

Evolution of enabling programs through a changing environment

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Historically Charles Sturt University (CSU) provided Mathematics enabling courses to enrolled students in the distance and tutorial mode in January and July each year. With the greatly improved student and community access to internet services and the university's willingness to embrace the benefits to students afforded by online technology, we have been able to enhance our practises.

The original offerings are now supported by on line diagnostic tests and remedial support materials for known problem areas. Our aim is to further improve our on line support with video clips and interactive sessions. We are currently undertaking research to see how these changes have affected student choice and progress. Analysis of the research findings and impacts on further developments will be presented. Discussion will encourage participants to have input on their current best practice and future plans.

In the age of the on-line environment it is important that we continually review our practices of delivery of material to our students to ensure we are providing quality materials and access to all.

The new technologies available ensure that the evolution from print to on line materials is fast and furious. Many assumptions are made in the process and we need to be continually aware of the services we provide to students.

In terms of the theme of this conference "Connecting Voices" this paper provides an insight into the balance required between the University voice, the student voice and connecting them to provide the best learning environment for students.

Our formative research has indicated that we provide quality enabling programs and learning experiences for students. It has also informed us on future directions for our research.

We do need to be very mindful of the ways we distribute information to students to ensure that the hard work taken to produce a high quality on line environment is taken advantage of.

This is supported by evidence from the University of Southern Queensland:

The experience at USQ indicates that the tension between learning needs, technological innovation and access restrictions for undergraduates pulls in the direction of learning needs as programs attempt to cater for independent, interactive and collaborative learners. While with preparatory students the focus is still on access restrictions, especially for students from the equity groups. In both cases further evolution must be slow and careful (Taylor, 2002, p. 74).

This paper discusses the evolution of the on line supported environment from an historical perspective discussing the impacts of our research and its implications for our future directions. It is more a presentation of practice than a true research paper

Charles Sturt University background

Charles Sturt University (CSU) is a regional Australian University with campuses in Albury, Bathurst, Dubbo, Goulburn, Orange and Wagga Wagga. Of the 33,736 enrolled students more than 70% of students study by distance education (Office of Planning and Audit, 2004).

The Student Services division employs three Mathematics Learning skills staff based at Albury (0.5), Bathurst (0.7) and Wagga Wagga (1.0). The role of these staff is to provide ongoing support to all students regardless of their enrolment category and to continue to develop and present the enabling programs in Mathematics and Statistics.

An historical perspective

Since 1998 CSU has provided Mathematics and Statistics enabling courses to enrolled students in the distance and tutorial mode in January and July each year. The courses were named Study Link. Under this auspice the following subjects were offered:

- Stepping into Mathematics SSS009
- Stepping into Mathematics for Agriculture SSS008
- Stepping into Statistics SSS014
- Stepping into Statistics for Social Sciences SSS013

These subjects have provided the background knowledge for a range of first year subjects offered in the University. Their purpose is three fold.

1. They are short, non credit bearing enabling subjects designed to better prepare the students for the demands of tertiary study and provide appropriate back ground knowledge
2. To make students aware of the support services provided by the Student Services division
3. To enable students to create networks to assist in their further studies through attendance at tutorial sessions or through the forums offered via their distance enrolment in the subjects

Students are notified of the availability and purpose of these enabling courses by two methods:

- A letter is sent once they are enrolled in a targeted subject
- The CSU Student Services website advertises all Study link subjects on an ongoing basis. The CSU website continually evolves and has a specific section designed for the Study Link subjects.

On average 23% of the targeted students have enrolled over the past three years.

Students are offered two modes of study for Study link subjects. They are able to study by distance education or by tutorial mode.

Distance education students receive a detailed self paced study guide with an assignment to be completed. They also have the opportunity to be involved in an on line forum to enable them to net work with other students. Students are also given a direct email link to the coordinator of the subject to enable instant feedback on questions relating to the course.

Tutorial students are involved in two day workshops with a coordinator where they work through the study guide and complete all the work with added instruction. This provides a networking opportunity and individual assistance can be provided with problem areas. Students leave these sessions with a more positive attitude to the future study in the mathematical area.

Some figures relating to Study Link success rates

Over the past three years figures have been collected relating to the success rate of students completing the Study Link courses. A brief description of each of the courses is provided in table 1.

Table 1. Mathematical content of courses

SSS014 <i>Stepping into Statistics</i>	<i>Basic statistics, use of calculator, basic algebra and probability</i>
SSS008 <i>Stepping into Mathematics for Agriculture</i>	<i>Basic mathematical skills, algebra, functions, trigonometry, Unit conversions</i>
SSS009 <i>Stepping into Mathematics</i>	<i>Basic mathematical skills, Algebra, Functions, Introductory calculus</i>

Table 2 indicates the percentage pass rate of students attempting each of the Study link subjects in recent trimesters

Table2. Percentage pass rate of students attempting Study Link subjects

% of students achieving SY grade	SSS014	SSS009	SSS008
2003 January	79%	54%	57%
2003 July	78%	71%	
2004 January	73%	47%	68%
2004 July	79%	67%	
2005 January	77%	54%	55%

For the first trimester in 2004 information was gathered to enable us to see the success rate of Study link applicants in the linked subject they studied during the semester. Considering the students were considered “at risk” prior to the session these figures are encouraging. Table 3 displays the success rates.

Table 3. Success rate of Study link participants

Semester results for 2004 Jan. students who achieved SY ¹ grade in SL subject	Ps or better	FL	Did not study targeted subject
SSS008	61%	29%	10%
SSS009	44%	4%	52%
SSS014	60%	2%	36%

Recent developments

With the greatly improved student and community access to internet services and the university’s willingness to embrace the benefits to students afforded by on-line technology we have been able to enhance our practices.

Charles Sturt University (CSU) has long been recognised as one of the largest providers of distance education in Australia. The advent of the internet allowed the University to establish itself as an international leader in the delivery of online support and services. Since 1998 all distance education subjects have been offered as a hybrid delivery model using online to ‘wrap’ services (e.g. online forums, email, electronic assignment submission and tracking, online resource links, library) around the well established print delivery model. Over the past 6 years the University has focussed on the development of enhancing online support services to students, including in house development of a student portal, online enrolment and an online communications system for students – the eBox. (Burr, & Smith, 2002, p. 95)

In 2005 the University adopted a mandatory internet access provision for enrolment as per the following policy:

CSU places great emphasis on services to its students. It is a leader in the provision of online services and, in particular, the use of the internet in the support of teaching, administration and communications with students. The online environment is so integrated into all aspects of student life and the learning experience at CSU that the University now assumes that all on campus and distance education students at CSU will be able to access, for at least one hour per week, an internet connected computer capable of communicating with CSU online systems. (Charles Sturt University, 2004)

While students seem to readily accept the access for administrative purposes it would be most interesting to further investigate their up take for learning purposes. Our limited research indicates that students are not always aware of the full range of available services despite the strong on line emphasis. Further investigation needs to be undertaken in this area.

With the increasing institution implementation of on line support to students it was thought that the Maths /Stats study link subjects could utilise some on line resources to supplement the subject material.

The original print offerings are now supported by on line materials, on line diagnostic tests and on line remedial support materials for known problem areas. The on line diagnostic tests cover all the material required in the enabling subjects. The standard of the questioning is at the completed level of achievement of the enabling course. The reasons for including this on the web site were:

¹ SY is a satisfactory grade.

- To alleviate concerns the Mathematics Learning Skills staff had that students were enrolling in the enabling courses when their background knowledge was already acceptable
- To assist students in their decision to enroll in a Study Link course
- To assist students in determining if they should attend tutorial sessions if they performed poorly on the on line diagnostic test

Support materials in known problem areas supplied on the website are

- Calculator instructions for a variety of brands
- Business Statistics assistance
- Financial Mathematics formula assistance
- Exam preparation strategies.

The reasons for including these on the website are:

- As Maths Learning skills advisors we were very aware of the areas of difficulty experienced by on campus students. We wanted to provide equitable support for the distance students. In discussions with students via email or phone we could readily direct them to the site. It appeared to be far more efficient.
- It provided a support mechanism for lecturers who could direct students to the site.

Evolution from strictly print information to a combination of both print and multi media presentations of material has occurred. In an Agriculture Engineering subject students historically had problems with the Unit Factor method of conversion and a CD Rom with a video clip of a whiteboard presentation was developed and sent out with the distance education packages.

The continual improvement policy that we have adopted in our management of the enabling subjects has ensured that we continually seek the best way to enable access to all students. Close co operation between the Mathematics Learning Skills team members and the Subject coordinators ensures that developments are embedded in the subject outlines for students.

To be successful the on line environment requires high quality interactive material to be readily accessible to all. With our commitment to face to face student contact and equity several questions need to be asked in the context of the on line environment.

- Can we allow the evolutionary process to take us to an on line only environment?
- Can we do away with the print versions and the face to face sessions and merely provide on line access to the material?
- What techniques can be utilized to give emphasis for the more difficult concepts?

Whose role is it to design the on line material? As Maths Learning Skills advisors are we able to access the appropriate training or do we hand it over to the Learning Material staff?

Research

The research undertaken is in very early stages but it has given us an insight into the directions we need to be heading with further research.

All targeted students enrolled in a first year subject who had been sent a letter in the 20005 January session for all Study Link subjects were emailed an on line survey and asked to complete it and email it back to us anonymously.

Our main purpose was to see if the students

- were previously aware of mathematics related Study link
- received the information
- used the on line diagnostic test as requested in the letter
- enrolled in a Study Link subject
- used the diagnostic test results to assist their enrolment decision

- benefited in their current course from the Study Link course
- utilized the additional on line support

With all Study Link tutorial sessions an evaluation sheet is completed by participants. Until this year the distance education cohort had never completed an evaluation. An on line evaluation was emailed to all distance education Study Link students in January 2005. The main purpose of this was to investigate the:

- method of discovery of the Study Link course
- expectations from the course
- clarity of published material
- benefits of the Study Link course to current studies
- level of utilization of the subject on line forum

It is interesting to note the method of information gathering in both cases was reliant on the web.

Research outcomes

The comment needs to be made that the sample of respondents is biased as the only form of dissemination of the surveys was through the web.

This is very formative research and in the very early stages. Our first attempt has made us very aware that ongoing evaluation is vital to keep us informed of what is happening from a student perspective and to assist us in decisions of resource management and directions of change.

From the responses it appears that 65% of the targeted students received the letter explaining the availability of the enabling courses. Of these students 46% enrolled in an enabling course. Of these enrolled students 100% found the course to be most beneficial in providing assistance in their current subject being undertaken in this semester.

It is interesting that we assume putting new information in a letter actually has an impact. We had introduced the notion of the on line diagnostic test in the early paragraphs of the letter, explaining its benefits in enrolment decision making for the Study link courses.

Of those students who received the letter 54% were unaware of the availability of the on line test

Of the students who did not receive a letter none utilized the on line test from accessing the web.

43 % of the students who received a letter and did the on line test explained that it did assist in their decision making.

The extra material available on the website to assist students is accessed by a minority.

- 12.5% of respondents used the Calculator skills site
- 5% used the Exam strategies
- 2.5% used the specific Financial Mathematics section
- 20% of respondents used the Business Statistics information.

From the distance education cohort there were 10% of students who utilized the forum, 20% looked only and did not participate while 70% did not use it at all.

All students said that the Study guide was very clear and easy to understand.

What does this tell us?

We know we are doing a great job with the courses we offer. Both the tutorial evaluations over the past years and the more recent on line surveys have all indicated that all participants have found the courses extremely relevant and helpful. The written materials are comprehensive and clear.

We need to be careful about assumptions that all students are aware of all that is available on our web site just because they "hit" the site.

Assuming that all students do spend at least one hour on the web each week it was interesting to note that before the students received the letter introducing Study link 50 % of recipients were unaware of the availability of Mathematics related Study link subjects.

Of the 35% who did not receive the letter 78% of those students were unaware of the Study link subject availability.

We need to keep up our dissemination of material in print form to alert students to the availability of courses. This information has to be better designed to ensure that our message of the on line environment is more readily received by the students.

We assume that we provide a networking opportunity by providing an on line forum for distance students but it is currently being taken up by a very small number of our students. We need to find ways of making students aware of this facility.

Are we heading in the right direction?

From our perspective we know we are providing an excellent opportunity to enhance the success of students who are not confident in the mathematical area. We are very aware of the challenges ahead in terms of continually updating resources to enhance our delivery including through the on line environment.

We are very interested in what is happening with the evolutionary process at other institutions.

- What is happening at your institution?
- How has your role changed over the past few years?
- What are the impacts of lessons you have learnt?
- What directions are you following?

From the session people were impressed with the ability to capture the target students early enough in the process to disseminate the information.

The challenge of provision for distance students was highlighted as an area constantly needing attention.

People were concerned at the changing role from a learning facilitator to an on line expert.

The changing role was a highlight of a paper delivered by Postle, Taylor, Taylor, & Clarke, University of Southern Queensland, Australia

The change of roles of those involved in teaching-learning tasks and procedures are significant. However, it must be remembered that the "Flexible Delivery" model is still in its early stages of implementation and many of the roles of those involved in teaching-learning tasks and procedures have placed the participants in an uncertain world, somewhere between the "person culture" of the face to face model and the "team culture" of the flexible delivery model. Whereas the teacher operating in a "person culture" is a free agent within some limits, the teacher in a "team culture" must accept that there are many involved in both the design and delivery of teaching-learning via the web. (Postle et al, 2001).

The major point people felt compelled by was "Would all voices be heard if we purely went to on line facilities?"

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