

Chapter 45

Mobile Augmented Reality Applications in Education

Irfan Sural

Eskisehir Osmangazi University, Turkey

ABSTRACT

The evolution and broad ownership of mobile devices has led to an increased interest to integrate the benefits of mobile learning and augmented reality applications. New possibilities for teaching and learning provided by augmented reality have been increasingly recognized by educational researchers. Mobile augmented reality can provide rich contextual learning for individuals. Currently virtual reality and augmented reality applications are used for training in fields as diverse as trades, military, entertainment, education and health. This chapter will explore different dimensions of mobile augmented reality and exemplify their potential for education. Therefore, how mobile augmented reality applies to education and training domain, and the potential impact on the future of education will be explained. Current status, opportunities and challenges of mobile augmented reality in education, mobile augmented reality applications will be included.

INTRODUCTION

Augmented reality is a growing field of technology where real life is adjusted and enhanced by computer-generated visuals and sounds. Augmented reality can be used in many different technologies, such as: computers, tablets, and smartphones. Augmented reality technology can also be utilized through wearable components, for example, glasses and helmets. Augmented reality allows us to integrate information based virtual reality and the real world physical reality. Recently as the advantages of mobile devices, mobile augmented reality concept is widely being used in many field and applications. Simply mobile augmented reality is augmented reality that users can take with them wherever they go. Most specifically, this means that the hardware required to implement an augmented reality application is something that can be taken with users wherever they go. Mobile augmented reality applications are designed to provide mobile device users with rich services, applications and functionality, which are utilized on top of physical reality. Such applications use the mobile device's camera, GPS, touch screen elements, other sensors and motion detectors to integrate real images, videos or scenarios within them.

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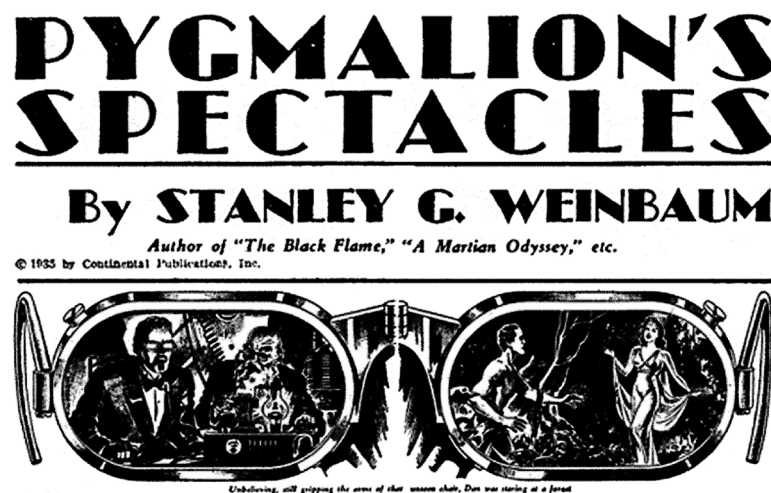
The evolution and broad ownership of mobile devices has led to an increased interest to integrate the benefits of augmented reality applications into mobile learning. New possibilities for teaching and learning provided by augmented reality have been increasingly recognized by educational researchers. Mobile augmented reality can provide rich contextual learning for individuals. Currently virtual reality and mobile augmented reality applications are used for training in fields as diverse as trades, military, education and health. The coexistence of virtual objects and real environments allows users to visualize complex spatial relationships and abstract concepts.

This chapter will explore development stage of mobile augmented reality and exemplify their potential use in education. Therefore, how mobile augmented reality applies to education and training domain, and the potential impact on the future of education will be explained. Current status, opportunities and challenges of mobile augmented reality in education, mobile augmented reality applications topics will be included.

BACKGROUND

This section will start with history of augmented reality and then continue with the emergence of mobile augmented reality. Finally, the development of mobile augmented reality for use in education domain is mentioned. Augmented reality is not a new concept. It has been used in different forms in many years. Augmented reality applications may vary from yellow first-down lines sketched over a televised football game to movies, event projector's been used to project images on the top a real setting. Those are examples of virtual graphics being placed upon a real-life situation. Since augmented reality exists about a half-century, the ancestors of this technology can be accepted as virtual reality. Concept of virtual reality is firstly used in science fiction short story named "Pygmalion's Spectacles" in 1935 (Weinbaum, 2007) (Figure 1). In this story reality system is described as a holographic recording of imaginary experiences, including smell and touch.

Figure 1. Pygmalion's Spectacles, idea of a pair of goggles (Virtual-Realms, 2016)



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