The Online Experience:
Implications of Web-based learning
for Student Support in the First Year

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Abstract
In the design of online teaching environments for first year students, considerable attention has been paid to the nature of the interface and to the streamlining of activities for learner engagement. Much less attention has been given to the nature of the support system that is provided for novice users learning online. Support systems are essential for first year students to help them to engage in the processes of learning and to develop the skills of learning-to-learn. It is also imperative that a range of support systems be put in place to enable learners to become competent in learning online, and to learn to interact in a virtual environment. Such skills are now recognised as part of the lifelong learning competencies or generic attributes that universities seek to develop in their graduates. In this paper a theoretical and pragmatic rationale for the development of support structures for online learning is offered, which comprises both resources that learners can access in order to achieve learning outcomes and supports for communicative and cognitive processes. In addition it is argues that provision of support services for students in the first year should be seen as partnership between various stakeholders; equity office, student support services and academic staff.

Introduction
When first year students are introduced to online learning, they are faced with a new learning environment and the expectation that they will have independent learning skills and the capacity to engage in activities that require self-direction and self-management of learning. While universities are now fostering lifelong learning skills and preparation for the workplace, the cultivation of these skills is now core business at tertiary institutions across Australia (Jarvis, 1999; Hager, 1999). The learning opportunities of Web-based instruction are enormous. Students can select and employ resources, develop independent learning strategies and assess their overall progress. Yet, how do students respond to such environments? Are they capable of independent learning, developing metacognitive awareness, and identifying their own learning needs and revising plans and actions?

Research has shown that learners in their first year of tertiary study need learning-how-to-learn skills in order to become effective on-line learners, and that these skills need to be explicitly supported and taught (McLoughlin & Marshall, 2000). The needs of these students can be effectively met by collaboration and partnership between academic and student support staff, counselling personnel and student administration so that a comprehensive and integrated suites of support services is offered to students.

The changing learning context
The advent of online technologies and the resources of the World Wide Web has resulted in the need for educators to focus their attention and imagination on how best to restructure the teaching and learning processes to make optimal use of these new agents of change in the educational enterprise/sector. One tendency in the current development of Web-based learning has been the view of the World Wide Web as a storehouse of information. Many educators use the web to publish their own materials such as lecture notes for student access, thus focusing on the content to be learned rather than the process of learning.

Assisting students to become independent learners will encourage our students to take increased responsibility for their own learning so that ultimately our students would be able to participate meaningfully in a networked, knowledge-based economy of the 21st century. In this way, our students will be better prepared for life in a postmodern, postindustrial world which requires of them to engage in a lifetime of learning for enhanced personal development and to facilitate for themselves flexible career paths. As the same time, issues regarding what the online environment offers are being considered by educators and innovators (Webb, 2001). In this critical time of rethinking higher education when roles of students and teachers are being redefined, the issue of
student support has been recognised to have many dimensions and that many parties may contribute to fostering academic skills among students (Abbott-Chapman & Edwards, 1999). What works best is collaboration between faculty disciplinary staff, counselling services and support units working together to provide learning skills support for students.

Table 1 shows an overview of roles and respective contributions to a comprehensive support program that integrates academic support, social support and generic skills support. In the case reported here, the design of the environment and the features of academic, social and personal skills development were achieved through a partnership between academic staff, student support services and counselling, with each contributing to the creation of positive learning experiences for students. This took place through a collaborative design process, with a working team in which contributions and perspectives were sought from all parties offering support.

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**Context of the study**

The following observations and recommendations on supporting first year students are made within the context of first year units in Computer Science, offered at the University of New England. Two unique features of course delivery are that units are taught to off-campus and on-campus students simultaneously, using the same learning materials, and making extensive use of Internet technology for delivery of course content, student assessment, teacher feedback and inter-group communication. All students who enrol in the unit Computer Science I are part of an ‘extended classroom’ where they collaborate with, and engage in dialogue with other students on and off campus. The Web offers an online syllabus, which is a series of Web pages that offer:

- essential course information
- online assessment tasks
- links to other sites and resources;
- communication with other students via bulletin boards.

In addition, the unit requires students to complete practical tasks, hands-on laboratory sessions and tutorials. Essentially, the course is designed for independent learning, but with sufficient support to enable students to develop cognitive and communicative skills, a well-structured knowledge base, and a network of other learners. These design features have been informed by the extensive research conducted on the first year experience by a number of researchers (McInnis, 1998; McInnis & James, 1995). In particular the unit was designed to develop independent learning skills, but with embedded support for a number of critical dimensions such as the development of social networks and peer interaction, generic communication skills and information literacy.

**Organising learning-centred instruction on the web**

In order to organise teaching around the learning process with the use of online technologies, there is a need to be clear about what the learning process entails. First, there is a need to spell out our assumptions or premises about the learning process based on the most recent research. The following are some of the central premises of learning on which the pedagogical design of the first year unit in computer science are based (Biggs, 1999).

- Learning is an active process of meaning or knowledge construction from information.
Learning occurs when the learner is able to construct mental models of the content to be learned, that is, when new knowledge is assimilated to old and old knowledge is changed to accommodate the new.

Learning takes place in a context, that is, knowledge makes sense when it is situated in a real life situation.

Learning occurs socially as meaning is negotiated and shared among the members of the community who use the common knowledge.

Marzano's (1992) insightful and useful conceptualisation of the process of learning as a complex system of interactive processes offers five types of thinking. Marzano (1992: 1-17) discusses these five dimensions of thinking as follows.

1. Students need to develop positive attitudes and perceptions about learning. This is an important dimension to remember in designing an environment that is conducive to learning since our experience of any phenomenon is coloured by our attitudes and perceptions that we bring to the situation. It is important therefore, to be cognisant of the attitudes and perceptions of the learners, to know their characteristics, their aims and aspirations for studying. Lessons and learning activities are developed to foster positive attitudes and perceptions.

2. Research in cognitive psychology points to learning as an active process which involves thinking in acquiring and integrating knowledge. As Chickering and Ehrmann (1996) note, learning is not a spectator sport. Learning activities need to provide opportunities for students to talk about what they are learning, to reflect and think about new information, relate it to past experience and say how they could use the knowledge in their everyday lives.

3. The learning process also involves thinking which extends and refines what is known. However, extending and refining knowledge means doing some serious thinking.

4. The main purpose of acquiring knowledge or developing a skill is to be able to use that skill or knowledge. However, to be able to do this requires the student to go beyond extending and refining knowledge to the thinking involved in using knowledge meaningfully. Learning activities need to be challenging and require students to go beyond what they normally do in a classroom situation. In other words, students need to be set learning activities which simulate real life work, which require extended engagement as a result of which the deepest learning occurs. Thus, in this case study, setting authentic learning tasks rather than many superficial ones became a major challenge.

5. Ownership and control are central factors in affecting the quality of learning. There are some skills which make learning effective and efficient. These are motivation to learn, attempting to be accurate and precise, persevering even when answers are not apparent, being able to think about content in unusual ways and avoiding acting on impulse. In this unit one of the goals was also to attempt to assist our students to develop a sense of control over the learning process and to develop positive attitudes during their course of study.

Creating a supportive learning environment online

How does one design a good learning environment for 300 students in a first year computer science unit on the basis of the principles and theories of learning just discussed? As a student in this unit, one would want to be able to acquire information on one's own, be given the opportunity to relate the new information to one's previous experience and feel comfortable enough to discuss with others in the class what one is learning, then apply and synthesise the information and apply the knowledge learned to novel situations. As Jonassen et al (1995) point out, "...the most valuable activity in a classroom of any kind is the opportunity for students to work and interact together and to build and become part of a community of scholars and practitioners."(Jonassen et al, 1995, p.7) By creating a learning community it is possible to enhance the students' classroom experiences through the provision of a broader context for their learning tasks. Face-to-face teaching and learning is enriched by online interaction, which allows more time for participants to engage in reflection, peer discussion and supportive interaction (McLoughlin, 1999). The challenge is how to
leverage online technologies to create a learning community consisting of a cohort of students taking a common curriculum for a time span of about fourteen weeks, that is, one semester. In the following sections the way these new media spaces open up possibilities for human interaction beyond those available in the traditional classroom or lecture hall are discussed.

**Creating a virtual communal space for both students and lecturer**

The first year students in the unit Comp 131 Introduction to Computer Science I consist of 100 on-campus students and 200 off-campus students. The profile of each of these groups is very different as are the students' reasons for study. On-campus students are typically just out of high school and look to university as a natural progression to a career. They perceive study as a means of obtaining a satisfying and high salary position. Off-campus students on the other hand are typically adult learners. Most but not all of these students exhibit the following features as summarised by Laskin (2000):

- As adults these learners are self reliant and can learn on their own.
- They feel they have something to offer.
- They learn only what they perceive to be relevant so any theory must be a vehicle to practicality.
- Adult students are less tolerant of non-meaningful learning such as the "busy work" to learn teaching method.
- Adult learners need to have opportunities to communicate their life experiences in relation to the subject matter they are learning.
- Adult learners want to be treated as adults and they learn best in a democratic non-threatening environment.

This was achieved in the course by setting tasks that allowed expression of personal views, the inclusion of experiential learning, and facilitation by an online moderator dedicated to fostering participation and open inquiry.

**Profiling our students**

In order to obtain a profile of the types of students studying the unit it was decided to use the assessment system as a means of gathering information about learner characteristics. The first assignment for the unit involved students posting a short description of themselves and the reasons for their studying the unit onto the Bulletin Board. In addition, to encourage participation and interaction between the various categories of students a discussion topic was also given. To provide incentive for students to participate in the online introductions, comprising the first section of the first assignment 6% of the students overall mark for the unit was allocated for active participation in posting to the Bulletin Board.

On studying the postings we found it useful to group the students into the following four learner categories below. Oblinger (2000) discusses these learner categories which were used by the University of North Carolina and Pricewaterhouse Coopers in the development of a system-wide instructional technology strategy.

1. Life fulfillment learners: This group view doing the unit as a kind of hobby or a source of personal development. Life fulfillment learners consist of approximately 2% of all enrolments for this unit and are generally people who are older and retired and tend to enroll in the off-campus mode of study.
2. Corporate learners: These learners seek to pass this unit in order to get a computer science degree to advance their careers within their corporation. These learners account for 60% of all the enrolments and generally enroll in the off-campus mode of study.
3. Degree completion adult learners: These are learners who seek to complete a degree later in life than usual and they are often working adults who must balance work and family responsibilities with their educational goals. These people account for approximately 2% of
the enrolments and tend to be partners with children and look to a degree as an outlet from family duties with perhaps one day getting a job within the industry.

4. "College experience" learners: This group is in the age group between 18-24 and are usually those who are just out of high school and are undergoing the "coming of age" process as well as getting an academic experience. This group accounts for the other 33% of enrolments and consists of mainly on-campus students living in the colleges and residences on the university campus.

**Building the right learning climate for authentic learning**

It should be noted that those four categories above are not definitive as there may be some overlap. However, while the students in the learner categories all have different reasons for studying it seems that they share a common objective. This objective is to pass the unit as evidenced by the large number of postings that stated just that in response to the question “What do you hope to get of the unit?”

The question then arises of “How does the categorisation of students inform us as supporters of learning?” Simply it implies that there are different learning needs that we as educators must accommodate. Traditionally, this could not be achieved as the on-campus students were the primary focus of support. The off-campus students were simply supplied with a hard copy of the teaching materials. By reconsidering the student learning community as a combination of on and off-campus students, academics, support staff, and counsellors could join forces to provide not only effective online delivery of educational services, but also improve support for learning.

There is the potential to utilise the online environment to foster a student's sense of belonging within a group and thus build a virtual classroom is realised. However, to be effective the learning and support activities must be integrated in such a way as to promote dialogue and communication between both cohorts of students, encouraging participation and rewarding both on and off-campus students for their participation.

**Creating a climate for learning**

According to Marzano (1992), it is imperative that the teacher sets the stage for learning by paying attention to student attitudes and perceptions that affect the learning, because it is only when students have positive attitudes and perceptions that proficient learning will occur. Marzano (1992) discusses the types of attitudes and perceptions which affect learners' approaches to learning. These include a sense of acceptance of the need to learn, and a sense of comfort and confidence with the learning environment.

Student's perceptions of acceptance by their peers and by the lecturer are determined in the traditional classroom by such little acts that the teacher engages in, for instance, making eye contact with each student in the class, knowing students by their first names, physically moving around the room and staying close to students and dignifying responses by acknowledging the correct aspects of answers. Although these aspects may seem trivial, they send powerful messages to students about the degree of acceptance of them by their lecturer. For students, this feeling of acceptance by the teacher and their peers constitutes an important aspect of a positive learning climate.

By rewarding and recognising participation in an assignment students can see an immediate benefit for participating in the virtual classroom. Once involved in the virtual classroom students then start to share experiences and create rapport with other students. This serves two purposes. The first is that off-campus students feel less isolated and more like active participants in the unit, and gives them the opportunity to share their life experiences. The on-campus students while not suffering the isolation of off-campus students get the benefit of interacting with more mature and experienced students. This creates a cyclic feedback loop. That is, off-campus students are able to share with on-campus students their life or work experiences while on-campus students assist their off-campus counterparts with the theoretical material they receive in the lectures. The net effect is a virtual support group where all students interact freely and without fear of feeling inadequate.
Communication and social support

The communication component is constructed as follows. All students are broken up into private work groups of approximately 20 students. These work groups serve as the forum where students of the group can post questions and answers dealing with the difficulties of the assignment. For participating in their private groups students are rewarded with a grade of 1% toward their overall final grade.

In terms of putting the theories of constructive learning into practice, it is imperative to provide support for social learning through the use of online forums and email. Our goal is to build a virtual learning community so that students can interact with other students and with their lecturer for the purpose of learning.

The reward of marks for participation in the virtual classroom can only be effective if students consider that there is some other gain to be made from participation. In addition to motivating the students to come online through integrated assessment, students should find the discussion interesting, feel that it is safe to contribute and that they are worthwhile contributors to the discussion. To make the discussion interesting and worthwhile requires effort on the teacher's behalf. The lecturer lets students know early in the unit what they are responsible for their own learning. The bulletin board needs be monitored regularly by the teacher. The teacher may contribute to the discussion by responding to students' postings with reassuring responses, feedback and prompts for more discussion.

The provision of guidance and feedback is done in a public forum so that all students can benefit. This presence of the moderator/teacher reassures students that someone in authority guides and cares about the discussion and creates a safe environment. In order to ensure that these principles are followed, course tutors and moderators are provided with guidelines.

A virtual classroom example

In order for the virtual classroom to be effective students need to overcome two hurdles. The first hurdle is the effective and efficient use of the technology. The second hurdle is to overcome the fear of participation in an environment in which there is no physical contact or social cues. This area creates an opportunity for counseling and student support services to provide input and direction for students by setting up a help desk for inquiries. In addition, the assessment task can be set up to assist students to overcome any further problems associated with anxiety unfamiliarity with online communication.

In the context of the present study, the first assignment consisted of two parts. The first part required students to simply log onto the bulletin board and post a short message introducing themselves. Other students were then invited to respond and find common interests. On completion of the first part of the assignment students were then given a topic to discuss on the bulletin board. The topic for discussion was:

“What do you consider to be the ethics of a computing professional?”

The question in the assignment is an open-ended question with the aim of motivating all students to participate actively in the discussion.

The objective of this assignment was two fold. Firstly, it was necessary for the students to become familiar with the technology. This was best achieved by setting a specific task for students to accomplish. Hence, the assignment required students to post some biographical details of themselves in the public forum on the bulletin board and receive uncritical peer feedback. Secondly, it was important for the students to begin considering the consequences of their actions as budding computing professionals. Students must begin early on in their career to become aware that their actions will affect others, as decisions that are made by a computing professional are not made in isolation from society.

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The participation of the students in the first assignment was beyond expectations. With approximately 300 students participating there were over 2000 postings on the bulletin board. This gives an average of about 6 postings per student for the first assignment. The issues discussed were wide ranging. However, it could be said that a majority of students had a common view on what they considered to be the ethics of the computer professional. A small minority actually dissented from that view. It was these two opposing viewpoints that stimulated and motivated the discussion. The online moderator drew out these opposing views by posing questions and by offering provocative statements for comment.

Of the responses it was the mature age students who had more variance in their postings. These students were more confident in what they wanted to say and were not affronted by someone opposing their view. Rather they would argue the point. The on-campus students tended to be more reserved in their postings and produced answers that they expected the teacher to think were good rather than how they actually felt about the issue. In general, the discussion was pedagogically sound with students expressing a heightened awareness of what the ethics of a computing professional are.

In personal communications with some of the on-campus students they communicated to the lecturer that they felt at times intimidated by the more mature students' responses on the bulletin board. This was due to the mature age students' confidence and assertiveness in their postings. Making the on-campus students feel less intimidated and interacting in a beneficial way with the mature age students in the class was a challenge for the lecturer during the course of the semester. In this, academic staff tutors were supported by counselling staff who offering a range of strategies.

In addition, other benefits were gained by students who completed the first assignment online. Students began to develop relationships with other students and to improve their communication skills. Overall this helped build an ongoing virtual learning environment where students felt secure in posting questions and discussing the content issues of the unit freely. These interactive learning instances are evidence that online communication can enhance traditional modes of study.

**Supporting students online: a new paradigm?**

The challenge for the online lecturer is how to communicate with students of diverse backgrounds and interests in different ways, at different times and for different purposes so that students can actively participate in the community of learning and achieve highly.

The challenge for the lecturer is how to use the new media spaces created by online technologies to increase opportunities for a diverse group of students to reflect on the important issues and assume increased responsibility for their own learning. The use of online technologies is not simply to generate a frenzy of increased activity for both lecturer and students, but to ensure that communication is focussed and supportive. To achieve this, its is important to recognise the varied and essential contributions of counselling staff, student support services and academic teaching staff in creating and fostering confidence in this new mode of learning. Partnership in the design and support of online communication, peer support and interaction were key ingredients of the successful approach described on this paper.

As Creed (1999) points out, technology can amplify bad pedagogy if adopted hastily and merely layered atop an existing practice. The instructional and learning goals should determine whether the lecturer adopts these online technologies. Effective and satisfactory use of technology in learning and teaching requires that stakeholders have a good understanding of how and why the technology is used to support learning. In this case study, there was consensus among the stakeholders that the technologies can be used to support and challenge students to think more deeply about the subject matter they are learning and to foster student's engagement with the content. This outcome is the result of heightened learner interaction with teachers, support services and their peers, resulting in the students' thinking more seriously about the social and political ramifications of the content they are learning.
In conclusion, the critical success factors in designing effective learning environments must start with a recognition that the student experience is not limited to learning disciplinary content, but that it is fundamentally a social and emotional experience. The creation of successful learning environments therefore require greater collaboration and dialogue between counselling staff, student support services and academic staff. The case study presented here is an example of an effective collaboration in supporting students, but like all strong partnerships, it requires effort, goodwill and recognition of the multifaceted nature of student learning.

References


Greening, T. 1996 “Problem-Based Learning in a First Year Computer Science Course”. *Synergy* Issue No.2 Centre for Teaching and Learning, University of Sydney.


Jonassen, D., Davidson, M., Collins, M., Campbell, J., Haag, B. 1995 “Constructivism and Computer-Mediated Communication in Distance Education”. *The American Journal of Distance Education* Vol.9. No.2.


Marzano, R.J. 1992 *A Different Kind of Classroom: Teaching with Dimensions of Learning*. Association for Supervision and Curriculum Development Alexandria, VA.


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