HIGH SCHOOL STUDENTS' VIEWS ON BLENDED LEARNING

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ABSTRACT

In this study, it is aimed to determine the high school students' views on blended learning. The study was carried out in biology course for the lesson unit of "Classification of Living Things and Biodiversity" with 47 9th grade students attending Nevzat Ayaz Anatolian High School in the second term of the academic year of 2009-2010. The lessons were taught in a way appropriate to the blended learning model both via the Internet and on face-to-face basis. As the online dimension of the blended learning model, Moodle, a Learning Management System (LMS), was used. The application lasted 10 weeks. The scale of learners' views on blended learning was applied and interviews were held to determine the views. As a result of the analysis of the scale, it was seen that their views were "highly" positive. The interviews held with the students revealed that the blended learning model provided students with various opportunities such as getting prepared for the lessons, reviewing the lessons as many times as wanted, reaching the subject-related materials without being dependent on time and place, testing oneself and communicating with the teacher and other students out of the school. The interviews also revealed that there were various problems though such as lack of Internet connection at home and problems experienced while playing the videos.

Keywords: Blended learning; biology; moodle.

INTRODUCTION

Since the moment information and communication technologies were used for the first time, there have been great developments in this field. Education given via tools such as letters, videos, cassettes and television is called "distant education". In other words, distant education is defined as a type of education in which the distance between the learner and the instructor is emphasized and in which technology is intensely used (Kaya, 2002).

In recent years, the spread of computer use, developing Internet technologies and faster Internet connection have all allowed distance education to be given in educational settings established on the Internet.

Therefore, while naming such educational settings, instead of the concept of distant education that rather defines a larger area, the concept of "e-learning" that defines distant learning environments in which Internet and network technologies are used for the presenting and receiving the content (Horton, 2002).

125

The development and spread of Internet technologies contributed to the quality of education to a great extent, and in recent years, with the increasing number of schools and institutions giving education via the Internet, the concept of e-learning has entered in our lives (Çallı, Torkul and Taşbaş, 2003).

Despite all these rapid developments, face-to-face instruction has never lost its popularity. In addition, distant education and e-learning methods have never taken the place of face-to-face instruction.

One of the reasons for this the student-teacher interaction achieved in face-to-face instruction can not be achieved in distant education or in e-learning applications. Such an interaction seems to be a must for permanent learning and for the teacher's control over this activity (Şimşek, 2009).

On the other hand, in face-to-face instruction, individualization has stayed in the background (Bonk and Graham, 2004). Similar to traditional face-to-face learning environments, there are several limitations of e-learning environments. This fact led to the idea of the blended learning approach, which brings two teaching approaches together correcting their deficiencies: one has been used for ages and the other has a history of quarter century long (Balcı, 2008).

Blended learning means combining the strong and advantageous aspects of web-based learning with those of face-to-face learning (Horton, 2002; Osguthorpe and Graham, 2003).

Garnham and Kaleta (2002) identified blended learning or hybrid courses as joining the best features of in-class teaching with the best features of online learning to promote active independent learning and reduce class seat time.

Also; Driscoll (2002) referred to four different concepts:

> To combine or mix modes of web-based technology (e.g., live virtual classroom, self-paced instruction, collaborative learning, streaming video, audio, and text) to accomplish an educational goal.
> To combine various pedagogical approaches (e.g., constructivism, behaviorism, cognitivism) to produce an optimal learning outcome with or with out instructional technology.
> To combine any form of instructional technology (e.g., videotape, CD-ROM, web-based training, film) with face-to-face instructor-led training.
> To mix or combine instructional technology with actual job tasks in order to create a harmonious effect of learning and working.

According to Thorne (2007), blended learning is a good option to cope with the problems experienced while finding solutions regarding learning that an individual needs.

In this respect, blended learning is "an opportunity to integrate the opportunities provided by the innovative technological developments due to e-learning with the participation and interaction features provided in the best way in the traditional learning environment".

The definitions made for the blended learning approach help draw such common conclusions as benefitting from all types of technologies, integrating new technologies into the traditional (face-to-face) education, combining various models of traditional and distant education, integrating the Internet technology into in-class learning and providing the intended learning goals with the web support (Demirer, 2009).

Use of the blended learning approach is based on the following assumption: along with the benefits of face-to-face interaction between student-student and of face-to-face interaction between student-teacher, there are a number of benefits of online learning as well. In blended learning, the purpose is to establish a balance between online learning and face-to-face learning. The balance between face-to-face learning and online learning may change from one course to another. Due to the basic features of some courses, face-to-face learning is used more, while in other courses online learning is used more. Still in another course, both learning methods are equally used (Osguthorpe and Graham, 2003).

Mc Campell (2001) emphasized that blended learning is a good approach for those who will include online applications in their current curriculum for the first time and that some parts of the course could be transferred into the online environment without executing the course fully on online basis. By avoiding complexity in online environment as much as possible, activities appropriate to students' computer skills should be included in the curriculum. Otherwise, students may get confused and demoralized (Silwerwood, 2007). There should be a clear relationship between the methods used in blended learning. The course should not seem like different activities forced together. Different methods used should complement one another without ruining the whole. For instance, theoretical parts of a course could be presented on face-to-face basis, while visual elements could be presented on online basis (Silwerwood, 2007; Precel, Alakalai and Alberton, 2009).There are many benefits to blended learning. To answer the question "*Why use blended instruction,*"the author of *UCLA Blended Instruction Case Studies* came up with a comprehensive list of these benefits. The list contains the following items (Hijazi, Crowley, Smith and Shaffer, 2006):

➢ Class goals can easily be met.
➢ Uniformed classes for multi-section offerings.
➢ Redesigning courses so the educational outcome can be measured easily.
➢ Effective use of class time
➢ Enhanced computer literacy among students and instructors.
➢ Flexible classroom scheduling.
➢ Increased chances for doing research.
➢ Course documents are available to learner 24 hours a day.
➢ Using the World Wide Web resources to support class activities.
➢ Students can participate at any time.
➢ Students can collaborate on their own time.
➢ Supply students with additional learning materials if they need them.
➢ Reduce the instructor's redundant tasks.
➢ Increase the quality of communications between the instructor and learner.
➢ Better ability to monitor student involvement and advancement.
➢ Using interactive programs that produce quick feedback and an advice for any remedial work.

The importance of blended learning has increased in recent years due to its advantages. The American Society for Education and Development defined blended learning as one of the top ten trends in the knowledge delivery industry (Rooney, 2003; cited by Graham, 2006). Young (2002) stated that the blended learning model has been the best and unique trend so far in higher education and that in near future, the number of blended courses executed in higher education will increase in a way to cover 80-90% of all the courses. The importance of using the Internet and computers is gradually increasing in terms of the course of biology. Activities carried out during the usual course hour are not sufficiently effective because of time constraints. With the blended learning model, students are able to carry out multimedia applications-which can not be sufficiently taught during lessons - via the Internet.

In addition, ability to see the course content before coming to the class enables students to learn the research subjects and thus to come to the class as prepared for the lesson.

Students can discuss important subjects in the Internet environment (in forums) and establish communication both with their teachers and with other students.

In recent years, the number of blended learning applications has increased in America and Europe. In our country, there are only a few studies conducted in this field. It is seen that studies carried out were carried out mostly in higher education. This study is important since it tries to demonstrate that blended learning is effective in secondary education as well. As a result of the review of the related literature, no blended learning application carried out in the field of biology teaching in secondary education was seen. The present study is believed to be leading one in the field. In this respect, the study conducted tried to determine the high school students' views on blended learning.

METHOD

In this study, it is aimed to determine the high school students' views on blended learning. Survey method was used as research model. The study was carried out with 47 students attending Nevzat Ayaz Anatolian High School in Diyarbakır in Second Term of the academic year of 2009-2010.

Data Collection
The scale of learners' views on blended learning

The scale -included a total of 50 items- was developed by Akkoyunlu and Yılmaz-Soylu (2006). 35 items aim at identifying students' views on the process of implementation (ease of use in web environment, online environment, face-to-face sessions, evaluations concerning the content) whereas the remaining 15 questions were prepared to determine their views on Blended Learning in general. The students were asked to rate each item on a scale ranging from 1-10.

The scores obtained were deemed as follows: "7.01-10: high", "5.01-7: medium", "1-5: low." The alpha reliability coefficient of the scale was calculated .72. In the present study, alpha reliability coefficient of the scale was calculated .94. In addition, the interviews were held with the students.

Application

The application was carried out in the biology course for the lesson unit of "Classification of Living Things and Biodiversity" in the Spring Term of the academic year of 2009-2010. The application process lasted 10 weeks. In order to create the online dimension of the blended learning environment, a web site was designed by using Moodle LMS (www.e-biyoloji.net).

Before the application, the students were trained in two-course hours. During this training, first, the students were informed about the blended learning model and about what they were expected to do. Secondly, the website was introduced to the students via the Internet with the help of a computer connected to a projector in the classroom. They were demonstrated in practice how to sign up the website and what to pay attention to while following up the activities. While teaching the lessons, a balance between the face-to-face and online environments was established as appropriate to the objectives of the lesson.

Before coming to the classroom, the students prepared themselves for the lesson by examining the summary of the subject, the visual presentation (in video format), the videos and animations related to the subject, the dictionary and the other related links via the Internet. In addition, for each subject, they were given an assignment (homework) that they were supposed to search for before coming to the classroom.
The students were asked to bring the research assignments to the classroom. Also, they were allowed to send their homework online.

It was announced to them that they were expected to allocate at least 1 hour a week to carry out the activities presented via the Internet.

The research assignments were presented and the subject was taught in the face-to-face setting via the question and answer, discussion methods.

The teacher evaluated the activities carried out via the Internet with the help of a computer in the classroom and clarified the points that were not understood by the students.

Furthermore, at the end of each subject, a quiz to be responded to by the students regarding that subject was included, and a forum environment for discussing the points that the students did not understand was designed. Without first completing one subject, access to another one was not allowed.

The features of the website used in the application were as follows:

> ➢ **All the students signed up the website by providing the necessary information and were given a user name and a password. They used their own user names and passwords to sign in the system. After they signed in the website, they saw the home page. The home page included the unit headings and the list of the active courses. On the right bottom side of the home page was a list of active online users. In addition, the home page also included a calendar and contact information about the researcher.**
> ➢ **After the students started the course on the website, they met the course screen made up of a number of parts.**

129

The lesson page was designed as appropriate to the weekly outline. Thus, before coming to the classroom, in line with the curriculum of the course, the students were able to examine the content related to the subject to be taught that week. On the course screen, the students were given information about the attitudes they were expected to show during the application and the method used. In addition, the course screen included a forum for the announcements made about the lesson. The students were able to see these announcements on the right side of the course screen under the heading of latest news. In order to create a more permanent and effective learning environment while presenting the subjects, techniques appropriate to different learning styles were used. The students were able to follow up the subjects via the summary page, presentations in video format, animations and different websites related to the subjects (Tubitak, Wikipedia and so on). In addition, there were parts for image galleries, a dictionary, quizzes, research subjects and a forum.

➢ The system allowed determining the students' sign in and signs out time for the website, the activities they carried out and the duration of the time the students spent on the activities. Such information provided the teacher with the opportunity to warn the students when necessary.

Table: 1
The Application Schedule

Week	Application
1	Training for introducing blended learning.
2	Via the website designed as appropriate to the blended learning model, the subjects of Classification of Living Things -Classification Steps- Binominal Nomenclatur were taught.
3	The subject of Bacteria and Archaea was taught via the blended learning model.
4	The subject of Protista was taught via the blended learning model.
5	The subject of Fungi was taught via the blended learning model.
6	The subject of Plants was taught via the blended learning model.
7	The subject of Animals-Invertebrates-Chordata was taught via the blended learning model.
8	The subject of Animals-Vertebrates was taught via the blended learning model.
9	The subject of Biodiversity was taught via the blended learning model.
10	Application of the scale of learners' views on blended learning and interviews.

FINDINGS and DISCUSSION

The students' scores regarding the blended learning method and its application were examined via the descriptive statistics analysis. The findings obtained are presented in Table: 2.

Table: 2
Descriptive Statistics Regarding the Students' Scores
for the Blended Learning Model and Its Application

Dimensions	n	Min	Max	$\overline{X}$	SS
Blended Learning Model		5.00	10.00	7.91	1.549
Application of the Model	47	5.00	9.89	8.28	1.181
General		5.00	9.84	8.17	1.186

When Table: 2 is examined, it is seen that the students' mean score regarding their views about the application of the blended learning model was 8.28. When the students' (affective) views about the blended learning model were taken into consideration, it was seen that their mean score was found as 7.91. The scores produced by the scale between 1 and 10 was evaluated as follows: "1–5: Low", "5–7: Average" and "7.01–10: High". Thus, it could be stated that the students' views both about blended learning model and about the application of the blended learning method were positive at a "high" level.

The overall mean score regarding the students' views about the blended learning model was calculated as 8.17. Therefore, it could be stated that the students' views about the blended learning model were positive at a "high" level.

The scores regarding the students' views about the sub-dimensions of the blended learning model were examined via descriptive statistics analysis. The findings obtained are presented in Table 3.

Table: 3
Descriptive Statistics Regarding the Students' Scores
for the Sub-Dimensions of the Blended Learning Method

Dimensions	n	Min	Max	$\overline{X}$	SS
Ease of use of the web environment		4.71	10.00	8.39	1.355
Online environment		4.67	10.00	7.91	1.699
Content	47	5.00	10.00	8.24	1.360
Face-to-face environment		3.86	10.00	8.44	1.601
Evaluation		5.00	10.00	8.43	1.686

When the students' views about the sub-dimensions of the blended learning model were examined, it was seen that the highest mean scores belonged to the sub-dimensions of "face-to-face environment" (8.44), "evaluation" (8.43), "ease of use of the web environment" (8.39), "content" (8.24) and "online environment" (7.91), respectively. Consequently, it could be stated that the students' views about all the sub-dimensions were positive at a "high" level.

In their study, Akkoyunlu and Yılmaz-Soylu (2006) examined students' views about the blended learning environment. The study was conducted with 64 students attending the Department of Computer and Instructional Technologies at Hacettepe University in the Fall Term of the academic year of 2005-2006. The results obtained in the study revealed that a big majority of the participating students' views about the blended learning environment were positive at average and high levels. Among the dimensions found in the scale used to determine the students' views, the highest mean score was found to belong to the dimension of "face-to-face environment". Balcı (2008) applied the blended learning method in the course of Special Education Methods. The study group included 20 students taking the course of Special Education Methods. In order to reveal the students' views, a form made up of 54 multiple-choice questions was developed and applied to the students at the end of the academic term.

Based on the means ($\overline{X}$) and the standard deviation values (SS) calculated as a result of the analysis of the students' responses to the questions, it could be stated that the students' views about the blended learning application were fairly positive. These findings are consistent with the results obtained in the present study.

In a number of studies in related literature, it was reported that students' views about the blended learning model were positive and that their satisfaction levels were high (Dziuban, Hartman and Moskal, 2004; Lilje and Peat, 2007; Uluyol and Karadeniz, 2008; Eng et.al., 2009; Pearcy, 2009; Kirişçioğlu, 2009; Yılmaz, 2009; Yaman and Graf, 2010).

Structured interviews were held with 15 volunteering students from the study group. The questions directed during the interviews and the students' responses to these questions are as follows: The students' views about the difficulties experienced during the teaching of the course via the blended learning model:

"At the beginning, we experienced problems with the opening of the videos found in the web site, but they solved these problems."(E)

"The web pages opened slowly due to the slow Internet connection."(H)

"I didn't experience any difficulty."(D)

"I didn't experience any difficulty except for the lack of Internet connection in my house."(S)

"My parents do not allow me to spend much time on the Internet, so I sometimes experienced problems".(Y)

"Everything is quite clear. I could reach whichever subject I wanted to. I could find the answers to the questions in my mind, so I didn't experience any difficulty."(S)

"It was quite boring for me to read in front of the computer, so I experienced some difficulties"(F)

The students' views about the advantages provided by the teaching of the course via the blended learning model:

"Even when I didn't understand the subject during the lesson, I knew there was a source waiting for me to help understand that subject".(F)

"We could find the visual details of the subjects taught during the lesson in the Internet environment. Also, we could find answers to the questions we weren't able to ask in the class due to lack of time".(İ)

"I can say it was quite beneficial for me. It allowed me to learn faster, to get prepared for the lesson and to learn the subject in detail."(S)

"Thanks to the quizzes on the Internet page, I found the opportunity to test myself and understood the subject better".(G)

"It was good for me to test myself thanks especially to the quizzes found in the Internet environment. Also, the videos and animations related to the subject helped me understand the subject better".(S)

"I got prepared for the lesson, and I found the opportunity to make revisions at home".(M)

"I could learn the subjects during the lesson depending on my own pace of learning. I could go to the class as prepared for the lesson and reinforce my knowledge. I didn't easily forget what I had learnt and I didn't have difficulty in making revision".(A)

"The high number of visual elements made it easy to keep the subject in my mind. I could ask questions when I had difficulty understanding the subject".(S)

"I can study for my lessons whenever I want. Thanks to the opportunity to study alone and in quiet environment, I can understand the subject better". (H)

"I can study for my lessons when I feel myself prepared. I didn't have to make a plan because everything was presented in order in the web site".(M)

"I can make as much revision as I want. I can watch various documentaries and different videos related to the subject. This increases my interest in the subject".(E)

"I can revise any subject at any time as much as I want. Also, the lessons on the web site and the realistic pictures make the subject more understandable".(R)

"The next day, I could take the answer to the question I asked on the Internet for the first time".(M)

"I could find the details missing in the books in the web site. Slides, the animations and the videos made the subject more entertaining".(M)

"The blended learning provides instruction specific to the individual just as I wanted. I wish this method were applied in all the courses".(D)

The students' views about the face-to-face environment dimension of the blended learning model:

"I can ask questions to the teacher and take the answers instantly in the face-to-face environment, so I can say it is a must". (S)

"I find in-class teaching much more productive".(S)

"Face-to-face environment is necessary because coming together and talking to each other allows telling the mistakes and sharing the new ideas". (B)

"I think the method is necessary to reinforce and better understand the subjects".(H)

"We can discuss the subjects in the class that we couldn't understand via the web site and we can find solutions to the problems".(M)

The students' views about the web environment dimension of the blended learning model:

"To me, the Internet should not just be an environment in which you can speak to friends or play games; there should also be such instructive web sites. Because we are used to it at all, we had difficulty adapting ourselves to it, but when this system starts working well, I think, it will be quite beneficial".(F)

"The web site could be made more entertaining if such activities as intelligent games and puzzles were included".(İ)

"Thanks to the Internet environment, I could reach anything related to the subject whenever I wanted".(S)

"The only bad thing about the web environment was the fact that although we needed Internet connection all the time, we couldn't find it every time in every place".(G)

"The web environment is much easier, more understandable and more permanent".(İ)

"In order to draw our attention, the web environment could include more interesting activities such as monthly contests, puzzles and so on".(S)

"The web environment is informal and more entertaining".(M)

"It is a simple web site quite suitable for me. It is understandable and not complicated. The web site allows making revisions of the subjects".(S)

"The lessons in the web environment, the presentations and the videos help me understand the lesson better".(E)

"The subjects are taught well in detail and are understandable, simple, and clear. I can say it is just a little formal. It could be enriched with games and various activities".(H)

"To me, it was quite beneficial. I learnt the lesson more easily. I wish there were similar web sites for other courses".(D)

"It helps us reinforce our knowledge about the subjects and take background information about the subjects".(M)

"I think it was quite effective, but I get bored when I read via the computer".(B)

"Thanks to the web site, *the course of biology became more entertaining for me. I can say I more willing to study for the lesson".(E)*

"The web environment was beautiful. Its content was satisfactory; and its design was quite good".(M)

CONCLUSION AND SUGESSTIONS

When the students' mean scores obtained from the scale of learners' views on blended learning were examined, it was seen that the students' mean score regarding their views about the application of the blended learning model was 8.28; that their mean score regarding their (affective) views about the blended learning model was 7.91; and that their overall mean score regarding their views about the blended learning model was 8.17.

Consequently, it was revealed that the students' views about the blended learning model were positive at a "high" level. When the sub-dimensions of the scale of learners' views on blended learning were taken into consideration, it was found out that the highest mean scores belonged to the sub-dimensions of "face-to-face environment" (8.44), "evaluation" (8.43), "ease of use of the web environment" (8.39), "content" (8.24) and "online environment" (7.91), respectively.

As a result, the students' views about all the sub-dimensions were positive at a "high" level. The results obtained via the interviews held with the students are as follows:

 ➢ The model allowed the students to get prepared for the subject and thus to learn the subject faster and more easily.
 ➢ The students found the opportunity to make revision at any time as much as they wanted and understood the subject better thanks to such activities as videos and animations.
 ➢ Thanks to the quizzes in the web site, the students were allowed to test themselves and to determine the subjects they were inefficient in.
 ➢ The students were allowed to learn on their own pace of learning, and thus their interest in the lesson increased.
 ➢ The students tried to overcome their inefficiencies by directing questions via the web site that they could not ask during the lesson and by discussing with their friends.
 ➢ Thanks to the activities presented in the web site, a more entertaining learning environment was provided.
 ➢ As mentioned above, besides a number of positive results, there were also certain limitations as follows:
 ➢ Not all the students had Internet connection in their houses,
 ➢ Some of the videos opened slowly due to the slow Internet connection,
 ➢ The parents did not want their children to spend much time on the Internet,

135

> - Some students found it boring to read via the computer,
> - Certain activities (contests, puzzles and so on) that students might find entertaining were not included as desired in the web site.

Depending on the findings obtained, the following suggestions could be put forward:

> - The lack of computer equipment and Internet access in schools should be overcome; the present ones should be used productively and updated.
> - Computer laboratories at schools should be organized in a way to be used in other courses besides computer-related courses.
> - Lack of computer and Internet access in a number of students' homes is one of the biggest limitations experienced in web-based applications. Therefore, overcome such a problem, the necessary arrangements should be made via lower-cost Internet access and campaigns specific to students to overcome such problems.
> - Students should be made accustomed to effective and appropriate use of the Internet and be encouraged to do so. For this purpose, a course called "Internet education" could be included in the curriculum.
> - Another limitation was that the parents did not want their children to spend much time on the Internet. Although it was normal that the parents were worried about the case, it is not right to fully ban the Internet. For this subject, consciousness raising studies could be carried out via the guidance services of schools or family-support agencies of the Ministry of National Education.
> - Entertaining applications such as contests and puzzles could be included in the content of the web page.
> - The present study was carried out within the biology course in the lesson unit of "Classification of Living Things and Biodiversity". In different subjects of the course of biology or in different other courses, the blended learning method could be applied.

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