Chapter 8

Geolocation for the Improvement of Spatial and Naturalist Intelligence in Primary Education

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**ABSTRACT**

Geolocation provides a new learning model by combining physical and digital content, creating an enriched and interactive universe. This mobile technology offers new opportunities for the promotion of learning inside and outside the classroom, linked to multiple intelligences, in particular, to the spatial and naturalistic intelligences. Taking these premises into account, an analysis of several geolocation applications (N=20) is carried out in order to determine their potential to develop spatial and naturalistic intelligences. To this end, case study methodology is adopted, and an analysis instrument is proposed consisting of 15 indicators grouped into three dimensions: 1) geolocation, 2) spatial intelligence (spatial orientation and spatial representation), and 3) naturalistic intelligence (physical geography and environment). Although the geolocation applications analyzed boost spatial intelligence through the different options they incorporate, the same cannot be said of the naturalist one. It is considered relevant that they include contents oriented to environmental awareness.

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INTRODUCTION

Augmented reality offers numerous opportunities to promote innovative experiences through the combination of physical and virtual contents in the same space, offering further information about the environment which surrounds us. AR makes it possible to broaden the knowledge and perception of the physical world with three-dimensional images, sounds or animations, among other things, for the purpose of enriching reality with interactive and digital contents (Lee, 2012). The portability that is associated with this technology through the utilization of mobile devices has implications in training processes, insofar as it allows learning to take place anytime and anywhere (Burbules, 2012; Villalustre, 2016). Thus, thanks to geolocation, one can promote new contexts and strategies which influence learning. Bearing this in mind, several experiences have been carried out in different contexts and levels based on using geolocation. Among them stands out the one developed by Villalustre and Del Moral (2016) in the university context, where students enrolled in the degree in teacher training for infant education designed a variety of training proposals to exploit this technology.

Geolocation favors a new learning model by combining physical contents with digital ones, thus creating an enriched and interactive universe. Geolocation is characterized by its customization capacity, its portability and interaction, as well by its ubiquity (Kaufmann & Schmalstieg, 2003). Similarly, the superimposition of information added by means of geolocation makes it possible to view images and videos about the place where we find ourselves when the GPS coordinates are activated, enlarging the experience and favoring—in the words of Mtebe and Raisamo (2014)—a more prominent role of students. Training goes beyond the classroom with geolocation, since the possibility exists to plan activities in spaces open to the environment helping to ensure that learning will be really significant and situated (Paul, 2014). Thus, according to the Horizon 2020 report, collected by Durall, Gros, Maina, Johnson, and Adams (2012), the benefits brought by this technology include the following: 1) the framework of m-learning projects favors territory-linked types of learning and adds experiential value to the work that revolves around specific contents and skills; 2) the geolocated information permits to establish relationships between various types of data and to visualize them, which in turn facilitates the identification of patterns; and 3) the geolocated data allow users to find like-minded people located in a nearby environment and to contact them through location-based social networking services.

This mobile technology consequently offers new opportunities to promote types of learning developed inside and outside the classroom, linked to multiple intelligences, and more precisely, to spatial and naturalist intelligence. Geolocations makes it possible to put together and develop training initiatives associated with the exploration and knowledge of the environment. In this sense, Sharples (2003) considers that it boosts spatial thinking for the representation and manipulation of information, as well as problem solving. The mobility linked to this type of technology helps to bring us closer to the physical elements in the environment combined with virtual elements so that spatial and visual representation can be developed. Geolocation likewise breaks down the physical barriers in the classroom, allowing for the interaction with different natural environment spaces to generate new meanings. All in all, this paper performs an analysis of various geolocation applications to determine their educational potential as precursors of abilities and skills related to spatial and naturalist intelligence.