1999

How do we know if students learn online? A case study of the deep integration of tertiary literacy and discipline-specific skills into a flexibly delivered first year subject

Margaret Merten
University of Wollongong

Alisa Percy
University of Wollongong, alisa@uow.edu.au

Jan Skillen
University of Wollongong, jskillen@uow.edu.au

Neil Trivett
University of Wollongong

How do we know if students learn online? A case study of the deep integration of tertiary literacy and discipline-specific skills into a flexibly delivered first year subject

Abstract

As universities globally move toward the flexible delivery of subjects and courses, the issue of how students learn from these modes is increasingly important for the design of these subjects. Using an action learning approach, this paper will show that this integration of learning skills into subject curriculum results in significant improvements in students' skills levels. The main focus of the paper is to show that the conversion of subjects into flexible delivery allows a deeper level of integration of tertiary literacy instruction than is possible in campus based subjects. To explore this, the paper will present a case-study on the conversion of a core first year subject for the Bachelor of Commerce, MGMT110: Introduction to Management. This paper will outline the development and application of an online study guide that has been integrated into the flexibly delivered version of MGMT110, which includes the collaborative process between subject staff and Learning Development in the design of this subject for flexible delivery, discusses issues on the design and delivery of such integration, discusses evaluation techniques and results and poses further questions based on issues arising from the evaluation.

Disciplines

Arts and Humanities | Social and Behavioral Sciences

Publication Details

How do we know if students learn online?
A case study of the deep integration of tertiary literacy and discipline-specific skills into a flexibly delivered first year subject

Margaret Merten, Alisa Percy, Jan Skillen and Neil Trivett
Learning Development, University of Wollongong

As universities globally move toward the flexible delivery of subjects and courses, the issue of how students learn from these modes is increasingly important for the design of these subjects. Using an action learning approach, this paper will show that this integration of learning skills into subject curriculum results in significant improvements in students' skills levels. The main focus of the paper is to show that the conversion of subjects into flexible delivery allows a deeper level of integration of tertiary literacy instruction than is possible in campus based subjects. To explore this, the paper will present a case-study on the conversion of a core first year subject for the Bachelor of Commerce, MGMT110: Introduction to Management. This paper will outline the development and application of an online study guide that has been integrated into the flexibly delivered version of MGMT110, which includes the collaborative process between subject staff and Learning Development in the design of this subject for flexible delivery, discusses issues on the design and delivery of such integration, discusses evaluation techniques and results and poses further questions based on issues arising from the evaluation.

As many Australian universities are beginning to offer subjects and courses in flexible delivery modes, the integration of tertiary literacy instruction into subject curricula has become increasingly important to ensure that those students studying these online degrees, and who have minimal contact with academic staff and support services, develop the necessary skills required for successful study. This is the case at the University of Wollongong which is currently establishing a campus at Nowra and access centres at Bega and Batemans Bay on the far South Coast of NSW with the aim of providing comprehensive flexibly delivered degrees in Arts and Commerce. The development of such degrees has created the need for a more focussed approach to curriculum design with careful consideration of how the students' learning is supported in these modes.

Traditionally, generic learning support has been available to the on-campus students via the Learning Resource Centre, but more recently at the University of Wollongong, Learning Development has developed an innovative approach to offering assistance to all students called the IDEALL approach. This approach is a systemic and strategic model that focuses on providing skill instruction within discipline and degree based contexts. The moves towards offering subjects flexibly has meant that Learning Development has needed to work closely with the academic staff designing these subjects to ensure that this approach to learning support is included in the flexibly delivered subjects.

Using Lewin's model of action research (Burns, 1990), we have shown that this integration of tertiary literacy instruction into subject curricula results in significant improvements in

students' skills levels (Skillen, Merten, Percy and Trivett, 1998). The main focus of this paper is to show that the conversion of subjects into flexible delivery and the production of learning resources in the online mode allows a deeper level of integration of tertiary literacy instruction than is possible in traditional campus based subjects. This paper presents a case-study of this integration in a Management subject: MGMT110: Introduction to Management, a first year core subject in the Bachelor of Commerce, which is undergoing conversion to flexible delivery mode. This case-study uses as its starting point the IDEALL (Integrated Development of English language and Academic Learning and Literacies) approach to providing integrated learning assistance within discipline and subject contexts.

Integration of Learning Skills into Subject Curriculum:
The IDEALL approach

At the University of Wollongong, Learning Development has had the opportunity to consolidate an innovative approach to the provision of learning support to students which takes a less remedial, more developmental approach. The IDEALL approach rests on the important premise that **all** students require assistance with the transition into tertiary education and, more specifically, with their transition into disciplinary contexts. The most effective way of providing assistance with this transition is to integrate instruction into the curriculum. The IDEALL model also allows Learning Development to take a systemic and strategic approach to improving student learning across campus. This model involves collaboration between discipline and Learning Development academics in the production of learning materials tailored to the needs of the curriculum and/or the provision of subject-based workshops that are team taught by staff from the discipline and the Learning Development unit. Such integration ensures that all students within a cohort have the opportunity to acquire the literacy practices and conventions of their disciplines of study (Skillen, Merten, Percy and Trivett, 1998).

With campus-based subjects, the IDEALL approach has been used to provide learning assistance within subject content in the form of face to face teaching, print based and some online resources. Having worked within MGMT110 in the campus-based context, the opportunity arose to work closely with the subject staff on curriculum design when this subject was proposed for inclusion in the flexibly delivered Bachelor of Business Administration Degree (BBA). This process will be outlined in the following case-study.

MANAGEMENT 110 CASE-STUDY

The following case-study will address the flexible delivery context and describe the collaborative procedure between subject and Learning Development academics by discussing the curriculum design, the design of the Online Study Guide, the literacy assessment, the instruction, shallow and deep integration of instruction, the evaluation of the Guide and the results.

Merten, M., Percy, A., Skillen, J. & Trivett, N. (1999). How do we know if students learn online? A case study of the deep integration of tertiary literacy and discipline-specific skills into a flexibly delivered first year subject. In *Cornerstones: Proceedings of the 1999 HERDSA Conference.* Melbourne, Vic: HERDSA.

Context moving towards Flexible Delivery

MGMT110: Introduction to Management is a core first year subject in the the Bachelor of Business Administration which will be offered flexibly by the Faculty of Commerce. In late 1998, MGMT110 staff decided to design and trial a flexibly delivered version of the subject to students in Session 1, 1999. As Learning Development had already been involved in the subject at the campus-based level, it was decided to develop and incorporate an Online Study Guide into the flexibly delivered subject content. The mode of flexible delivery was online provision of content in WebCT.

While the initial intention was to have the flexibly delivered version of the subject completed by session 1, 1999, due to workload levels and time constraints, this deadline was not met by the subject staff. However, Learning Development did complete the Online Study Guide component of the subject and it was made available to all enrolled students. This meant that students were still taught in a face to face mode, but had access to the online support if they wished to use it in the preparation of their assignments and for support with more general study approaches in the subject.

Procedure

Table 1 below outlines the IDEALL procedure, the provision of support to students and the collaboration with staff providing an overview of the action learning process for both the campus-based and flexibly delivered versions of the subject. The case-study, however, will focus on the design and implementation of the online study-guide as this was the main difference between the campus-based support and the online support.

Merten, M., Percy, A., Skillen, J. & Trivett, N. (1999). How do we know if students learn online? A case study of the deep integration of tertiary literacy and discipline-specific skills into a flexibly delivered first year subject. In *Cornerstones: Proceedings of the 1999 HERDSA Conference.* Melbourne, Vic: HERDSA.

TABLE 1. Integration in Management 110

IDEALL Procedure	Provision of Support to Students	Collaboration with Staff
Skills Inventory / Needs analysis		• Curriculum development • Development of diagnostic task • Development of marking criteria • Development of Online Study Guide • Development and implementation of staff training workshop on Assessing Tertiary Literacy • Development of staff marking booklet for assessing tertiary literacy
Literacy assessment Feedback	• Feedback to students (follow up support was offered to students through the: • Online Study Guide and Learning Resource Centre	
Instruction	• Online Study Guide Weeks 1,2,3, 4,6,8,9,12. • Essay writing workshop (Wk 5)	
Evaluation		• Focus Groups • Implementation of evaluation survey

Curriculum Design

Because this subject was being re-designed for flexible delivery, subject staff and Learning Development lecturers worked together in the initial stages to ensure that the learning support and instruction in tertiary literacy was incorporated into the new curriculum. This transition to flexible delivery meant that it was possible to integrate a far greater amount of subject specific learning support than had been possible previously in the campus-based mode. The first step in this process was an inventory of skills which was undertaken to ascertain those skills would need to be included. The subject assessment tasks were used as a framework for developing a list of the skills as it was felt that students would have intrinsic motivation to access support designed to assist them in completing their assessment tasks. In early 1999, Learning Development lecturers began to write and design the Online Study Guide.

Merten, M., Percy, A., Skillen, J. & Trivett, N. (1999). How do we know if students learn online? A case study of the deep integration of tertiary literacy and discipline-specific skills into a flexibly delivered first year subject. In *Cornerstones: Proceedings of the 1999 HERDSA Conference.* Melbourne, Vic: HERDSA.

Design of Online Resources

The Online Study Guide was integrated into the tutorial framework of the subject in Weeks 1, 2, 3, 4, 6, 8, 10 and 12. The content of the Study Guide included a wide range of skills instruction, such as critical reading, note-making, essay writing and oral presentations. One of the major techniques in the instructional design of these resources was the use of annotated examples of good and poor models of writing. The annotations are an important feature because they unpack for students the disciplinary conventions and discourses used in the subject and that they need to construct for their assessment tasks.

An important factor in presenting this online content for learning is the design and layout of this resources. Elements such as colour, composition, and navigational features are crucial aspects in the design of content that facilitates learning. In terms of colour, the Learning Development lecturers designed a system for the use of colour that was used consistently throughout the resource. For example, red was always used to highlight arguments and main ideas in an annotated text, and green was used to highlight the integration of evidence. In terms of composition, large amounts of information, or lists of processes needed to be broken down clearly and displayed graphically to allow easy navigation throughout the Study Guide. In terms of navigation, a detailed main menu was provided to allow students to choose where they wanted to go and exit points were provided at the end of each section that would take the student back to the main menu or on to the following section. Feedback, which will be discussed in detail in the following section of this paper, showed that the layout and design of the Online Study Guide were well received by students.

Literacy Assessment

An ongoing aspect of the campus-based subject was a preliminary writing task which was integrated into the first week of the tutorial program as a diagnostic procedure. This task was a critical response to a discipline-specific article and entailed rating the macro- and micro-skills within the MASUS[2] (Measuring the Academic Skills of University Students) and MELSUS (Measuring the English Language Skills of University Students) criteria (Skillen, Merten, Percy, Trivett, 1998). It was decided to maintain this task in the new version of the subject for the following three reasons:

- to provide students with some direction on which aspects of the Online Study Guide would be relevant to them,
- to provide them with individual feedback on their tertiary literacy skills, and
- to allow the development of a profile of the cohort's tertiary literacy skills levels.

This allowed the students to receive individual feedback about their level of skills[1] before their first major assignments were due, and directed them to the Online Study Guide for assistance in completing their assignments and for general study needs within the subject.

Merten, M., Percy, A., Skillen, J. & Trivett, N. (1999). How do we know if students learn online? A case study of the deep integration of tertiary literacy and discipline-specific skills into a flexibly delivered first year subject. In *Cornerstones: Proceedings of the 1999 HERDSA Conference.* Melbourne, Vic: HERDSA.

Instruction

Within the flexibly delivered subject, discipline-specific support was provided in the form of the Online Study Guide and an essay writing workshop. Both were integrated into the subject framework and were timed to coincide with the assessment schedule so that the students' needs in skills development could be met at the relevant times. Attendance was high for the workshop at 76% of the total cohort. The essay writing workshop was team taught by subject and Learning Development staff inside the lecture schedule, while the Online Study Guide was integrated into eight of the fourteen weeks of the tutorial program. The content of the Study Guide was based specifically on content and readings from the subject and focussed on the skills necessary for successful completion of the assessment tasks. The Online Study Guide could be downloaded with Acrobat Reader software and although designed to be used from the Web, it could also be printed out if students wished to have a paper version. A print version of the Online Study Guide was also made available to students through the Commerce Resource Centre.

The major headings of the Study Guide are outlined below:

1.4 Week 1 Study Guide: Analytical Reading
2.4 Week 2 Study Guide: Analytical Reading
3.4 Week 3 Study Guide: Reflective Journals
4.4 Week 4 Study Guide: Beginning the Research Process
    4.4.1   Preparation
    4.4.2   Analysing The Essay Question
    4.4.3   Research And Critical Reading
    4.4.4   Note-Taking
    4.4.5   Planning
6.4 Week 6 Study Guide: Essay Criteria
    6.4.1   Use Of Source Material
    6.4.2   Structure And Development Of Argument
    6.4.3   Academic Style
    6.4.4   Qualities Of Presentation
    6.4.5   Drafting
8.4 Week 8 Study Guide: Oral Presentations
9.4 Week 9 Study Guide: Report Writing
12.4 Week 12 Study Guide: Exam Preparation and Techniques

Shallow and Deep Integration of Instruction

Integrating instruction in the online mode allowed a deeper level of integration to occur within this subject than had previously been the case in the traditional delivery of integrated learning support. While working within this subject from 1996 to 1998, the integration was limited to an essay writing workshop and short booklet. This is because teaching time and the cost of printed resources constrains the integration by Learning Development lecturers to a few activities and/or resources offered to students. Further, the time available for face-

to-face instruction within subjects is limited because of the competition with content delivery. For the purposes of this paper, we refer to this approach as 'shallow' integration. It is important to point out that the authors are in no way suggesting a value judgement in using these terms. Both shallow and deep integration need to be understood as equally appropriate choices and approaches to specific teaching and learning contexts.

The results of the evaluation in 1998 showed that even at a shallow level this integration resulted in significant improvements in students' skills levels, see Diagram 1 below.
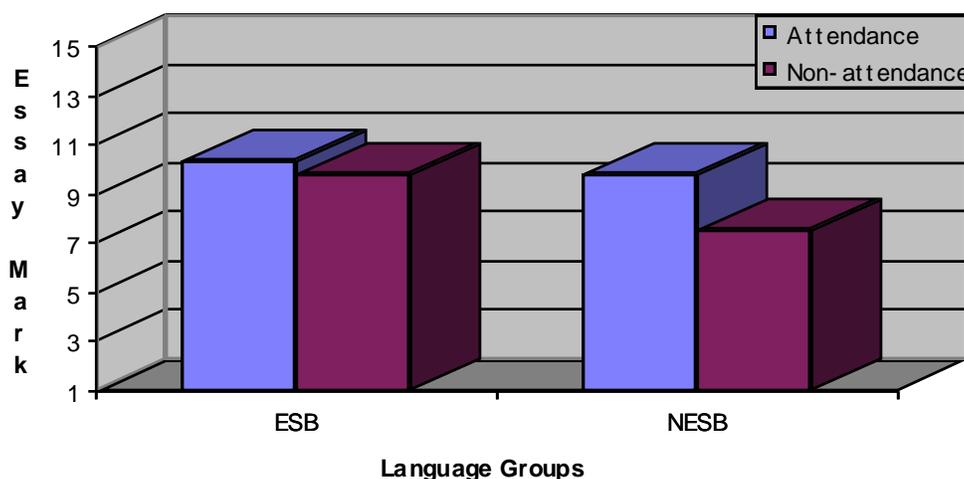
	Attendance	Non-Attendance	Total	(p=.0087)
ESB	10.36	9.77	**10.15**	
NESB	8.91	7.6	**8.39**	
TOTAL	**10**	**9.15**	9.69	
(p=.0001)				

ESB - English Speaking Background
NESB - Non-English Speaking background

Figure 1: Students' Essay Results according to their Language Background and Attendance at the Essay Writing Workshop

Figure 1 indicates that even with attendance at a 1 hour lecture on the essay assignment, offered within the subject, these students' skills levels improved significantly.

Shallow integration of this kind incorporates the following advantages:

- it is subject/ discipline-specific learning support
- it is equitable as all students have access to the same level of support
- it is student-centred support
- it is support that can be transferred to other subject contexts
- it focuses on the assessment tasks that students must complete; therefore, it appeals to students' intrinsic motivation to improve their marks

Merten, M., Percy, A., Skillen, J. & Trivett, N. (1999). How do we know if students learn online? A case study of the deep integration of tertiary literacy and discipline-specific skills into a flexibly delivered first year subject. In *Cornerstones: Proceedings of the 1999 HERDSA Conference.* Melbourne, Vic: HERDSA.

- it allows students to more quickly acquire the skills suitable for the discipline being studied
- it produces resources that can remain within the subject and is a form of curriculum redevelopment
- it allows staff the opportunity to identify and deconstruct the disciplinary conventions of their subject

However, with the use of online technology a much deeper and comprehensive level of integration is possible with increased advantages to students and staff. A deep approach incorporates the above advantages as well as a number of added advantages which include the following:

- it has greater coverage of necessary skills
- it can provide assistance for every assessment task that students have to complete
- it makes use of colour for instructional design
- it can include basic interactivity
- it allows greater access for students 24 hours a day; it is not time and place constrained
- it is cost effective to the university in encouraging independent learning

Evaluation

To evaluate the pilot version of the Online Study Guide, an evaluation process was designed by Learning Development lecturers and included both qualitative and quantitative methods. The focus of the evaluation was whether students used the Study Guide and how they used it in their study. In terms of evaluation techniques, we had initially hoped to conduct focus groups and participant observation with students, but due to the timing of this research (end of session, just before exams), most students were unwilling to participate even when offered money for their participation. Their unwillingness was mainly due to the fact that they were more intent on studying for their exams than participating in research.

Therefore, five in-depth student interviews and eighty completed student surveys from a cohort of 250 students were carried out. Both the surveys and interviews were used to explore students' attitudes towards the Online Study Guide. The instruments also explored the variables affecting the students' use of this support in terms of access, usability, the way in which they used it and its usefulness to their study and skills development. While the survey was able to provide quantitative data on student opinion, the qualitative data gained from the interviews provided greater insight into the major issues surrounding the use of the Study Guide and extended the quantitative feedback given in the survey.

The student survey consisted of fifty questions asking students to evaluate both the Essay Writing Workshop and the Online Study Guide, using a Likert scale with room for comments in some questions. A statistical analysis was then conducted on the survey results. The comments that student provided were also collated and the themes presented in the results are the product of these comments and the issues raised in the interviews.

The thirty minute student interviews consisted of closed and open-ended questions that allowed students to present their opinion on aspects of the Study Guide and provided further comment where necessary; for example, Question 1 asked "Did you find the Study Guide useful? If not, why? If so, How?" Where a student brought up an issue they felt was important, the questioning would then guide them through that point and allow other points to be raised before moving on to the following question on the interview schedule. The interview schedule is included in Appendix A, and does not indicate the tangents that the interviews took.

Results

Student Survey

The survey indicated that while 76% of students had attended the Essay Writing Workshop, only 30% had accessed the Online Study Guide. One comment that most students made was that they had difficulty accessing the Online Study Guide due to problems with computer access, knowledge in using a computer, difficulties with their password, being unable to download acrobat reader and a lack of familiarity with navigational tools. From those students who were able to access the Online Study Guide, the following survey results were obtained.
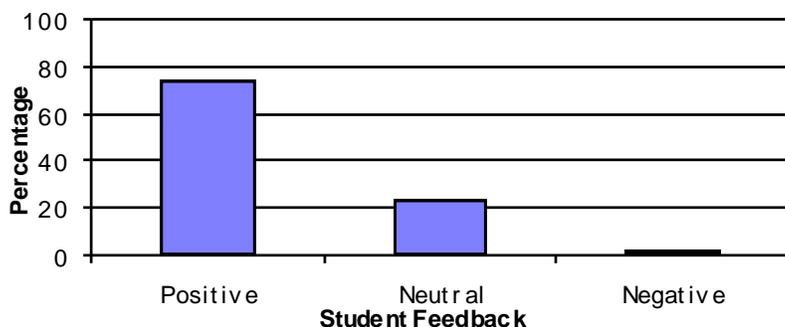

Figure 2: Student feedback on the Design/ Content Integration of the Study Guide

As can be seen from Figure 2 above, of the total feedback on the design and content integration of the Study Guide, 74% of students were positive, 24% were neutral and 2% negative. The sub-issues included in this section are as follows:

Merten, M., Percy, A., Skillen, J. & Trivett, N. (1999). How do we know if students learn online? A case study of the deep integration of tertiary literacy and discipline-specific skills into a flexibly delivered first year subject. In *Cornerstones: Proceedings of the 1999 HERDSA Conference.* Melbourne, Vic: HERDSA.

- whether it was relevant to their interests (70% positive, 26% neutral)
- whether the topics were presented in a logical sequence (77% positive, 22% neutral)
- whether the number of topics was adequate (73% positive, 27% neutral)
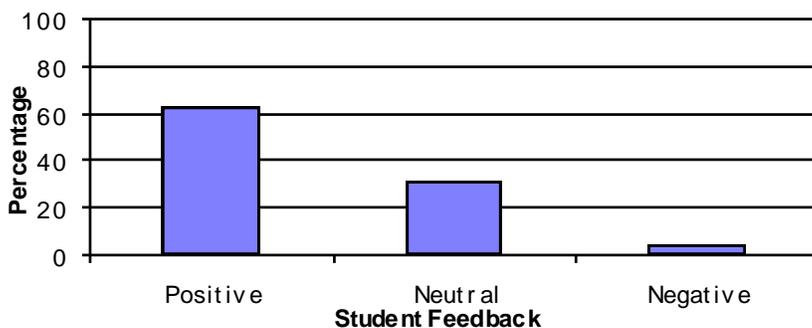- whether the organisation was easy to follow (73% positive, 23% neutral)

Figure 3: Student feedback on the teaching and learning of the Study Guide

As indicated in Figure 3 above, of the total feedback on the teaching and learning aspects of the Study Guide, 63% of the responses were positive, 32% neutral, 5% negative. The sub-issues explored included the following:
- the effectiveness of the format in helping students to learn (78% positive, 13% neutral);
- the role of the Study Guide in enhancing students' learning in the subject (44% positive; 52% neutral)
- the clarity of the content presentation (69% positive, 22% neutral);
- the level of the content being appropriate (78% positive. 22% neutral);
- the use of illustrations to explain difficult concepts (57% positive, 39% neutral);
- the adequacy of the Study Guide to support their learning (65% positive, 31% neutral);
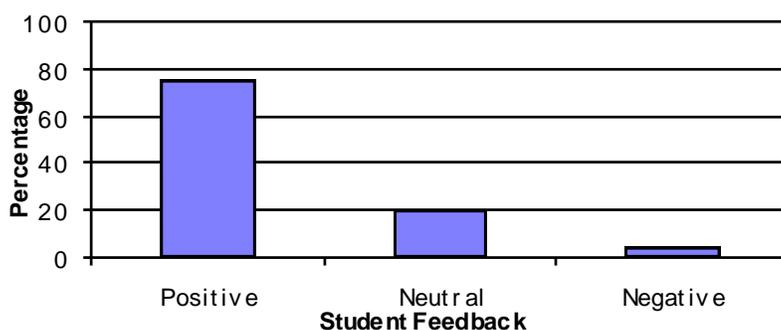
Figure 4: Student feedback on the mode of delivery of the Study Guide

Merten, M., Percy, A., Skillen, J. & Trivett, N. (1999). How do we know if students learn online? A case study of the deep integration of tertiary literacy and discipline-specific skills into a flexibly delivered first year subject. In *Cornerstones: Proceedings of the 1999 HERDSA Conference.* Melbourne, Vic: HERDSA.

Figure 4 above indicates that those students who accessed the Online Study Guide were very positive about the online mode of delivery. The sub-issues explored in this section are included below:

- whether they liked accessing the Study Guide via the Web (66% positive, 24% neutral)
- whether they felt there was there was sufficient access to computers for this subject (57% positive, 19% neutral)
- whether they were able to access the University modem connection when required (51% positive, 17% neutral)
- whether the onscreen text was legible, concise and meaningful (93% positive,7% neutral)
- whether the computer-based materials used in the Study Guide functioned properly (72% positive, 24% neutral)
- whether they could navigate easily through the content (81% positive, 10% neutral)

Use of Study Guide
- once per week   5%
- more than once per week   4%
- once per fortnight   13%
- once per month   26%
- only in preparation for my assignments   52%

Student Interviews
THEMES
Timing of research
- late in session/ overlapping with study time
- too late after the workshop for them to remember

How did they use it
- 1 read straight off screen, downloaded it, no print out
- 1 read off screen, didn't download, printed off relevant pages
- 1 downloaded, printed out full copy
- 1 viewed straight off screen, didn't download, didn't print out
- 1 saved to home computer, printed off the relevant parts

Strengths
Technology
- access convenient (time/place)
- navigation easy for most

Content
- logical order/ format
- clear layout/ good use of colour
- develops new skills/ useful for new students

Merten, M., Percy, A., Skillen, J. & Trivett, N. (1999). How do we know if students learn online? A case study of the deep integration of tertiary literacy and discipline-specific skills into a flexibly delivered first year subject. In *Cornerstones: Proceedings of the 1999 HERDSA Conference.* Melbourne, Vic: HERDSA.

- excellent for structure/ essay writing skills/ synopsis
- useful for reading analytically and summarising text chapters
- presentation of good and bad examples
- transferability to other subjects/ discipline areas

Weaknesses

Technology

- access - most students could not access the site, or were not motivated to.
- need net classes/ training in using the system/ downloading Acrobat Reader/ difficulties with password
- navigation from home page to Study Guide difficult for those unfamiliar with the technology

Content

- size of weekly unit/ too much info
- annotated chapters a bit big

Improvements

Technology

- training for students
- better navigation from home page

Content

- summaries of a lecture
- more hints for academic language
- more availability of hard copy/ handouts
- guidelines for group assignments/ journal entries/ glossary of mgmt terms

Presentation

- less info in some sections
- make easier to download and print
- booklets in library (hard copy)
- use frames to navigate on a web browser
- change from PDF format to HTML

Discussion

The major issue that the students had with the online Study Guide was access. Only 30% of the total cohort used the Study Guide this session, as opposed to 76% of the cohort who attended the essay writing workshop. The interviews and surveys indicated that overall the students were positive about both the workshop and the Study Guide. The results showed that the Study Guide's content and design was successful. As predicted, students reported that the strengths of this mode of delivery were the convenient 24 hour access and easy navigation . In terms of content, students felt that the layout was clear with a good use of colour, and that the guide had a logical structure and format. Students specifically felt that the essay writing skills, analytical and critical reading skills and the presentation of good and bad examples of previous students' work were particularly helpful in preparing their

Merten, M., Percy, A., Skillen, J. & Trivett, N. (1999). How do we know if students learn online? A case study of the deep integration of tertiary literacy and discipline-specific skills into a flexibly delivered first year subject. In *Cornerstones: Proceedings of the 1999 HERDSA Conference.* Melbourne, Vic: HERDSA.

assignments. A final and important finding that students reported was that the content was transferable to other subjects and discipline areas.

Some of the weaknesses that were reported included the difficulty of accessing the website, the lack of computer literacy, specifically in using the net, downloading software and trouble-shooting. A small number of students who were unfamiliar with the technology found navigation from the home page to the Study Guide difficult. This latter issue, while not specific to the Study Guide, but to the more general issue of the online literacy of students, should be considered a major concern for all parties who are involved in developing curriculum for flexible delivery. This concern has been emphasised by Tapper (1997) who points out that we cannot assume homogenous levels of online literacy among cohorts, and that there needs to be instruction and support in students' development of these online literacy skills.

Given the above point, in designing subjects for flexible delivery, it is very important to maintain an emphasis on facilitating student learning in these modes. As Cevero (1988) argues

> Participation and interaction are important elements of the teaching-learning process. Technologies, if exploited properly, can enhance both of these elements and thereby improve the quality of education - both internally and at a distance. These need to be built into the design of educational programs in such a way that learning is assured: Without taking away from the important role played by the teacher, it is helpful to remember that what the student does is actually more important in determining what is learned than what the teacher does.

The challenge of designing curricula for flexible delivery is to understand what the student does when using these modes and to ensure that support is available at all levels for students, from the time they turn the computer on to their production of written assignments.

It was hoped that higher numbers of students would use the online Study Guide and that we would be able to more deeply investigate how students use this online resource, and if this mode enhanced their acquisition of the subject-based skills. At this preliminary stage of evaluation, it is difficult to make any broad generalisations as to whether this is the case.

Our findings do show, however, that the students were very positive about the accessibility of the Study Guide, providing comments such as "..always there, able to access what I want when I want" and "the fact that you can use it at home...good if you live in Sydney". For content and design, students said "one of the most enhancing learning process is to present both the good and bad answers or writing, so the students can know which is better by comparing them", "it helped with the components of the essay and what was expected in each", "you can get ideas on how to study and how to start study' and "logical order especially for assignments". Others were simply pleased at the provision of such comprehensive and specific learning assistance at the first year level; of the interviewed students, two had chosen this subject because they were aware the integration would support their learning. Importantly, several commented on the transferability of the Study Guide, by stating "I am so glad I did MGMT110 this semester, so I had the Study Guide for all my subjects as well".

Merten, M., Percy, A., Skillen, J. & Trivett, N. (1999). How do we know if students learn online? A case study of the deep integration of tertiary literacy and discipline-specific skills into a flexibly delivered first year subject. In *Cornerstones: Proceedings of the 1999 HERDSA Conference.* Melbourne, Vic: HERDSA.

Conclusion

This paper has presented some rich data and issues surrounding the support of teaching and learning in the current academic context of flexible delivery. With diverse student cohorts having a variety of learning needs, the integration of learning skills into subject curriculum has been emphasised as a new approach to supporting these needs, and has been termed the IDEALL approach. This approach is strategic, developmental, and has a more lasting effect on teaching and curriculum design than past remedial and generic approaches.

The paper has indicated that even with a shallow level of integration in campus-based subjects using face-to-face and print resources, there is a significant improvement in students' skills. This shallow integration has many advantages relating to students' acquisition of discipline conventions and is a successful model of integration. However, the paper has shown that using technology in flexible delivery modes has added advantages for integrating learning skills at a deeper level by allowing cost effective and greater coverage of skills in the integration process and providing opportunities for the use of colour and interactivity.

Also, being involved in a collaborative process with staff on the conversion of subjects to flexible delivery provides the opportuniity for Learning Development staff to have a greater involvement in curriculum design that includes an emphasis on student-centred learning, and allows students to more quickly acquire the discipline specific skills at a first year level.

Additionally, in the design and presentation of learning support in flexible delivery modes, issues of colour, composition and navigation are important elements in its development. Colour systems can be used for instructional design purposes, the design of composition can present logical and graphic layouts of complex content and ease of navigation must be ensured to facilitate students' independent learning.

Finally, no matter how well-designed and formatted any resource in this mode is, students' online literacy and their use of such resources must involve instruction and support if they are to get the maximum benefits of such equitable learning instruction.

Future Research

As this paper has presented information gathered within the framework of action learning, the author's intend to further evaluate how students use online resources and whether they have any greater impact on students' marks and success within subjects. In Semester 2, 1999, a tutorial group will complete MGMT110 via Web delivery alone. In collaboration with subject staff, a comprehensive evaluation project will be implemented to further investigate the issues raised in this paper.

Merten, M., Percy, A., Skillen, J. & Trivett, N. (1999). How do we know if students learn online? A case study of the deep integration of tertiary literacy and discipline-specific skills into a flexibly delivered first year subject. In *Cornerstones: Proceedings of the 1999 HERDSA Conference.* Melbourne, Vic: HERDSA.

Endnotes

[1] Students were directed towards further relevant support provided by Learning Development via its Learning Resource Centre. This centre is situated on campus and provides generic learning assistance in the form of academic and English language workshops, self-access resources and individual consultations. This generic assistance underpins the IDEAL procedure in faculty programs.

[2] MASUS (Measuring the Academic Skills of University Students) is a diagnostic tool provides students with a rating on their generic academic skills. The criteria of these skills has five categories: use of source material, structure and development of argument, academic style, grammatical correctness and qualities of presentation.

References

Bonnano, H. & Jones, J. (1997) *Measuring the Academic Skills of University Students; The MASUS Procedure, A Diagnostic Assessment*, Learning Assistance Centre Publications, university of Sydney

Burns, R.B. (1990) *Introduction to Research Methods in Education*, Longman Cheshire, Melbourne

Cevero, R. M. (1988) 'Effective Education for Professionals' Jossey-Bass, San Francisco

Skillen, J., Merten, M., Trivett & Percy, A. (1998) 'The IDEALL approach to Learning Development: a model for fostering improved literacy and learning outcomes for students', conference proceedings AARE, University of Adelaide, 1998

Tapper, J. (1997) 'Integrating Online Literacy into Undergraduate Education: a case study', *Higher Education Research and Development Society of Australasia*, Vol.16, No.1

Merten, M., Percy, A., Skillen, J. & Trivett, N. (1999). How do we know if students learn online? A case study of the deep integration of tertiary literacy and discipline-specific skills into a flexibly delivered first year subject. In *Cornerstones: Proceedings of the 1999 HERDSA Conference.* Melbourne, Vic: HERDSA.