

The Optimum Blend: Affordances and Challenges of Blended Learning For Students

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Abstract

The purpose of this study was to elicit students' perceptions regarding the most facilitative and most challenging features (affordances and barriers) in a blended course design. Following the phenomenological approach of qualitative inquiry, data were collected from ten undergraduate students who had experiences in a blended learning environment. Data were collected from the students' weekly reflection papers, interviews with students, and documents, and analyzed by structurally and texturally describing the resulting experiences and perceptions. The findings of the study indicate that used together, online and face-to-face course structures offer several opportunities and challenges for students. The participating students mentioned interaction and communication opportunities, increased motivation, increased opportunities to voice their opinions, and reinforcement of learning as the affordances in the blended learning environment. The barriers included increased workload, cultural and technical barriers, and the inter-dependence of the two environments. Implications and suggestions are offered for instructors in higher education settings.

Keywords: *Hybrid instruction; challenges of blended course; benefits of blended learning; blended learning environment.*

Introduction

A learning environment is a place that includes communication media to interact with students (Gagne, 1970). It is also regarded as an alterable variable of education (Chandra & Fisher, 2009). With the increasing availability of the Internet and Web technologies, higher education institutions are seeking ways to adapt and use online and distributed systems (Carr-Chelman, 2006; Dempsey & Van Eck, 2007) to complement a growing number of online courses and programs (Allen & Seaman,

2009). The term 'blended learning environment' (BLE) is commonly used to define a learning environment which combines face-to-face (F2F) and online components. Researchers and scholars have taken a keen interest in BLEs among the new types of online programs.

Blended learning (BL) provides various benefits "over using any single delivery medium alone" (Singh, 2003, p. 53). In the higher education context, BL is regarded as an "evolutionary transformation" (Garrison & Vaughan, 2008). With the current availability of Web-based systems in universities, BLE is able to provide more interaction with students in large classes, and more flexible learning environments in terms of economic and administrative considerations (Dempsey & Van Eck, 2007). Several studies on student satisfaction with, and on the success of, BLEs have revealed that their most valuable attributes are their interactive communication technologies, especially those which are of an asynchronous nature (Garrison & Cleveland-Innes, 2005; Swan, 2001). An additional advantage of BLEs is their ability to support different learning styles (McCray, 2000). By blending a F2F environment with an online environment, BLEs also support the community building process (Brown, 2009; Garrison & Vaughan, 2008; Rheingold, 1993). But despite these benefits, there are challenges that can impede the utility of blending of two learning environments. Studies have indicated that the main challenges of BLEs for students are time management, workload, course design barriers, and personal barriers that include familial and career pressures (Futch, 2005; Lupshenyuk, 2008; Tanner, 2007).

As Dede, Whitehouse, and L'Bahy (2002) argued, single medium comparison studies have yielded 'no significance difference' phenomenon. Studies are needed to investigate learning and teaching in the multiple use of media and learning environments. Thus, researchers must explore the designs and effects of blended learning to facilitate more meaningful learning experiences (Bates & Poole, 2003; Bliuc, Goodyear, & Ellis, 2007; Garrison & Kanuka, 2004). This study investigated students' perceptions of the most facilitative and challenging BLE course features (affordances and barriers). By identifying these affordances and barriers, we can then focus on how to eliminate or minimize the barriers and maximize the benefits of BLEs (Wray, Lowenthal, Bates, & Stevens, 2008). The term 'affordance' is used to identify those course features which were perceived as helpful to the students, and 'barrier' is used for the challenging course features. The following questions guided this study:

- a. What do the students perceive as the affordances of the BLE?
- b. What do the students perceive as the barriers of the BLE?

Methods

Research Design

The phenomenological tradition of the qualitative approach formed this study's framework. Phenomenological inquiry yields explanations of lived experiences, and "describe and interpret these meanings to a certain degree of depth and richness" (van Manen, 1990, p. 11). As Jonassen (2000) suggested, "understanding phenomena is inextricably interrelated with our experiences of them" (p. 93). Taking this into account, in the present study the experiences of the students were investigated in depth. The use of phenomenology was deemed appropriate to portray the students' authentic uses of the BLE from their own perspectives, rather than focusing on their learning outcomes.

The Course Context

For the purpose of the study, an introductory F2F course in an educational technology program within a teacher education school at a large university was redesigned in blended format. This 3-credit course was offered to sophomores at Fall 2007. During the three-hour lectures, the instructor presented theoretical information and discussed this with the students. The students assessed several instructional programs, and were required to develop sample instructional projects. Five guest speakers were also invited to relate their experiences concerning the topics of the course. The online environment included resources, links, and a forum for discussions. Table 1 summarizes the course components.

Table 1. Components of the Blended Course

Proportions	Components
Online (50%)	Reading materials, resources Forum discussions (on given scenarios, assigned projects, and expert seminars) Sample links
F2F (50%)	Traditional lectures Group Work (cooperative learning tasks) Group discussions (on course content) Expert seminars

The blended course was designed based on Merrill's First Principles of Instruction (Merrill, 2002; Merrill, Barclay, & van Schaak, 2008), and included authentic activities, as suggested by Reeves, Herrington, and Oliver (2002). The Web environment was created and developed by one of the author of this article, who has been using this learning management system (LMS) in his undergraduate and graduate classes since 1998. It was continually revised and improved during this period by taking user reactions into account (Ozden, 2002). The main categories of the LMS included a general menu on the left side, ordered with text-buttons; an icon-based menu with communication and collaboration tools; and a layout on the rest of the page for the presentation of the content. The left-frame menu included the items: introduction, objectives, syllabus, lecture, grading, homework, links, e-sources, news, instructor, and FAQ. Figure 1 shows the introduction page.



Figure 1. Introduction Page of the Online Environment

The Participants

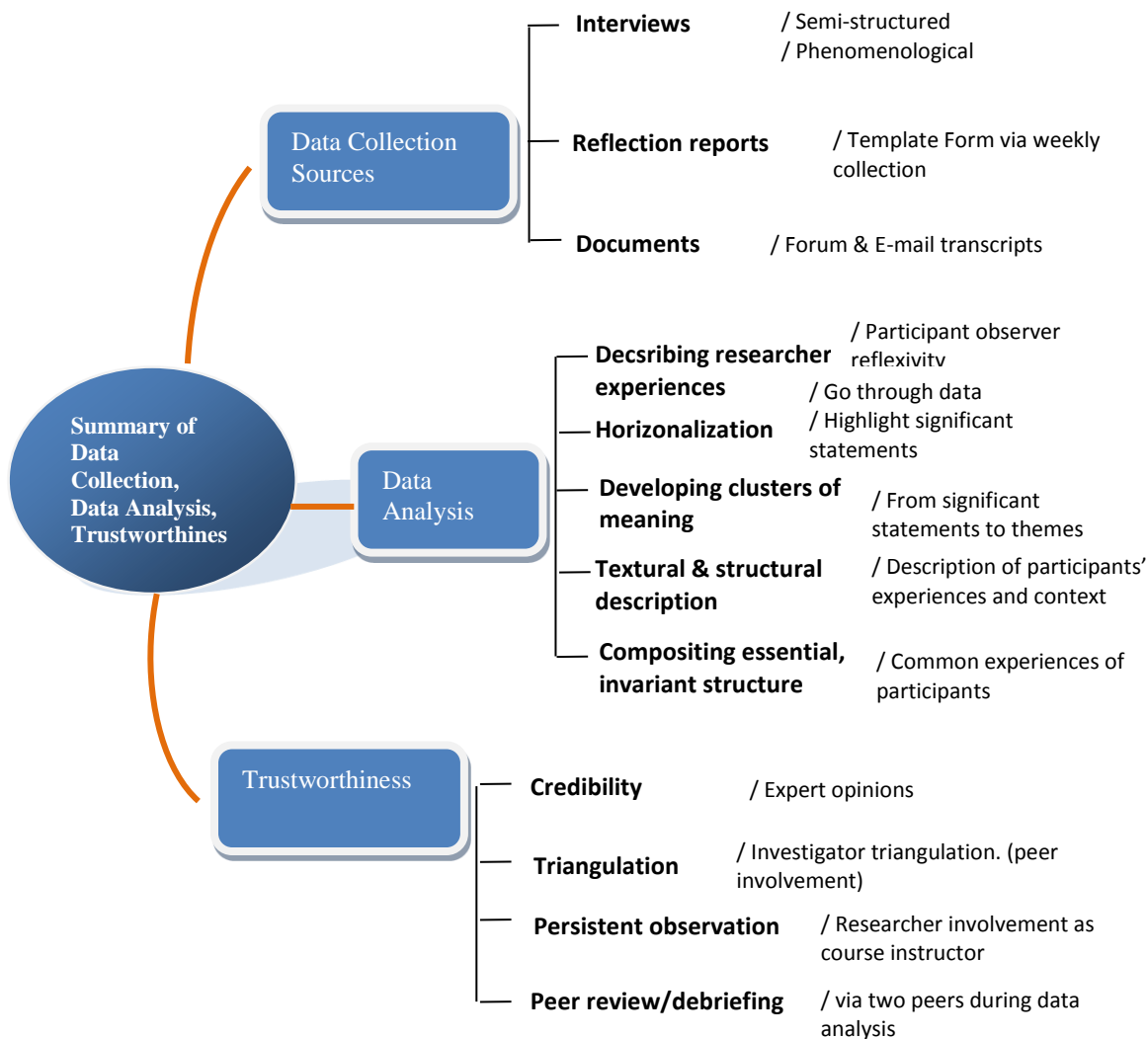
The researchers selected ten participants from a cohort of people who had experienced the affordances and barriers of a blended course. The larger cohort was composed of 46 sophomore prospective teachers. Ten of these students were randomly selected for the study, as this was deemed a useful sample size for a phenomenological examination (based on Patton, 2002). Of these students, five students were active both in the F2F and online environments, two students were active in F2F environment, but not active in the online environment, and three students were not active in the F2F environment but active in the online environment. Upon selection, the participants were then assigned pseudonyms (e.g., A, B, C) to protect their identities. All of these students had taken one blended course in a prior semester, but had taken no courses that were held exclusively online. All of the students except Student C expressed positive impressions of their prior blended course experience.

Data Collection and Analysis

Data were collected from the students' weekly reflection papers, interviews, and documents. The reflection papers included two open-ended questions that asked for the students' perceptions concerning the affordances and barriers of the F2F and online course portions, and about the workload. The semi-structured interviews were conducted at the end of the semester, to elicit the students' perceptions about the most enabling and challenging features of the BLE. These were phenomenological interviews, which are designed to discern the meanings that students imposed on their experiences. The documents included forum and e-mail transcripts. Data were analyzed by structurally and texturally describing the phenomenon (Moustakas, 1994). The common analytic approach suggested by Miles and Huberman (1994) was also followed in this process. Initially, all of the digital documents were printed. Descriptive codes and notes (following an inductive coding scheme without predefined codes) were placed in the margins of the pages. The codes were then assembled into categories (horizontalization). After this first-level of coding, all of the categories from each document were grouped under major themes which were based upon the research questions

(developing clusters of meaning). These common themes were grouped into final themes via completion of essential structures. Figure 2 summarizes the data collection and analysis processes.

Figure 2. Summary of the Data Collection, Analysis, and Trustworthiness



In the data analysis process, a peer review strategy was used to create trustworthiness. Two peers outside the study were asked to review the data to check the coding, interpretations of the categories, and the common themes. The level of agreement was calculated at 88% for the inter-coder reliability, denoting a satisfactory score (Miles & Huberman, 1994). The credibility of the research was also ensured via expert checks of the interpretations. Yet, persistent observation was done via researcher involvement as the course instructor.

Results and Discussion

Affordances of the BLE

The main themes that emerged were: usage of different environments to present all of the course content, motivation, opportunity to voice opinions and see others' opinions more, time efficiency, reinforcement of learning, instructor monitoring, instructor support, access to resources, continuity within the course, and areas for discussion. These themes are summarized with frequencies of responses and illustrative quotations in Table 2.

Table 2. Summary of the Students’ Responses to the Affordances of the Blended Learning Environment

Themes	Perceived Affordance	Source	f	Illustrative Quotations
Facilitation of different environments to encompass all points of the course content	Improved engagement with course content	Interviews (n=10)	4	Certainly I missed things and issues covered in F2F classes, and whenever we had discussions on these issues, I remembered or re-studied them in the online environment. This is kind of applying in the online environment what you learned in the F2F classes by discussing it. (Student A) It allowed me to study in the online environment the things that I missed in the F2F classes or the things that I felt I needed to learn more. (Survey Respondent) I found the online environment very much contributed to my learning this week, because I was able to have prior knowledge thanks to the links given in the forum and the syllabus of the course. (Reflection Paper Respondent – Week 9)
		Survey (n=40)	11	
		Reflection	2	
	Helpful in clarifying confusing points	Report(n=40)	4	
		Interviews	4	
		Survey	4	
Useful for catching things that were missed	RR	2		
	Interviews	3		
	Survey	4		
Motivation	Ability to voice opinions	RR	5	Not only learning content, but also putting it into practice and voicing my opinions freely without any constraint or any interruption provided me with the opportunity to express myself, which motivated me a lot. (Survey Respondent) I always went to each class with enthusiasm. There are courses that you go to unwillingly. But, this was a course that I was participating in willingly. (Student D) I think all of them [course activities] were helpful, and I was very motivated with the idea that the things we were covering were issues that I can respond in the online environment more comfortably. In F2F class, either there is a time limitation or you just don’t find what to say at that time... In fact I prefer F2F responding, but there is the comfort of writing online...Both provided opportunities for me to participate... (Student D) You don’t have to discuss and learn issues only in the F2F environment. You can share your ideas or find answers to your questions by using the
		Interviews	4	
	Real-world relevance of activities	Survey	7	
		RR	-	
	Learning about different learning skills	Interviews	7	
		Survey	2	
RR		5		
Opportunity to voice opinions and see others’ opinions more	Use of activities to help students discuss within groups or with everyone	Interviews	3	
		Survey	4	
	Provides areas for	RR	-	
		Interviews	5	

	discussion	Survey RR	9 -	online environment as well. (Survey Respondent)
Time efficiency	Can ask their questions without any time limitations	Interviews	4	It saved time for us to study... instead of Googling or searching elsewhere, we had quite a lot of resources to study in the online environment. It was advantageous in this way too. (Student D)
		Survey RR	3 2	
	Can flexibly study the content of the course	Interviews	4	You cannot interrupt his [guest speaker's] speech while he is talking, even if you have a question. After the seminar, we would not have enough time to discuss issues together... But in the forum, we discussed how we could improve our skills, how all those issues were related to our course or project, what lessons we learned, etc... (Student H)
		Survey RR	2 3	
Reinforcement of learning	F2F supported online and vice versa	Interviews	7	Class sessions are, more or less, a limited environment. But the online environment is always there for you, to serve you... We could use many resources to help us.(Student G)
		Survey RR	3 4	
		Interviews	9	
	Benefits of instructional strategies	Survey RR	4 22	The two environments were affecting each other in terms of reinforcing what I learned. ...The online environment was more of an area for me to reinforce what I learned in the F2Fclasses.(Student I) Sometimes I felt what we discussed in the online environment just stayed there, which made it abstract. But when we discussed them F2F, this problem was resolved. (Survey Respondent) [The most contributing event to my learning was] having an online environment where we were provided with the similar learning environment as in the F2F class. (Survey Respondent)
Areas for discussion	More peer interaction	Interviews	2	In the class, we discussed issues with peers in groups, and there were class and group discussions, and separate discussions online [for project groups]. Absolutely richer interaction. (Student J) [The most contributing event] was accessing resources in the online environment whenever we needed, and consequently no need to take notes in the F2F classes.... (Survey Respondent)
		Survey RR	2 4	
	Wider access to	Interviews	4	

resources

Survey
RR

8
10

Maybe these [e-sources and links] were more helpful than having hours of lecturing. In the F2F lectures we investigated software and example projects, and the instructor did a great job in making comments on them for us. It would be impossible to do this in an online environment. (Student H)

The students stated that they had the opportunity to learn the issues that they missed due to the availability of different environments. This allowed more engagement with the course content and was helpful in terms of announcements, communications, and interactions to clarify confusing points. The students also could use information presented in one environment to form a base of knowledge to be used in the other environment.

The students also mentioned the real-world relevance of the course activities, including the guest seminars, projects, and their learning different skills, as motivating factors. These can be considered the factors that supported the students' extrinsic motivation. Klein, Noe, and Wang (2006) asserted that both the learner characteristics and the instructional characteristics of learning environments affect student motivation. They also stated that perceived affordances affect student motivation: "Because learners believe that their efforts will be facilitated rather than hindered, they become more motivated" (p. 671). A parallel effect also may have resulted; i.e., while these positive perceptions increased their motivation for the course, it is possible that their motivation may have affected their perceptions positively as well.

The opportunity to voice opinions more frequently was another benefit of the BLE. This allowed the students to participate more interactively. Especially with a large number of students in the course, providing them with two environments increased flexibility to better facilitate their participation.

Another affordance was time efficiency. This was also found to be significant by Garnham and Kaleta (2002). The students could ask and respond to questions without time limitations, and flexibly study the content. This opportunity was mainly attributed to the online environment, and it was more efficient for the students when they had the online support after F2F classes. Another important time-saving aspect was the availability of course materials, and the communication and interactions in more than one place. A final factor indicated by the students involved their preference to use the F2F environment more efficiently by staying focused on the content, and not so much on the other issues (i.e., announcements, detailed discussions, Q&As, etc.). This also allowed for more efficient use of the online environment. As the content had already been covered in the F2F classes, the discussions, resources, etc. were left for the online work.

Reinforcement of learning was one of the most frequently mentioned affordances. The students highlighted the mutually supporting roles of the F2F and the online environments, and mentioned the opportunity to conduct more research. They also mentioned the benefits of several instructional strategies, such as group work, quizzes, and projects. The results show that using the online discussion area, the students were able to continue their F2F team efforts and enhanced their social presence (Johnson & Johnson, 2008; Kreijns, Kirschner, & Jochems, 2003). In addition to enhancing their social presence, the asynchronous nature of the online environment also helped the student groups in terms of facilitating negotiations of meaning and community building (Wenger, 1998).

A final perception was that there was a wide range of ways to learn, e.g., more resource availability, and enhanced discussion and peer interaction opportunities. The students mostly attributed this to the online environment. These facilities can be drawn from major aspects of LMSs (Woods, Baker, & Hopper, 2004). Besides; the students also mentioned the F2F environment as supportive in these areas. Thus, it can be argued that providing learners with multiple venues to acquire knowledge supports them in their learning (Spiro, Coulson, Feltovich, & Anderson, 1988). The BLE in this study presented this benefit as expected.

The interaction types suggested by Moore (1989) are thought to be the most important features of the online environment; these have implications for the F2F environment as well (Anderson, 2003). The results of this study suggest that the use of two environments enhanced strong interaction with

increased opportunities of different interaction types; a parallel result to what literature offers (e.g., So & Brush, 2008). The development of different perspectives was also a major affordance, which can be attributed more to the pedagogy of the course (specifically its authentic activities) (Reeves et al., 2002). One conclusion that can be derived from this result is that the combined F2F and online delivery environments seem to have offered the students opportunities to utilize different media to support their learning on multiple levels via a variety of activities in different learning environments, including synchronous and asynchronous discussion opportunities.

Barriers of the BLE

The data analysis revealed that the barriers in the learning environment were workload, course design, cultural aspects, technical support, and the inter-dependence of the two environments. A summary of the frequencies and percentages of the student responses is shown in Table 3. When the students were asked to comment on the BLE, they began talking about the online environment first. This suggests that since they are familiar with the F2F environment in their educational background, they fixated upon their online experiences more. Thus, while undertaking design considerations for courses that are redesigned from a F2F to a blended format, initial attention perhaps should be given to the online component.

Table 3. Summary of the Students' Responses Concerning the Barriers of the Blended Learning Environment

Themes	Perceived Barrier	Data Source	f	Illustrative Quotations
Workload issues	Combined workload from two environments	Interviews (n=10)	3	The course workload was heavy. There were things both to write in the online forum and also participation in the F2F classes every week. As students, we think as follows: We have other courses; those impose workload on us too; and we are having difficulty managing them all. When we participate F2F, online is discarded; or when we participate online, F2F is discarded. ... (Student G) It [BLE] increased workload. This is a 3-credit course, and apart from 3 hours of lecture time, we had to participate in online environment. The forum was being graded. Then it needs to be 4 credits! (Survey Resp.) The workload is getting to be too much nowadays. Since the end of semester is approaching, we have lots of deadlines and tasks. ... (Reflection Paper Respondent – Week 9) This week the workload was too much. I responded in the forum environment, met with group members for the evaluation of educational software CD twice, went to a meeting for the project and report. Considering the other course assignments and midterms, the workload is too much in total. (Reflection Paper Respondent – W10)
		Survey (n=40)	7	
		Reflection Report (RR) (n=40)	15	
	More time commitment	Interviews	-	
		Survey	6	
		RR	10	

Course design issues	Activity design barriers	Interviews	1	<p>I always felt the need to get online for the forum, because there was always the chance that a new forum topic discussion would be held. I always felt worried about this concern. (Student B)</p> <p>I noticed something on the [Web] page. [Quote of a friends' post:] "Dude, I saw something: hey, where did you see it?" Things happened like that. Where [in which pages] did she [the course instructor] insert that note? Sometimes it was confusing [to track online]. (Student D)</p> <p>There were too many assignments. I felt it was too much, considering the workload that we had in the online environment plus the F2F assignments. (Survey Respondent)</p> <p>The assigned readings are increasing, and I think they are too much. We are also doing lots of assignments. (Reflection Paper Resp.– W5)</p> <p>[To the instructor:] We already have lots of classes, assignments, and projects. You assigned another one this week, and I do not know how to handle them all. (Reflection Paper Respondent W5)</p>
		Survey	2	
		RR	11	
	Scheduling of activities and staying on track	Interviews	3	
		Survey	1	
		RR	3	
	Guidance for the online environment	Interviews	3	
		Survey	2	
		RR	2	
Cultural issues	Language used	Interviews	2	
		Survey	-	
		RR	2	
	Students' interaction and communication patterns	Interviews	2	
		Survey	-	
		RR	-	
	Personal issues	Interviews	1	
		Survey	2	
		RR	3	
	Technical issues	Interviews	4	
		Survey	6	
		RR	8	

				Respondent – W4)
Inter-	Online	Interviews	2	When I had an important task to do for another course, I did not have a chance to use the Internet at all...Thus, I was not able to actively participate in the F2F class in that particular week. (Survey Resp.) If you do not understand the subject presented in the F2F environment, then that means you will have difficulty doing the online activities. (Survey Resp.)
depende	activities are	Survey	2	
nce of	related to	RR	1	
the two	F2F ones			
environm	and vice			
ents	versa			

The students complained that their workload in the two environments made the overall course load heavier than for a usual course. It also meant more time commitment. The students' complaints about workload increased after the middle of the semester, which was the start of the project assignment. Hence, as the assignments increased throughout the semester, the students appear to have perceived the overall course load to be too heavy, and they viewed the BLE as causing significant time devotion.

The students specifically complained about the large amount of assignments and readings. This shows that the activities need to be balanced, and that the amount needs to be diminished (not doubled due to two environments) compared to a single environment. Moreover, the scheduling of activities needs to be carefully considered to balance the workload and stay on track. Several students also noted problems they had in the online environment, including difficulties with responding to forum content and uploading documents, which can be attributed to lack of guidance. Consistency in the scheduling of activities, and a balance in the assignments were seemingly most important.

The barriers relating to the cultural aspects of the study context were the language used, the students' interaction and communication patterns, and their personal issues. The language of instruction in the university was English (not the mother tongue, which was Turkish), and there were international students in the class. The students' complaints were mainly about online forum writing. The language can become a barrier not only for non-native speakers of English but also for students who do not feel comfortable about their writing skills (Palloff & Pratt, 2007). Other barriers in this category were the students' study habits, and their interaction and communication patterns. This prevented them from fully concentrating on their team work, and on course activities that required rich interactions among the group members. These findings imply that the instructors need to be aware of student characteristics, and should develop strategies to prevent them from falling behind and possibly impeding the progress of their classmates.

The personal barriers included problems with time management and communication with peers. Finally, the technical barrier was described as the lack of technical support (this was only provided by the instructor). This finding indicates that there must be an online support system provided by professionals other than the course instructor.

Finally, the inter-dependence of the two environments was regarded as a barrier, because the students regarded success in one environment to be dependent on success in the other. They found the online activities bound to the F2F ones and vice versa, which made participation and studying difficult for them.

Conclusion

The study results indicate that used together, online and face-to-face course structures offer diverse opportunities and challenges for students. While a BLE offers a rich context for interactions and

communication, motivation, and participation, the common barriers of heavy workload, cultural and technical barriers, and the inter-dependence of the two environments are issues that need to be addressed by instructors. As expected, most of the strategies for overcoming these barriers are related to the pedagogical approach of the course design; yet, cultural and organizational factors must also be considered. For blended courses, the instructors must be careful to sustain a balance in terms of students' workload and time devotion, support mechanisms and guidance, and assessment. Selecting an appropriate pedagogical framework and identifying the roles of each environment while making course design decisions, therefore, is critical. As Boyle, Clark, Jones, & Pickard (2003) suggested, "a stable transition of familiar and new features" of the BLE might also offer a dynamic environment in this sense (p. 176).

Based on this study's results, it is important for instructors to present learning activities with appropriate technologies. Mullen and Tallent-Runnels (2006) suggested that instructors should challenge their students, but also create a balance in the instructional demands. Taking this one step further, the instructor's communication of the value and use of the instructional demands in the BLE to the students also can be regarded as critical. The students need to be cognizant of the BLE's potentials and drawbacks, and must learn to adapt their learning habits and strategies to the requirements of a blended learning course. The overall course study time needs to be balanced between the online and F2F course loads. Future research is needed to verify the effectiveness of these recommendations and to identify other important suggestions.

This study is limited by its set of participants, who all possessed advanced computer and Internet skills. Additionally, their positive prior experiences with a blended course may have affected their perceptions of this new blended course. Future studies are needed with students who have diverse skills and differing prior experiences with blended courses. Future studies can also focus on different aspects of BLEs in terms of media used (e.g., mobile or personal devices instead of an online environment), cost-effectiveness, learning processes, and learning outcomes.

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