Increasing Productivity and Efficiency in Online Teaching

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Chapter 3
The Adaptation of a Residential Course to Web-Based Environment for Increasing Productivity

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ABSTRACT

This study examines the design process of a blended learning environment using a learning management system to transform Basic English courses into the web-based distance learning format in the School of Foreign Languages at a large scale research university in Turkey. The research design was based on design-based research and the ASSURE, which is an instructional design model. A design plan was created based on the needs indicated by the analysis, and the necessary materials were developed and transferred to the learning management system. A usability test of the environment was conducted for increasing efficiency of environment, facilitating learning, increasing productivity and making the environment more user-friendly. As a result, an environment was designed where instructors can create the desired multimedia materials (videos, exercises, quizzes). Students can access these materials, discuss with each other and instructor (chat, discussion) and assess their learning outcomes (weekly homework, quizzes, games).

INTRODUCTION

In higher education, there is a need to design and use new tools, techniques and environments for increasing productivity of instructors and students. In this context, the importance of web-based distance learning

environments and learning management systems is increasing. In simple terms, distance learning is a type of learning where the teacher and the learner are physically in different places. At the beginning, distance learning was created for the students unable to attend school lessons for various reasons. Then it was re-built in a web-based form and gained a new dimension called "online learning" or "e-learning" (Lei & Gupta, 2010). Since distance education takes place through the Internet, it increases the quality and power of education. It also enables teachers and students to exchange information, experience, materials and notes, and it can even reach more people (Subbiah, Saravanakumar, & Perumal, 2012). Web-based distance learning has many advantages such as providing access to information in different modalities—audio, video, text—independent from time and location thanks to the use of multimedia, facilitating individual learning in asynchronous cases and providing interaction in cases of synchronised use.

Learning Management Systems (LMSs) are units of software that enable online distance education teaching and learning activities in a systematic and planned form, making it easier to follow and monitor educational activities, regulating the content and interactions between teachers and learners (Ozan, 2008). Learning management systems are online interfaces for the production and management of course contents and management of the learning process (Gökova & İnceoğlu, 2011). Moodle is one such software program. It is commonly used in online learning because its web interface supports interactions between teachers and students, because it is easy to use, and because it uses open source code (Kaleci, 2011).

This study explores the design process for migrating "Basic English" courses for online delivery. These courses are normally taught face-to-face in the School of Foreign Languages at a reputable public university in Ankara. This research is an example of design-based research. Tüzün (2001) claims that if educational designers and teachers use a certified method to transform courses for online education, they will be able to overcome problems such as limited time and limited experience. Design models show what, when and how to do things, thus ensuring that the design process advances successfully and according to the plan (Tüzün, 2001). This study is based on the ASSURE Model, an instructional design model. The courses were put online using Moodle. The ASSURE Model is based on learning necessities, and it aims to improve material selection. It stresses the interaction between learners and teachers during the design process and the realisation of learning targets at the end of the process. The ASSURE Model has six phases: analyze learner (i.e., demographic features, learning styles and life styles of the target group), state objectives, select media and materials, utilize media and materials, require learner participation, evaluate and revise (Akkoyunlu, Altun, & Soylu, 2008; Chiou et al., 2006). In this context, this study aims to redesign, develop and implement "Basic English 1" and "Basic English 2" courses for web-based online education in the bases of ASSURE model.

BACKGROUND

Literature Review

Web-based distance learning has many advantages. It provides access to information free of place and time thanks to its multimedia elements (e.g., audio, video, texts). It facilitates individual learning in asynchronous mode and helps to generate interaction in synchronicity. The Internet supports lifelong learning by allowing for flexibility of time and place. Therefore, universities organize online courses in and out of the academic year in order to meet students' needs (Chen, 2007). Online learning is an

effective tool for distance learning due to its many advantages for learners. It eliminates the obligation of physical attending the courses which allows students to plan their daily activities in a more flexible way. It saves time and money since there is no need to go to school regularly. It is an ideal environment for the students who work part-time or full-time or who have physical disabilities and it makes it easier to conduct classes with many students (Abarashi, 2011; Lei & Gupta, 2010). However, online distance learning is not suitable for all courses and all learners. The reasons for this are that students have to be motivated, face-to-face interaction is important in some lessons and some lessons require laboratory work. Still, these limitations can be eliminated to some extent thanks to the Internet. Simulations and interactive videos make practical learning possible. Audio and visual multimedia elements increase the motivation of learners. Furthermore, some practices such as live lectures, sharing course materials and other resources, examinations and student attendance can be done with various Internet technologies (Abarashi, 2011). In Internet-based distance learning, students use these facilities and educational activities are performed systematically thanks to a variety of software on the web.

Learning Management Systems

Learning management systems (LMSs) use software to offer learning activities in web-based distance learning. These are performed in a systematic and organized way, monitoring and evaluating learning activities without difficulty and arranging the content and the interaction between students and teachers (Ozan, 2008). LMSs create an interface in the electronic environment for the generation and management of course content and management of the learning process (Gökova & İnceoğlu, 2011). LMSs allow to design cheaper, faster and better e-learning environments while instructors can create their own multimedia materials (Tortora, Monica, Vitiello, & D'Ambrosio 2002). Coates, James and Baldwin (2005) indicated some benefits of LMSs as:

- Asynchronous and Synchronous Communication
- Content Development and Delivery
- Formative and Summative Assessment
- Class and User Management

It can be asserted that these benefits will be useful for instructors' productivity and efficiency. On the other hand, LMSs have possible effects on students' engagement that involve intellectual, emotional and practical interactions (Coates, James, & Baldwin, 2005). LMSs have modules such as database, shared files, workbook, courses, tasks, news, forums, dictionary, and quizzes. These modules enable doing many activities such as access, distribution, communication, cooperation, and assessment. When these components are used pertinently and timely, LMSs can be useful for teaching efficiently and productively. It is stated that LMSs are efficient for students to access materials (Lonn, & Teasley, 2009).

On the other hand, since LMSs aren't equally efficient, selection process of LMSs should involve matching functionality with the universities' or instructors' definition of teaching and learning (Cavus, 2013). Cavus (2013) indicated that the following features of LMSs should be taken into consideration:

- Pedagogical factors (course objectives and activities),
- Learner environment (video conferencing, chat room, discussion forum, file sharing, etc.),
- Instructor tools (online quiz editor, grading, etc.),

- Course and curriculum design (curriculum management, automated testing, course templates, etc.),
- Administrator tools (course authorization, registration, statistics, student transcripts, etc.), and
- Technical specifications (technical support, help desk, multi-language support, etc.).

Researchers also indicated that discussion boards, chat room, assignment, drop boxes, quizzes, student tracking, content files, grade book, and asynchronous discussions are the most useful features of LMSs (Harrington, Staffo, & Wright, 2006; Malikowski, Thompson, & Theis, 2006; Woods, Baker, & Hopper, 2004). Therefore, these features should be considered when selecting an LMS.

Instructional Design

"Instructional design is a systematic process that is employed to develop education and training programs in a consistent and reliable fashion" (Reiser & Dempsey, 2007, p.11). This process adapts learning and teaching theories to educational materials, activities and evaluation using a specific plan (Smith & Ragan, 1992). On the other hand, instructional design models indicate when and how to do things in this process and enable the design plan to be conducted successfully (Tüzün, 2001). An instructional design model manages the design process to eliminate errors and misunderstandings, provides orientation, arranges linear and simultaneous operations and helps the designer to select appropriate tools. In summary, instructional design models advances and develops the scheme in designers' minds (Baturay, 2008). In the design of an organized and systematic distance learning environment, using instructional design models increases the functionality of the process and helps to attain the learning outcomes expected from the environment.

In this study, the researchers designed a web-based distance learning environment based on the AS-SURE instructional design model. This environment provides the content of the Basic English courses by means of the learning management system. The system was designed after doing target group analysis at the beginning of the design process. The authors decided to make it a mixed learning environment that supported Basic English courses conducted in the traditional classroom environment. Blended learning is an environment that unites classroom lessons with web-based learning environment. In this environment, classroom lessons are combined with web-based learning. Thus, learners benefit both from the face-to-face interaction in classrooms and from the advantages of the web-based environment (Rovai & Jordan, 2004).

A review of the relevant literature indicates that there are studies on the design of blended learning environments analyzing their effectiveness. Doğan et al. (2011) adapted an undergraduate course given in the classroom to the distance education format using a learning management system to create a blended learning course. Lin (2008) designed a mixed environment by transferring classroom lessons to online environment using a learning management system and evaluated the effectiveness of the environment from different perspectives after it was used by pre-service teachers for 15 weeks. The study revealed that the participants had a positive perception about the influence of the mixed environment on learning. It increased pre-service teachers' interaction with the mixed environment and their learning was enhanced. It made a rich environment for different learning styles.

Similarly, Delialioğlu and Yıldırım (2007) stated that blended learning environments increase the learners' cognitive loads; on the other hand, there are many factors that affect the student learning in such environments. Presence of cognitive and collaboration tools, facilitator role of instructor's, students'

motivation and usability and simplicity of the system are the factors that increase student learning in hybrid courses. To create a meaningful learning experience in blended instruction, it is also crucial to apply several instructional strategies for different competency level of students and variation in the modality of instructional delivery can support the transfer of learning (Lim and Morris, 2009).

The ASSURE model is a methodological guide used for planning and realizing education, and it includes the use of classroom media and technology. The ASSURE model describes processes such as needs analysis, product design and development and prototype experiments. The ASSURE model consists of six stages (Smaldino, Russell, Heinich, & Molenda, 2005):

1. **Analyze Learners:** Planning is to identify the learners in terms of demographic characteristics, learning styles, lifestyles, entry competencies, etc.
2. **State Objectives:** To state the objectives in terms of what the learner will be able to do as a result of instruction.
3. **Select Instructional Methods, Media and Materials:** Select available materials, modify existing materials or design new materials for implementation.
4. **Utilize Media and Materials:** To plan how the material will be used to implement, after selecting appropriate material.
5. **Require Learner Participation:** To be effective, instruction should require active mental engagement by learners.
6. **Evaluate and Revise:** To evaluate impact and effectiveness of instruction and to assess student learning.

This model is based on learners' needs and aims to increase productivity by selecting appropriate environments and materials. In the design process, the model emphasizes the interaction between the learner and instructor and achieving learning outcomes. When Wang (2012) designed an online course based on ASSURE model, she stated that in successful online course design, efficient communication and interaction are key factors. Using multimedia materials promoted students with different learning styles and learning interests and using blogs for student reflections increased their motivation and promoted their critical thinking. Baran (2010) stated the two most difficult steps in the ASSURE model are "selecting methods, media, and materials" along with "utilizing media and materials", because developing new media and materials is a very demanding task; therefore, designers need to have access to educational materials.

MAIN FOCUS OF THE CHAPTER

Issues, Controversies, Problems

Within the context of the study, face to face lessons have some boundaries by comparison to online classes. In the context under study, students have difficulty with attending classes, and the attrition rate is high. Further, instructional methods and strategies used in the course are not attractive for students, resulting boredom on the students' side. It is expected that online courses and LMSs may solve these problems, considering that many of these students have access to mobile devices such as smart phones and tablet PCs.

In this context, this study describes the design process for adding web-based online learning to the Basic English courses given by the School of Foreign Languages at a large-scale research university in a traditional environment. The study aims to re-design, develop and implement Basic English 1 and 2 in the distance education environment.

METHODOLOGY

This study is a design-based research. Wang and Hannafin (2005) describe design-based research as a method that includes the cooperation of researchers and participants for the analysis, design, development and implementation of processes that aim to enhance education. It is conducted in an authentic environment, creates content-sensitive design principles and theories that are systematic, yet flexible. Wang and Hannafin (2005) classify the characteristics of design-based research in five categories:

1. It is pragmatic: It brings theory and practice together. The development of the theory is based on practices. The main objective of design-based research is to materialize the research process.
2. It has a specific foundation: The design is made under authentic conditions and based on relevant research, theories and practices.
3. It is interactive, repetitive and flexible: In the design process, designers and participants work together. In this process, there is a repetitive cycle of analysis, design, development and implementation.
4. It is integrated: It employs blended research techniques. The methods may vary as the focus of the research changes, and new situations or needs emerge.
5. It is contextual: Research outcomes are related to the design process and conditions. Design principles as well as content may vary.

Anderson and Shattuck (2012) indicate that design-based research should be, as suggested by Wang and Hannafin (2005), conducted in educational contexts that reflect authentic conditions using blended research methods in a repetitive way with the interaction and cooperation of designers and participants. Anderson and Shattuck (2012) also stress that it is important to analyze the data both immediately and retrospectively.

This study includes the design of a real learning environment based on the characteristics of design-based models. In this design process, the researchers used tools such as observation, interviews and tests and revised the design based on feedback. The study was performed with the interaction and cooperation of the researchers, the instructors and the participants who used the web-based distance education environment.

Study Group

The study was conducted in collaboration with students and instructors of Basic English 1 and 2 and the director of the School of Foreign Languages at a large-scale university in Turkey in the 2012-2013 academic year.

SOLUTIONS AND RECOMMENDATIONS

Course Design Process

This section describes the redesign of Basic English 1 and 2 using the ASSURE Instructional Design Model as a web-based distance education environment. Tüzün (2001) argued that if instructional designers and educators followed time-tested models when transforming courses into distance education courses, it would help them to eliminate problems such as time limits and inexperience. Instructional design models are the approaches that show when and how to do things and help the design process to proceed in an organized and successful way (Tüzün, 2001). By using the ASSURE instructional design model, the courses were transformed into the distance education format using Moodle, which is an open-source learning management system.

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The researchers kept design diaries throughout the design process, collectively referred to as the designers' logbook. Interviews, course observations, and preparation of the content and its transfer to the environment were all recorded in the designers' logbook.

The researchers first held interviews with the director of the School of Foreign Languages and the course instructors. Then, the researchers observed the students with the approval of the course instructors during classroom lessons and took notes. In the second stage, determining the objectives, the researchers clarified the students' and instructors' needs and expectations from the distance learning environment with data from observation and interviews. The learning objectives were determined with these expectations in mind. The objectives were used as a guide for planning how to offer the content, which formats to use and planning activities and supporting materials. In the stage of selecting instructional methods, media and materials, the researchers prepared videos, images and written materials to add to Moodle. Then, the environment was organized and prepared for use. At this stage, the prototype was ready to offer Basic English 1 and 2 through distance education. In the final stage, the evaluation and revision of the design, the researchers completed the design of the prototype and obtained the opinions of the instructors and students. Then the design was revised accordingly.

Target Group Analysis

The first stage of the ASSURE model is learner analysis. It is important that the method, media and materials are compatible with the characteristics of the learners for the effective use of educational media and technology. The learners' general characteristics, specific introductory competencies (information, skills, and attitudes) and learning styles should be determined to select instructional methods and media (Smaldino, Russell, Heinich, & Molenda, 2005). Thus, the researchers observed the students during classroom lessons to do learner analysis. In addition, the researchers held interviews with their instructors and the director of the school to collect data about their teaching styles, technical capabilities and course materials and the students' ages and academic achievement.

Interviews with Instructors

According to these interviews, this course is offered during students' first year at the university, and there are 30 to 100 students in each class. The two-hour lessons are taught twice a week. The course materials for Basic English 1 and 2 are *Top Notch 1* and *2*. The CDs s and videos sent with the books by the publishing houses are used as supporting materials. These books mainly include grammatical knowledge. There are five chapters in each book. The syllabi are prepared before the beginning of the school year with these chapters in mind. The instructors teach using these plans during the school year. In weekly department meetings, current subject matter and the achievement of the classes are discussed. The synchronization between the classes is created this way. The final grades of the students are determined collectively. The common examinations include sections on vocabulary, reading, writing and reading comprehension.

Traditional lectures are held since the classes are crowded with about 60 students in each. Normally, instructors begin lessons by talking about a picture in the book or by starting some other conversation to interact with the students. However, this is not practical in crowded classrooms. Further, doing listening and speaking activities in classes with too many students is not practical, either. The instructor begins the lesson by doing activities on the whiteboard. The lessons are usually delivered as lectures. Therefore, interaction between learners and instructors is limited, which has a negative influence on students' interest, attitude and motivation.

During interviews, the researchers also discussed the technical details of the transfer of the course to the distance learning environment. The instructors were shown a sample distance learning environment and asked what kind of environment they desired to use. The instructors stated that the learning environment should be blended to support the classroom lessons and include activities that cannot be done in the crowded traditional classroom. The instructors believe that it is not appropriate to offer lessons only by distance education. This may exclude instructors' input, and prevent opportunities for interactions between students and instructors. These interviews yielded information about the teaching practices within the course including the duration, assessment, materials and instructional methods to help the researchers adapt these processes to an online course.

Observing Lessons and Obtaining Students' Opinions

The researchers observed classroom lessons with the instructors' approval to find out more about the students and the teaching of the course. At the beginning of each lesson, the instructors review the previous lesson. The students are posed questions about the previously completed unit and are expected to respond to them. However, the students are not so eager to answer these questions. So, the instructor addresses the students by name to make them participate. The students who participate are told they are doing well as a means to motivate them. The instructor attains a very low level of participation this way. As the lesson proceeds, the students begin to lose interest. It is clearly observed as students deal with different things other than the lesson. The instructors frequently complain about this. At the end of a lesson, the researchers asked the instructor why there was so little participation, and the instructor said that most students work night shifts or until late hours, and some of them have attended this course three or four times. Since attendance is mandatory, students prefer to play with their mobile phones or anything else during the lesson. Although students do not bother anyone else, this has a negative influence on the instructors' motivation.

After observing the classroom lessons, the researchers informed the students about the project and asked what they would like to see in an online course. The students said that:

● The system should be simple, plain and easy to use.
● The system should be searchable with easy access to information.
● Online listening exercises and quizzes should exist, which are not incorporated in the traditional class due to large class size.
● Lessons should be supported with videos and educational movies with subtitles.
● The system should be accessible from mobile devices such as smart phones and tablet PCs.

These observations and interviews related to the needs analysis provided useful information about the system to be created. It indicated that there were problems with class participation. The researchers concluded that these problems could be solved by designing a system that supports lessons, includes a variety of activities and enables students to be more active than an easily used text-based course.

Determining the Objectives

The researchers first analyzed the descriptions and content of the courses to determine which learning outcomes should be the objectives. Basic English 1 is a mandatory three credit course offered during the first year in faculties and colleges that provide education in Turkish and do not include an English prep class. Basic English 2 is a mandatory three credit course. It is the second stage of Basic English education given during the first year. Both courses teach students Basic English grammar and language skills at the beginner level. The course content is:

● **Basic English 1:** The tenses (present tense and present continuous tense), the verb "to be" (yes-no questions, when, what time and where questions), possessive nouns and adjectives, prepositions of place and time (on, in, at), countable and uncountable nouns, "there is" and "there are," articles (a-an-the), how much and how many questions, some and any.
● **Basic English 2:** Modal verbs (can, have to, could, should) the tenses (simple present, continuous present, past tense, future (going to), comparative and superlative adjectives, object and subject pronouns, "too" and "enough."

The specific objectives of the courses were taken from the curricula provided by the instructors. The objectives for the courses were determined after an analysis of the instructors' and students' books, activity books and CDs.

Selection of Teaching Method, Media and Materials

The researchers observed the students to decide which tools would help students reach the objectives. Then the researchers interviewed the students, instructors and the director of the school.

Observing and Interviewing the Students

The researchers participated in lessons to observe them. The lessons were delivered using the question and answer method. The instructor used a whiteboard as a visual aid and mp4 players as an audio tool

for speaking and listening activities. The instructor used the instructors' book during the lesson, while the students used their own books along with activity books that help them reinforce their learning.

The researchers interviewed the students who were observed. The following questions were asked:

1. Would you like to be taught this lesson with Internet technologies?
2. How is it possible to integrate technology into your lesson?
3. If the lesson were delivered on the Internet, how would you like its design to be?
4. How would you like the content to be presented?

Some of the students stated that they would like the course to be delivered entirely online, while others said that the Internet should be used as a supporting resource. The students who said that the course should not be entirely online said they wanted to interact with the instructor at times. Students also said that having the entire content of the curriculum on a web-based system would be very beneficial for students who would not have to attend the course or receive the course again if they failed to pass it. In addition the students wanted:

- The system could be accessed from a variety of mobile devices anytime and anywhere,
- The online course to include videos that they can listen to whenever they wish,
- Videos instead of long texts,
- Audio and visual narrations, for the content to be simple and easy to understand,
- To be able to ask questions to the instructor online and to include all the units in their textbooks,
- To be able to test themselves on specific subjects and before mid-term examinations,
- The system to include some games.

Interviews with Course Instructors

The researchers asked the course instructors, "If you had sufficient technical support and facilities, how would you design the online version of Basic English 1 and 2?" The researchers thus hoped to determine their expectations about the transfer of the course to the online environment. The course instructors said that it would be beneficial to prepare:

- Thematic vocabulary learning activities and review exercises,
- A video on grammatical knowledge course presentation,
- Interactive vocabulary exercises,
- Reading and listening exercises using extracts from online newspapers and magazines,
- Examples that reinforce reading, listening and grammar knowledge with the use of popular songs and movie trailers.

One course instructor described the distance education environment they desired as:

In fact, our textbook includes sufficient and beneficial exercises. These exercises can help the students successfully learn the subject if they are studied regularly. The course content in the book is very suitable for designing the course as distance education. I would like this course to be made more entertaining if possible. For example, the number of the listening activities can be increased by offering the reading

texts with an audio option, since the greatest difficulty for the students is pronunciation. Along with that, the system should also include images and games. In particular, word matching and other similar games are necessary to teach vocabulary to the students at this level. It would be very beneficial to visualize the reading texts through videos and relevant questions are posed to the students at the end of the video. The most important thing is feedback. Every student should be provided with feedback to any question they ask. Students should be given the correct answer, but it should be hidden while the question is asked. Exercises and quizzes for each subject are also very important. The more there are, the better the subjects will be reviewed. (Course instructor interview, October 20, 2012)

Another instructor stated that they really liked Edublog (2015), and that this kind of an environment was available for use. The instructors said that an online learning environment would be beneficial if it enabled students to study outside of the school hours and eliminated the problem of lack of interaction due to crowded classes. Some instructors said they had to go to other campuses to teach, and that distance education would save them both time and money. Finally, the course instructors and the director of school said that there were 30 to 100 students in the classes, and it would be better if the course was delivered online, particularly to overcrowded classes.

Interviews with the Director of the School of Foreign Languages

The researchers asked the director what kind of online education environment would be the best. The director hoped for an environment where course content was transferred to the mobile environment, educational software and course presentations were included, students can access the course content and instructor presentations whenever they want. The director also said that if the design were asynchronous, students could access the course at the end of classroom lessons through their mobile devices, review the lesson and those who could not attend the course would access the environment and learn about the subjects they missed. The interviews also included discussions on the software and tools needed for the design of the environment. The director wanted to use Mediasite so that instructors would be able to record their presentations in an empty or a regular classroom. Mediasite can record presentations both on the computer screen and in the classroom. Although it has many benefits, Mediasite could not be used since additional resources were required and these resources were not available at the time of the design.

The researchers gave a seminar to the instructors about distance education and this design project in order to determine for which course or courses this design should be implemented. This issue is important in order for the process to proceed smoothly and without any problems. The researchers' seminar was entitled, "Foreign Language Teaching and Learning by Distance Education," and described the project team and design plan.

Selection of Learning Management System

Following the interviews with students, course instructors and the director the researchers evaluated several learning environments including Mediasite, Edublog, Coursera, and Moodle. The researchers decided to use Moodle, which is the most widely known and used learning management system. It is free, easy to use and was already installed in school servers.

Learning Management Systems are used by education specialists to create and teach courses in the distance education environment. In blended courses, classroom lessons and online courses are used

together and this flexibility increases the accessibility of learning activities and opportunities for interaction (Yueh & Hsu, 2008). LMS is a web-based technology for planning, implementing and evaluating the learning process (Aydın & Biroğul, 2008). Thanks to the use of LMS, activities that cannot be done in the classroom due to time limits can be offered to the students online. This makes it easier for students to review lessons. Sales (2010) stresses that the main objective of the e-learning environment creation process is to create an environment that is the best and the most suitable for specific needs at the lowest cost.

Moodle (Modular Object Oriented Dynamic Learning Environment) is an e-learning platform which is open-source and free. Moodle is commonly used since it supports communication between the instructor and students with its web interface (Kaleci, 2011). Moodle has 71,111,844 users in 221 countries, which indicates a very large and diverse group of users (Moodle Statistics, 2015). Instructors or students can upload videos and files in different formats to Moodle. It can be used for preparing quizzes, forums, messaging, real time chatting and blogging. Moodle allows for the exchange of information between users by using synchronous and asynchronous communication tools. Table 1 shows that Moodle allows users to do a variety of activities with its modules and tools (Costa, Alvelos, & Teixeira, 2012).

Moodle makes it possible for course instructors to give feedback to students instantly. Moodle can inform the students about their score when they finish and send examinations. In Moodle, instructors can also track students to see when the student last entered the environment. Videos of lectures and games can also be included in Moodle. It is also possible to use Moodle for video conferences.

The Use of Media and Materials

After selecting Moodle as the LMS, the modules of Basic English 1 and 2 courses to be uploaded to the system were video recorded by the design team. These videos were included in the learning environment for the students to follow the courses on Moodle. The researchers also found videos and games on the Internet that would enable students to review the subjects and added them to the environment to help students reinforce their learning. The researchers also included homework in the environment. There are short quizzes at the end of each subject that assess students' learning. The questions have a variety of formats (e.g., open-ended, multiple choice) and offer different options to users.

In this stage, the researchers held regular interviews with an academic specialist in distance learning. This expert was consulted about the selection of teaching methods and materials. Feedback from the instructors about the design led to these revisions:

Table 1. Activities and modules in Moodle

Activities	Module
Creation	Database
Organization	Courses
Distribution	Tasks, workshops
Communication	Chats, forums, news, messaging
Cooperation	Dictionary, Wiki's
Assessment	Quiz, survey, feedback
Reusability	SCORM

- Roman numbers were replaced with Arabic numbers.
- The short titles of subjects were clarified with explanations in the unit and grammatical terms in the instructors' book.
- The subject titles, which all had a margin before, were put on one line (For instance, the quiz had a margin under the exercise; however, that quiz did not only cover that exercise. This prevented misunderstandings.)
- All links were set to open in the same page to standardize them.
- The researchers also added verbs to the subject titles to instruct the students (e.g., Watch: Video 1, Play: Game).
- Complications in the order of videos, quizzes, games and homework were eliminated.

Participation of the Learners

According to the ASSURE model, an effective learning activity should encourage students' active mental participation, make them apply what they learn and give them feedback. The distance learning environment designed in this study includes quizzes, homework, tasks and games that help learners participate in the learning process actively. In addition to exercises in the distance learning environment, homework and different types of examinations (e.g., open-ended, multiple choice) at the end of each subject help students use their learning. The participants did not start the main use of the prototype learning environment since it was the end of the semester. A usability test was prepared instead for instructors and learners to use and test it and to monitor learners' participation in the activities.

Evaluation, Review and Revision

Before the actual use of the environment, the researchers presented the prototype to the users as a pilot test for increasing efficiency of the environment, facilitating learning, increasing productivity and making the environment more user-friendly. The usability test of the prototype was conducted with the students and instructors as authentic users. The usability of a system, software or product plays a major role in making that product serve its purpose (Yeniad, Mazman, Tüzün, & Akbal, 2011). Dumas and Redish (1994) describe usability as the ability to meet users' desire to complete a task in a quick and easy way and they emphasize these four points:

- It is user-centered.
- Users make use of the products to be more productive.
- Users want to be quick when trying to complete a task.
- It is the users who decide whether a product is easy to use or not.

The International Organization for Standardization describes usability as: "users' being able to use a product in a specific context in an effective, efficient and satisfying way" (ISO, 1998). Shackel (1991) explained usability as the set of relations between user, task, tool and context. These components are: the user, or the individual using the system; the tool, or the computer system; the task, or the process to be completed by the user, and the environment, or the context. In Nielsen's (1993) description of usability, the acceptance of individuals in a certain system is the foundation. Nielsen classifies system acceptance as social, practical and other similar types of acceptance, asserting that there are benefit,

cost, suitability and reliability dimensions in practical acceptance. Usability is included in the benefit sub-dimension. There are five dimensions in usability: easiness of learning, efficiency of use, easiness to remember, errors and satisfaction.

The usability test is an effective tool for measuring the ease of use and effectiveness of interfaces (Battleson, Booth, & Weintrop, 2001). Usable products and environments make people happy and also allow people to avoid spending unnecessary effort, time and resources on products, which leads to increased productivity and thus, economic gain (Çağıltay, 2011). Usable learning management systems reduce the time spent on the organization and management of the course, increasing the learning duration and improving the experience of the learners (Inversini, Botturi, & Triacca, 2006). Rubin and Chisnell (2008) claim that there are eight steps in performing a usability test:

1. Planning the test: Determining the environment, participants, implementation and tasks.
2. Creating the test environment: Choosing the environment for the test. This can be the laboratory or the environment of users.
3. Finding and selecting the participants: Participants representing potential users of the product are selected.
4. Preparing the test materials: Deciding on the data collection tools. These can be surveys, scales, observation forms, task lists and checklists.
5. Performing the test sessions: Participants use the product in the laboratory or in their own environment. Participants are observed during the usability test using different techniques such as eye tracking devices, observation and having them speak their thought processes out loud.
6. Receiving information from the participants and observers: The performance of the participants in the usability test are reviewed and studied, and observers' notes are examined.
7. Analysis of the data and observations: The data are analyzed by using methods appropriate to the test materials, and suggestions are developed.
8. Reporting the findings and suggestions: The collected data are analyzed and reported.

The Usability Test

Two usability tests were prepared for this study, one for the instructors and one for the students. This usability test was conducted with three course instructors. The researchers paid careful attention to use all features of the environment in this test. In order for the instructors to use the learning environment effectively, they should be able to use all components of the course (syllabus, lesson tasks, videos, games, quizzes and homework) with no difficulties and also enable or disable these components for the use of the students. The authentic tasks in the usability test prepared for the instructors are:

1. Review the syllabus.
2. Find the tasks in Week 12.
3. Watch the second course video in Week 12.
4. Play the game in Week 12.
5. Watch the videos, but not the course videos, in Week 13.
6. Do a quiz with the students in Week 13.
7. Enable the homework for Week 13 for the students.
8. Visualize the hidden answer of the homework for Week 13.
9. Add a homework for Week 12.

The other usability test was for the students who planned to take this course. It was conducted with five students. The authentic tasks in the usability test for the students are:

1. Review the syllabus.
2. Find the tasks in Week 12.
3. Watch the course video for Week 12.
4. Play the game in Week 12.
5. Watch the videos, but not the course videos, in Week 13.
6. Take the quiz in Week 13.
7. Do the homework for Week 13.

The researchers made appointments with the course instructors and students for the usability test and met them in a classroom. Before implementing the usability test, the researchers asked for the participants' permission to record their voices, and were also asked to think out loud while performing the tasks during the test. Thinking out loud is a technique that makes it possible to evaluate a product through observation in usability tests (Dix, Finlay, Abowd, & Beale, 2004). The researchers also took notes on observation forms, and the test was video recorded. The participants' opinions were solicited after the test. The thinking out loud data were transcribed after the usability test, and the observer notes were analyzed using content analysis.

The usability test revealed that both course instructors and the students could find and perform the tasks with no difficulties. The course instructors appreciated that the curriculum was transferred to the system in an organized way and that it was easy to add files or homework to the system. Students said that the interface was easy to use and liked the visual materials included along with the texts. One instructor suggested that the videos were too long and should be shorter than 15 minutes and that one video be included for each activity. A problem occurred during the implementation since one video did not start to play. The problem was later resolved. The researchers emphasized the copyright issue of the games and other applications and explained to the course instructors that it was a prototype lesson. The researchers also stated that the course instructors could record their own videos later. The students asked that the environment be expanded by adding new titles under each title. These revisions were done.

FUTURE RESEARCH DIRECTIONS

The researchers had some technical difficulties while the courses were being recorded in the classroom environment. Anticipating these kinds of problems and taking proactive measures to prevent them will help future studies. Here are some suggestions for future research:

- Designing web-based environment for different courses and target groups by using the findings of this study.
- Adding new plug-ins to Moodle.
- Using alternative learning, course or content management systems other than Moodle.
- Conducting similar studies using design models other than ASSURE.
- Creating strictly web-based designs instead of a blended learning environment.
- Performing usability tests with eye tracking devices.

In this age, the use of online or web-based distance learning environments is common. This trend can be expected to continue into the future. MOOCs (Massive Open Online Courses) are an example of this growth. Transferring existing courses to online environments will be a more practical solution than developing new online courses. In this sense, the findings of this research will contribute to future studies.

CONCLUSION

This study demonstrates the design process of a blended learning environment using a learning management system to transform Basic English 1and 2 into the web-based distance learning format. The design followed the steps of the ASSURE model to ensure an organized and systematic design process. The researchers conducted learner analysis by means of observation and interviews and determined the learning objectives in accord with the expectations of the instructors and students. After preparing learning materials that suited these objectives and transferring them to Moodle, the newly-designed environment was presented for the use of the target group. Its functionality and usability were tested, and necessary revisions were done. With this step, the design of the distance learning environment was completed, and it took on its final form for use in blended learning.

The design team worked with the students who would use the system, and their needs and suggestions played a role in shaping the design. Since the design team did not include any specialists in Basic English, specialists in this field were consulted about the course content. During the design process, the researchers consulted a specialist in distance education and the interaction between humans and computers. The instructors' feedback was used to revise the design. The potential users were given the opportunity to use the environment to do authentic tasks in a usability test. The acquired data was used to revise the design, and it was completed.

Similar studies demonstrating the process of transferring a residential course to distance learning environment (Akıncı et al., 2011; Doğan et al., 2011) stress that it will prevent the waste of time and resources if designers cooperate with the instructors and students (potential users) in the design process and consult experts. Students are the most important authentic users of the distance learning system. This study's researchers observed the students during lessons at the beginning of the design process and interviewed them. The data from these interviews were used to decide the course content and format. Folowo (2007) said that it disappoints users when their needs are not considered in the design of a distance education system and course materials.

It is important that needs analysis and preliminary studies are done before designing web-based distance education systems for them to serve their purpose (Bilgiç-Doğan, 2014). This study aimed to implement a distance education environment, designed with the needs of the potential users in mind, as a support to classroom lessons as blended learning. Blended learning, in which classroom lessons are supported with web-based distance education and in-class discussions and learning tasks are continued online, provides many advantages to learners in terms of time and learning experience (Koohang & Durante, 2003). The blended model is a suitable learning model for the adult learners who are capable of managing their own time and have developed skills of self-regulation and self-direction (Koohang & Durante, 2003). The researchers interviewed the students at the beginning of the design process. Some said that the course should be taught entirely online, while others said that distance learning system should be used as a support to their in-class lessons. The students who argued that the course should be taught entirely online are mainly those who find it difficult to attend the classes, since they are taking the course for

the second time or working part-time. In higher education, intended users are older students who have more responsibilities (e.g., business, family) than just their education (Cercone, 2008). Moreover, this group of learners is self-motivated about their learning tasks. These factors are revealed by the analysis of the target group and they also determined the synchronous and asynchronous design of the courses.

This study's distance education environment is based on the ASSURE design model. The analysis of the learners in the design process and the evaluation of the product with the participation of the learners enables ASSURE to reduce design flaws. The ASSURE model is also useful in the sense that it can be designed for smaller learning units, is suitable for individuals with any characteristics and does not require a complex transfer (Gustafson & Branch, 2002). Thanks to these features, the model was easily adapted to the potential users, the course and its materials.

Teaching and learning is a process that consists of different stages. The ASSURE model was used as a guide for these stages, and it increased the effectiveness of the process by including media and technologies in the process, which other instructional design models do not do (Smaldino, Russell, Heinich, & Molenda, 2005). In this respect, the most fundamental feature of the ASSURE model is that it enables learners to use the technology at any stage of the design and supports the use of multimedia tools. This study's researchers prepared learning content consisting of audio and video elements along with games and visual materials and uploaded them to the learning environment. The course was completely transferred to the learning management system so that learners and instructors could use this environment. The use of the learning management system also ensures the use of technology in addition to in-class lessons. In the usability test conducted with students and instructors, the users successfully completed most of the tasks and said that the system was easy to use. The study made the participants willing to use the distance education environment technology in addition to their class lectures. Being informed about the characteristics of the users during the design process guided the selection of suitable teaching methods and media (Smaldino, Russell, Heinich, & Molenda, 2005). During the interviews, students expressed their wish that the course had visual elements to make the course more fun. The instructors also said in interviews that it would help them to draw students' attention to the course if a variety of tools and visual elements were used in the environment. As the end user will change as technology becomes more advanced, course designers should also consider the iterative process of online design and make frequent updates and modifications as a result of these changes.

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KEY TERMS AND DEFINITIONS

Eye Tracking: It is one of the usability testing methods that measures eye movements.

Learning Management System (LMS): LMS is a web-based environment for teaching and learning.

Modality: The particular way in which information exists or is presented such as audio, video, or text.

Moodle: Moodle is a learning management system which is open-source.

Open-Source: Used to describe free software's source code available to anyone.

Plug-In: A piece of software or application or system to do more things in LMSs.

Usability Test: A method for measuring effectiveness, efficiency and satisfactoriness of interfaces and products.