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Effects of Learners' Readiness on Their Perceived Learning Outcomes

John A. Boeglin

Katy Campbell

John A. Boeglin is Associate Professor & Associate Dean (Academic), Faculté Saint-Jean, University of Alberta. He can be contacted at john.boeglin@ualberta.ca

Katy Campbell is Associate Professor & Associate Dean (Research), Faculty of Extension, University of Alberta. She can be contacted at katy.campbell@ualberta.ca

Abstract

This paper provides some insight into students' performance and perceptions within the context of an introductory psychology course in which Web-based materials and activities were used to enhance teaching effectiveness and learning outcomes. The paper begins with an overview of the development and implementation of this French-language WebCT course. The rationale behind the adoption of WebCT and the use of a number of its tools are also discussed. In order to evaluate the effectiveness of this pedagogical approach, we collected quantitative and qualitative information on student performance and perceptions from a number of sources throughout the term. The data highlight some of the strengths and weaknesses of this particular use of online teaching and learning support.

Résumé

Cet article donne quelques éclaircissements sur les résultats des étudiants, et de leurs impressions, à un cours d'introduction en psychologie, dans lequel des matériels et des activités sur le Web ont été utilisés pour rehausser l'efficacité de l'enseignement et les résultats de l'apprentissage. Il commence par un aperçu général de la création et de la mise en œuvre de ce cours en français sur le Web (logiciel WebCT). Nous y discutons également la logique qui sous-tend l'adoption du WebCT et l'utilisation d'un certain nombre des outils qu'il propose. Afin d'évaluer l'efficacité de cette approche pédagogique, nous avons recueilli des informations qualitatives et quantitatives sur les résultats et sur les impressions des étudiants à partir d'un certain nombre de sources au cours du semestre. Les données recueillies soulignent certains des points forts et des points faibles de cette utilisation particulière des matériels de soutien à l'enseignement et à l'apprentissage en ligne.

Introduction

A long-established approach to teaching large, first-year university-level introductory courses has been to adopt a lecture-based teaching or didactic strategy, that is, formal presentations or lectures by the instructor with the support of overhead, slide, film, or audio materials. With the advent of technology-enhanced teaching and learning environments such as Web-based educational resources and activities, multimedia CD-ROMs, and so-called smart or multimedia classrooms, to name but a few, instructors now have access to an even broader range of teaching tools. When they are used appropriately, these tools can enhance teaching and learning effectiveness, create a more interactive teaching and learning environment, and promote the use of higher-Canadian Journal of Learning and Technology

Designing a Course With Online Teaching and Learning Support

The introduction of any form of innovation into an educational environment requires that careful consideration be given beforehand to the pedagogical objectives to be achieved by the innovation. Our decision to introduce Web-based teaching and learning support was based, in part, on a summary review of what has been said over the past decade or so with respect to some of the pedagogical merits and flaws of online teaching and learning

environments.

For example, Jonassen (1990, 1994, 1996), Schank (1993), and Yaverbaum, Kulkarni and Wood (1997) are just a few of the many learning theorists who believe that learners should be "doing something, not just watching something" - and that this doing could occur through online learning environments that promote the intellectual capacities of learners. That is, computer-supported tasks such as the retrieval and reorganization of information from the World Wide Web (WWW) may require a reconceptualization of existing semantic networks, a process of active learning.

Hypermedia environments can also provide the learner with ample opportunities to engage with and think about information retrieved from the WWW (Greenbaum & Kyng, 1991; Hill, 1997). In some of these contexts, learners must develop their own learning strategies, a cognitive process that encourages deep learning. Moreover, if this process can be enhanced so as to involve the social negotiation inherent in collaborative conversations with others, then knowledge construction becomes enriched even further. In sum, the learning environment is enhanced through the dynamic, interactive, and visual capabilities of hypermedia learning (Crosby & Stelovsky, 1995), in turn supported and extended, for example, through the use of online conversations or discussions.

Over time, online teaching and learning environments are also moving away from electronically presenting information, toward providing support for learners in constructing knowledge and deriving meaning. For example, in online hypermedia environments, control is moving from the computer, which presents information in pre-determined, structured sequences, to the learner, who decides where to find information and how to link new information to previously acquired knowledge. Whereas early educational environments helped to shape "compliant thinking" (Hill, 1997), hypermedia environments tend to be more open-ended, "where divergent thinking, multiple perspectives, and independent learning are critical..." (p. 79).

In the present case, online teaching and learning support were used to enhance a French-language introductory psychology course offered at Faculté Saint-Jean, an entirely French-speaking Faculty at the University of Alberta. The course, PSYCE 104 - *Procédés psychologiques de base* , was part of a major course redevelopment project undertaken during the 1998-99 academic year (see Boeglin, Campbell, & Picard, 1999). Up until that time, PSYCE 104 had been delivered using a lecture-based teaching strategy. According to student evaluations extending over a period of several years, the lectures were usually well-organized and informative, though not particularly exciting. The lectures were enhanced with overheads, videos, and in-class demonstrations to which the students were generally receptive. Unfortunately, given the significant amount of content to be covered during class time, there was very little time left for group discussions or other forms of social interaction that could have created a more active, or participatory, learning environment. Moreover, students were reluctant to ask questions or to share their relevant experiences during class time, even when encouraged to.

In the fall of 1998, PSYCE 104 was scheduled for simultaneous delivery to on- and off-campus students by way of interactive videoconferencing. This particular initiative arose out of Faculté Saint-Jean's commitment to develop and implement alternative delivery technologies for its regular and distance education programs. Since this delivery format represented a significant departure from the face-to-face format of previous years, particularly in terms of physical, social, and technical constraints, the entire course content had to be redeveloped. This development process involved, among things, repackaging the lecture content into smaller segments, incorporating more opportunities for interactivity into the lectures, and paying more attention to the preparation of visual materials to be used during the lectures. It was during the early stages of this redevelopment process that we decided to further enhance the course by way of online teaching and learning support.

There were several reasons for wanting to use online teaching and learning support in this particular course. First, we reasoned that in the light of emergent thinking about the effectiveness of alternative teaching and learning technologies, the development and implementation of a Web-based teaching and learning environment might help address some of the problems that were encountered in the face-to-face lecture format. For example, by providing pre-session access to lecture outlines highlighting the key concepts to be covered, students could organize the material for learning as well as use a guided, note-taking strategy during the face-to-face lectures. Second, since the videoconferencing was limited to a single three-hour session each week, we wanted to provide students with unlimited access to all course materials, ample opportunities to interact with both the instructor and the other students in the course, and encouragement to actively pursue knowledge construction outside of the regularly scheduled weekly meetings. For example, participation in an online threaded discussion would require students to prepare evidence and personal narratives related to the discussion topic.

We speculated that students would benefit from this pedagogical approach in several ways. First, they would gain global access to a wealth of course-related information not readily accessible given the current format of delivery (i.e. textbook-supported, lecture-based teaching and learning environment). Second, it would create a window of opportunity for

teaching and learning environment). Second, it would create a window of opportunity for the instructor to change existing classroom teaching strategies and develop new teaching strategies - for example, relying less on lecture-based teaching and more on interactive activities with and between students. Third, students would be able to access and review course materials at their own pace both before and following the weekly class meetings. As a result, students would have the opportunity to change their existing in-class and out-of-class learning strategies, developing new, higher-order learning strategies.

Support for these expectations is provided by cognitive theorists such as Jonassen (1996) who describes computers as intellectual toolkits, able to promote the intellectual capacities of learners. From a cognitivist viewpoint, he refers to the processes involved in retrieving, organizing, and relating information to existing semantic networks as a process of reconceptualization. However, so-called traditional learning tasks are not well supported in the relatively unstructured environments of the WWW, in which both instructors and learners are participatory, collaborative designers rather than transmitters and recipients of knowledge (Child, 1998; Greenbaum & Kyng, 1991). This suggests that instructors have an important role to play in helping learners set goals and plan learning strategies to accomplish them. Success of these systems seems strongly related to well-designed instructional settings and their embeddedness in a social context (Tergan, 1997). The redesign of PSYCE 104 for Web-supported, distance delivery was intended to provide a guided learning experience in which students were encouraged to plan and evaluate their own learning. This was supported by way of an environment that, hopefully, would enhance their learning opportunities through their participation in a so-called community of learners, thereby resulting in an increase in the number of learning interactions. The objective therefore was to come up with a well-structured instructional design that would strike a balance between teacher-centered and learner-centered environments, while supporting those learners who might express some confusion and resistance to learning experiences that unexpectedly require them to work collaboratively and in more flexible, technology-enhanced contexts (Magolda, 1992).

This framework promotes the Web as a tool for "assisting in learning", not simply as an extension of, or substitution for, traditional teaching practices (Bonk & Reynolds, 1997). Bonk and Reynolds describe the instructors' role, here, as one of assisters of learning, " [who] manage and structure tasks, model and demonstrate ideas, provide questions and feedback, coach or scaffold learning, encourage students to articulate beliefs and ideas, foster student reflection and self-awareness, push student exploration and application of skills, and directly instruct when appropriate" (Bonk & Reynolds, 1997, p. 168). In this view, Web-based teaching and learning environments that continue to support the value of instructor presence may also increase opportunities for success for relatively inexperienced learners in junior undergraduate courses.

Implementing a Course With Online Teaching and Learning Support

In the fall term of 1999, PSYCE 104 was offered to on-campus students only, by way of bi-weekly face-to-face lectures held in a smart classroom. The lectures were enhanced with Web-based educational resources, Power Point™ presentations, videos, in-class activities and/or demonstrations, as well as question and discussion periods. The Power Point™ presentations included text, images, tables and figures, as well as links to relevant Web sites. The Power Point™ slides guided note-taking during the lectures and were used occasionally to summarize points as they were being made during some of the in-class discussions.

The face-to-face lectures were further enhanced with online teaching and learning support through the use of WebCT™, a learning management system for the development, delivery, and management of interactive courses or course components over the Web. WebCT™, short for Web Course Tools, is comprised of an integrated set of tools designed to enhance teaching effectiveness and learning outcomes.

Figure 1 shows a screen capture of the course home page. The *General Information* icon opened to a page where students could find links to the course outline, a calendar, an HTML page containing University policy on plagiarism and cheating, and a WebCT™ help site for students. The . *Course Content* icon opened to a Table of Contents (Figure 2). The online course content was organized much like a textbook. Each chapter or module was introduced by way of a single page highlighting the learning objectives and providing an outline of the major topics to be covered. These outlines were designed for use as advance organizers and as a guided note-taking tool which students were encouraged to print and bring to class. Students could also access some of the Power Point™ slides that were presented during class. As for the actual online course content, it reiterated and/or expanded on material that was presented and/or discussed either in class or in the textbook. Most of the course content pages contained hyperlinks to a glossary and relevant Web sites as well as embedded questions requiring the students to stop and think about the material that had just been covered. Some of these questions were subsequently discussed in class or during online discussions. An example of a typical course content page is shown in Figure 3. The online course content could be printed, annotated within the WebCT™ environment, or

downloaded to a word processor where students could then create their own course notes or study guide.

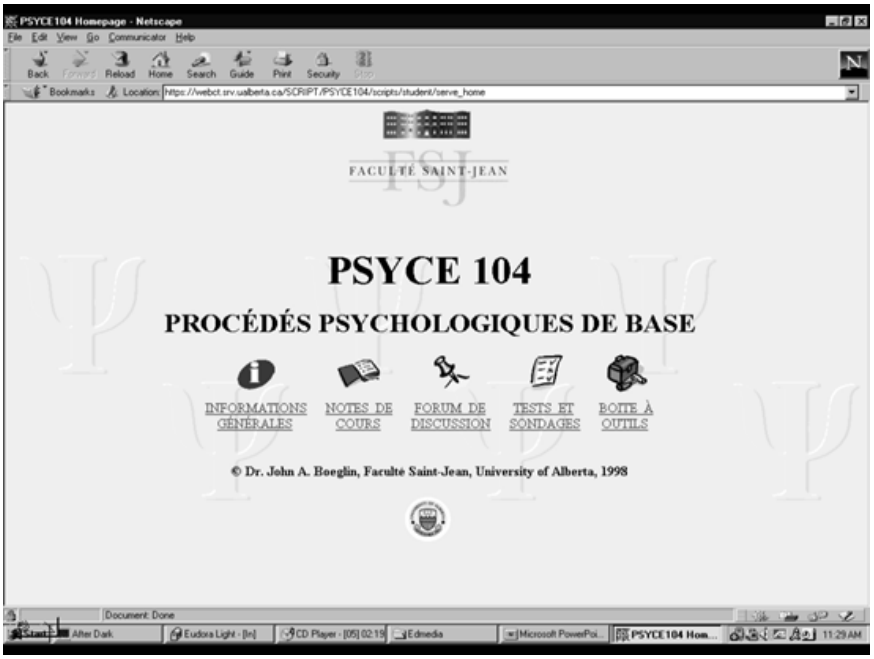

Figure 1.

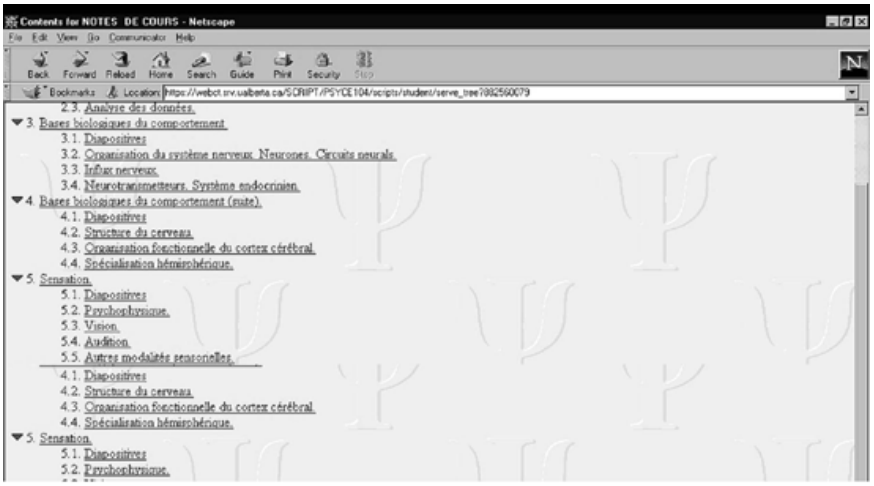

Figure 2.

Figure 3

Figure 3.

The *Conferencing Tool* was used to promote interpersonal and critical thinking skills. The students were required to participate in five graded, online discussions of topics recently covered during the face-to-face lectures. This was accomplished by first dividing the class into four smaller groups. One student from each group was asked to act as a reporter and to provide a weekly online summary of the group's discussions that was accessible to the other students in the class. As a way of introducing students to the idea of composing and posting messages in an online discussion group, as well as providing them with an opportunity to get to know each other better, students were first invited to compose and post a brief message about themselves. The formal discussions themselves were initiated three weeks into the course. Each of the five discussions was led off by a question introduced by the instructor. The questions were fairly broad, somewhat controversial, and required students to take a position based on personal experience, research evidence, and the comments of other students. For example, following an in-class discussion of some of the amazing feats that people can accomplish while they are hypnotized, students were asked to discuss if the state of hypnosis was really a unique altered state of consciousness or not, and to provide evidence for their response. The intent of the question was to get students thinking about whether some of the amazing feats that can be accomplished under hypnosis could not also be accomplished when individuals are in a so-called normal state of consciousness.

The *Quiz Tool* served a two-fold purpose. First, it was used to provide students with a means of self-assessing their mastery of the course material. Second, it was used to allow students to become more familiar with the type of exam questions used to assess student performance in this course. There was one online quiz for each of the eight chapters covered during the term. Each quiz was comprised of five to eight multiple-choice questions. On submitting a quiz, within a few seconds students would receive a grade and accompanying mediated feedback for each question. Each of the quizzes was initially set for five attempts, although students could request that the number of attempts be reset to zero.

Finally, the *ToolBox* icon opened to another page containing a number of student course tools such as email, access to grades, a glossary, a personal study guide, and a searchable course index.

On the first day of class, the instructor informed the students, as part of his general overview of the course, that there was a course Web site for teaching and learning support. The students were provided with a help-sheet that included instructions on how to log on to the course Web site, a brief description of some of its features and tools, and whom to contact if they needed help. The instructor then guided the students through the process of logging on to the course. He also went over some of the main features of the WebCT™ course site. Among other things, students were shown how to use some of the tools described above, in particular how to compose and post messages. Other features and tools such as quizzes and annotations were introduced later on in the term.

Evaluating a Course With Online Teaching and Learning Support

In the fall of 1999, the students enrolled in PSYCE 104 were the willing participants in an extensive study on the impact of Web-based teaching and learning environments on student perceptions and performance. Specifically, we were interested in determining what effects such environments might have on student learning strategies and how students feel about these innovative teaching and learning technologies. In order to evaluate the impact of Web-based teaching and learning support on student performance and perceptions we employed a multi-dimensional, quantitative and qualitative approach resulting in four data sets:

1. Pencil and paper surveys were administered shortly after the beginning of the term (Week 3) and shortly before the end of the term (Week 12). These surveys consisted of multiple-choice and short answer, open-ended questions dealing with, among other things, students' impressions of various aspects of the course Web site, any problems or concerns they had, and suggestions for improving the course delivery. In addition, we asked the students to provide a self-evaluation of their computer literacy as well as their attitudes with respect to the use of learning technologies.

2. Quantitative and qualitative information concerning the course in general was obtained from the standard, university-wide course evaluation survey conducted at the end of the term.

3. The WebCT™ tracking tool was used to monitor, among other things, the number of times that the students logged on to the course Web site as well as the frequency with which they used some of the WebCT™ features and tools (e.g. level of participation in the online discussions).

4. A focus group discussion was scheduled during class time toward the end of the term. Two experienced course evaluators led this activity. The instructor was not in attendance.

The students were encouraged but not obligated to participate in the focus group. Nonetheless, almost half of the class did take part in this activity.

Participant Characteristics

Table 1 presents some of the general characteristics of the forty-three student participants in this study.

Table 1. *Participant characteristics*

Gender	
Males	11
Females	32
Age Range	
17-20 years	30
21-29 years	11
30+ years	2
Program	
Year 1	36
Year 2	2
Year 3	5
Technical readiness (out of 23 respondents)	
I am a frequent computer user	11
I am somewhat comfortable to very comfortable using computers	9
I own a personal computer	18
I have an Internet connection at home	6
I have previously taken a course offered either partially or entirely online.	3

Results

Intended outcomes of the present course design, described above, included the following:

- to begin to re-orient the learning environment to a learner-centered approach
- to enhance and encourage knowledge construction
- to increase instructor-to-student and student-to-student interaction
- to improve learning outcomes

If we begin by looking at the date on which students logged on to the course Web site for the first time, we find that 26% of the students accessed the course Web site on the first day of class. One week later, 77% of the students had accessed the course Web site at least once. Figure 4 shows the distribution of the total number of hits over the entire term as recorded by the WebCT™ tracking tool. The mean number of hits per student was 224 (median = 213). Figure 5 shows the average number of times the various WebCT™ course tools were used. Finally, Figure 6 shows the average number of times students used the various features of the conferencing tool.

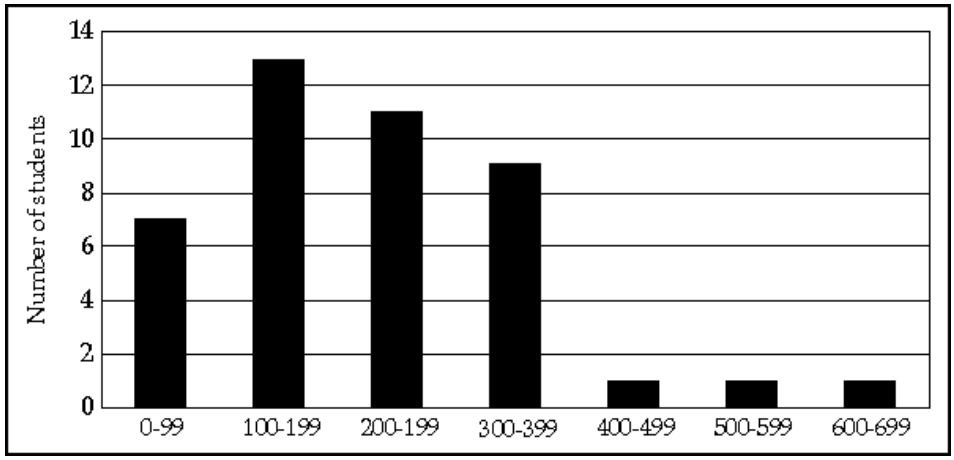

Figure 4. Distribution of total number of hits.

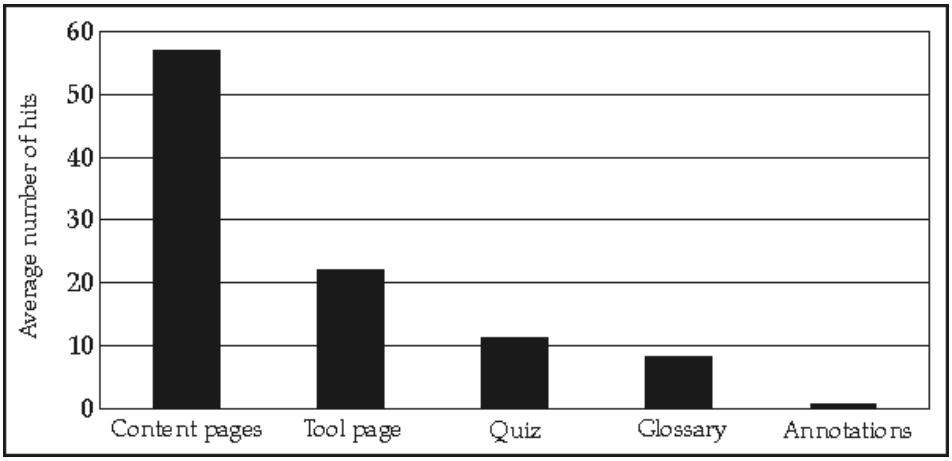

Figure 5. Frequency of usage of WebCT course tools.

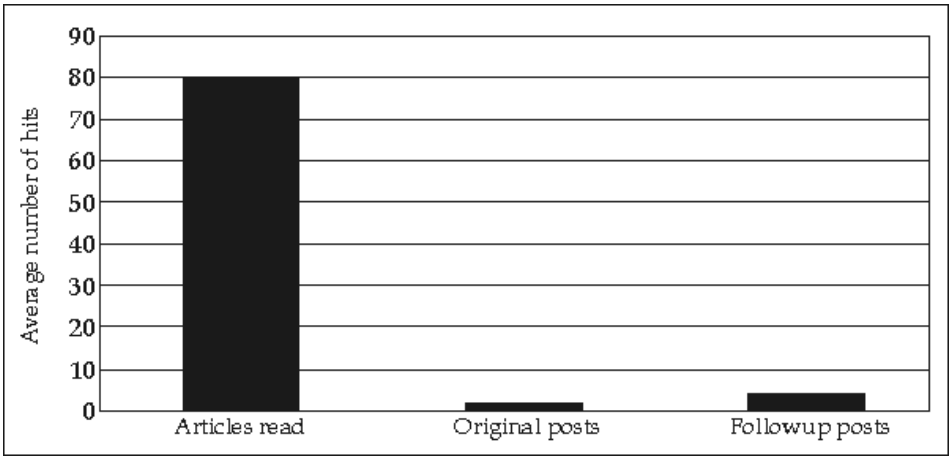

Figure 6. Frequency of usage of WebCT conferencing tool.

Tables 2 and 3, present an overview of some of the quantitative and qualitative data from the surveys, formal course evaluation, and focus group.

Table 2. *Summary of student reactions to the course in general*

Which aspects of this course did you like the best?	Instructor's interest for the subject Use of the Internet In-class activities
How could this course be improved?	Include more activities other than lectures and discussions
Has this course contributed to your enthusiasm for learning?	Yes: 95% (Total responses 19) No: 5%
What is your overall impression of the way this course was taught?	Very comfortable: 29% Somewhat comfortable: 57% Neutral: 9 % Not at all comfortable: 5%
Would you be ready to take another course taught in the same way?	Yes: 74% No: 0% Do not know: 26%
Did you spend more time on this course than on your other courses?	Yes: 24% No: 56% Do not know: 20%

Table 3. *Summary of student reactions to the course Web-site*

Did you have any difficulty in learning to use the Web site?	Yes: 23% No: 73%
If so, please elaborate.	Difficulties with the conferencing tool Accessing and searching the Web site
	Course notes

What did you like?	Revision tests Conferencing Checking results
What did you dislike?	Conferencing Technical difficulties
What would you add?	More links More media
What would you delete?	Conferencing
Did the Web site facilitate your learning?	Yes: 78% No: 4% Not sure: 18%
If so, how?	Course notes - accessible, easy to search and review Revision tests - practice, feedback Conferencing - learn more about course topics and other students' opinions
Did the Web site change your learning strategies?	Yes: 57% No: 19% Not sure: 24%
If so, how?	Course notes - better prepared More literate in the use of computers and the Internet
How would you describe your level of comfort in using computers?	Very comfortable: 33% Somewhat comfortable: 43% Neutral: 14% Not very comfortable: 5% Not at all comfortable: 5%
What is your overall impression of theWeb site content?	Very positive: 28% Somewhat positive: 68% Neutral: 4%
What is your overall impression of theWeb site?	Very positive: 32% Somewhat positive: 43% Not sure: 25%
Do you have any other comments or suggestions?	Educationally well-organized Remove the conferencing Will never replace the instructor or in-class discussions with other students Inconvenient for those without Internet access at home

Discussion

The use of online teaching and learning support in this introductory psychology course yielded mixed results in terms of its impact on student performance and perceptions. While most students were generally receptive to the use of online teaching and learning support and were willing to use the various tools of the course Web site, others were more cautious in this respect. There are several possible explanations for this finding. First, it may be due to the fact that students had no prior knowledge that this course would involve the use of alternative delivery technologies. Given that only one section of this particular course was available, those students who did not feel comfortable with the use of computers and Web-based learning resources did not have the option of changing course sections. Second, it may be that the explanations that were provided to the students at the beginning of the term did not adequately address their level of concern. That is, the instructor did not provide sufficient explanation for the different types of learning support being used, nor was there enough emphasis on the fact that the course design was based on thoughtful pedagogic rationale and was meant to enhance their learning experiences.

Finally, the majority of the students enrolled in this course arrived directly from highly didactic learning environments, for which they had developed pertinent learning strategies and in which they felt most comfortable. Under the best of circumstances, university courses can be very intimidating for first-year students, perhaps even more so when the pedagogical approach differs from that to which students have been accustomed in the past. Magolda (1992) provides a possible explanation for the dissonance experienced by these learners when faced with a more open-ended, learner-centered, cooperative learning experience as can be found in a course with online teaching and learning support. She believes that students interpret, or make meaning, of their educational experiences as a result of their assumptions about the nature, limits, and certainty about knowledge. These assumptions are referred to as "ways of knowing".

Magolda describes four socially constructed patterns of knowing and reasoning in college or university students. These patterns are continuous and fluid, and may change over time as ways of knowing evolve in response to experience and reflection. These patterns are absolute knowing, transitional knowing, independent knowing, and contextual knowing:

- Absolute knowers view knowledge as certain and authoritative, and see

- Absolute knowers view knowledge as certain and authoritative, and see their role as obtaining knowledge from the experts. Although they see their peers as support in learning, they do not value learning from them.
- Transitional knowers acknowledge that some knowledge is uncertain, but believe that discrepancies are a result of the answers being unavailable. Peers may provide different information and views but these are not the sources of knowledge.
- The independent knower realizes that knowledge is mostly uncertain, and this substantially changes the learning process and sense of where knowledge resides. Learners in this pattern stress open-mindedness and express an emerging ability to create their own perspectives.
- Contextual knowers agree that the nature of knowledge remains uncertain, but that some knowledge claims are better than others in particular contexts. In this pattern, characterized by equitable two-way interaction, learning changes from thinking independently to thinking through problems and integrating and applying knowledge in context.

Magolda characterizes the majority of junior undergraduate students as absolute knowers; contextual knowing is often not evident until the final year of an undergraduate program at the earliest. This theoretical framework suggests that some of the learners in PSYCE 104 may have been conceptually unprepared to work in highly interactive or collaborative environments in which, among other things, they were expected to value multiple perspectives, especially those of their peers, as sources of knowledge. However, while a few learners did express some frustration with respect to the online discussions citing, for example, technical difficulties or the fact that the instructor did not provide the answer, most of the learners provided positive feedback.

Finally, Tergan (1997) suggests that learning outcomes are determined by the quality of students' goal-oriented activity. In relating learning performance in hypertext versus linear contexts, individual learning preferences such as differences in learning goals and cognitive styles may actually "override the structural parameters of hypertext/hypermedia documents" (p. 263). For example, most of the students in this course appeared to have followed linear paths to information structured by the course designer/instructor instead of capitalizing on the interactive learning mode. Again, this tends to suggest that students need to be provided with more information up front, as to the pedagogical rationale of online teaching and learning environments and how these can be used to enhance learning outcomes.

Several studies have found that more advanced learners, or learners who have already developed expertise in the subject matter (domain experts) use facilities of a hypertext-based retrieval system in a more constructive and efficient manner as compared to those learners who have not yet encountered, or who have had relatively little experience with learning in hypertext environments (Tergan, 1997). This may be related to experience in using such systems, as well as to the cognitive developmental level of the learner. As our results show, the learners in PSYCE 104, most of whom were relatively inexperienced users of online teaching and learning environments, rated access to the course notes and the quizzes more highly than the more open-ended activities such as conferencing with their peers, even though the discussions were very structured and guided by the instructor.

As we indicated above, one of the intended outcomes of this course design was to enhance and encourage knowledge construction by providing students with a number of cognitive tools to help them elaborate on, and develop a deeper understanding of key learning concepts in the course. Jonassen (1996) refers to these tools as mind tools. These include tools for critical reflection (e.g. conferencing); elaboration (e.g. asking questions); organizing and re-presenting information (e.g. in outlines or study guides); self-assessment (e.g. online quizzes); and, finally, reshaping knowledge (e.g. collaborative projects involving many different perspectives on a problem). The course design of PSYCE 104 provided for all of these strategies.

Daugherty and Funke (1998) believe that hypermedia contexts may increase motivation to learn and self-esteem by providing meaningful resources that foster critical thinking skills and allow learners to "see new ways to interpret and evaluate information" in interaction with the instructor and other students (p. 31). Conversation (or online discussion) itself is a developmental and cognitive process requiring reorganization, reassessment, and realignment of life experience (Brody & Witherell, 1991). Denning and Smith (1998) support the hypothesis that the learner becomes more competent as he or she actively integrates his or her previous beliefs and ideas with new ones acquired through dialogue with others. Connected, or relational, aspects of knowing may be the key to complex forms of knowing (Magolda, 1992).

If reshaping ideas is one critical success factor in collaborative learning environments, another closely related factor is conceptual conflict resolution. According to Harasim (1990), group controversy leads members to question their own concepts and seek new information and perspectives. In other words, collaboration creates value through the development of critical thinking skills (McLellan, 1997). At the same time, participants in these learning cultures learn self-efficacy, taking control of their own learning (Dicks, 1992; Lebow, 1995), which are both cognitive and social goals of undergraduate education.

which are both cognitive and social goals of undergraduate education.

As an intended outcome, increasing levels of critical thinking through collaborative online conversation was not as successful as we had anticipated. Possible explanations for this outcome that have been discussed include the cognitive, emotional, and experiential levels of the learners, who may prefer autonomous learning environments; uncertainty about the intended purpose of the instructional strategy; conversations that were too structured; and perceived time commitment.

An interesting line of inquiry relates to what undergraduates know or believe about their learning strategies. Awareness of one's preferences suggests a metacognitive strategy in which one could actively choose effective and appropriate learning activities. Certainly, we could ask whether undergraduates at this level are critically reflective about their learning style preferences and able to match that with a directed strategy, even though they believed that the course was designed, in part, to facilitate teaching and learning and to interact and develop better relationships with their peers.

Finally, it should be noted that the final grades in this course were slightly lower than in previous years (where the instruction was directed and didactic), thereby suggesting that this course design may have actually decreased learning effectiveness. However, learning effectiveness was determined by performance on mid-term and final multiple choice examinations that, it could be argued, were not aligned with critical thinking learning outcomes and more collaborative learning environments. In other words, the assessment may have tested content learning more than process learning, which is one of the intended outcomes of hypermedia, conversation-based designs.

Conclusion

In summary, the design of PSYCE 104 combined didactic, self-managed, and collaborative components, embracing a range of strategies from direct to constructivist. Indeed, the design rationale for the course reflected the following assumptions:

- the students were junior undergraduates and would likely feel most comfortable in didactic environments;
- poorly structured online teaching and learning environments can be counter-productive until learners are acculturated (or even enculturated) to them;
- learners may not yet be at the cognitive/developmental stage where they can trust learning from others - they expect intellectual authority from the instructor;
- the online discussion did not require open-ended learning, but was designed to help participants elaborate on their conceptual learning;
- the design would not reflect a social constructivist environment in which learners would be expected to construct knowledge in negotiation with others, or by working collaboratively on ill-structured problems - in other words, there would be a greater chance of learner success with a well-structured environment.

Moving towards a learner-centered approach necessitates a re-evaluation of the instructor's traditional role of expert, making room for learners as participatory designers of the experience. Landow (1992) describes this instructional reorientation as a shift, or rather, a balancing of intellectual authority in the classroom: "A hypertext classroom can change the role of the teacher. Since some of the power and authority is transferred to the students the teacher becomes something like Bruner's coach, more an older, more experienced partner in a collaboration than an authenticated leader" (p. 123). He goes on to applaud students' corresponding independence as "active shapers of the knowledge they acquire" (p. 135).

In light of the increasing availability and use of online teaching and learning environments, it is imperative that more research be conducted to evaluate the actual impact of these environments on student learning strategies. It is through studies such as this that we will be able to make significant advances in terms of using online environments more effectively to enhance learning outcomes.

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