

USABILITY OF AN AUGMENTED REALITY LEARNING SCENARIO: A MIXED METHODS EVALUATION APPROACH

Costin PRIBEANU¹, Dragos Daniel IORDACHE²

Abstract. *Augmented reality (AR) technologies provide teachers with new opportunities to enhance students' motivation to learn. The mix of real and virtual objects requires specific interaction techniques thus making the design for usability a difficult task. Individual usability evaluation methods have specific strengths and weaknesses that suggest a mixed methods research approach. This paper presents a triangulation of quantitative and qualitative data that increases confidence in the evaluation results, provides a broader view on the strengths and weaknesses of the learning scenario and enables a deeper understanding of usability problems.*

Keywords: usability evaluation, mixed methods research, triangulation, augmented reality, learning scenario, educational platform

1. Introduction

The mix of real and virtual objects is challenging the developers of Augmented Reality (AR) systems to design novel interaction techniques which are mainly driven by the possibilities to interact with real objects and augment them with useful information. Educational systems based on the augmented reality (AR) technology are creating a new kind of user learning experience by bringing real life objects into a computer environment which in turn could better support a learning-by-doing approach to education [1, 3, 12, 17]. However, designing for usability is not an easy task in the AR field given the particularities of interaction techniques and the lack of specific user-centered design methods [9, 22].

This paper is reporting on a mixed methods research approach to the usability evaluation of an AR-based learning scenario developed in the framework of the ARiSE (Augmented Reality for School Environments) research project. Six research partners (Fraunhofer IAIS, Technical University Prague, Siauliai University, ICI Bucharest, Brighton University, and Across Limited) and two school partners (one for Germany and another from Lithuania) participated in this FP6 (Framework Programme 6) project. The ICT research in FP6 focused on generating new technologies integrated into day-to-day life with ease-to-use

¹Senior Researcher I, PhD, National Institute for Research and Development in Informatics, pribeanu@ici.ro.

²Researcher, PhD student, National Institute for Research and Development in Informatics, iordache@ici.ro.