

Accessible Mobile Augmented Reality App for Art Social Learning Based on Technology Acceptance Model

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Abstract : Mobile augmented reality technologies have become very popular in the last years in the educational field. Researchers have studied how these technologies improve the engagement of the student and better understanding of the process of learning. But few studies have been made regarding the accessibility of these new technologies applied to digital humanities. The goal of our research is to develop an accessible mobile application with embedded augmented reality main characters of the art work and gamification events accompanied by multi-sensorial activities. The mobile app conducts a learning itinerary around the artistic work, driving the user experience in and out the museum. The learning design follows the inquiry-based methodology and social learning conducted through interaction with social networks. As for the software application, it's being user-centered designed, following the universal design for learning (UDL) principles to assure the best level of accessibility for all. The mobile augmented reality application starts recognizing a marker from a masterpiece of a museum using the camera of the mobile device. The augmented reality information (history, author, 3D images, audio, quizzes) is shown through virtual main characters that come out from the art work. To comply with the UDL principles, we use a version of the technology acceptance model (TAM) to study the easiness of use and perception of usefulness, extended by the authors with specific indicators for measuring accessibility issues. Following a rapid prototype method for development, the first app has been recently produced, fulfilling the EN 301549 standard and W3C accessibility guidelines for mobile development. A TAM-based web questionnaire with 214 participants with different kinds of disabilities was previously conducted to gather information and feedback on user preferences from the artistic work on the Museo del Prado, the level of acceptance of technology innovations and the easiness of use of mobile elements. Preliminary results show that people with disabilities felt very comfortable while using mobile apps and internet connection. The augmented reality elements seem to offer an added value highly engaging and motivating for the students.

Keywords : H.5.1 (multimedia information systems), artificial, augmented and virtual realities, evaluation/methodology

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