9th International Conference on Ambient Systems, Networks and Technologies, ANT-2018 and the 8th International Conference on Sustainable Energy Information Technology, SEIT 2018, 8-11 May, 2018, Porto, Portugal

Educational Mobile Application of Augmented Reality Based on Markers to Improve the Learning of Vowel Usage and Numbers for Children of a Kindergarten in Trujillo

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Abstract

The main objective of this research was to improve the level of understanding of the usage of vowels and numbers for children over 4 years of age in the Juana Alarco de Dammert Nursery School in Trujillo through an educational mobile application that is composed of the unit development platform, monodevelopment, Andriod Studio, Vuforia using the programming language C# that was made based on the development methodology of extreme software programming. The research design is a pre-experimental experiment grade which was composed of 10 children over the age of 4 of the nursery school and was used as a method of data analysis Student T test.

In addition, with the implemented application it was possible to increase the level of academic performance of vowel usage by 27.60% and the use of numbers by 22.60%.

It was concluded that with the implementation of the educational mobile application of augmented reality, the level of understanding of vowel usage and numbers had improved in the Juana Alarco de Dammart nursery school children.

Keywords: Mobile app, Learning, Augmented reality, Markers, Development tools.

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1. Introduction

Technology of Information and Communication play a very important role in the education sector, they can improve the knowledge of the student and at the same time the teaching methods used by teachers. Likewise, many applications can be seen using augmented reality, however are not oriented towards educational sector

The nursery school "Juana Alarco de Dammert" was founded in 1993 in the city of Trujillo, this educational institution hosts children from 2 to 5 years of age every year with the aim of providing quality education, this research focused on children older than 4 years, because they had a little difficulty at the time of learning, the main factor was that they were too restless and were distracted very quickly with the teaching method taught by the teacher through drawings made on paper, printed images and pictures with images of the vowels or numbers. Therefore, the children should learn in a more dynamic and fun way, where they can interact with the learning material in the same educational institution and in the comfort of their home; preventing them from being easily distracted[3].

For this reason, a mobile application was developed on the Unity platform, which helps to create videogames and works with 3D objects. It also has an integrated development environment (IDE) called MonoDevelop that allows the user to code (program) in the most popular programming languages such as C # or JavaScript. The software development tool (SDK) Vuforia was also used, which contains many libraries that facilitate the creation of augmented reality mobile applications and provides different types of options for viewing, taking video and for exploration of recurring events of the captured images, in order to calculate in real time the position of the camera and the location of the markers.

The general objective of this research was to improve the level of learning of the vowel usage and numbers through the educational mobile application of augmented reality based on markers for children over 4 years old in the nursery school "Juana Alarco de Dammert" Trujillo in 2017, and as specific objectives the following: Increase the level of academic performance of the vowel usage through the use of the mobile application of augmented reality based on markers, increase the level of academic performance of the number usage through the use of the augmented reality mobile application based on markers and determine the average time of use of the application of augmented reality based on markers.

2. Literature review

2.1. Augmented Reality

Augmented reality is the vision of a physical environment by means of a device (smart phone, tablet), so that this real-world physical environment is shown in real time with an additional layer of virtual elements[1].

2.2. Augmented Reality Based on Markers

The markers are symbols or clipart that are printed on paper, which project objects (elements in third dimension, figures, texts) when they are focused by the camera under the use of an application that runs on the device[4].

2.3. Education

Education is a basic social process through which people acquire the culture of their society[5].

2.4. levels of learning

Learning are the subjective processes of recruitment, incorporation, retention and use of the information that the individual receives in their continuous exchange with the environment[6]. The levels are memorization, comprehension and application[7].