MOBILE LEARNING IN CHILDHOOD EDUCATION

APRENDIZAGEM MÓVEL NA EDUCAÇÃO INFANTIL

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Abstract. This paper presents a discussion about mobile learning in early childhood education. Using a theoretical approach, we sought to elucidate what are the possibilities and challenges of using mobile devices in learning for this age group, this, mainly motivated by the restrictions of classroom educational activities imposed by governments for health issues. The study is of a qualitative nature and the data were obtained from an exploratory search for publications in CAPES indexed databases and in reference books that address the theme of the study. Currently, quality education must be based on the planned use of educational resources that enable the cognitive development of students, especially in the current reality in which it seeks to minimize the effects of the COVID-19 pandemic on education. It was also found that the m-learning methodology can be an option for children of second childhood in view of their stage of cognitive development and their physical capacities, since they already have the skills and competences necessary to operationalize the use of these equipment in favor of adult-oriented learning. However, for this to be possible, in addition to modifying some paradigms of traditional education, it is necessary to overcome the challenges arising from children's contact with the external world of the world wide web, aiming at their integration with current technologies without this may be detrimental to its development.

Keywords: m-learning; secondary education; mobile learning; mobile devices.

Resumo. O presente trabalho apresenta uma discussão acerca da aprendizagem móvel na educação infantil. Utilizando um enfoque teórico buscou-se elucidar quais as possibilidades e desafios do uso de dispositivos móveis no aprendizado para esta faixa de idade, isto, motivado principalmente pelas restrições das atividades educacionais presenciais impostas pelos governos por questões sanitárias. O estudo é de caráter qualitativo e os dados foram obtidos a partir busca exploratória de publicações em bases de dados indexados da CAPES e em livros de referência que abordam a temática do estudo. Atualmente a educação de qualidade deve estar alicerçada no uso planejado de recursos educacionais que possibilitem o desenvolvimento cognitivo dos alunos, principalmente na realidade atual em que busca-se minimizar os efeitos da pandemia COVID-19 na educação. Verificou-se também que a metodologia m-learning pode ser uma opção para crianças da segunda infância tendo em vista sua fase de desenvolvimento cognitivo e suas capacidades físicas, pois, já possuem as habilidades e competências necessárias para operacionalizar o uso destes equipamentos em prol da aprendizagem com orientação de adultos. Porém, para que isto seja possível, além de modificar alguns paradigmas da educação tradicional, e necessário que sejam vencidos os desafios advindos do contato das crianças com o mundo externo da rede mundial de computadores, visando a sua integração com as atuais tecnologias sem que isto possa ser prejudicial ao seu desenvolvimento.

Palavras-chave: m-learning; segunda infância; aprendizagem móvel; dispositivos móveis.

INTRODUCTION

The COVID-19 pandemic has had a major influence on how to manage people's lives and in the area of education has limited classroom activities. This change was necessary due to the sanitary restrictions imposed by the governments to try to reduce the number of infected, on the other hand, it also affected a way of thinking about classroom teaching.

Distance education is a topic that has been discussed for some time and, nowadays, it has been put into practice in an emergency way for students of all ages, but do the little ones have the skills and competences to operate as technological tools for learning? Is the mobile use model feasible for this age group? What barriers and possibilities are present in this teaching-learning method?

Favoring the situational picture, we see an increase in the number of mobile devices due to their popularity and cost reduction (Ferreira et al, 2013), in addition to the ease of use that is mostly dependent on physical structure for connectivity with the world wide web (Mulbert, 2011).

Today it is common to see children from different social classes, even before entering school, using mobile devices (Merije, 2012), and in this context they have an unlimited universe of experiences at their fingertips (Da Fonseca, 2018).

This new tool forces the school to seek educational subsidies to include technology in its pedagogical plan so that it is not marginalized or obsolete in relation to the reality outside its walls (Tajra, 2012). However, achieving this goal is not a simple task; it is necessary to review the features of a conservative education that is based only on the content passed on the blackboard and insert the digital world for teaching so that the learning will be pleasant and playful and rethought through technological tools. In addition, one should check the tools are most appropriate in relation to the age group and resources of the students. Thus, there is a need to identify the possibilities and challenges of mobile learning for early childhood education.

For this purpose, a theoretical study about mobile learning and its use in early childhood education will be carried out, seeking to identify how this tool can influence the lives of children and if the little ones have the skills and the necessary needs to use these tools. However, the beginning of this work will contextualize the worldview of the "child" system, searching through the general theory of the system and analyzing the phases of development to deepen the knowledge about its limitations and limitations.

THEORETICAL ASSUMPTIONS

Understanding child development and thinking

Discussing the use of mobile technologies in the process of teaching and learning in early childhood brings the margin to the discussion of the conception of what second childhood is within the child system. The second childhood for Papalia, Olds and Feldman (Papalia et al, 2009), is the period between 3 and 6 years and presents great physical changes (preference in activities with the use of hands), cognitive (improvement of language and memory) and psychosocial (greater sociability in games). Within Piaget's cognitive psychogenetic (Piaget, 1970), second childhood is the stage at which the child becomes capable of initiating cognitive construction and, from his perception, manages to understand the other's point of view. In the same line of reasoning, Cruz (Cruz, 2014) adds that children have the ability to discern and even build certain thoughts, behaviors and attitudes towards the issues that surround them within their social groups. This interaction of the children with the environment contributes both to the social and historical construction of the environment in which they live and to their own formation as a person.

From this exchange of experiences of the child with the social environment and the objects that compose it, new learnings of relational practices can emerge (Charlot, 2018) and also the first steps arise for the construction of the child's worldview, which can be defined with the "A set of all the aspects mentally constructed by an individual, as a result of the process of observation / reflection of his world." (ALVES, 2012). For teaching to have a logic that generates learning, the objects that make up its super system, (teaching) must be organized in such a way that they can serve its purpose (ALVES, 2012). When, however, there is an intersection between the worldview between the actors of the teaching-learning process, the construction of a new paradigm arises, learning (ALVES, 2012), in short, in the author's thinking, "Collective worldview (or paradigm) is the set of intersections of two or more individual worldviews". However, traditional educational paradigms can slow down the construction of educational paradigms based on technologies, especially m-learning (Simão, 2013). If this paradigmatic barrier is broken, the author states that m-learning, in addition to making learning more interesting for students, can personalize teaching in order to accompany the different learning rhythms, and thus, preschools, can provide the generation of new skills and the healthy and high-quality development of its students (Ferreira, Oliveira, Callou 2013). Therefore, the learning paradigm based on mobile technologies as a pedagogical tool for second childhood will be analyzed.

M-learning as an educational tool in early childhood

According to Piaget (Piaget, 1970), knowledge results from human interactions with the environment in which he lives, this knowledge being built since childhood through objects that the child has contact with.

It is known that the child development process requires effective educational opportunities and that the individual achievements of each child depend on interactions and quality activities mediated by the adult and other children, as it is from these activities and interactions that the child will develop their skills and competences (Schneider, 2007).

One of the child development domains cited by Diamond (Diamond, 2007)) is cognitive development, which encompasses learning, attention, memory, language, thinking, reasoning and creativity. These cognitive advances are highly related to the child's physical, social and emotional growth. However, the second childhood period between 3 to 6 years, the child goes through fundamental stages in cognitive development, such as the evolution of the ability to solve problems, and the significant improvement of memory and language (Papalia et al, 2009).

At this stage, it is important that incentives and incentives occur so that the process of developing these capacities is maximized. Still in this reasoning, Unesco (Schneider, 2007) complements that psychologists, sociologists, among other professionals, have defended that the first and second childhood are primordial phases for the child, where he will develop the emotional and intellectual base that will take him throughout your life.

Early childhood education is a factor that can improve children's well-being during their growth, promoting their integral development, especially in countries that are not classified as first world (Schneider, 2007). For Vasconcelos (2007), preschools must provide challenges for children and cause problems that induce scientific research and exploratory work and that create stimulating spaces for knowledge and learning.

Mobile devices have been gaining prominence in this area, increasing the excitement around mobile learning, and the presence of these devices in formal education systems has been increasing considerably (UNESCO, 2014). It has already been found that in developed countries educational applications have grown exponentially, and in 2011 more than 270 million downloads of educational applications were made (UNESCO, 2014).

The increased use of mobile devices in education environments makes this type of teaching an important part of the learning environment and a highly motivating form of teaching, as it increases children's involvement in learning (Druin, 2009).

Unesco (UNESCO, 2014) predicts that in the next fifteen years, mobile technology will be more accessible, cheap and functional. There will be advances in terms of connectivity and memory, with lower costs, opening doors to new possibilities for m-learning solutions and, just as computers are now considered fundamental in the teaching-learning process, mobile technologies will soon become common in formal education (UNESCO, 2014).

M-learning, in this sense, can be defined as the use of mobile devices to facilitate, support, enhance and expand learning, which can occur anywhere and at any time and includes smartphones, tablets, mini notebooks or netbook, among others , and are great help in education as tools to support learning (Hasemi et al, 2012).

Learning from mobile devices comes to help children develop important skills, such as critical thinking and interculturality, which are increasingly important in an interconnected world based on innovation (Druin, 2009).

According to Saccol, Schlemmer and Barbosa (2010), m-learning has several benefits that can assist in the teaching-learning process, such as flexibility, since mobile devices can be used anywhere, enabling the exploration of new environments and learning resources, allowing children to be encouraged to visit new places and interact with these environments. In addition, the authors also cite the possibility for the student to have personalized learning, according to the learning needs of each child.

As mobile devices are getting cheaper and cheaper, this teaching practice can collaborate to enable new educational activities in different social classes, also promoting social inclusion (Saccol, Schlemmer, Barbosa, 2010). Just as there are numerous opportunities for m learning, there are also some challenges in the use of mobile technologies, as warned Ferreira *et al* (2013), saying that, despite progress with the use of mobile technologies in the educational environment, the academic community has not yet reached a consensus on an effective model of education that uses m-learning.

According to Liu, Han and Li (2010), acceptance of m-learning is much slower than expected and mobile devices, in most cases, are used occasionally and in a supplementary way to teaching, as there are still many people who hesitate to use this tool in the teaching-learning process (Liu, Han, Li, 2010). It noticed that few teachers, including the younger ones, consider the use of mobile technologies in the

preparation of their classes, due to the lack of theories and models of teaching learning that guide these teachers in the construction of effective activities using these devices (Shuler, 2009).

There are several concerns about the child's relationship with the mobile device, such: a the possibility of cyberbulling; distraction from school content; writing journals; difficulty in monitoring accessed content; and among others (Shuler, 2009). As well as the concern with preventing children are too distracted with their mobile devices, or become very individualistic, since the goal is collaboration among themselves and this is an inherent risk of technology (Druin, 2009)

It is necessary that teachers have pedagogical teaching skills to use mobile technologies in order to enhance student learning (Saccol, Schlemmer, Barbosa, 2010).

The authors also point out that activities that use mobile devices and that have fast and superficial interactions with applications can harm the more elaborate learning needs and also activities that require intensive collaboration. In addition, it will be necessary to rethink literacy, so that it adapts to the digital age and work towards digital equity, allowing all children to have access to mobile technologies, considering that these technologies are heading towards low cost and familiarity. (Druin, 2009).

Even with all the progress and use of technologies in the current world, many parents and teachers still do not believe in the pedagogical potential of mobile devices (Shuler, 2009). Based on this information, even though there are several challenges to be overcome, it appears that m-learning helps to enhance and expand the possibilities of teaching and learning.

There are already several proposals for implementing m-learning in education, as well as several pre-schools that are using this form of learning in their daily lives, as can be seen in schools in the southern region of Santa Catarina. However, there is still much to be researched from the methodological and didactic point of view to obtain fluency in the use of technologies for m-learning in second childhood.

METHODOLOGY

In order for the proposed objectives to be achieved, a strategy called exploratory-descriptive bibliographic study was adopted, considering that the purpose of the research is to provide greater familiarity with the problem and, at this stage, to understand the current scenario of mobile learning, its possibilities and challenges for the teaching-learning process in early childhood education.

Despite not being a recent topic, with the emergence of COVID-19, this agenda is not widely approached as a learning option in this age group, so it was decided to investigate scientific journals in CAPES indexed databases and reference books for the thematic. For this research, the word mobile learning was used as a search term together with early childhood education, articles that contained the theme of work were selected. In addition to this exploratory search, classic references in the field of education were used, such as Piaget, contemporaries of international organizations such as UNESCO and the UN, and some works that, at their discretion, complement the information about mobile learning in early childhood education. The following criteria were applied for the selection of works: alignment with the theme of the article and relevance to the research. At the end, the data were classified so that it was possible to present the possibilities and challenges of mobile learning for early childhood education.

Table 1. Research Phases.

Phases
Delimitation of the theme
Method definition
Exploratory research
Application of data selection criteria
Data classification
Results presentation

Source: table prepared by the authors of the article (2020)

In the next topic, the research data will be presented in a synthesized way in order to achieve the objective proposed in the work.

RESULTS AND DISCUSSION

To better to organize the results, possibilities and challenges will be divided between what is sought in this work, but beforehand, the conclusions about the theoretical assumptions that will support the content analysis will be presented.

Theoretical assumptions

International organizations such as the UN and UNESCO have for some time been emphasizing the importance of quality education for all in order to have sustainable development (BRAZIL, 2011) and the use of mobile technologies is today an eminent opportunity.

For this, Tajra (Tajra, 2012) leads the discussion about the importance of the school being updated to enable quality education. This report makes us reflect on the possibilities and challenges of using mlearning as a teaching tool, including in childhood.

According to the general theory of systems, the child can be considered a system open to the exchange of knowledge and experiences, with its view of the developing world and also a component of the process of forming paradigms in the super system in which it is inserted, the educational system (ALVES, 2012).

The eminent paradigm today is m learning and, even if it is not fully used by children in the classroom, mobile devices are already a reality in children's lives. In the second childhood, according to Piaget (1970), there is a search in the child to understand the objects that surround them, which facilitates the introduction of new practices within the school environment. One of these practices being m-learning, which it enables the enhancement of the teaching-learning process, facilitated by technological advances that allow access to content anytime and anywhere (Mulbert, 2011) and by the cheapness of mobile devices (Ferreira et al, 2013).

Therefore, it can be inferred that the quality of education that has been discussed internationally can be achieved through the didactic use of mobile devices, which are more efficient and cheaper every day; and also that the child in the second childhood already has the minimum physical, psychosocial and cognitive abilities to learn with this new object for the classroom.

With this theoretical basis, about the m-learning paradigm as an educational tool for second childhood, now the possibilities and challenges for this eminent reality can be discussed.

Possibilities of m-learning for second childhood

The current scenario, favorable to the development of m-learning in the educational area, is added to the need for educational opportunities for the child to have subsidies for the development of their skills (Schneider, 2007).

In this sense, the development of children in second childhood brings cognitive subsidies: attention, memory, language, thinking, reasoning and creativity; physical and psychosocial (Papalia et al, 2009) already sufficient to use m-learning as an educational tool (Diamond, 2007)).

Unesco (Schneider, 2007) states that several studies are being carried out on the importance that early and second childhood have in the development of the emotional and intellectual basis that the child will carry throughout his life.

Within this logic, inserting m-learning technology in early childhood can contribute for the child to build their vision of mute based on the image of the mobile device not only as a leisure object, but also as a didactic tool for their learning.

Another relevant aspect cited by Unesco (Schneider, 2007) is that education in the second childhood can bring well-being for the integral development of the child and, for this, Vasconcelos (2007) cites the importance of pre-schools to pose challenges that create stimulating spaces for knowledge and learning. These challenges can be presented with the insertion of new objects for the school environment, such as mobile devices.

Thus, it is understood that the teaching and learning objects used in preschool have a great impact on child development (Schneider, 2007), both in the social area and in the intellectual area (Diamond, 2007)), with mobile devices being one of the teaching tools that are on the rise (UNESCO, 2014).

Unesco (UNESCO, 2014) predicts that in the next fifteen years there will be a greater application of M-learning as a tool in formal education, cites the considerable growth in downloads of educational applications reaching numbers of 270 million and also reports that today there is already a increase in the use of these devices in formal education.

This implies an inevitable trend, with the increase in data link, processing and storage capacities resulting from technological advances. Saccol, Schlemmer and Barbosa (2010) suggest that mobile devices can bring educational benefits, assisting in the development of activities within the classroom in a flexible way and can be personalized, and social, promoting social inclusion with accessibility to mobile technologies by all students in the classroom, regardless of their economic situation.

Furthermore, as stated by Santanella (Santanella, 2013), the accessibility, connectivity and availability of mobile devices can promote the exchange of experiences and knowledge in unprecedented ways. Therefore, this eminent technology based on mobile devices has a lot to contribute to education, however, for the use of m learning as a didactic tool in early childhood to be made effectively, some challenges that will be presented in the next topic.

Challenges of m-learning for early childhood

There are several challenges encountered in the use of mobile devices for the teaching and learning process of children in second childhood. In the context of the child, there are concerns related to the possibility of cyberbulling, distraction from school content, writing jargon, difficulty in monitoring accessed content, among others (Shuler, 2009).

One of the great challenges is the development of a teaching-learning methodology that will cover the use of mobile devices effectively in the children's teaching environment (Ferreira et al, 2013). For this, it is necessary that parents and teachers start to accept this technology as an important tool in education (Liu, Han, Li, 2010).

To better expose the findings of this study, Chart 2 was designed to show the relationship between the possibilities and challenges of m-learning in early childhood:

Table 2. Possibilities and Challenges

POSSIBILITIES FOUND	CHALLENGES TO BE OVERCOME
Promotion of Quality in Education	Content control and teacher training
Child's Physical Development	Developments of physical problems caused for the misuse of devices
Cognitive Development	School content distraction, writing slang learning disorders
Promotion of Quality in Child Education	Faculty resistance; content control
Development Child's Psychosocial	Cyberbulling; child's individualism
Construction of the M-Learning Paradigm in Child Education	Creation of an educational model that uses m-learning and investment in training of education professionals
Social Inclusion	Investment in mobile devices, so they are available in the classroom
Personalized Education	Lack of adequate content preparation with m-learning

Source: table prepared by the authors of the article (2020)

CONCLUSION

Early childhood education must be contextualized with the reality of the world, as it is during this period that children will create the emotional and cognitive basis for their entire life, which is why the importance of introducing everyday tools to make learning a pleasant experience grows. . This can facilitate the familiarization of children with m learning in the school environment.

Mobile learning can assist in the development of logical reasoning, fine motor skills, ability to solve problems, teamwork, and emotional control and among other skills. However, for this to be possible, some challenges must be overcome, such as inadequate content control, search for digital equity (between social classes), didactic development and teacher training to operationalize mobile learning.

This article aimed to identify the possibilities and challenges of mobile learning for early childhood education, which was an emerging issue in the face of the COVID-19 pandemic and the limitations of classroom activities in schools. Despite the achievement of the proposed objective, it is believed that there is still much to be researched in relation to methods, didactics and pedagogical approaches and consequences of the inclusion of digital in early childhood education. Can the long-term use of digital (at home, at school, leisure ...) negatively influence the lives of these future adults?

As future studies, it is suggested that a survey be carried out to verify what is the best way to carry out mobile learning activities such as: which actors are involved; which digital content can be used; and which is the ideal time for each activity in order to outline mobile learning in the right measure for early childhood education.

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