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Review of Android and iOS Tablet Apps in Spanish to improve reading and writing skills of children with dyslexia

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Abstract

Through this article we want to shed light on the Apps in Spanish for children with dyslexia. We also present research on developing literacy using fifteen tablet applications selected for working on literacy and mathematics in children with dyslexia. We have used an ad-hoc instrument that analyses the main elements of the apps, their pedagogical approach, game resources and approach to dyslexia. The fifteen apps selected are in Spanish and are recommended by dyslexia experts. The results that we emphasize are that no application has a global approach; most apps consider only reading fluency or automated word recognition, the two are not integrated in the set of activities.

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1. Dyslexia and ICT in primary education

The International Dyslexia Association (2002) defines dyslexia as a specific learning disability of neurological origin. It is characterized by accuracy and fluency difficulties in recognizing written words, and problems in decoding and spelling. These difficulties are caused by a deficit in the phonological component of language, unexpected in nature, since other cognitive skills have normal development and education is appropriate (DSM-5, 2013). Puyuelo et al. (2001) state that people with dyslexia have problems in written composition due to their spatiotemporal structuring.

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difficulties and sequencing problems. They can also manifest problems in comprehension, composition and structure of literary texts.

The results of studies on the percentage of children with dyslexia vary greatly. Morris, Shaywitz and Shaywitz (2008) indicate that 17.5% had a significant reading delay. However, in more specific studies on dyslexia, the percentage decreases, peaking around 5%, especially in males (Iglesias, 2000). Deficits can be observed in functions related to memory, vocabulary, motor areas and speech (Bigozzi, Tarchi, Pezzi and Giuliana, 2016). In preschool we can already detect significant alterations in language, motor skills, perception and lack of maturity in general (Hulme and Snowling, 2009). Knowing that these do not simply subside with the passing of time, an early diagnosis is required in order to help the child promptly.

Dyslexia can affect people with normal or high cognitive development (Lyytinen et al., 2008), who have no perceptible sensory disturbances and are receiving an adequate education (McArthur, Ellis, Atkinson and Coltheart, 2008). It is an important factor in school dropout and in most common reading and learning difficulties. People with dyslexia constitute 80% of diagnoses of learning disabilities, with a prevalence around 2-8% in schoolchildren. It is common for children diagnosed with dyslexia to manifest hyperactivity disorders or suffer problems of attention or impulsiveness. In addition, if neither their school nor their social environment is adapted to their educational needs, if there is no promotion of emotional intelligence and resilience, children with dyslexia can suffer stress and anxiety, thus forming low self-esteem and disaffection (Chapman and Tunmer, 2003).

There is a greater percentage among boys than among girls, and it is quite common to have a family history, although these family members have not always been diagnosed (Asandis, 2010). Siegel (2006) considers that dyslexia is stable, dyslexics are likely to continue to have reading difficulties throughout adolescence and adulthood, especially when they do not receive proper educational intervention.

For students with dyslexia, the traditional rote-only textual teaching model does not work (Guerrero, Muñoz, Longo and Ordoñez, 2012). People with dyslexia are very heterogeneous, each child with this learning disability will potentially manifest a different profile and range of difficulties. “Consequently, the difficulties profile will be very important in determining the intervention approach as children with dyslexia should require individual and customized intervention based on the deficits that have been identified in their assessment” (Jiménez and Defior, 2014, p. 51).

They need other forms of teaching and learning based on more practical exercises and multisensory learning that enable them to more easily connect the text with its meaning through images and sounds (Carrillo, 2015). A strategy to bring about this multisensory learning is the use of ICT (Montero, Ruiz and Díaz, 2010).

The goal of the new progressive teaching method called interactive teaching is to offer students a more entertaining and less monotonous form of education, increasing their attention and motivation to learn (Hannan and Silver, 2011). An equally important goal is to involve the pupils themselves in the education process, enabling them to actively participate in it and help shape it instead of being mere passive listeners (Zikl et al., 2014).

It is undeniable that information and communications technology (ICT) has penetrated nearly every sector of society. This fact can be a great incentive to leave behind obsolete teaching and learning styles based on repetition and memory, and to move towards more practical, dynamic and participatory educational models (Fernández, 2005). Educators face the challenge of knowing how to project and build networks for students to learn by experience, in the same way that video game players acquire skills as they progress through levels and achieve the goals set by the game (Carvajal and Rojas, 2014).

Studies such as Blok, Oostdam, Otter and Overmaat (2002) or Cheung and Slavin (2013) argue that ICT has the potential to prevent and remediate reading problems. However, Gomez, Garcia and Cordón (2015) warn that the simple use of ICT in the classroom does not increase educational quality if it is not accompanied by proper integration into the learning process, a correct selection of products that really achieve the desired objectives and teacher practice in the use of devices and applications.

Use of ICT in the education system favors learning motivation because it allows students to experiment and discover new things and to practice the skills and knowledge they have learned in fun ways. Franceschini, Gori, Ruffino, Viola, Molteni and Facoetti (2013) consider that smartphones and tablets can be great partners for working more inclusively and flexibly with students with disabilities, especially children with dyslexia.

Several authors such as Manero, Torrente, Serrano, Martínez and Fernández (2015) and Antoniazzi (2007) consider that the main advantage of integrating ICT in the classroom curriculum is the individualized attention given to the
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