International Journal of Environmental Trends (IJENT)
http://dergipark.gov.tr/ijent
International Journal of Environmental Trends (IJENT)
2022; 6 (2),48-64
ISSN: 2602-4160
Turkish JournalPark ACADEMIC

Review Article

A Step-by-Step Guide to Building a Computer-Based Digital Education (CBE) model with an Interactive Electronic Book (E-book)

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Abstract

Asynchronous online learning allows real-time interaction between students and teachers. In computer based education (CBE), hypermedia, hypertext and multimedia terms are widely used. Especially if synonyms are widely used, the distinction between hyper- and multimedia is especially important. The CBE means that computers in education includes that e-learning, Internet learning, distributed learning, networked learning, tele-learning, virtual learning, computer-based learning, web-based learning and distance learning. Electronic books (eBooks) or e-textbooks are defined as the digitized book by those involved in creating, providing and distributing information. The first step in creating an eBook reader is to create content. In most cases, the content may already have been created for a printed publication. Technically, creating eBooks is extremely easy and has a variety of possibilities for creating rich eBooks. The eBook industry tries to serve the needs of this area with over twenty years of experience. Interactive eBooks have come a long way and can present information in ways that have not been possible in the past.

Received
5 November 2022

Accepted
25 December 2022

Keywords
Computer based education (CBE)
Email
link
eBook
Distance Learning

İnteraktif Bir Elektronik Kitap (E-kitap) ile Bilgisayar Tabanlı Dijital Eğitim (BTE) modeli Oluşturmak İçin Adım Adım Kılavuz

Özet

Eşzamansız çevrimiçi öğrenme, öğrenciler ve öğretmenler arasında gerçek zamanlı etkileşime izin verir. Bilgisayar tabanlı eğitimde (CBE), hiper ortam, hiper metin ve multimedya terimleri yaygın olarak kullanılmaktadır. Özellikle eşanlamlılar yaygın olarak kullanılıyorsa, hiper ve multimedya arasındaki ayrım özellikle önemlidir. CBE, eğitimdeki bilgisayarların e-öğrenmeyi, İnternet'ten öğrenmeyi, dağıtılmış öğrenmeyi, ağ bağlantılı öğrenmeyi, uzaktan öğrenmeyi, sanal öğrenmeyi, bilgisayar tabanlı öğrenmeyi, web tabanlı öğrenmeyi ve uzaktan öğrenmeyi kapsadığı anlamına gelir. Elektronik kitaplar (eKitaplar) veya e-ders kitapları, bilgi oluşturma, sağlama ve dağıtma ile ilgili kişiler tarafından sayısallaştırılmış kitap olarak tanımlanır. Bir e-Kitap okuyucu oluşturmanın ilk adımı içerik oluşturmaktır. Çoğu durumda, içerik zaten basılı bir yayın için oluşturulmuş olabilir. Teknik olarak, e-Kitap oluşturmak son derece kolaydır ve zengin e-Kitaplar oluşturmak için çeşitli olanaklara sahiptir. E-Kitap endüstrisi, yirmi yılı aşkın tecrübesiyle bu alanın ihtiyaçlarına hizmet etmeye çalışıyor. Etkileşimli e-Kitaplar uzun bir yol kat etti ve bilgileri geçmişte mümkün olmayan şekillerde sunabilir.

Anahtar Kelimeler
Bilgisayar tabanlı eğitim (CBE)
E-posta
bağlantı
eKitap
Uzaktan Öğrenme

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INTRODUCTION

In computer based education (CBE), hypermedia, hypertext and multimedia terms are widely used. Especially if synonyms are widely used, the distinction between hyper- and multimedia is especially important. Multimedia is a general term for presenting information on a computer. Multimedia is computer documents that combine different types of information. Information can be any kind of information that can be presented with a computer: text, image, sound, video, and so on [1].

Commonly used terms include e-learning, Internet learning, distributed learning, networked learning, tele-learning, virtual learning, computer-based learning, web-based learning and distance learning. Broadly speaking, computer based education (CBE) means that computers in education are used for all kinds of purposes. For students, online learning does not know my time zone and location and distance are not a problem. Asynchronous online learning allows real-time interaction between students and teachers while synchronized online learning, while students can access online materials at any time [2].

The use of computers in educational fields in developed countries is increasing year by year. The computer assisted teaching method constitutes the self-learning process. So the computer is used as a learning tool to strengthen the learning process and to increase the motivation of the learners. Thus, students can accelerate the learning process through computer technology. Computer-assisted teaching method can be defined as the interaction of students with computers during the course in teacher guidance [3].

Problem Based Learning (PBL) is supported by interactive computer simulations [4]. Literature showed effectiveness of PBL on development of a range of skills including active participation in learning process, taking responsibility for their own learning, becoming better learners in terms of communication and group-working skills, accessing different resources and evaluating validity of these resources [5-10].

RESULT AND DISCUSSION

Computer based education (CBE)

Changes in the education system have led to the fact that students are dependent on books and teachers, and that the more modern approaches to education have changed the non-formal education approaches that already want to learn. From a transitory educational point of view, students need to be encouraged to go beyond memorizing, to provide critical and creative thinking, and to apply knowledge to problem solving in new and foreign situations [2-4].

There are studies about use of computer games in education have a positive increasing trend. In order to achievement of these studies, the role of teacher should be noticed. There is a dramatic increase in the use of Computer Aided Training Methods (CATM) in developed countries. The Computer Aided Instruction Method (CAIM) is used frequently in academic research to measure the success of the surveys and studies in different experimental groups [11-13].

Today, a phenomenon in the Internet world, Facebook is a kind of social sharing site (SNS), one of the most widely used and most time consuming web 2.0 technologies. Students interacting with Facebook, academic achievements were more successful when compared to other students the end of the training. Facebook students share all the subjects they have learned, share different types of information, and comment on the shared materials. Using Facebook for educational purposes provides some advantages for students [14, 15].

The current training period, focusing on individual and student centered education, traditional materials, and teaching media solutions for large populations, may not be fruitful. Similar to other areas, new technologies have been used in education systems as well. Computer labs and projectors have become the main class equipment for many schools around the world. Researchers and educators agree that courses with existing technologies, especially computers, are stronger for the quality of education students receive [17-19]. The

integration of new technologies is also contemporary for the 21st century. Despite easy access to available equipment and computer resources, a number of teachers have emerged as a result of research that does not alter existing teaching strategies [20, 21].

Computers can be used as an effective teaching tool for early childhood education [22-24]. A software platform where children can play games and can learn simple shapes in colors is developed. The program will serve as an educational tool to teach geometric shapes in colors, guided by computer and virtual words [22, 25-27].

Computers have pioneered common technologies in their education applications. Educators and researchers have used computer-aided instructional materials (CAIMs) to teach in a variety of contexts, and found that this teaching helps students to get the information they want more efficiently and efficiently [28-32]. Despite this struggle, the influence of technology on education has been reported to be mixed. Some researchers argue that technology is a small or negative effect on the learning of the learners [33, 34]. Computer organization is a mandatory language in computer-related departments. Integrating the lab course with the theoretical course textbook is the main trend to improve the teaching performance of the computer organization. The bringing together of laboratories and lessons can be determined before the benefit of the integration of the two lessons [35]. The Computer Organization (CO) is the main department of the colleges and universities that introduce the computing principles and processes of the computer system. Processor development projects are usually conducted to deepen the understanding of the students in the processor design. These projects enable students to transform what they learn into class into real practice [36, 37]. Coban et al. studies sstimation of factors affecting Internet dependence level of adolescent individuals in Turkey with censored regression method [38].

Another research is to perform a number of logistics and distribution companies, classification of electronic commerce (E-commerce) logistics, network computer technology

and modern equipment, software systems and advanced management tools, according to customer requests, according to customer requests. Distribution and other installments have been determined, in accordance with the agreed time and place, the number and characteristics of the goods delivered to the users of the activities and processes [39].

The development of modern technologies and the rapid growth of Internet users have led to changes in the creation of advertising campaigns around the globe. It is interesting to examine the impact of the Internet as a new media because of the importance of advertising and corporate performance offered by Internet advertising [40]. Children learn quickly from their parents using computers, and computers offer more learning options as they grow. Nevertheless, lessons learned better using cognitive, constructivist, collaborative, and technical teaching principles, that is, by properly incorporating math lessons into the computer [41].

Knowledge of technological pedagogical content (TPCK) is given in Fig. 1 [16]. From Fig. 1, researchers are set for technology, pedagogy, and content knowledge, and each information has an intersection point. Accordingly, the pedagogical content knowledge (PCK) is defined as "knowing which teaching approaches are content, and likewise knowing how the content elements can be arranged to teach better." Knowledge of technological content (TCK) is "information on how technology and content are correlated." Technological pedagogical information (TPK) means "the existence, components and abilities of various technologies are used in teaching and learning environments and, on the contrary, to know how the teacher can change as a result of the use of certain technologies." Thus, "a new term that defines the basis of technology and good teaching and requires the representation of concepts by using technologies is the definition of technological pedagogical content knowledge (TPCK), pedagogical techniques that use constructive methods to teach content, Knowledge of the students' knowledge of epistemology and knowledge, and information on how to use

technologies to build on existing knowledge and develop new epistemologies or to strengthen old epistemologies" [42].

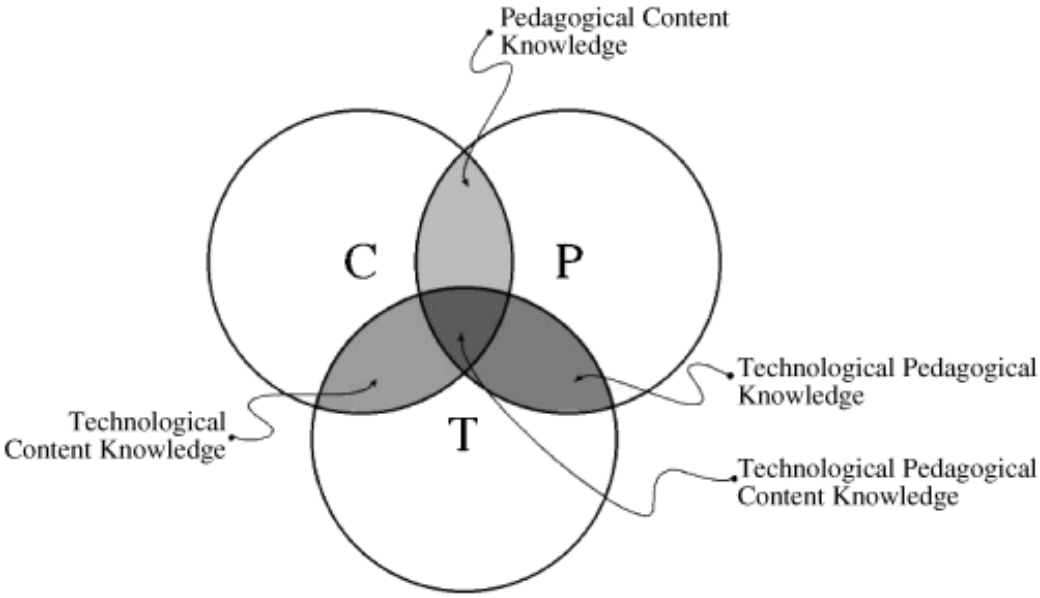

Fig. 1. The components of knowledge of technological pedagogical content TPCK.

Fig. 2 shows the steps in Face-learning education [14]. In a previous research [14], the same course content was transferred to the experimental and control groups in the same way during the course of 2 credits. The experimental group on Facebook provided interaction for their students.

Setting a Group
A group, called as “History of Science” has been set up by the teacher and it has been arranged as being accessed by only members.

↓

Announcement for the students who does not have an account
It was identified that a student from the application group does not have a Facebook account and it was opened by the student.

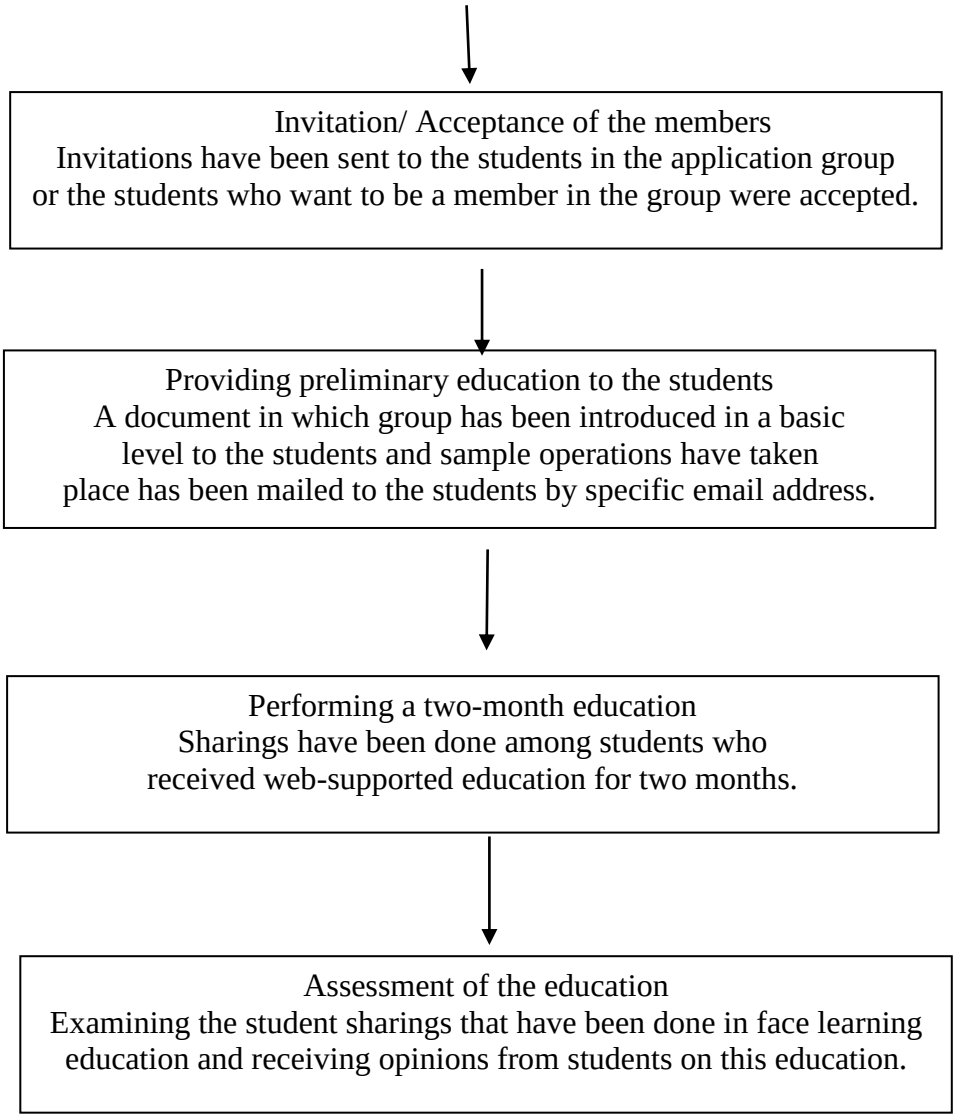

Fig. 2. Steps in Face-learning education.

The educational environment of Facebook is called facelearning. The following process steps are followed for a facelearning application. Education was created for Facebook and membership was only accepted for students in the experimental group. A science-themed picture and a symbol were added and the aim of the group was explained on the access screen for the Facebook group called as Science History, as the group members could see. The group setting has been changed to be accessible only by group members to prevent access to external access, especially to students in the control group [14].

In a previous research [14], total of 69 valid answers were identified on the benefits of the education provided in the Facebook environment, including 27 responses that provided interaction between class, science and history lessons. The results of the analysis of the

answers given by the students are shown in Table 1. The most important advantage provided by the students educated in the Facebook environment (26.1%) is to spread the information from Table 1 and to inform everyone with Facebook automatically. More than half of the students (18 students) are considered as an advantage to send information to educators about the education shares and to spread information through this way. While enthusiasm and motivation (17.4%) are considered as the second most important advantage, accessibility (13.0%) and accessibility (13.0) are considered as other important advantages. Another significant advantage is expressed as the transformation of education into entertainment (10.1%). Other advantages include multimedia support (7.3%), interpretability of information (5.8%), democratic environment (4.3%), persistence (1.4%) and massive educational suitability (1.4%).

Table 1. The advantages of Facebook use on the purpose of education

	f	%
Spread of information and informing everyone	18	26.1
Arousing curiosity and motivation	12	17.4
Opportunity for interaction	9	13.0
Accessibility of information- gaining time	9	13.0
Transforming education into entertainment	7	10.1
Multimedia support	5	7.3
Interpretability of information	4	5.8
Providing a democratic environment	3	4.3
Providing permanence	1	1.4
Suitability to mass education	1	1.4
Total	69	100

In order to solve the problems of lack of education alone and in education for the students alone, online teaching prepares a traditional network education platform social network service (SNS) to enhance the activity. In the distance learning environment, teachers and

students are separated in time and space. The interactions between them can be reached through the E-learning system [1] and it helps people to build a social network [43-47].

Computer games have become an indispensable interest among the students and have attracted the interest of the trainers. Since then they have begun to work differently on how to use them as a teaching tool. When studies on the existence of computer games in education are examined, it appears that computer games are beginning to be used in areas such as computer games, science, mathematics, medicine, engineering, language learning, problem solving and developing strategic thinking skills [48-50]. Since computer games are used in education, educational software has been classified as educational software. Table 2 shows mean and standard deviation for the use of computer games in education [13].

Table 2. Mean and standard deviation for the use of computer games in education

Computer games having educational aspects	$\overline{X}$	***Ss***
Applicable to all classes	3.6	0.97
When used in the lessons easy to learn	4.0	0.94
When used in the lessons it saves time	3.0	0.82
Make classroom management difficult	2.5	0.53
When Students are allowed to choose their own learning goals, it cannot be effective.	3.6	0.70
Can be obtained easily (by internet etc…)	3.6	0.70
Should be used to reinforce learned information	4.2	0.79
It should not be used in order to attract attention and motivate students	4.6	0.52
Effective in understanding of abstract concepts	4.5	0.53
Is not effective in eliminating misconceptions	2.9	0.57
The student-computer interaction should be high	3.9	1.20
To be effective, an environment controlled by teachers should be designed	3.3	0.67
To be effective in learning it must be used at the end of the course	3.8	0.79
It can be used in parallel with the purposes of education programs at schools	4.0	0.82
Makes it difficult for student to adapt the lesson	2.0	1.05
Learning can be effective when used as an aid to teaching the lessons	3.2	1.14
It can be effective in learning when used to fill students' leisure time in lessons	4.2	0.79
When collaborative learning environment is provided, permanent learning can take place	4.3	0.67
When competitors learning environment is provided, permanent learning can take place	4.1	0.74
As it causes addiction, student may want to cut a lecture	3.3	1.06

3. Step-by-step guide to create an interactive eBook

Electronic books (eBooks) or e-textbooks are defined as the digitized book by those involved in creating, providing and distributing information. When available eBook solutions are searched on the market, it is likely that every technology package provides the best combination of features, prices and quality. The eBook industry tries to serve the needs of this area with over twenty years of experience. Interactive eBooks have come a long way and can present information in ways that have not been possible in the past.

Electronic books (eBooks) or eTextbooks are defined as books digitized by those engaged in the creation, provision and distribution of information. E-Books are gaining popularity for reading personal books. The choice of accessing large books and the option of accessing readings at any time contribute to the increased use of eBooks. E-Books (soft-books or digital books) have emerged in the last two decades and have been developed with great interest. E-Books soon began to take the place of printed paper books (hard-books). Having a technology that enables new devices to provide a more enjoyable, user-friendly experience. E-books have a zero cost of printing, storing, moving and posting. E-Books can be read on e-readers, but they can also be read on laptop computers and mobile devices with wider access.

E-books are not limited to static images and texts; they can also integrate video, sound, animation, and even interactive simulations. E-Books are rapidly emerging as a user with interactive reading tools at the smart brand interface.

E-Books are effective learning tools with easy publishing and wide range of advantages. Interactive books may even be integrated within existing technologies and current programs. Current developments in smartphone technology are also of great interest and so most students will have a device that can be a suitable tool for workaday and academic studies.

E-books provide usage possibilities to students on software from their own personal computers, laptops, tablets such as iPad and iPhone. E-Books provide much wider formatting

possibilities than printed paper books. If the e-book publisher does not remove this option in the user's broadcast settings, it can be shared by users and by viewers such as Facebook and Twitter via social networking.

Table 3. A step-by-step guide to create an interactive eBook

No	Steps	
1	Setting up the InDesign document	The first step to create an eBook is to create the artwork that you will be using for background design, animations, interactions, etc. and set up the InDesign document. You need to add the tentative number of pages in your eBook and create Master layouts with common imagery for the eBook.
2	Adding static content and placeholders	It's always beneficial to finish the simple tasks first and then tackling the complex ones. So, get going with adding static images, text, and placeholders for animations, interactions, simulations, and videos.
3	Adding animations	When you are creating an eBook for iPad, you have to make sure the animations are in HTML5 format. For creating such animations, you can use Adobe Edge Animate and publish an OAM file, which can further be embedded in the InDesign document.
4	Adding simulations and interactions	Adobe Captivate 7 is a great tool to create simulations and interactive eLearning content. You can leverage this tool to make your eLearning truly interactive. Adobe Captivate 7 lets you publish your courses to HTML5 format, which can be embedded in the InDesign document as web content.
5	Adding videos	Videos can add life to your eBook. You can add demonstrations in the form of videos.
6	Creating and publishing an eBook folio	The final step to create an eBook is to build a DPS folio and preview/publish it on an iPad using Adobe Content Viewer.

CONCLUSIONS

Most of the primary schools and some universities use e-libraries. In addition, academics and students are trying to build a library as a key focal point to adopt eBooks as they look to their libraries for access and support. Utilizing of especially the FlippingBook system and the benefits of pedagogical support can be a clear advantage of this technology.

As a result, while more and more people are using and reading eBooks in a wider society, the importance of cultural exchange should be noted. This will continue to have an impact on the expectations and perceptions of students and academic staff.

Interactive examples include short video and audio clips that provide more insight into interactive activities, animations, interactive maps and graphics, guided tours, 3D renderings, bands, hot spots, complex topics, and interacts with hearing learners and includes their own assessment of measurement understanding.

Non-simultaneous online learning allows real-time interaction between students and teachers. In computer based education (CBE), hypermedia, hypertext and multimedia terms are widely used. The distinction between hyper and multimedia is important, especially if synonyms are widely used. CBE refers to e-learning, Internet learning, distributed learning, networked learning, tele-learning, virtual learning, computer-based learning, web-based training and distance learning. Electronic books (eBooks) or e-textbooks are defined as books digitized by those engaged in the creation, presentation and dissemination of information. The first step in creating an eBook reader is to create content. In most cases, the content may already have been created for a printed publication. Technically, creating eBooks is extremely easy and has several possibilities to create rich eBooks. The e-book industry is trying to meet the needs of this field with over twenty years of experience. Interactive eBooks have come a long way and can provide information in the past that is not possible.

The first step in creating an eBook is background design, animations, interactions, etc. You will use it to create an image and create an InDesign document. You need to add the number of temporary pages in your EBook and create the Main layouts with the common images for the eBook. It is always beneficial to complete simple tasks first and then deal with the complicated ones. So, continue adding static images, text, and placeholders for animations, interactions, simulations and videos.

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