



DydetectiveU application: contribution to the literacy in children with dyslexia

Aplicación DydetectiveU: contribución a la lectoescritura en niños con dislexia

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Abstract

The result of research on DydetectiveU application and its contribution to the reading-writing process in children with dyslexia is offered. An explanatory-descriptive research was developed, with the use of quantitative and qualitative methods to explore the reading-writing process mediated by technologies of the education. It was found that the DydetectiveU application offers multiple actions to learn to read and write, during the learning of children with dyslexia. It concludes that the DydetectiveU application reveals potentialities to develop the literacy process in children with dyslexia, as well as the reasons that lead to its use in the teaching-learning process of Basic Education.

Key words: Reading, writing, educational technology.

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Resumen

Se ofrece el resultado de investigación sobre la aplicación DydetectiveU y su contribución al proceso de lectoescritura en niños con dislexia. Se desarrolló una investigación explicativa-descriptiva con la utilización de métodos cuantitativos y cualitativos para explorar el proceso de lectoescritura mediado por tecnologías de la educación. Se constató que la aplicación DydetectiveU ofrece múltiples acciones para aprender a leer y escribir durante el aprendizaje de niños con dislexia. Se concluye que la aplicación DydetectiveU devela potencialidades para desarrollar el proceso de lectoescritura en niños con dislexia, así como los motivos que conllevan a su empleo en el proceso de enseñanza-aprendizaje de la educación básica.

Palabras clave: lectura, escritura, tecnología educativa.

Introduction

Dyslexia is a specific language difficulty. This disorder affects between 5 and 10 % of the world's population and is characterized by a series of difficulties in the precise and fluent recognition of words, and by problems with spelling and decoding.

In a study carried out by the Institute for Statistics of UNESCO (2019) to countries that belong of the Organization for Economic Cooperation and Development (OECD), referring to dyslexia, it is stated that:

The problem of reading is even more serious, as revealed by the conclusions of the PISA 2000 Study, recently carried out by this international organization and which shows us that 13 member countries, among which Mexico, Luxembourg, Latvia, Russia, Portugal, Italy and the Czech Republic, had reading rates significantly below the OECD statistical average for reading skills. (p. 1)

From the above, it is retaken that more than 617 million children and adolescents are not reaching the minimum levels of reading proficiency, according to the new estimates of the Institute for Statistics of UNESCO, this is equivalent to three times the amount of the population of Brazil being unable to read or write.

In the particular case of Ecuador and in order to single out the level of Basic Education, according to the newspaper *El Telégrafo* (2019):

There are 2621 children with learning difficulties within the educational system, and in recent years the term dyslexia have become very important within the Ecuadorian educational environment, due to the fact that it is a problem in literacy that affects a large number of children, which present problems when it comes to overcoming educational demands.

According to the census of the Master File of Educational Institutions (AMIE for its acronym in Spanish), 9238 students with special educational needs not associated with a disability participate in the national educational system, which reveals that 28.37% of students present problems in literacy.

In the Unidad Educativa Padre Marcos Benetazzo, it was detected that several children in the seventh year of basic education have the learning disorder dyslexia, this is reflected as problems in the ability to read and write; this difficulty arises due to the lack of knowledge about dyslexia and the little use of technological instruments in said year of basic education at the institution.

At present, the educational process receives an important technological influence, where networks, computers, software and social websites mark social relations in a general sense and these transcend the school institution, which, as part of society, it adapts and transforms all its processes to the enormous recursion offered the Computing Technologies. This constitutes a positive fact that enhances the act of improvement of dyslexia, however, a group of questions about it becomes recurrent, which in this research is specified in a single problem for the Pedagogical Sciences: How does the DydetectiveU app influence children's literacy?

For this reason, in this research paper, what is sought is to determine the way in which the DydetectiveU application influences the literacy of children with dyslexia in the seventh year of basic education at the Unidad Educativa Padre Marcos Benetazzo.

In literary reviews of the last two decades, there is a trend towards an increase in studies on literacy with the support of educational technologies; however, it has been proven that there are few specific investigations that relate ICT with literacy problems from an educational approach.

Among the studies carried out, Álvarez (2015) stands out that "who delves into the characteristics of writing the narrative text mediated by a word processor (Word) and a voice recognition program (Dragon)" (p. 98). This contribution reveals that the narrative structure of children with reading and writing problems is not restricted by the types of writing tools.

Another unique study is on a mental skills program to improve concentration. Where students were divided into three groups of participants. In the first group, they studied three multimedia games that teach different skills. The second only played Tetris. While the third did not receive any training. The results showed that: "in comparison with the other two groups, the first one reached significant attentional competences in comparison with the other two groups" (Navarro et al., 2016, p. 124).

In the study by de Marco (2020) on the use of the MeMotiva program in children diagnosed with ADHD, it reflects that “it helps in reducing impulsivity, since children have to follow instructions that make them have to be attentive, it also increases the capacity of working memory, and improves cognitive tasks such as writing, calculation, planning and organizational skills” (p. 34).

In accordance with the above, a study was carried out on the operation and effect of the virtual environment. The general objective was to evaluate the effectiveness of the DydetectiveU application to improve the literacy skills and vocabulary learning of students with dyslexia learning disorders.

To understand this creative character, an approach to communication skills is offered, first of all, as an object of study, mainly the influence of the DydetectiveU application on reading and writing, taking as a basis some terms, authors and theories that will give validity to the development of this research.

DydetectiveU is a free application for people with dyslexia, with the aim of overcoming this barrier in a fun way. It is a multi-device video game, with which you can play both on your mobile phone, as well as on your computer or tablet. It offers educational games, taking into account the following variables: perceptual processes, language skills, working memory and executive functions (Rello, 2018).

The DydetectiveU application has 35000 exercises that were created manually by linguists, psychologists and computer scientists using two linguistic resources: the linguistic pattern extracted from a corpus of errors made by people with dyslexia using linguistic data mining; linguistic resources generated by natural language techniques (Rello, Macías, & Bigham, 2017).

Literacy is a teaching process, especially in the first stage of primary education. Educators have prepared their students for appropriate future development by guiding them to develop the necessary skills so that their students are prepared for the upcoming reading and writing assignments from early childhood.

In a first study, the maturational factors found were four: linguistic, visual-motor structuring, conceptual organization and reproductive memory. By relating this factorial structure with the results obtained in literacy, it is shown that linguistic and conceptual organization factors are the ones that best predict success in literacy (Caso, & García, 2016).

Due to its complexity, literacy is one of the learning that requires the highest level of abstraction. Over the years, traditional literacy methods have focused on three trends: the first is a synthesis method based on word components. The second is analytical, it is a response to comprehensive learning. Finally, there is the trend of eclecticism, which is characterized by the combination of synthetic and analytical elements, and its focus is to develop an understanding of the meaning of words (Tangarife, Blanco, & Díaz, 2016).

Dyslexia is a learning disorder characterized by difficulties in reading, interpreting, and writing. Its cause has been investigated and several theories try to explain the reason for dyslexia. There is a strong tendency that the origin is related to genetics and neurobiology (Colares, Guelber, & Pereira, 2019).

The basic concept of dyslexia from a behavioral point of view, dyslexia is characterized by difficulties in the correct recognition of words and the ability to decode them. It is also highlighted that, in most definitions, the lack of ability at the phonological level is constant, as well as the difficulty in recognizing words (Menezes, Januário, & Sobral, 2018).

Materials and Methods

An explanatory-descriptive research is developed, with a dialectical use of quantitative and qualitative methods to explore the literacy process mediated by computer technologies.

A non-experimental design was used in the interpretation, analysis and observation of a population made up of 40 students who are in the seventh year of Basic General Education of the Unidad Educativa Padre Marcos Benetazzo, located in the city of Babahoyo, province of Los Ríos, Ecuador; during the 2020-2021 school period. To determine the sample, a non-probabilistic type of sampling was applied, due to the fact that the population is small; since the group of students has been chosen intentionally to carry out the experiment.

A questionnaire was designed for data collection, which consisted of 20 questions which were divided into blocks, the first block of questions referred to the use of the DyetectiveU application, while the second block to literacy learning. Which were tabulated in a spreadsheet for further analysis and interpretation.

The questionnaire was applied in two rounds, initially in a test pilot to students of a parallel of 7th grade, not included in the research sample, as piloting and verification of its adequate functioning in the collection of information and in discerning which questions They may present difficulties with their understanding. Once the instrument was corrected and applied to the research population, the following results were obtained.

Results

The results are offered according to the blocks of the questionnaire, referring to the DyetectiveU application and literacy. In the case of the block of questions linked to the DyetectiveU application, the following results were obtained.

According to the respondents, they appreciate the DydetectiveU as a tool that offers a different way to learn to read; which is supported by 82.5 % of the students that expressed agreement on the item; linked to it and in a similar percentage, it is appreciated as a new resource that enhances reading improvement, which is positive for the application in that it arouses interest in its use in students.

In the case of the potential to offer creative and cognitive activities for the diagnosis of dyslexia, more than 80 % of the answers consider this, similar to the answer about optimal actions that can be carried out to learn to read and write, which is interpreted as: a tool that offers multiple actions to learn to read and write, in the most optimal way for the use of literacy during its teaching-learning and autonomous practice.

In a degree of acceptance above 85 % of coincidence, it is accepted that DydetectiveU helps the development of skills, relationships and a sense of humor, with a motivating and affective character, which reveals the playful nature of the tool and enhancer of extrinsic stimuli for the student to learn in a fun way.

It is significant the result of responses on the possibility of encouraging teamwork and activities, where 80 % of the participants expressed agreement. This reveals the character of socialization that work with the application has and the possibilities it offers to achieve team relationships and shared learning.

In the case of the block of questions related to literacy, the following results were obtained: regarding the question about literacy as procedures for the construction of knowledge, the respondents agreed in more than 80 % of the students according to the item related; in a similar percentage, it is appreciated that the learning of literacy contains a set of shares and operations. The foregoing reveals the procedural nature of literacy and as an initial learning process of development, from which the individual will be able to guide and structure their thoughts.

Regarding the possibility of working with previous knowledge to obtain new knowledge, 87 % of the participants expressed agreement, which is interpreted as literacy learning uses experiences so that, in this way, they are used as a basis for the new knowledge obtained.

In a degree of acceptance above 80 % of coincidence, it is accepted that literacy develops linguistic processes to participate efficiently and skillfully in the field of communication, which reveals that it not only allows the construction of meanings to expand knowledge, but also facilitates the opening of new communication channels with the social environment in which it operates.

All the results obtained were tabulated and analyzed in their entirety, which facilitates the process of analyzing the information and offering a scientific discussion.

Discussion

The DytectiveU application has optimal potential for the development of literacy, as could be seen in the survey and the criteria of the students have been favorable for the development of the literacy process. In this they highlight the possibility of arousing interest in work with the application; however, it may be a motivationally biased result, since it was not possible to verify whether in the time of its systematic use, students continue in their interest in work with the app. This element is of consideration for future studies for the sake of the perspective improvement of literacy as a teaching-learning process assisted by technological tools.

One of the most important findings was related to the interaction possibilities offered by the platform and its playful nature. However, and according to the review of the scientific literature on the matter, it was found that the literacy process is theoretically designed for its development in the face-to-face classes; even the national curriculum of Basic Education in the countries of the region does not conceive of virtual work in this process that has had greater execution in the presence of the student, the teacher and the text in time-space. From this, it is inferred the epistemic need for new studies on the literacy process in its theoretical and practical bases systematized during its development in a virtual way or even as support for that recurring presence in its current conception.

One of the results obtained reveals the potential of the application to develop shared and team work, which constitutes a very suggestive starting point for the approach to the problem situation of the previous paragraph.

For its part, the reading-writing process, according to the respondents, is appreciated as a vital need for self-development of other learning; in addition, the structuring of thoughts is fundamental, which reverts in itself a potential for its conception from virtuality as a recursive element and motivating to the student and teacher.

The foregoing reveals the character of significance that the literacy process imposes on the learning of children with dyslexia, especially when it is carried out with the support of technology. Although it is theoretically necessary to continue investigating the intrinsic motivations of the student towards technology and even the role of the family and other educational agents during this reading-writing process.

Conclusions

The DytectiveU application reveals potentialities to develop the reading and writing process in children with dyslexia, evidenced in the use and interaction with the application, as well as in the reasons that lead to its use in the teaching-learning process of Basic Education; however, more in-depth studies are needed to assess the levels of motivation over time of use.

The current pedagogical process for the development of literacy learning is conceived at a theoretical, curricular and school practice level as a face-to-face process, in which its virtual execution is not at the level of scientific analysis, which opens up new investigative scenarios for its improvement and inclusion in contemporary pedagogical practice.

Literacy has the possibility of becoming different and improving through the use of educational technologies, studies are needed in more diversity of applications and their scientific arguments, through continuous observations of practice and assessments of how to learn and under what applications and resources.

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