

Students' Views of a Mixed Hybrid Ecology Course

Visión de los Alumnos sobre un Curso Mixto Híbrido de Ecología

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Abstract

This exploratory study examined students' views of hybrid learning in an undergraduate Ecology course, which incorporated Modular Object Oriented Dynamic Learning Environment (MOODLE) into the online portion of the coursework. Quantitative data were obtained by administering the Constructivist On-Line Learning Environment Survey (COLLES) to an intact class. Additionally, qualitative data were collected by interviewing five randomly selected class members. The interview data was converged with the quantitative survey data to supplement key findings in the study. Results revealed that a majority of students had positive views and experiences with hybrid learning, despite some challenges. Implications were discussed in terms of how to better utilize this instructional format in general education courses to foster active learning.

Keywords: Hybrid learning, Moodle, Online learning, Reflective thinking, Students' views, Tutor support

Resumen

Este estudio examinó las opiniones de los alumnos sobre aprendizaje híbrido de un curso de ecología, que incorporó Entorno Modular de Aprendizaje Dinámico Orientado a Objetos (MOODLE) en la sección online del curso. Los datos cuantitativos se obtuvieron de una encuesta a una clase, y los datos cualitativos fueron recogidos en entrevistas al azar a cinco integrantes de la clase. Las conclusiones revelaron que la mayoría de los alumnos tenían puntos de vista y experiencias positivas con el aprendizaje híbrido, a pesar de algunos desafíos. Las consecuencias fueron discutidas en términos de cómo utilizar mejor este formato de instrucción en los cursos de educación general para fomentar el aprendizaje activo.

Palabras claves: aprendizaje híbrido, Moodle, aprendizaje online, pensamiento reflexivo, visión de los estudiantes, apoyo del profesor

Introduction

As information technology develops, it challenges and transforms instructional delivery in higher education in profound ways. Traditional methods of instruction are no longer adequate, hence, colleges and universities are integrating computer technologies in their mission to better serve students (DeNeui, 2006; Orhan, 2008). Because hybrid learning has the capability to merge the best of traditional and Web-based learning experiences, many higher education institutions are positioning themselves to harness its transformational potential (Lin, 2008).

The widely-adopted concept of hybrid learning refers to all combinations of face-to-face (FTF) learning with technology-based learning, such that traditional education can be enriched with the use of technology and learning with technology can profit from FTF meetings (Kerres and de Witt, 2003, as cited in Orhan, 2008). In a hybrid course, a significant amount of the FTF instructional time will be replaced with online learning activities (Allan, 2006, as cited in Lin, 2008). Online activities may include among others, providing links to resources and downloadable text materials, administering online quizzes, and facilitating electronic submission of assignments (Dabbagh & Bannan-Ritland, 2005).

According to Krawiec, Salter, & Kay (2005), “creating learning tasks for students which involve an online discussion can be particularly effective (p. 8).” In discussions, students learn from one another by receiving feedback from peers. Threaded discussions allow students to respond in thoughtful ways to questions that stimulate critical thinking and promote the sharing of ideas (Williams, 2006). Moreover, the online classroom environment allows the instructor to interact more with the learners by providing immediate feedback (Klecker, 2007).

The hybrid learning concept also includes two models: (a) mixed, in which online sessions replace a significant portion of FTF meetings, and (b) adjunct, in which online sessions supplement a traditional course (Ho and Burniske, 2005, as cited in Lin, 2008). Additionally, Bersin (2004) posits that hybrid learning involves a thoughtful integration of FTF and online learning experiences.

In Deliaglioglu’s (2004) paper, he cited the following researches on hybrid learning:

Studies on student achievement in hybrid course showed that students were more successful in the hybrid courses than they do in purely web based or traditional courses (Lilja, 2001; Truckman, 2002, Christman et al., 1997; Christman & Badget, 1999; Persin, 2002). The literature showed that students’ course satisfaction was high in hybrid courses (Gray, 1999; Black, 2002). Students’ attitude towards technology and technology integrated courses were indicated as positive in hybrid courses. Several studies showed that a “mixed” course structure was preferred by the students and that hybrid courses effected students learning positively (Gunter, 2001; Leon de la Barra et al., 1999) (p. 266).

According to McFarlin (2008), the hybrid course format increases students’ exposure to course content, thereby improving their academic performance. Another research shows that student satisfaction increased with mixed-mode learning while students’ dependency on the instructor for assistance decreased, such that online materials allowed students to seek out answers independent of the instructor (Bhatti, Tubaisahat & El-Quawasmeh, 2005). Among the three modes of instruction (face-to-face, fully online, and hybrid), Young (2002, as cited in Buzzetto-More & Sweat-Guy, 2006) concluded that the hybrid model offers the most significant benefits for teaching and learning.

This study sought to explore student views about hybrid learning as they engage in integrated FTF and online learning sessions. Understanding how students view this learning format is vital to institutions interested to implement hybrid courses (Lin, 2008), as well as educators disposed to explore this new pedagogy.

Methods

The Context

With the Internet being a ubiquitous source of information nowadays, students have access to rich and current data about almost any subject content. The study of ecosystems is no exception to this, thus making ecology a suitable subject for hybrid instructional format.

This study took place at a private college in Manila between January and April 2009. NATSC13, or Ecology is a general education science course that explores the basic principles of ecology, the workings of natural ecosystems, and the environmental problems that threaten the world today. It is a 3-unit credit course that meets three hours weekly within a 14-week period. This course has no prerequisites, and is usually taken by undergraduate students during their first two academic years.

To enable hybrid learning, MOODLE (Modular Object Oriented Dynamic Learning Environment) was utilized to facilitate the Ecology class. MOODLE is an open source learning management system (LMS) that enables teachers to create engaging learning experiences using a selection of activities that may be accomplished online. This hybrid course was designed with the main goal of enriching traditional classroom sessions with the use of technology.

During the first two weeks, students were given an orientation on the course and its hybrid format. Hybrid instruction commenced on the third week of the term. In the succeeding weeks, the class met once a week (Tuesdays) for one and a half hours in a FTF environment. The other meeting (Thursdays) was replaced by off-campus online sessions. FTF sessions consisted of individual, paired, and team activities, as well as guided discussions of the subject matter. On the other hand, online activities included quizzes, surveys, forums, and journals.

With this investigation being a pioneering effort to test the feasibility of mixed-hybrid learning in the College as a whole, permissions were accordingly sought from relevant offices (i.e., Office of the Vice Chancellor for Academics and Office of the Registrar).

Participants

Data were gathered from an intact undergraduate Ecology class taught by the primary investigator, where “intact” means a whole class that includes all students within that one section of the course. The hybrid class consisted of 26 students, the majority of whom belonged to the information technology and management programs. There were 10 female and 16 male respondents, with ages ranging from 18 to 25 years.

Data collection and analysis

Quantitative data were obtained using COLLES, or Constructivist On-Line Learning Environment Survey, while qualitative data were generated through interviews with randomly selected members of the class

COLLES is a survey packaged with the MOODLE courseware, and is designed to help assess key questions about the quality of an online learning environment. The format of the questionnaire requires the respondent to indicate a level of agreement or disagreement using a 5-point Likert scale (1-almost never, 2-seldom, 3-sometimes, 4-often and 5-almost always). The questions ask about the following: (1) the course’s relevance to student’s interests and professional goals, (2) the level of critical or reflective thinking that the student applies to the material in the course, (3) the level of interactivity the student engages in during the course, (4) the level of tutor support and (5) peer support the student is receiving in the course, and (6) the success of both students and tutor in making good sense of each other’s communication (Dougiamas & Taylor, 2002; Rice IV, 2006).

For the qualitative portion of the study, two sets of semi-structured interviews were conducted- one with two respondents and the other with three. All five respondents were NATSCI3 students of the main researcher, and were randomly sampled from the class using the fishbowl technique. There were two female and three male interviewees, and their mean age was 19.4. The two interviews were scheduled on different days. During the interviews, respondents were asked questions using an interview guide patterned after the COLLES domains. Both sets of interviews were tape-recorded for documentation purposes. All five interviewees were first asked for consent regarding the recording of the interviews. There were two interview protocols made from the data gathering phase.

Data analysis included both quantitative and qualitative methods. For the quantitative part, descriptive statistics (frequency, percentages, means, and standard deviations) were calculated. For the qualitative part, the recordings were transcribed verbatim and open-coded from the interview protocols. Similar open codes were clustered together, and recurring themes were linked to those that were evident in the COLLES items. Emergent themes were established and discussed.

Results

Table 1 shows the results of COLLES, which indicates students’ perceptions of their hybrid learning experiences in six scales: relevance, reflective thinking, interactivity, tutor support, peer support, and interpretation. The scale that garnered the highest percentages in terms of student agreement to the survey items is tutor support. Nearly 90% of the students perceived that the tutor stimulated their thinking and modeled critical self-reflection, while about 81% expressed that the tutor encouraged their participation.

These results support the responses gathered from the interview, and highlight the critical role of teachers in a hybrid learning environment. The interviewees perceived their teacher as someone who facilitated the exchange of ideas among them, and provided prompt feedback that helped improve their work in the course.

Data also revealed that opportunities for reflective thinking are evident in a hybrid course. About 85% of the students expressed that they were able to think critically about their own ideas, and 81% perceived that they thought critically about the readings and how they learn. Only 65% of the students, however, indicated that they had opportunities to critically think about other students’ ideas.

According to the interview respondents, the hybrid class sessions encouraged them to be more reflective and creative, especially when posting responses to the online forums. Through such an interaction, they were able to gain new information and question the ideas of their peers. The interviewees also reported

that they developed creativity when they attempted to formulate new insights based on the responses of their peers.

Table 1. Results of COLLES^a

COLLES Items	Percentage (%) of agreement	Mean	Standard deviation
<i>Relevance</i>			
My learning focuses on issues that interest me.	61.54	3.73	0.78
What I learn is important for my professional practice.	61.54	3.69	0.84
What I learn connects well with my professional practice.	46.15	3.58	0.81
I learn how to improve my professional practice.	42.31	3.50	0.76
<i>Reflective thinking</i>			
I think critically about my own ideas.	84.62	4.00	0.89
I think critically about how I learn.	80.77	3.96	0.72
I think critically about ideas in the readings.	80.77	4.00	0.75
I think critically about other students' ideas.	65.38	3.77	0.86
<i>Interactivity</i>			
Other students respond to my ideas.	53.85	3.46	0.76
I ask other students to explain their ideas.	50.00	3.54	0.71
I explain my ideas to other students.	46.15	3.54	0.86
Other students ask me to explain my ideas.	34.62	3.23	0.76
<i>Tutor support</i>			
The tutor stimulates my thinking.	88.47	4.08	0.69
The tutor models critical self-reflection.	88.46	4.04	0.66
The tutor encourages me to participate.	80.77	4.08	0.80
The tutor models good discourse.	73.08	3.92	0.80
<i>Peer support</i>			
Other students encourage my participation.	69.23	3.75	0.85
Other students empathise with my struggle to learn.	57.69	3.50	0.76
Other students praise my contribution.	53.85	3.50	0.71
Other students value my contribution.	50.00	3.50	0.76
<i>Interpretation</i>			
I make good sense of other students' messages.	84.62	3.96	0.53
I make good sense of the tutor's messages.	84.62	4.12	0.77
Other students make good sense of my messages.	80.77	3.88	0.67
The tutor makes good sense of my messages.	80.77	4.08	0.80
<i>Note.</i> ^a The results represented the percentage of students who selected 4 or 5 (i.e., those who answered often or almost always) in a 5-point Likert scale (1=never and 5=almost always).			

Although engaged in integrated FTF and online learning sessions, communication between tutor and students seem to be effective. More than 80% of the students perceived that they make good sense of the tutor's and each other's messages in the course of hybrid instruction.

The relevance, peer support, and interactivity scales received the lowest percentages. Relevance measures how the course itself relates to students' interests and professional goals. About 61.5% of the students perceive that what they learn is related to their interests and professional practice. As for peer support, only 69.2% expressed that other students encourage their participation.

In terms of interactivity, more than half of the respondents (53.8%) indicated that other students respond to their ideas, while only 34.6% expressed that they asked other students to explain their ideas. The interviewees, however, had very positive views about the level of interaction that they experienced in the course. They perceived that online discussions fostered a collaborative exchange of ideas that helped enrich their learning experiences. In addition to the information they obtained while constructing their responses, they also learned new material from the forum posts of their peers. One interviewee specifically noted that an online discussion gives all ideas equal opportunities to be "heard", while another reported that one's ideas are openly evaluated and even praised by others when fitting.

Interview results also generated emergent themes that reflected the benefits and challenges of hybrid learning as perceived by the respondents. One of the notable perceived advantages of a hybrid course was accessibility. According to them, doing school work is more convenient because course materials are readily available online, and they need not rely on the schedule of their teacher and classmates when accomplishing course-related tasks. They also expressed satisfaction in terms of conducting online research to comply with course requirements without the hassle of physically going to the library.

Although accessibility was seen as a positive effect, some respondents also noted it as a challenge. Specifically, difficulty in site access and loss of Internet connection while doing an online task were expressed as relevant problems. Another challenge noted was the availability of the teacher to clarify concepts and instructions.

The interview respondents reported that the hybrid format of the course enabled them to develop increased responsibility for their own learning. They were compelled to regularly check the online courseware, and to actively participate in the online discussions. Some of the interviewees admitted their reluctance to contribute to class discussions, and indicated that the online portion of the course "compensated" for their lack of participation in FTF sessions. Furthermore, they believed that hybrid learning encouraged them to be more self-reliant because they had to depend on themselves to accomplish the online tasks.

Despite their favorable views on the new course format, the interviewees suggested improvements to the hybrid conduct of the course. According to them, the teacher should be equally active in both FTF and online learning environments and that they be given the freedom to initiate online discussions. More importantly, they recommended that a "smooth flow" between FTF and online sessions be facilitated to further enhance their learning experiences.

Discussion

In this study, the COLLES scales that garnered the highest means were reflective thinking and tutor support. These findings are congruent with those derived from a prior investigation on an adjunct-hybrid Ecology course. Through journal compositions and forum discussions, students were given more opportunities to think critically about their own ideas, as well as the readings. Such online tasks direct students to be more mindful when responding to questions that stimulate reflection, and encourage them to seek information apart from what is already provided in the course. Furthermore, hybrid learning emphasizes the tutor's role in enabling student participation and promoting critical thinking. Prior research has found that the way in which instructors integrate Web-based systems into their instruction affect student perceptions of the course (Biggs, 2006; Alavi, 1994; Arbaugh, 2000; Parikh & Verma, 2002 as cited in Martins & Kellermanns, 2004). Apparently, the manner with which the teacher facilitates a hybrid course largely affects how well students perceive the mixed format in general.

Similarly, interactivity and peer support had the lowest mean scores for both the adjunct- and mixed-hybrid courses. This data suggests that aside from sharing their own ideas, being asked to explain their ideas and having other students respond to them heightens the level of interactivity that occurs in a hybrid course. Other than interactivity, learners also consider receiving a high level of sensitive and encouraging support from peers desirable. To address this limitation, teachers may design online tasks in such a way that students will be directed to assess the contribution of their peers and provide substantial remarks. In so doing, not only will the quality of online interactions improve but the learners' exposure to course content as well. Eventually, students' increased familiarity with the subject matter will lead to better academic performance (McFarlin, 2008). Creating deliberate learning communities by assigning group

projects and activities (Hensley, 2005) is another way to maximize student engagement in the hybrid course. Collaborative online activities will enhance student-to-student interactions, and at the same time increase student agency in view of the fact that the responsibility for learning is shared among the group members.

Landau's (2001; 2002 as cited in Deliaglioglu, 2004) ideas about accessibility of course materials as a major advantage of online learning was also noted in this study. Teacher availability during online sessions, however, was identified as a concern inasmuch as students were unable to seek clarifications while engaged in online activities. Although the hybrid nature of the course increases learner autonomy and maximizes student self-direction (Reynard, 2007), it is imperative that instructions for the online portion of the course are transmitted to students adequately and clearly so as to leave little room for related queries.

Another challenge that directly affects students' views about hybrid learning is access to the Internet. An assessment of students' technology background before hybrid instruction will enable the teacher to evaluate whether support is needed in terms of accessing the Web.

Overall, student perceptions about the hybrid facilitation of the course were found to be positive and the effects of hybrid learning in Ecology, promising.

Conclusions

This research is a small-scale investigation of an individual faculty member's effort to integrate online and face-to-face learning in an Ecology class, but its findings are transferable to a number of other disciplines. As technology increasingly becomes a standard part of the instructional delivery in higher education, colleges and universities are challenged to provide engaging and exciting opportunities for students.

At the heart of this challenge are the instructors who will be performing new roles as instructional designers in a hybrid course. It is essential, therefore, that teachers are given the time to explore the different pedagogical implications of both environments, and examine how the two environments can be brought together for students. To do this, teachers need the professional development support from the institution in redesigning their courses and adjusting their instructional practices accordingly (Reynard, 2007). Likewise, learners who experience a hybrid course for the first time are likely to encounter problems. A reasonable acclimation period is recommended to help students get accustomed to the new format. During this time, it will be worthwhile to provide them with an intensive orientation about the technology to be used, and elaborate issues pertinent to hybrid learning such as expectations on student participation, increased responsibility for learning, and effective time management.

In conclusion, hybrid learning presents many positive outcomes for higher education institutions. For hybrid courses to live up to the expectation of offering "the best of both worlds," it is vital that students are offered a seamless hybrid experience that will ensure their success in this relatively new delivery format.

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