.

Comments about the interface design were generally very positive. Teachers reported that the instructions were clear, graphics were good and navigation was easy. They found the website easy to manage in terms of moving from one section to another and returning to home page from any location. The teachers did not like the chat facility and found it very confusing and limiting for instructional purposes. Most teachers lacked familiarity with the message board postings and the discourse of threaded discussions. In contrast, students demonstrated a better understanding and fluency in the use of both the message board and chat facilities.

Maths teachers from general education courses found the content of MCA Online very relevant and were generally very pleased with the interactive maths learning content. There were comments about adding special features. For example one teacher said that,

“*I would like more units in ESL maths, perhaps an ESL dictionary*”

Another teacher noted that,

“*I would like more depth – extend the trigonometry range*”
In vocational areas such as business maths, the teachers were keen to offer additional learning opportunities via the MCA Online website but noticed that any sustained use of online services would require more planning of content and assessment strategies. They admit that using online resources in teaching will make their content more realistic and relevant for students.

The project found that teachers are keen to use online learning environments but need substantial professional development both in terms of technical skills and online teaching and learning strategies. Availability of time and resources is seen as a key factor with teachers. The project shows that it is important to recognize teachers’ commitment to innovative teaching and learning.

**Future Developments**
The TLG funded project enabled the development of a print-based module to familiarize students with the MCA Online learning environment. The use of MCA Online is set to increase as more teachers and students become aware of its potential use in their teaching and learning. The content developed for MCA Online is suited for mathematics at pre-VCE levels and the trials have also demonstrated its success with these courses. In order to use MCA Online environment to its full potential and to extend its offering to specialist areas following developments are suggested:

- Mainstream TAFE courses offering mathematics modules are encouraged to develop online components for their courses integrating MCA online resources with their print-based content.
- MCA Online website is developed to include user authentication and tracking mechanisms to enable monitoring of students’ access and use of the website.
- The MCA Online website and its content are maintained regularly to ensure reliability and accuracy of information and services.
- MCA module is offered to a wide range of VU students to increase their participation in online learning
- A distance education (online) module for general education mathematics at CGEA level 3 and 4 is offered. This new module should integrate print based and MCA Online content and services for a mixed mode delivery.