Approaching Student-Managed Learning: Evaluations of Web-Supported Undergraduate Units in Early Childhood

Ayshe Talay-Ongan
Institute of Early Childhood
Macquarie University, Sydney, AUSTRALIA
ayshe.talay-ongan@mq.edu.au

Maree Gosper
Centre for Flexible Learning
Macquarie University, Sydney, AUSTRALIA
maree.gosper@mq.edu.au

Abstract

Two core undergraduate units offered to the same cohort of students in Early Childhood in a web-supported format in 1998 and 1999 were formally evaluated. Both units had web sites which included course management, curriculum content including weekly lecture materials, weekly tutorial applications and reflections exercises and additional resource materials, as well as communication facilities which included a bulletin board and e-mail. The first unit, ECH 213 was offered in 1998 and modified in presentation in 1999. In its first year, it did not offer face-to-face tutorials; instead online forums were established with tutors to generate discussions, arguments and responses to various tasks such as case studies. The second unit, ECH 317 offered basically the same format, but maintained optional face-to-face tutorial meetings for the internally enrolled students, as did ECH 213 in 1999. In both units, parity between external and internal students was established to a large degree. All three results of the evaluations are presented. Approaching student-managed learning as evidenced by unit evaluations in 1999 indicated a greater degree of student satisfaction with the delivery mode, although the content of these units remained prescribed. Results suggest a sound place for IT in scaffolding student learning, provided that multiple models of access and

flexibility of choice to learning experiences are made available to them.

Keywords
Web supported learning, Student managed learning

Background

Self-regulated learning refers to learners' systematic use of metacognitive, motivational and behavioural strategies to achieve academic goals (Zimmerman, 1990). Most effective learners are said to be those who are self-regulated (Butler & Winne, 1995). A foundation of content-specific knowledge is requisite to the efficient and effective development and utilisation of strategic knowledge; in fact, effective and efficient learning may be dependent upon the continual interaction of the students' content and strategy knowledge (Alexander & Judy, 1988).

The self-regulated learner requires exposure to content within an environment that encourages the execution of some control over the knowledge construction process. The more recent cognitive / constructivist methodologies focussing on the learner, the learning processes and the learning context are more likely to provide the requisite environment than are the traditional behaviourist /objectivist approaches to learning favouring the development of content and the transmission of knowledge (Atkins, 1993; Mayer, 1992; Resnick, 1989). Nevertheless, existing practice is still largely dominated by traditional behaviourist approaches typified in higher education by lecture / tutorial methodology and instructional design which provides students with little control in how the content is presented, delivered or unpacked (Sweeters, 1994).

Information and communication technologies have transformed teaching and learning (Jonassen, 1996), and present the potential to support constructivist approaches that develop learning environments more conducive to self-regulated learning (Atkins, 1993; Park & Hannafin, 1993). The way in which information is presented and used is influenced by the representation of information through the use of multiple media format: attributes such as the organisation and structure of information using hypertext environments, the interactivity available through feedback mechanisms, and the control the user has in determining the pathway and rate of progression through materials may cater for individual differences and learning styles of students.

It is reasonable to assume that the mode of delivery of content to the learners, and the extent to which the delivery is flexible such that they can make decisions to suit their needs in constructing their content knowledge are likely to impact learning outcomes. Web-supported learning experiences may be planned and prepared to allow for such a platform of student managed learning of academic content. Benefits of web-supported learning include flexibility of access, and maintenance of parity between the learning experiences of internally versus externally enrolled university students. Additionally, introduction of new learning approaches may encourage more self-reflection and control, and provision of access to interactive and ongoing communications may encourage participation towards construction of students' own learning experiences.

These objectives and desired educational outcomes prompted the construction and delivery of two core units at the Institute of Early Childhood, Macquarie University: ECH 213 Development, Difference and Disability (1998, 1999), and ECH 317 Teachers as Researchers: Reading the Research (1999) in an web-assisted format (supported by Macquarie University Vice Chancellor's Grant). ECH 213, the first unit to be trialed in a substantially extensive web-supported delivery mode had 120 students, 55 of whom were externally enrolled; the course evaluation data was obtained from 115 students. In 1999, ECH 213 had 77 internal and 31 external students; all but one responded to the evaluation. The second unit, ECH 317 had 132 students, 45 of whom were externally enrolled; the course evaluation data was obtained from 98 students. Both units are taught in a traditional pattern of two-hour lectures and one-hour tutorial per week. This review will summarise the findings of the student evaluations in these units. In one set, the same cohort of students are compared on a similar delivery mode in two separate core units, with one significant difference: in addition to the weekly web-based application and reflection tutorial exercises for each unit, face-to-face tutorials were still made available to the internally-enrolled students in ECH 317. In the second set, different cohorts are compared in modified delivery of the same content in 1998 and 1999 in ECH 213.

Overview of the Web-supported Packages

Both of these units introduce new content and knowledge where students are assumed to have little prior knowledge and experience. As the development of self-regulatory skills in this context requires a parallel

development of content knowledge, the use of structured lectures and tutorial exercises evidenced in traditional delivery modes was maintained.

The flexible learning packages for ECH 213 and ECH 317 both employed multiple technologies such as weekly face-to-face (audiotaped) lectures, a text book, as well as a unit web site. Hypertext environments provide options for different pathways through the material. However, for students with little prior knowledge and expertise in web-supported learning experiences, a structured and well-organised pathway through the site is more effective and efficient because it prevents disorientation and reduces time on task (Foltz, 1996; McDonald and Stevenson 1998; Rouet & Levonen, 1996). The navigation in the sites was thus accomplished via clear icons and multiple pathways for access for different functions, and the curriculum content material online is presented in a sequential manner. Each of the unit web sites contained three major components: course information, curriculum content, and communication facilities.

Course information included clearly identified goals and objectives for the unit, a unit outline pacing the learning activities for the semester, a description of the assessment activities, and an extensive reference list for further reading and internet resources. The curriculum content included the lecture overheads, and weekly tutorial exercises which contained case studies, application and reflection questions and self-assessment tasks. Elaboration of knowledge through the use of self-explanation have been effective in developing deeper understanding (Chi, De Leeuw, Chiu, & LaVancher, 1994); thus the application and reflection questions invited self-explanations and personal vignettes to be embedded in student responses which became the platform for further discussions on the web site. The communication facility contained a bulletin board and e-mail. The students were encouraged to respond to the tutorial exercises by posting their comments on the bulletin board; they were also encouraged to respond to others' postings and engage in arguments and discussions. Use of communications tools such as a bulletin board offers considerable potential for collaborative learning (Katz & Lesgold, 1993) and involvement and interaction between groups of students, particularly for students who cannot attend on-campus sessions or are marginalised in conventional tutorials (Harasim, Hiltz, Teles, & Turof, 1995). The equivalent of each tutorial group constituted a forum on the bulletin board, with a tutor in charge of all (six) such forums. E-mail facilities were available for personal communication between students and/or their teachers.

In the first application of ECH213, the face-to-face tutorial sessions were essentially replaced by the teaching and learning activities designed on the web tutorials; based on student evaluations, in its second year, additional fortnightly tutorials were put in place, attendance to which were optional. Other features of student-managed learning were also incorporated (see case study below). For the second unit ECH 317, the face-to-face tutorials were maintained on an optional basis in addition to the weekly web-based tutorials. This independent variable of student choice in mode of delivery marked for the designer of these units the journey into student-managed learning.

All students were offered training sessions to familiarise them with the unit web site and its proper use. Student access to the web site was accomplished either from university-based computer facilities or through students' own resources. Problems associated with student access and use of the web site, as well as weekly uploading of the files to the site were largely attended to by the technical services supervisor at IEC, who in turn received support from the Centre for Flexible Learning in more challenging problems. Having technical assistance available on hand made an invaluable contribution to the successful delivery of the units.

Evaluation Results

An online assessment tool was used in both units at the end of each semester in order to obtain some formal evaluation data, which specifically targeted the web-based learning component of the units. The summary of these results is presented in the table below. As can be surmised from the student responses, the delivery mode in 1999 in both units appears to have elicited significantly more positive responses than did ECH 213 in its first year of web-supported delivery in 1998.

In particular, the fact that the face-to-face tutorials were available to the students seem to have accounted for stronger positive responses in items probing student satisfaction in opportunities of interaction with students and obtaining assistance from staff, overall rating of the web-based learning experience, and prospects of having other units in a similar format. Paradoxically, the student attendance to the tutorials was quite poor, the student numbers varying between one and eight per session, except for the meetings in which a quiz was scheduled; nevertheless, the students had the choice of attending if they needed to. These results suggest that student satisfaction increases proportionally to the

opportunities of being able to choose the delivery modes in the process of mastery of the content required of them

Some salient features that emerged from the evaluation results are highlighted below:

- Student competencies in access and navigation of the web site seem to have increased, an expected experience effect within the same cohort, and perhaps an effect attributable to general increase of web skills from one year to the next in different cohorts.
- Similarly, student training needs on access and use of the web site seem to indicate a substantial decrease: the percentages of students not needing training at all in ECH 213 in 1998 was 8% compared with 26% in 1999, and with ECH 317 (1999) it was indicated to be 20%.
- Optional face-to-face tutorials appeared to make a significant impact on student satisfaction: while web-only tutorials were rated at 39% as being satisfactory or better in ECH213 in 1998, this rating increased to 61% in 1999 with the optional face-to-face contact. ECH 317 was so rated at 54%.
- Similarly, student satisfaction on the dimension of interacting with fellow students on the web doubled (28% vs. 61% in ECH 213 in 1998 vs. 1999) as their assignments were asked to be placed on the web bulletin board and as they were invited comment on each others' work.
- Finally, there appeared to be a significant positive shift in student attitudes towards the quality of web-supported learning experiences as the units offered more student choice and increased the opportunities for interactions: overall learning experience was rated as being good and excellent by 51% in ECH 213 in 1998, as opposed to 85% in 1999; in ECH 317, this figure was 80%.
- In looking forward to other units being presented in similar formats, this desire was rated at only 40% in ECH 213 in 1998, and jumped to 67% in 1999; in ECH 317, 73% of students indicated that they'd like to see more units offered in a web-supported format.

Student-managed Learning: A Case Study

Student-managed (autonomous) learning espouses to give the learner the responsibility for choosing and understanding the relevance of some key variables in construction of knowledge. These include: the purpose of the unit, its content, the role of the teachers, monitoring of their progress, the criteria and mode of assessment, the location, pace and style of delivery, the learning styles, and access to resources (Stephenson, 1999). Butler and

Winne (1995) suggest that the following attributes be evaluated by the students for them to become self-regulated learners:

- the students' understanding of the content and tasks to be learned;
- the students' goals and objectives relative to the content;
- their strategies for meeting the demands of the tasks;
- the consequences of their learning strategies and engagement with the learning tasks;
- their access to feedback on their performance in relation to the tasks, objectives and strategies.

Web-supported learning is an innovation and as such, needs a process of careful evaluation and monitoring in its needs analysis, design, development and implementation. Teachers are obliged to evaluate and monitor their plans, decisions and actions to make sure that they are consistent with the realisation of their primary goals of improving teaching and learning outcomes. Thus, feedback is central to the process of innovation as it is to the process of learning (Marshall, 2000).

With the student evaluations in hand, in order to improve the learning outcomes of the initial web-based offering of ECH 213, and to enable it to approach the principles of student-managed learning, some modifications were put in place in the delivery of this unit in 1999. The principal features of its modified delivery can be summarised as follows:

- The web-supported delivery was maintained. Students were still able to access online the unit outline, a list of staff and students, weekly events including weekly lecture notes and weekly tutorial activities, and communication facilities including e-mail and bulletin boards. Lecture overheads were made available a day prior to the lecture so that students could download the materials and to listen to the lectures attentively, making their own additions as necessary.
- A new assessment task was for them to write a reflective journal each week framed by the tutorial tasks and guiding questions which they put on the web bulletin board (10% weight). This exercise has proven most effective and has increased student use of the web site by 53%, as determined from the comparisons of the student access statistics. It has also generated substantial discussion, construction of argument and interactive experiences among students online.
- Lectures were digitally recorded and appended to the sites within a day of the lecture delivery. The Centre for Open Education still mailed out the lecture tapes fortnightly as a back-up measure for the external students; however their internally enrolled counterparts now had the

option of listening to the lectures without having to come to the lecture theatre.

- Optional face-to-face tutorials were maintained fortnightly for internal students. Those students who attended were usually few in number and were found to be the highly motivated ones and those with higher support needs; the caliber of the tutorials has made teaching and learning a very rewarding experience for all. Other students whose needs were met with the tutorial materials made available to them on the web chose not to attend regularly.
- On-campus school was available for all external students, although only four students were not online. Face-to-face interaction provided most with a sense of grounding and gave the students and teachers a chance to meet their peers with whom they had interacted on the web.
- Digital images of the consenting students and all teaching staff were added to the site, making interactions and communications more “real” and personal, particularly for external students.
- Other assessment tasks for the unit were also modified in order to suit student learning styles and achieve the following: to give them a choice and self-selection of topics in their major assignment, to make it contextually relevant for them, and to provide them with advance knowledge of the framing questions and the scope of content to be covered in their final exam.
- Two quizzes totaling 20% were given in weeks 6 and 12 during tutorial sessions for internal students and during on-campus school for externals, with the second quiz being mailed out to them. This allowed for students' monitoring of their progress in content mastery.
- Their major assignment (30%) was a choice of a self-selected parent interview and analysis within a family-centred intervention model, or a CD-ROM based research on the state of the art developments on a condition or intervention, giving the students a choice in their areas of interest as well as between a more applied vs. a theoretical exercise.
- The final examination included a case study, the guidelines for the analysis of which the students were provided with in their unit outline. The actual case study was chosen from the six they were presented with in their tutorials in alternating weeks during the semester; they had already had the opportunity of analysing and reflecting on each.
- The final examination included a choice of three out of six short essay questions. The students were also allowed an A4 ‘cheat sheet’ for their use during the examination. This device was incorporated to encourage them to systematise their review of unit content at the end of the semester, as the questions they were expected to answer relied much more on their skills of critical thinking than factual regurgitation.

In short, in response to student evaluations in 1998, the unit was re-designed to be a flexible learning package to better suit student needs and learning styles although all students received the same content materials every week. Although they were encouraged and self-selected to be online, the unit delivery did not disadvantage those students who were not, as they were sent hard copies of web materials every week. Students had the option of choosing an applied or a theoretical piece of assessment, the expected form of which was prescribed in the unit outline, but the selection of the topic (the content) was student selected. They could choose traditional models of delivery with tutorials and on-campus school, or do their entire learning on the web, or choose a combination of the two. Thus, the students are treated as adult learners who are self-motivated to construct knowledge within their preferred learning style. While the content is mostly prescribed, as it is a core unit, the *mode* of delivery is entirely flexible and encourages student-managed learning.

Resulting Educational Benefits and Implications

Web-supported teaching and learning experiences have already yielded some tangible benefits. These include:

- the creation of parity between internal and external students in content of the learning materials as well as their delivery;
- flexibility of access for all students as well as teaching staff;
- enriched content in teaching and tutorial materials with many more internet-based resources presented;
- better student engagement with highly motivational materials;
- students' construction of their learning scaffolded by online communications and peer tutoring observed frequently in propagation of relevant information, problem solving, and support, and
- increase in student confidence and skills in online learning, researching and resourcing.

Student-managed learning can only have limited applications with respect to domain-specific knowledge in core units of undergraduate programs, as the contents of such units are usually prescribed and tightly controlled (with a possible margin of options in the assessment tasks). However, as stated by Alexander and Judy (1988), efficient and effective utilisation of the strategic knowledge towards construction of learning can be optimally accomplished within content-specific knowledge. The arena in which students can manage their learning is therefore made possible in the choices they make in the *mode* and the flexibility of delivery, as well as in strategies and styles employed to interface with individual needs.

These applications have shown that students can have increasing degrees of freedom of self-designing the delivery modes which will best suit them (i.e. external vs. internal enrollment; face-to-face vs. online lectures and tutorials; online versus traditional presentation of unit materials; online vs. telephone or face-to-face communications). The ability to make the choices which best suit the adult students' needs and/or constraints and learning styles are deemed to be highly motivational; consequently, they are expected to impact the achievement of their academic goals positively (Zimmerman, 1990).

The increased student satisfaction with units delivered in innovative ways presumably has favourable teaching and learning outcomes for tertiary students. More systematic research needs to be undertaken to determine the efficacy of flexible delivery towards self-managed learning across disciplines in view of the limited evidence presented here.

	ECH213, 1998 N=115			**ECH 213, 1999 n=108**			**ECH317, 1999 n=98**		
	SA+A	**D+SD**	**Mean**	**SA+A**	**D+SD**	**Mean**	**SA+A**	**D+SD**	**Mean**
I was able to find my way easily around the web site	74%	10%	3.8	82%	3%	4.2	93%	3%	4.5
Links to course materials are always in working order.	63%	16%	3.6	82%	6%	4.1	80%	6%	3.9
Training offered on campus for the web site was sufficient.	58%	4%	3.6	49%	5%	3.8	66%	1%	4.1
My computer skills were good enough for web-based learning.	79%	9%	3.9	89%	4%	4.2	96%	1%	4.5
Face-to-face, telephone and computer communications met my needs for staff assistance.	39%	29%	3	78%	7%	4.1	77%	6%	4
Compared to traditional tutorials, I was better able to interact through the web.	28%	30%	2.9	61%	8%	3.7	54%	12%	3.6
Accessing lecture notes prior to the lecture was helpful.	83%	2%	4.4	95%	0%	4.7	90%	1%	4.5
How would you rate the contents and quality of web materials (excellent-v. poor)	84%	6%	4.1	95%	0%	4.6	84%	0%	4.1
How would you rate the overall web-based learning experience in	51%	21%	3.4	85%	4%	4.2	80%	3%	4.1

this unit? "									
I would like to see more units delivered on a web-supported format.	40%	33%	3	67%	9%	3.9	73%	16%	3.8

Summary Table: Pooled student positive responses (Strongly agree and Agree; SA+A) versus negative responses (Disagree and Strongly disagree; D+SD), and the value mean, where 5= Strongly agree, 4= Agree, 3= Neutral, 2= Disagree and 1= Strongly disagree for ECH 213 and ECH 317

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