

## BOOK REVIEW

### Mobile Technologies and Augmented Reality in Open Education

Edited by Gulsun Kurubacak and Hakan Altinpulluk

Research Assistant Hakan KILINC

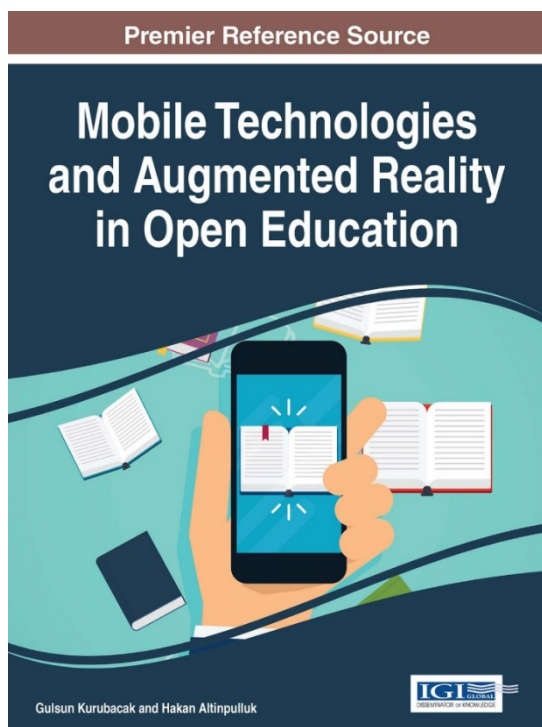
ORCID: 0000-0002-4301-1370

Open Education Faculty

Anadolu University

Eskisehir, Turkey

ISBN	9781522521105 (Hardcover) 9781522521112 (PDF)
Publication Date	January 2017
Publication Formats	e-Book (PDF) and Hardcover
Publisher	IGI GLOBAL



#### INTRODUCTION

Augmented reality is an interactive technology that makes it possible to combine virtual and reality, and to see this combination in the same environment, rather than creating a completely virtual world. Although the ideas on augmented reality has an historical background, its technological development is relatively new. We see that augmented reality applications have been developed in the recent years for wearable technologies and especially for mobile technologies rather than for desktop/laptop computers. Strengthening of mobile technologies with various sensors and hardware and ease of producing mobile application software have led to rapid widespread use of mobile devices in all segments of society. With such spread of mobile technologies, augmented reality applications are downloaded and used by everyone and such applications are even developed without any need to advanced software knowledge.

The book consists of a combination of valuable studies on mobile technologies and augmented reality. The general theme of the book and its 16 chapters is the use of mobile technologies and augmented reality in open and distance learning. This book, which consists of the compilation of studies that analyze the possibility of using many augmented reality components from smart glasses to mobile applications, is one of the valuable works contributing to open and distance learning literature.

This book is indexed in the WEB of SCIENCE, SCOPUS, ERIC databases and has been prepared with contributions by many authors from various countries. 28 authors, mostly from Turkey, and from the USA, Germany, Mexico, Italy, Austria and India put a great effort and time to create this book. The book not only handles the augmented reality mobile applications used in education and open education but also provides in connection with the augmented reality, a detailed analysis of the virtual reality applications, video games, wearable technologies, smart glasses and artificial intelligence based applications. This book serves as a reference book to academics, educators, managers, software application developers and students who study on augmented reality and make research on this field. It aims to provide available academic information on augmented reality and contribute to this field by filling the gap in education. The sections of this book, which consists of 16 different sections, can be summarized as follows.

## **REVIEW OF THE BOOK**

Chapter 1 discusses the positive and negative aspects of the use of smart glasses that are frequently used in augmented reality applications. This section examines the social aspect of smart glasses, one of the wearable technologies. In this way, it is aimed to determine how users interpret and evaluate potential opportunities and threats related to the use of smart glasses.

Chapter 2 introduces augmented reality software developers to introduce augmented reality training practices and provides information on the development processes of these applications. The chapter presents several limitations and advantages of augmented reality, which is the result of some experimental studies in the literature. In addition, the development stages for the sample augmented reality book page are presented.

Chapter 3 intends to advance a sociocultural perspective to frame the integration of augmented reality technology for the learning of mathematics. The design of an already produced application is discussed with this technology. The purpose of the application is to promote the development of spatial ability while also reviewing the visualization of some calculus topics at college.

In chapter 4, a high school class consisting of 23 students, using augmented reality and virtual reality tools to create their own educational materials, was analyzed. They are about 16-year-old attending Istituto Tecnico Tecnologico “Eustachio Divini” in San Severino Marche, Italy. The basic idea of the trial is to create a short printed document augmented with the technologies of Augmented Reality and Virtual Reality. Experiences, was evaluated using tests and direct observation. The aim is to observe the impact of augmented mobile learning and to demonstrate that Augmented Reality and Virtual Reality study material may represent a new communication object adequate to teach future students.

Chapter 5 describes the educational use of augmented reality in mobile devices. Throughout the content of the chapter, readers are provided with information about how augmented reality practices have changed people's teaching and learning styles. In addition, the history of augmented reality, application platforms, educational use, advantages and disadvantages are also presented in this section.

Chapter 6 focuses on technologies, tools, programs, operating systems, a number of standards as well as some parts of web infrastructure standards for use in mobile augmented reality applications and then discusses the current state, issues, and direction of the development and the use of these apps. The aim of chapter 6 is to provide information on that can be used by developers of mobile augmented reality applications for learning and to assist educators and instructional designers in developing mobile augmented reality apps for learning by using augmented reality development tools that provide them to create custom mobile augmented reality applications without programming skills.

Chapter 7 presents the mobile learning ecosystem and mobile augmented reality themes derived from a Delphi study performed. The results and discussions present a “good fit” framework for a viable mobile learning ecosystem.

Chapter 8 offers augmented reality-based smart mobile application to support computer education courses. In the study, it was aimed to provide an alternative way of improving M-Learning experiences by employing both augmented reality and artificial intelligence based approaches in a common environment.

In Chapter 9, the potential of combining making, gaming and education is demonstrated by evaluating an implemented math-game prototype in a school by pupils aged 12-13. The aim of the virtual reality game is to solve mathematical exercises with increasing difficulties. The pupils were motivated and excited by immersing into the virtual world of the game to solve exercises and advance in the game. The results of the evaluation were very positive and showed the high motivational potential of combining making and game-based learning and its usage in schools as educational instrument.

Chapter 10 examines various aspects of mobile augmented reality and its potential in education. This chapter provides a comprehensive literature review and provides detailed information on mobile augmented reality application examples.

Chapter 11 deals with design and development of artificial intelligence based “intelligent Augmented Reality based M-Learning application” and its effects on the English language skills of engineering students.

Chapter 12 explores the use of interactive 3D game environments in design visualization in Building Information Modeling (BIM) by adopting various available software packages and APIs. Virtual reality will allow the prospective customer to enter and explore a structure before it is constructed. This can be achieved by making use of a powerful game engine, in this case, Unity3D. In Chapter 12, the authors describe ways to pivot Unity’s functions towards the benefit of civil engineering.

Chapter 13 combines flipped learning and augmented reality approaches and brings a new dimension to the use of augmented reality in open and distance learning environments.

In Chapter 14, authors discuss literature and research supporting the augmented reality, affordances in K-12 Education. The purpose of this chapter is to articulate the affordances of using augmented reality in K-12 classrooms. This is thematic review of the literature to understand what themes are developing from the publish literature. This chapter begins with a definition of augmented reality. This is followed by the unpacking of four trends in how augmented reality can support teaching and learning. These affordances are that augmented reality supports; authentic learning, contextualized learning, student-centered learning and enables students to better visualize subject content.

Chapter 15 follows an interesting and quite different approach, emphasizing the importance of mobile augmented reality in online nursing education. It presents proposals to use mobile augmented reality applications in “online nursing education” to increase the quality of nurses and to provide a better education service.

Chapter 16 provides an overview of the video games and video games industry, and then details the design, development and marketing of these games. This section classifies the concept of video game systematically and explains each category and game types in detail. Also, it aims to create awareness among researchers on video game development process.

## BIODATA and CONTACT ADRESSES of the AUTHOR



**Hakan KILINC** is currently working as a research assistant at the Distance Education Department of Anadolu University. He graduated from Computer Education and Instructional Technology Department of Anadolu University. His professional interests include distance education technology, personalized learning environments, information and communication technologies, online group discussions and synchronous, asynchronous, interactive communications.

Research Assistant Hakan KILINC  
Department of Distance Education,  
Anadolu University, 26470 Eskisehir, TURKEY  
Phone: +90 222 335 0580 #2432  
E-mail: [hakankilinc@anadolu.edu.tr](mailto:hakankilinc@anadolu.edu.tr)

## REFERENCE

Kurubacak, G. and Altinpulluk, H. (Eds.). (2017). *Mobile Technologies and Augmented Reality in Open Education*. IGI Global.