REDESIGNING A COURSE FOR BLENDED LEARNING ENVIRONMENT

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ABSTRACT

This article describes a collaborative study of the blended learning approach, designed to pave the way for higher education students to integrate online and face-to-face learning environments in an "Instructional Technology and Material Development" course at the University of Yildiz Technic in Turkey. The purpose of this study is to investigate the students' perceptions of the blended learning environment and to trace the integration between online and face-to-face learning environments. For this purpose, 30 students were given statements on the redesigned course, which they rated on a 5-point Likert scale. To probe more deeply into their positive and negative responses, a focus group discussion was held to gather the students' views. The findings are reveal that the majority of the students (90%) enjoyed being in the blended learning environment. However, improvement in methods of application and online study materials are needed. Additionally, other factors that may be salient in blended learning environment are also discussed.

Keywords: **Face to face learning environment; blended learning; blended learning environment; online instruction; Turkey.**

INTRODUCTION

Defining today's students as new learners suggests a fundamental difference in the way they approach knowledge acquisition, problem solving, and moving into the workforce. The paramount question becomes, "Is higher education meeting the needs of the present generation of learners?" (Dziuban, Moskal, Hartman: in Bourne, Moore, 2005).

In fact, higher education is being challenged by rapidly developing information technologies and by the non-traditional character of today's students. Institutions are integrating computer technologies into their mission to better serve their students, since traditional methods of supplying information and instruction are no longer adequate. The conventional education system has mainly focused on transmitting the teachers' knowledge to students.

However, it has paid less attention to the other aspect of education namely, learning (Alonso, Lopez, Manrique, Vines, 2005). Although computer-assisted teaching using the Internet has radically changed the teaching paradigm, much of higher education is still classroom-based (Pitch, 2004). This indicates that there will always be a role for face-to-face teacher-student interaction in learning environments.

Essentially, a number of research studies show that there is no meaningful difference in terms of success, performance, etc. between online and face-to-face learning environments (Schulman and Sims, 1999; Cooper, 2001; Peterson and Bond, 2004; Thornam and Phillips, 2001).
For instance, Cooper compared online instruction and face-to-face (in-class) instruction in terms of both students' perceptions and performance. At the end of the year, he came up with two main results:

- **Although a much higher percentage of students made A's in the online class, a greater number of students in the face-to-face classes made grades of B. There were no meaningful differences between the two groups in terms of course performance. (2) Although there was no difference in students' course performance, face-to-face students believed that they learned more through face-to-face instruction (Cooper, 2001).**
- **In the 1999-2000 academic year, Schulman and Sims (1999) did not find any meaningful difference between post-test performances of online and face-to-face undergraduate students. Thornam and Phillips (2001) compared online instruction and face-to-face (in-class) instruction in terms of undergraduate nursing students' perceptions about the interactivity of the course. They found out that there was a meaningful difference between the two groups. The online students perceived less interactivity compared to face-to-face students.**

The blended learning approach is mainly based on this understanding as pointed out by Kerres and de Witt (2003, p.101): "Digital media will not substitute traditional approaches to learning and teaching as advocated by some e-learning enthusiasts a few years ago. Digital media do not question the existence of teachers or educational institutions as such and they will coexist with traditional approaches of teaching and training. In many cases, computer-based or Internet-based trainings are accompanied by face-to-face meetings to ensure the quality of learning to reduce dropouts. The now widely adopted term of 'blended learning' refers to all combinations of face-to-face (FTF) learning with technology-based learning: traditional education can be enriched with the use of technology and learning with technology can profit from FTF meetings."

Blended Learning (BL) is widely used to describe learning that mixes various event-based activities, including FTF classrooms, live e-learning and self-paced learning (Valiathan, 2002); combines multiple delivery media that are designed to complement each other and promote learning behaviour.
Its programs may include several forms of learning tools, such as real-time virtual/collaboration software, self-paced web-based courses, electronic performance support systems and knowledge management systems (Singh, 2003). Unfortunately, in many cases, the concept of BL is used simply as a learning environment that combines technology with FTF learning. BL is definitely more than a simple combination of face-to face teaching plus e-learning.

In a broader perspective, Osguthorpe and Graham (2003) pointed out that BL combines FTF with distance delivery system, and the internet is involved but it is more than showing a page from a website on the classroom screen.

It all comes back to teaching methodologies-pedagogies that change according to the unique needs of learners. Those who use BL environments try to maximize the benefits of both face-to-face and online methods using the web and class time to their full potential.

The number of institutions implementing different BL models is increasing each year. Some experts predict that within five years, a significant number of courses will be taught using the BL model (Young, 2002). Yildiz Technic University in Turkey is one of the universities trying to implement BL into some of its courses (http://www.e-learning.yildiz.edu.tr).

WHY BLENDED LEARNING APPROACH AT THE YILDIZ TECHNIC UNIVERSITY

Like many universities, Yildiz Technic University (YTU) is searching for ways to integrate technology into its instruction, to ensure individualized learning environment for its students and to extend the reach of its programs without expanding the physical classroom and without incurring unreasonable costs. BL instruction provides an answer to these needs.

Aims of the Study

The aims of this study were to discuss the process of redesigning a course for blended learning and to explore college students' perceptions of Blended Learning Environment (BLE).

Background of the Course

"Instructional Technology and Material Development" is a core course of the undergraduate curriculum at the Department of Computer Education and Instructional Technologies (Faculty of Education) of Yildiz Technic University. This course has no prerequisites. The students take the course in their fifth academic semester. Approximately 30 to 40 students are enrolled in the course each academic year. Implementing the blended learning model in an "ınstructional technology and material development" course. The process of redesign of the course involved the following phases:

Analysis of the objectives

Firstly, the course objectives were analyzed by the course instructor, with the aim of deciding which of them were to be achieved through the online method and which of them were to be accomplished within the FTF learning environment.

This course was redesigned by the instructor for BL such that the students first mastered "basic material development knowledge and principles" through online materials and then proceeded to FTF environment to share and discuss with their peers and the instructor whether they were able to apply the principles to the material they had developed. With this setup, students also had a chance to evaluate each other's material within the FTF environment.

Identifying the mix

As mentioned by Osguthorpe and Graham (2003, p.229), "if balance and harmony are the qualities that are sought for in blended environments, one must first identify precisely what is to be mixed together".

Therefore, this course was redesigned with part of the course for classroom instruction and the other part for the internet. There was a mix of online and FTF learning activities and the same learners were involved in both environments.

Osguthorpe and Graham (2003) defined this model as "Type 1," a blended classroom involving the same learners in both FTF and online activities.

Time specification and order of the courses

"How much time should learners spend with online activities and how much in an FTF environment?" To answer this question, the learning objectives of the course and the learning environment have to be analyzed (Kerres and de Witt, 2003).

According to the instructor of the course, there were in essence two major learning objectives in the course: 1) to understand the instructional principles of material development; and 2) to be able to apply the principles while developing teaching material.

As Cottrell and Robison (2003) mentioned, most course objectives provide students with the tools they need so that they can apply the tools to solve real problems. In this study, it was assumed that BL might allow learners to pursue both types of objectives more effectively by providing them access to critical knowledge when they need it and by permitting them to obtain more timely feedback from peers and instructors as they attempt to apply new knowledge to solve problems.

Scheduling face-to-face and online learning environments

The instructor decided that the mix between FTF and online environments should be 50/50. As specified, the course was a 4-hour course. In the BLE, students spent two hours within the FTF environment every week; they were also advised to spend at least two hours in the online learning environment.

For this application, the computer lab of the department was scheduled for use by these students every Tuesday. Moreover, the students had a chance to use the university's computer lab, which is open from 8 am to 7 pm. every day. Twenty-one students out of 30 specified that they used both computer labs and their own computer to study the online material. Nine students said that they used only their own computer at home to study the online material.

The course design and development of online materials

The redesign of the course and the development of online material accordingly was a collaborative effort involving the instructor of the course, instructional designers, curriculum developers, and graphic designers from different departments of the university.

This redesign process was supported by the YTU. To create the online environment, web-based material included the course content, the course text, discussion forms, the library (Figure: 1) and follow up quizzes (Figure 2).

The course content and the course text were developed by the course instructor. The curriculum developer helped the instructor to design the content into modules. Animations, graphs and pictures as visual materials were planned by the course instructor and developed by the graphic designers.

During the design of the web-based material, Mayer's (2001) principles of web-based material development and the opinions of the instructional designers were taken into consideration

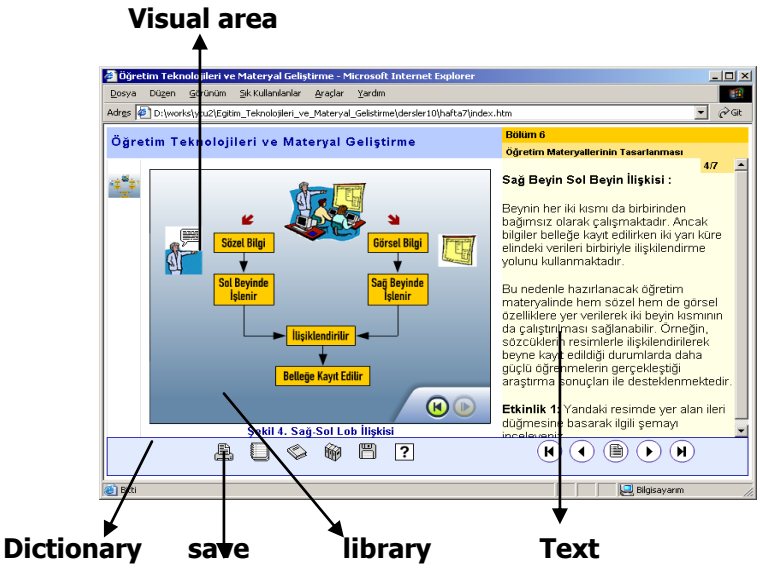

Figure: 1
An example of a self-paced web material

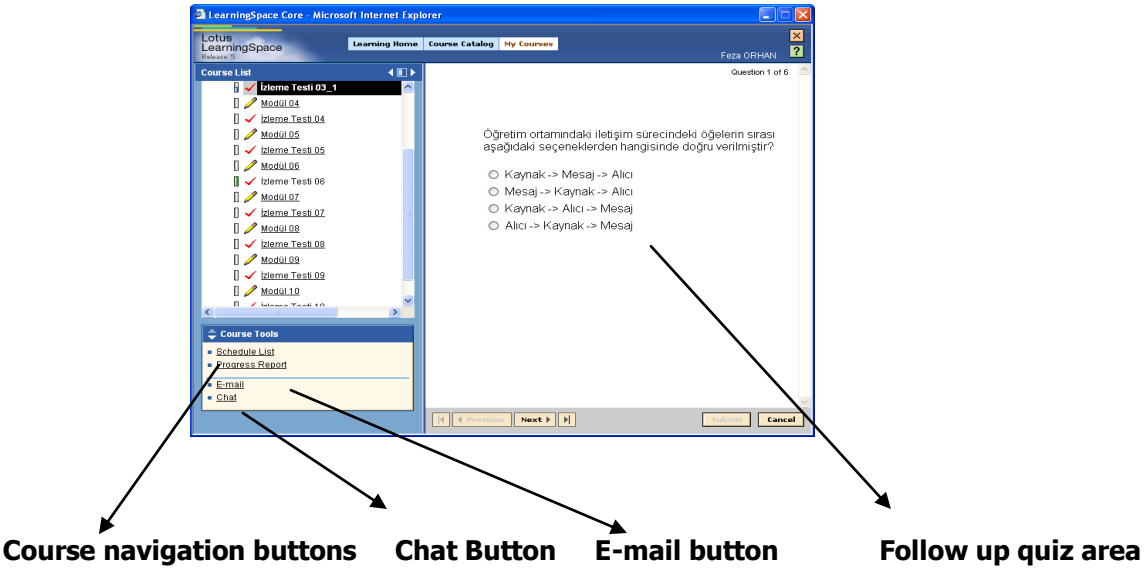

Figure: 2
An example of a follow-up quiz web page

The process

The BLE for the course was implemented for 14 weeks, during the autumn semester of academic year 2005-2006.

Based on the ideas of Moore (1989), we observed three levels of learner interaction: student-content, student-instructor, and student-student.

Through the online learning environment in our BL model, students had student-content interaction with self-paced, web-based materials; student-student interaction

during discussion forums; and student-instructor interaction via e-mail. In the FTF environment, there were student-instructor and student-student interactions.

The instructor posed questions about the online materials students had already studied, answered students' questions, started student-student discussions on the points that were not clearly understood, and encouraged students to present the instructional materials they had developed.

As these students are being trained to become computer teachers, they were asked to develop material for "Computer Literacy" courses given in elementary schools (K-12) in Turkey.

As a "Whole Class Activity" during FTF interaction, each student presented the material he/she developed on the data projector, while the entire class and the instructor evaluated these materials against material development principles.

Throughout the semester, each student developed four different types of materials.

Participants

The participants of this study were 30 students in their fifth semester of the program. From their first to fourth semesters, they had taken courses such as "Programming Languages/Application of Authoring Languages in PC Environment", etc.

Therefore, all of them were advanced computer users. Participants had no prior experience in BLE, but they had taken courses such as "Foundations of Distance Education/Internet Applications in Education" (http://www.bote.yildiz.edu.tr/erasmus/index_en.html). Therefore, the participants were accustomed to using the internet as a tool for accessing knowledge and they were well informed about online distance education.

Data collection and analysis http://www.e-learning.yildiz.edu.tr. Data were collected based on a survey and on focus group discussions.

A 5-point Likert scale survey developed by the researcher was distributed to the students during class near the end of the semester (11th week).

All students completed the questionnaire. In the survey, each statement was phrased to determine whether there was a positive response to different aspects of BLE.

There were statements to determine the perceptions of the students about BLE.

Table: 1
Views about BLE (N:35)

Statement		**1**	**2**	**3**	**4**	**5**	**Total**
1. I enjoyed BL environment.	%	3,3	0	6,7	23,3	66,7	100
2. I prefer BLE to purely face-to-face learning.	%	3,3	20,0	3,3	46,7	26,7	100
3. I prefer BLE to purely online distance learning.	%	6,7	0	13,3	46,7	33,3	100
4. FTF environment was necessary to achieve the course objectives.	%	0	0	3,3	63,3	33,3	100
5.Online environment was necessary to achieve the course objectives.	%	6,7	6,7	13,3	26,7	46,7	100
6.Time spent in the FTF environment was worthwhile.	%	0	6,7	3,3	43,3	46,7	100
7.Time spent in the online environment was worthwhile.	%	6,7	16,7	10,0	43,3	23,3	100
8.There was a good balance between FTF and online environments.	%	3,3	10,0	20,0	53,3	13,3	100
9. Having responsibility for my own learning was useful.	%	3,3	0	6,7	66,7	23,3	100
10.Having control of my own learning of online material was useful.	%	6,7	0	6,7	33,3	53,3	100
11.I would like to take all courses in a BL environment.	%	3,3	26,7	23,3	23,3	23,3	100

The statements in the scale were constituted after examining validated constructs of previous relevant studies (Cottrell et al., 2003; Rogers et al., 2003; Bunderson, 2003) and obtaining the opinions of experts in this field. These included experts from the e-learning department of the YTU and instructors who are experienced in BL. "f" and "%" were used to analyze the data obtained from the survey.

The results are given in Table: 1 Cronbach's alpha index was used to assess the reliability of the questionnaire. The Cronbach's alpha value was found to be 0.87, revealing acceptability with high reliability value. To probe more deeply into nuances of their experiences, the views of six of the students were gathered through a focus group discussion administered by the researcher. Participants were chosen through purposive sampling targeted at typical users (Cohen et al., 2000).

As it is known that focus groups are best held in neutral locations (Denton, 2003), a university-based location was chosen for focus group discussion. During the discussion, the researcher, acting as the moderator, encouraged discussions and achieved a balance between leading the session and letting it run its course. The focus group discussion was recorded on tape; a research assistant took notes of the discussion as well. Taking notes stalls discussion and makes members extra sensitive to what they say (Denton, 2003). Thus, through focus group discussion, students were given an opportunity to elaborate their feelings concerning any difficulties they had during the course.

FINDINGS AND DISCUSSION

In this part of the article, findings and focus group discussions are presented and discussed with related subtitles. The Likert-style questions quoted here, as well as comments from students, were translated from Turkish by the author.

As illustrated in Table: 1, 90 % of the students enjoyed this new learning environment. Moreover, the data for Statement 2 shows that 26.7% of students "strongly agree" and 46.7% of them "agree", meaning that they preferred BLE to purely FTF learning environment.. As mentioned before, until the fifth semester of taking the "Instructional Technology and Material Development" course in BLE, these students took nearly 25 courses, all of which were within an FTF environment. Therefore, although this course was their first experience of BLE, it should be taken into consideration that the students did not want to continue within a purely FTF learning environment. This may be interpreted to mean that the students preferred online learning environment to FTF learning environment. However, in the same table, it is indicated that 80% of the students preferred BLE (Statement 3) to purely online distance learning.

In general, these findings illustrate that students thought that the integration of FTF and online learning environments (BLE) was more enjoyable and preferable than purely online distance learning or purely FTF learning environment.

As mentioned before, finding a harmonious balance between online access to knowledge and FTF human interaction in a BL environment is very important (Osguthorpe and Graham, 2003). Therefore, to determine students' views about the balance between online and FTF learning environment in this blended application, they were asked to rate five statements.

According to our data, a combined 96.6% of the class rated that they "strongly agree" and "agree" to Statement 4: "FTF environment was necessary to achieve the course objectives." Aside from this, 73.5% indicated, "online learning environment was necessary" as well (Statement 5). These results show that it is very important for our students to have live, FTF interaction with the instructor and their peers.

In focus group discussions, students expressed that they felt comfortable while studying online materials, knowing that they would have a chance to ask their

questions to the instructor in FTF environment. Besides, they pointed out that getting feedback and encouraging responses from the instructor in FTF environment encouraged them to study regularly. A comment from one of the students reflected this feeling quite well:

> **"*Knowing that the instructor is going to ask some questions about the material that I was supposed to read on the web, made me study the online materials more carefully. Although bored with traditional methods, I could never think of a learning environment that is without interaction with the instructor and my peers. Being in class for a brief period of time was wonderful and effective*." Another added, "*Although I studied the online materials carefully, the instructor's experience and the examples she presented made the subject much clearer. Sometimes, after FTF discussion with the instructor, I found out that I had not correctly comprehended the material I studied online*."**

When students were asked if they thought the time spent in FTF instruction was worthwhile (Statement 6), 90% responded positively. In focus group discussions, comments such as these clarified the reasons for this agreement: "*Meeting only once a week for two class hours was just the time we needed. We didn't get bored with the lesson*." and "*The instructor didn't repeat the material I had already studied on the web. She went into deeper discussions, so coming to class was worthwhile*." Although most of the students seemed to appreciate the more limited FTF learning environment, two students did not. Their comments were as follows: "*The FTF class hours were very short. I always learn better listening to the instructor*." and "*I don't like studying by myself. It is easier to listen to the instructor and get the knowledge*."

For Statement 7, "Time spent in the online environment was worthwhile", results indicate that, compared to the responses for FTF instruction, there was more of a difference of opinion among the students. The total number of students who responded "agree" and "strongly agree" is 66.6%. This percentage is quite high, but the remaining 43.4% of the students' responses show that they did not find the time spent in the online learning environment worthwhile.

Parallel to the findings in Statement 3, 66.6% ("strongly agree" and "agree") of the students rated the mix between FTF and online instruction as having a good balance (Statement 8). Taking into consideration that this was both the students and the instructor's first experience for BL application, the result could be accepted as satisfactory. When we combined the responses of those who marked "disagree" and "strongly disagree", the result is 13.3%. Yet, the percentage of students who had "no opinion" is 20%. This shows that a significant number of students were still undecided about the effectiveness of the balance between FTF and online environments.

These findings could be related to the material used in the online environment. In fact, it was pointed out during focus group discussions that,

> **"*some visual materials in the web-based material were not satisfactory enough*"; "*the use of the web mail for submitting course assignments did not work well all the time*"; and "*it took time to get responses to assignments*".**

Most papers have mentioned that, aside from pedagogical richness, access to knowledge and social interaction, one of the other significant benefits of BL is learner

control/self pacing (Cottrell and Robison, 2003). Our findings illustrate students' views about this significant benefit of learner controlled learning environment. The data gathered from Statements 9 and 10 illustrate that students in the BL course liked taking responsibility for learning (Statement 9) and having control of their study time (Statement 10). Comments in focus group discussions that supported these findings include the following:

> **"*I studied the online material anytime, anywhere I wanted. This flexibility made me feel that I was a university student*."; "*I felt I was free. Not to have any pressure to study motivated me much more to study regularly*."; "*Some days I studied the online materials when I was out of the city for a weekend. This was great, thank you for giving us this chance*."; "*Having the responsibility of studying or not studying the online materials made me more responsible for this course*."**

On the other hand, although online learning environments give students a chance to participate in online instruction on their own time (Cottrell and Robison, 2003; Aycock, Garnham and Kaleta, 2002; Christensen, 2003), this flexibility may cause problems for some students. Students who were not happy with online study time commented:

> **"*There was always something to do instead of studying the online materials*."**

Interestingly, student responses to Statement 11, "*I would like to take all courses in a BL environment*", were astonishing. There was a large divergence of responses ranging from "disagree" to "strongly agree". The students who were positive about taking all the courses in blended environment make up 46.6%, those who did not want to take all the courses in blended environment make up 30%. The ones with no opinion constitute 23.3%. This finding should not be taken as a negative indication, but could be taken as an indication of how students felt about their first experience of blended environment. "There is a feeling by those new to BL that the online experience restricts interaction." (Cottrell and Robison, 2003, p. 266) One student's comment summed up the reason,

> **"*Yes, I enjoyed BL but would not prefer to take all the courses with this model. For example, I would prefer traditional face-to-face classroom for the course programming computer languages*." Other comments include, "*If webbased learning means not coming to university every day, I do not want this. I meet my friends at the campus*." and "*Yes, for some courses, but not for all courses*."**

These comments primarily reveal that universities are not only institutions of education but also a social environment where students meet and interact with each other. Furthermore, the comments also indicate that students prefer to have more interaction with the instructor in some courses.

CONCLUSION

The most important conclusion derived from this research is that university students do not want to continue their education with only traditional face-to-face learning environments or with a purely online learning environment. They would like to come to campus and discuss the course content with their instructors and friends, but would like to use information technology as a learning tool as well. In short, they prefer BLE.

One of the main questions in this research was how to redesign the course in BLE to achieve a balance between online and face-to-face activities. To create an effective BLE, a harmonious balance between online access to knowledge and FTF human interaction in blended learning approaches must be found (Osguthorpe and Graham, 2003). The balance will vary for every course according to instructional objectives, student characteristics, instructor background and available online resources. In this case, the balance between FTF and online learning environments is 50/50.
Our research findings demonstrate that 66.6% of the students thought this was a good balance between FTF and online instruction.

Additionally, the findings of this case study could provide valuable insights for instructors who want to create BLE. Our findings suggest that the application of BLE can improve students' responsibility for their own learning through online activities and improve their motivation through FTF interactivity. In BLE, instructors may be able to spend less time delivering content and more time guiding students. Using a BLE appears to be an effective strategy when trying to implement a student-centered learning environment. Moreover, students in this study had a valuable experience in online and blended learning for their future employment.

Based on the research findings, some basic suggestions could be implemented as follows:

1. **Instructors should be encouraged to leave strictly traditional lecturing and redesign their courses according to BLE principles.**
2. **Institutions should provide students with the necessary resources and facilities to use the computer as a supplementary learning tool.**
3. **Before redesigning courses for BLE, university students should be made to understand and consciously realize that learning is their responsibility.**
4. **Course instructors need training for the dual role of both content developer and facilitator in redesigning courses for BLE.**
5. **Further studies with a bigger sample size student population are suggested.**

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