THEORETICAL BASE MODEL FOR THE CREATION OF DIGITAL GAME THOUGHT FOR CHILD DEVELOPMENT

MODELO DE BASE TEÓRICA PARA CRIAÇÃO DE JOGO DIGITAL PENSADO PARA O DESENVOLVIMENTO INFANTIL

MODELO BASE TEÓRICO PARA LA CREACIÓN DE JUEGOS DIGITALES PENSADOS PARA EL DESARROLLO INFANTIL

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ABSTRACT: The use of digital games as a possibility to enhance the teaching and learning processes in childhood emerges as an intentional strategy for learning specific content. However, serious digital games that include motor development, cognition and cooperation are not very viable. In this sense, the present study aims to present a theoretical model developed for the creation of an educational digital game that seeks to enhance aspects of child development. This is bibliographic research, with a qualitative approach, with exploratory and descriptive objectives. As a result, a model was presented that considers aspects of cognitive learning, motor aspects and psychosocial aspects. The proposal sought to use the learning potential of digital games in conjunction with theories of human development. It is worth noting that this is a suggestion for the application of some theoretical approaches and that the model presented needs empirical testing.

KEYWORDS: Digital games. Child development. Motor development. Executive functions.

***RESUMO**: O uso de jogos digitais como possibilidade de potencializar os processos de ensino e aprendizagem na infância surge como estratégia intencional para aprendizagem de conteúdos específicos. Todavia, jogos digitais sérios que contemplem o desenvolvimento motor, a cognição e a cooperação são pouco viabilizados. Neste sentido, o presente estudo tem como objetivo apresentar um modelo teórico desenvolvido para a criação de um jogo digital educativo que busca potencializar aspectos do desenvolvimento infantil, em crianças de 9 a 10 anos. Trata-se de uma pesquisa bibliográfica, de abordagem qualitativa, com objetivos do tipo exploratório descritivo. Como resultado, foi apresentado um modelo que considera aspectos da aprendizagem cognitiva, aspectos motores e aspectos psicossociais. A proposta apresentada buscou utilizar o potencial de aprendizado dos jogos digitais em conjunto com teorias do desenvolvimento humano. Ressalta-se que essa é uma sugestão de aplicação de algumas abordagens teóricas e que o modelo apresentado necessita de uma testagem empírica.*

***PALAVRAS-CHAVE**: Jogos digitais. Desenvolvimento infantil. Desenvolvimento motor. Funções executivas.*

***RESUMEN**: El uso de los juegos digitales como posibilidad de potenciar los procesos de enseñanza y aprendizaje en la infancia surge como una estrategia intencional para el aprendizaje de contenidos específicos. Sin embargo, los juegos digitales serios que incluyen desarrollo motor, cognición y cooperación no son muy viables. En este sentido, el presente estudio tiene como objetivo presentar un modelo teórico desarrollado para la creación de un juego digital educativo que busca potenciar aspectos del desarrollo infantil. Se trata de una investigación bibliográfica, con abordaje cualitativo, con objetivos exploratorios y descriptivos. Como resultado se presentó un modelo que considera aspectos del aprendizaje cognitivo, aspectos motores y aspectos psicosociales. La propuesta buscó utilizar el potencial de aprendizaje de los juegos digitales en conjunto con las teorías del desarrollo humano. Cabe destacar que esta es una sugerencia para la aplicación de algunos enfoques teóricos y que el modelo presentado necesita una prueba empírica.*

***PALABRAS CLAVE**: Juegos digitales. Desarrollo infantil. Desarrollo motor. Funciones ejecutivas.*

Introduction

In childhood, the game is a fundamental element for the development of children, as it proposes playfulness, fun, imagination, fantasy, movement, experience and interactions with others (PIAGET, 1971; WALLON, 1968; VYGOTSKY, 1994). However, it is known that the game is an activity that precedes human culture itself and, throughout history, has been used in different ways by different societies (HUIZINGA, 2000).

With the social changes anchored by the advent of the industrial revolution and the development of the means of production, transformations in the way of living in society were caused. Among them, the transformation of the way of playing and playing, maintaining the ludic essence. In this sense, technologies have expanded the ways of experiencing childhood, incorporating new elements, giving new meanings.

These aspects are evident in education, especially in the use of technologies for the teaching-learning processes, as they can enhance the ways of learning through new models of interaction, such as in direct relationships, thinking about the didactics of new methodologies, or with the introduction of new technological devices (CAETANO, 2015). These changes go beyond the insertion of technological objects, they involve rethinking ways of teaching.

Among the possibilities of technological resources in the field of education, digital games stand out. According to Ramos and Cruz (2018, p. 20, our translation), "the intensification of the use of digital technologies in contemporary society, which include games, refers to experiences that can influence human development, learning, sociability and subjectivity". The authors point out that digital games can be used as pedagogical alternatives, as they are fun and motivating activities that contribute to student learning.

In this sense, in the early 2000s, serious games began to gain ground as part of an educational approach based on digital games, which have as their central characteristic the union of ludic aspects and specific contents. The potentialities of this approach stand out as motivation to learn, the possibilities of presenting new situations, training specific skills and building diverse knowledge that would often be difficult or inaccessible in the traditional way (MACHADO *et al*., 2011).

In this way, a digital game aimed at learning has a different focus during its development, since these products need to balance playfulness and learning. One of the aspects that differentiate educational games from other commercial games is their relationship with the pedagogical domains, that is, their intentionality in the player's learning and development. Therefore, the content or theme that is intended for teaching and the way in which it will be

taught through the game becomes an important issue. Mainly when we consider the use of learning theories, which, according to Ribeiro *et al.* (2015), can point out how to approach a subject, making the game more consistent for pedagogical practice.

Based on this context, this study deals with a theoretical model for the development of educational digital games based on child development in an integral way, for children aged between 9 and 10 years, which corresponds to the 4th and 5th year of elementary school. Thus, we consider current issues here, which involve children's development from three aspects: cognitive (executive functions), physical (motor skills and physical abilities) and psychosocial (socio-emotional skills). That said, this investigation aims to present a theoretical model developed for the creation of an educational digital game that seeks to enhance aspects of child development.

Methodological Path

The structure of this article is based on the creation and development of a prototype intervention program for the same purpose mentioned above, called “Coopera”. This was developed based on cooperation, structured in 12 phases, in which each one of them presented to its players, within a created plot, physical/motor activities and cognitive activities, focusing on the programmed social interaction (developed on the screen). The development of this game corresponds to master's and doctoral works that were conducted in the field of education.

For this, theoretical research was carried out, due to the importance of creating conditions to think about the conception and development of an object of intervention, since adequate theoretical knowledge entails conceptual rigor, accurate analysis, logical performance, diversified argumentation, explanatory capacity (DEMO, 2000). In this way, the research approach is qualitative, with exploratory objectives, since the intention was to carry out a survey on theories and authors who are specialists in the area, seeking concepts to improve theoretical foundations (DEMO, 2000).

The study initially addresses the concept of play and its importance for human beings, especially in childhood. Subsequently, it discusses the game in its digital format and its potential for learning. Next, it presents the proposed theoretical model, based on child development and the three aspects that make up this phenomenon: cognitive (executive functions), physical (motor skills and physical abilities) and psychosocial (socio-emotional skills). Finally, an

example of application of this theoretical model is presented, presenting the organization of the created digital game that inspired the creation of this proposal.

The game and the human being

Historically, the presence of games for humanity begins with the very evolution of the species, even before norms and rules of coexistence were established, to which people adapted or proposed other referrals for their demands; the hunting and war rituals had a playful, entertainment, strength and power character (ALVES, 2004). The importance of games in people's lives is known, especially in modernity, as it corresponds to a phenomenon so essential and fundamental to life that it compares to the importance of work and sleep (ROSAMILHA, 1979).

However, when we think about the concept of a game, several doubts and questions arise. Kishimoto (1994, p. 105, our translation) wrote that "trying to define the game is not an easy task", because the act of playing contemplates many particularities, and many times they are difficult to be delimited. In this study we will be based especially on the writings of Huizinga (2000), who states that the animals themselves have always carried out ludic activities, thus showing that the game constitutes a universal activity that precedes the culture itself, in addition to being part of the various activities developed socially by people throughout the history of our species. Activities such as art, war, philosophy, our laws and our language, can be considered as results of games (HUIZINGA, 2000).

However, over the centuries, games have come to be understood by common sense only as entertainment activities. However, playing goes well beyond the act of being distracted. According to Huizinga (2000), the game is not only a physiological phenomenon or a psychological reflex, it goes beyond the limits of purely physical or biological activity. "In the game there is something "at play" that transcends the immediate needs of life and gives meaning to the action, the whole game means something" (HUIZINGA, 2000, p. 04, emphasis added).

Games, regardless of their form – the most traditional being sports games, board games, imaginative games, among others – are very important for people's advancement, especially in childhood, when the main phase of human development takes place, according to studies by Piaget (1971), Wallon (1968), Vygotsky (1994), among others; and, cultural ones, such as Huizinga (2000), Benjamim (2004). According to Piaget (1971), games are directly connected to the cognitive (mental) development of children, by constituting the assimilation of reality

when they play both in terms of learning and recreational activities, fundamental for this development.

For Alves (2004), the psychogenetic theories represented by great theorists of child development such as Piaget (1971), Vygotsky (1994), Wallon (1968), show play and games as a possibility of redefining intuitive thinking, because to the extent that that children are given the opportunity to exercise situations from the world of adults, through make-believe activities, they are learning to live with social rules. These aspects show the importance that games have in psychomotor development and in the learning process in childhood, in addition to being fundamental in the child's social domain.

Based on these assumptions, we consider that games, when well planned, are great allies in people's teaching and learning process, including being intentionally used as a didactic possibility for the development of skills and competences that contemplate children in an integral way.

Game and technological evolution: possibility of new approaches in the teaching and learning process

Making itself present in people's daily lives, such as at work, in the educational field, at leisure and in other activities, digital technologies are influencing the development of new and different ways of teaching, learning, thinking, searching for information, interact, among many other aspects. These changes are especially evident in children and young people, who show great interest and familiarity with technologies (PRENSKY, 2001; MATTAR, 2011).

Regarding games, it is from the 1960s that it incorporates technological aspects, through electronic games (REIS; CAVICHIOLLI, 2008). Currently, with the digital scenario established in society, in which games are increasingly elaborated, we can see that digital games have been incorporated as a possibility of entertainment, taking over, in the ranking, the place that used to be for music, television and cinema (CARELLI, 2003).

In this sense, digital games carry the same potential for learning as traditional games. Regarding this, Ramos and Cruz (2018) report that “the intensification of the use of digital technologies in society, which include games, refers to experiences that can influence human development, learning, sociability and subjectivity”. In addition, they can be used as pedagogical alternatives, as it is a playful and motivating activity that contributes to student learning (RAMOS; CRUZ, 2018).

Videogames considered of good quality have in their learning principles: identity, some form of interaction, customization, the fact that it is challenging and motivating, contextualized meanings, systematic thinking, exploration, review of objectives, among others (GEE, 2009). For the author, games provide players with experiences in a virtual world, in which they use learning, problem solving and mastery of involvement and pleasure to achieve the goal (GEE, 2009).

This potential enabled, in the early 2000s, the serious games gain space as part of an educational approach based on games, which has as its central characteristic the union of ludic aspects and specific contents. The motivation to learn and the possibilities of presenting new situations, training specific skills and building diverse knowledge, which would often be difficult or inaccessible in the traditional way, stand out as potentialities of this approach (MACHADO, 2011).

Even without a precise definition, serious games are those games that aim to simulate everyday situations in a practical way, with the function of providing opportunities for situations that develop decision-making or that provide training or learning for professional issues or issues of learning and awareness in specific themes (MACHADO *et al.,* 2011). In addition, it focuses on specific and intentional learning outcomes to achieve the transformation of performance and behavior in a serious, measurable and continuous way (MACHADO *et al.,* 2011).

Although playfulness is one of the great differentials in the use of digital games for educational purposes, Brincher and Silva (2012) argue that this is not the only, or even the main, feature. Thus, a necessary step for "understanding the use of electronic games as a learning tool is to accept their role as a meaningful practice, as a formative element constituted by meanings" (BRINCHER; SILVA, 2012, p. 45, our translation). The option for using these tools must be in line with the objectives of the school's or class's curriculum proposal, "it is not about turning content into a game with the excuse of making it more attractive, but considering that this passage from the merely textual, for example, to the ludic implies much more than a mere change of support" (BRINCHER; SILVA, 2012, p. 52, our translation).

Theoretical base model for creating a digital game designed for child development

The area of child development encompasses studies that seek to help children realize their potential as a person, through a path consistent with some patterns that precede others (HENRICKS, 2020). It is the scientific study of the systematic processes of change and stability that occur in people throughout the entire human life cycle (PAPALIA; FELDMAN, 2013). In general, the impacts of research in this field cover the upbringing, education and health of children (PAPALIA; FELDMAN, 2013).

From fertilization until the moment of our death, our body is in complete transformation, whether in terms of biological structure, cognitive development or in our social relationships, we are always in complex development. Experts who study development emphasize three dimensions or domains that are considered to be central to people or aspects of the self: physical, cognitive, and psychosocial. For Papalia and Feldman (2013), physical development is linked to issues related to body and brain growth, in addition to sensory capacities, motor skills and health. Cognitive development is related to issues related to attention, memory, language, thought, reasoning and creativity and psychosocial development is related to emotions and personality.

In this sense, the proposal presented here is based on the importance of adequate stimuli during the child development phase and on the learning potential of digital games. This proposal for a theoretical basis for a digital game was designed considering aspects of cognitive development (executive functions), body development (motor skills and physical abilities) and psychosocial development (socio-emotional skills), for children aged between 9 and 10 years.

Executive Functions

Daily we develop tasks and perform functions without realizing the greatness of skills we need to perform to perform simple situations. This successful tuning of our executive functions exists in the three dimensions highlighted by experts: working memory, inhibitory control (self-control) and cognitive flexibility. In everyday life, most of the time, they present themselves in different ways, but they are necessary in working together for the proper functionality of the executive functions (KNAPP; MORTON, 2013; HARVARD, 2011).

Working memory highlights the ability to relate subjects, make decisions, organize priorities in carrying out tasks or actions and mentally make calculations, making it possible to store and use information in our mind for short periods (KNAPP; MORTON, 2013). “It

provides a mental surface on which we can deposit important information so that it is ready for use in the course of our daily lives" (HARVARD, 2011, p. 02, our translation). Working memory in the teaching and learning process is fundamental, as it acts directly on issues related to the connection and relationship of content, themes and situations, contributing to the process of logical understanding and children relating and connecting information, understanding instructions to be followed and that they learn to plan by creating strategies (KNAPP; MORTON, 2013).

Inhibitory control concerns the ability to control your impulsive desires and desires, filter thoughts and impulses to resist temptations to perform a certain task or attitude that is considered socially correct (KNAPP; MORTON, 2013), in addition to enabling the focus on development of activities, selective in attention with the aim of prioritizing what is most relevant in certain situations (KNAPP; MORTON, 2013; HARVARD, 2011). When well developed, it regulates the desire to act on impulse or put into practice situations we think about. It is the regulator that helps us not to daydream and, thus, we are able to focus and carry out important tasks. "It is the ability we rely on to help us "hold our tongue" and say something nice and control our emotions at the same time, even when we are angry, agitated or frustrated" (HARVARD, 2011, p. 02, emphasis added, our translation).

And, finally, cognitive flexibility is related to creative thinking and people's ability to adapt to transformations and changes, their flexibility and condition to reinvent themselves in everyday situations (KNAPP; MORTON, 2013). It is what enables us to develop the "capacity to quickly change gears and adjust them to meet requirements, priorities or perspectives. It is what allows us to apply different rules in different contexts" (HARVARD, 2011 p. 02, our translation). It allows us to find and change the focus to the priority, connecting with the new requirement or need. Or, flexibly adjust to new demands or priorities that arise, "thinking outside the box", innovating, leaving aside what is conventional (KNAPP; MORTON, 2013).

In this way, the development of digital games that address executive functions for children and adolescents, as Ramos (2013) mentions, when considering the issues that guarantee playfulness, is easily accepted by children, due to the fact that games are so seductive for this public. Around the world, authors such as Best (2012, 2013) have developed studies in this direction, and in Brazil we have several studies in the line of games for the development of executive functions (RAMOS, 2013; ALVES, 2004).

Motor skills and physical abilities

Gallahue, Ozmun and Goodway (2013) show that the motor development process is related to changes in motor behavior throughout life. The process of learning to move with control and competence is part of our learning processes, aspects that babies, children, adolescents and adults are challenged on a daily basis (GALLAHUE; OZMUN; GOODWAY, 2013). Tani *et al*. (1988) describe the importance of developing motor skills in the first years of life, since the skills developed and acquired in this period will form the motor base that will support the learning of more complex tasks. According to the author, "the phase that extends from birth to approximately six years of age basically corresponds to a period of acquisition and, after six years, to a refinement and combination of these patterns" (TANI *et al.,* 1988, p. 74, our translation).

According to Gallahue, Ozmun and Goodway (2013), fundamental motor skills can be divided into three categories: locomotor, manipulative and balance. Locomotor skills comprise the actions of walking, running, jumping, bouncing, rolling, deviating, among others; movements that show the change in the location of the body in relation to a fixed point on the surface. Manipulative skills considered gross include throwing, throwing, receiving, kicking, hitting, etc.; on the other hand, fine skills involve cutting, stacking objects, kneading, etc. Finally, balance skills that involve rotating arms and trunk, flexing the trunk and inverting body position show efforts against the force of gravity in an attempt to maintain an upright posture (GALLAHUE; OZMUN; GOODWAY, 2013).

On the other hand, physical abilities are innate elements, considered as an attribute that corresponds to body movement. These can be developed and improved and enable the execution of movements at different levels of volumes and intensity that, together with motor skills, make up motor development (GALLAHUE; OZMUN; GOODWAY, 2013). It is related to the "ability to perform daily tasks without fatigue and to have sufficient reserves of energy to participate in extra physical activities, as well as for emergency needs" (GALLAHUE; DONELLY, 2008, p. 16, our translation). It has two domains: the first focused on health and the second on performance.

Physical capabilities related to health are based on "biological attributes that offer some protection to the appearance of organic disorders caused by a sedentary lifestyle, which becomes, therefore, extremely sensitive to the level of physical activity" (GUEDES; GUEDES, 1995, p. 22, our translation). This domain is related to quality of life and low risk of disease, even in children (GALLAHUE; DONELLY, 2008). This domain comprises: muscle strength

and endurance, cardiovascular (aerobic) endurance, flexibility and body composition (GALLAHUE; DONELLY, 2008; NAHAS, 2017).

On the other hand, performance-related physical capacity refers to the "components necessary for maximum performance at work or in sports" (NAHAS, 2017, p. 52, our translation). Gallahue and Donelly (2008) describe that the absolute potential of the elements of this domain is related to genetic components and that its development happens as a function of the practice and development of athletic skills. This domain comprises: coordination, balance, agility, speed and anaerobic resistance (GALLAHUE; DONELLY, 2008; NAHAS, 2017).

Encouraging sports practices in childhood is essential for the development of motor skills and physical abilities, which also enhance the child's social and cognitive development and quality of life (TANI *et al*., 1988; GALLAHUE; OZMUN; GOODWAY, 2013). In addition, there are studies that indicate that digital games that use body movement (exergames) can be an interesting strategy for increasing the level of physical activity, as well as for acquiring motor skills and developing physical abilities (FERREIRA; FRANCISCO, 2017; MEDEIROS *et al*., 2017).

Socio-emotional skills

Socio-affective (or socio-emotional) aspects are considered vitally important for children and aim to increase "children's ability to act, interact and react effectively with other people as well as with themselves" (GALLAHUE; DONELLY, 2008, p. 20, our translation). In this domain, it would be possible to list the contributions of Henri Wallon, in which he presents the aspects of affectivity and the motor act as inseparable to understand the individual (MAHONEY; ALMEIDA, 2005; WALLON, 1968).

In addition, the components of the socio-affective dimension can be aligned with the proposal of the National Common Curricular Base – BNCC, which proposes the development of 5 general competences: (i) self-awareness: "it involves the knowledge of each person, as well as their strengths and limitations, always maintaining an optimistic and growth-oriented attitude (BNCC, 2019); (ii) self-management: "related to efficient stress management, impulse control and goal setting" (BNCC, 2019); (iii) social conscience: "needs to exercise empathy, to put oneself "in the shoes of others", respecting diversity" (BNCC, 2019, emphasis on the website); (iv) relationship skills: "relate to the skills of listening with empathy, speaking clearly and

objectively, cooperating with others, resisting inappropriate social pressure (bullying, for example), resolving conflicts in a constructive and respectful way" (BNCC, 2019); (v) responsible decision-making "advocates personal choices and social interactions in accordance with the norms, safety precautions and ethical standards of a society" (BNCC, 2019).

In general, socio-emotional skills have been valued in different areas of knowledge, as they constitute an essential element for professional and personal success (DOS SANTOS *et al.,* 2018). Specifically in the area of education, the development of psychosocial factors is presented as a predictor of the development of reading and mathematics, for example, and can contribute to the promotion of school success and improvement of the teaching and learning process (DOS SANTOS *et al.,* 2018).

In the case of digital games, there is evidence that playing with other people can improve the game experience (KAYE, 2016) and can favor relationships, especially between parents and children and with new relationships developed in online games (JANSZ; MARTENS, 2005).

Application of the proposal

Considering the theoretical model exposed above, an intervention program was developed with a digital game created specifically for this activity. The program was conceived from the study of theories of human development and the use of technology at school, especially in Physical Education. The program has a complexity and intentionality inherent to its proposal, that is, it has many components that were purposely inserted with the purpose of helping to reach its objective.

In general, the program consists of small games and physical, motor, educational and recreational activities, which, after being carried out, direct players to activities in a digital game, which will be on a projection screen. The activities that make up the digital game were created specifically for the program and aim to hit a ball at previously indicated targets (which will be in motion). Thus, the program is composed of twelve sessions or phases, which can correspond to the period of one class (50 minutes), in which each session has four moments: a) separation of teams; b) motor activities; c) activities in the digital game; d) conversation wheel.

In this sense, aspects related to children's development are involved in the proposed activities, that is, in each phase there are several components linked to learning to be developed.

The cognitive aspect is being contemplated mainly in the activities that make up the digital game and that are being designed. For this program, we chose to focus on working

memory, as it contributes to learning and performing daily tasks (HARVARD, 2011). Example of actions present in the game: relating what you saw previously with what is appearing on the screen, relating color and shape, performing mathematical operations, etc.

On the other hand, the motor aspect is present in traditional games and games. These activities correspond to couriers, tag and tag, for example. These are activities that are characterized by greater energy expenditure in body movement. In this way, mainly through its motor activities, it facilitates the practice of motor skills and, consequently, enhances the development of physical skills. In addition, interaction with the digital game can also be a way to stimulate this domain, especially the ability to shoot.

Therefore, the program's narrative was created with the intention of contributing to the development of socio-affective components, following what was observed by Ramos, Anastácio and Martins (2017), who found that this element has an engaging potential and influence on the player's learning. Thus, the program's narrative is related to aspects of Brazilian folklore and has as its main character a monkey called Coop, who, with the help of his friends and magical beings, needs to save the forest that is being invaded. In addition to being incorporated into the narrative, the affective aspects are directly related to the condition of victory and defeat in some phases of the game. For example, in phase 1, with each hit the Coop monkey becomes more confident and courageous, since the team that manages to fill the courage bar first, wins that round. This component can also be better explored in the conversation wheel, at the end of each phase.

In Chart 1 we present how the model proposed here was applied in the developed game. It should be noted that the game has 12 phases, however, we present only 3 phases in order to illustrate the use of the model. The phases chosen were 1, 6 and 12, as they represent different moments of the game. The first column presents the activities that correspond to games and motor games, as well as the motor skills and physical abilities that will be worked on in these activities. The second column corresponds to game activities that are designed and developed to stimulate working memory. Finally, the last column addresses the game's narrative, the victory and defeat conditions and the socio-emotional competence worked on in the phase.

Chart 1 – Example application of the theoretical model for digital games

Phase	Motor Activities	Digital Game	Plot
1	**Activity:** players in line, organized according to their teams. Several balls will be available. The challenge is to shoot across the screen with the aim of hitting the targets. **Motor Skills:** throwing, throwing and catching. **Physical Abilities:** Agility and strength.	**Activity:** the screen will show the target with the color that the players must hit. The team that hits the correct target will score a point, considering its color, regardless of shape. **Aspects that enhance Working Memory:** accessing information on the target's color, which changes frequently; keep an eye on the targets and the target color change.	**Narrative:** Coop needs to warn everyone about the dangers that surround the forest. He uses the vines to move in all directions as quickly as possible, while mustering the courage and confidence to face this challenge. **Win Condition:** The monkey gains confidence and courage with each hit. **Defeat Condition:** for each mistake the monkey becomes less courageous and confident about the challenge. **Competency:** understanding social problems.
6	**Activity:** Catching and Escape - the players have the objective of "catching" the balls that will be close to the mediator, without the ball that is being rotated, reaching them. Everyone must try to catch at least one ball. The player who manages to catch the ball waits to go to the screen. If the child is hit by the ball in motion, he must return to the starting place and drop the ball that he recovered. **Motor Skills:** throw, throw, catch, run, dodge, jump, rotate arms and trunk, flex trunk and reverse body position. **Physical Abilities:** agility, speed, balance, flexibility and resistance.	**Activity:** targets with syllables will be presented, and as the children hit the targets, the game will store the information. After time of attempts, the game will present the correct syllables by team. On a piece of paper, children will have 2 minutes to form words with the syllables in the game. **Aspects that enhance Working Memory:** relating what you saw previously with what you are reading; maintain focus and attention to hit the right target; relate one syllable to another, to later form the word.	**Narrative:** Coop goes on his way in search of the next element. In this phase, Coop is faced with a great challenge, he was captured and imprisoned in a cage. The men who destroy the forest managed to capture our friend, now he needs our help to escape and continue his mission. **Victory Condition:** With each hit Coop gets closer to achieving his freedom. He gets resources and keeps the man distracted. **Defeat Condition:** with each mistake Coop remains trapped, without resources and under the gaze of the man. **Competence: s**ocial behavior (cooperation).
12	**Activity:** Adapted Baseball - a team attacks, hitting the pitched balls. The player who manages to hit the ball must run to carry out the course through the four bases. He may run only as long as the ball has not yet been caught in the correct base. The second group will try to catch the ball and return it to where it was thrown. When the ball arrives in the base of the game, the players who are outside a base	**Activity:** a type of shape will appear on the screen, and the children must count the amount in that way, so that on the next screen they get the total number corresponding to the amount observed previously. Every 5 hits will open a new screen with bonus items (different sizes, speeds and scores) wandering across the screen in a linear fashion. After each child throws, we go back to the home screen.	**Narrative:** In the last phase, Coop's journey ends, now he needs to go back home and celebrate with his friends. Coop is tired but happy and missing his family and friends very much. Help Coop return home as soon as possible and celebrate this achievement with everyone. **Victory Condition:** With each hit Coop gets more speed to return home. The team that manages to get Coop back first wins.

	are eliminated. More than one player can be on the same base. **Motor Skills:** throwing, throwing, catching, hitting, running, dodging and jumping. **Physical Abilities:** agility, speed and stamina.	**Aspects that enhance Working Memory:** relating what you saw before with what you read; maintain focus and attention to hit the right target; keep an eye on the targets and changing the color and shape of the target, to relate.	**Defeat Condition:** Every mistake Coop slows down. The team that fails to take it home loses. **Competence:** Emotional knowledge and expression.

Source: Prepared by the authors (2022)

The proposal was developed considering that the teacher who will possibly use the game has autonomy to adapt the game conditions to the needs of his group of children. For example, in motor activities, he could increase or decrease the number of passes, or even be intentional in the participation of children who are historically segregated and excluded, as only girls can score the point, or even strategies such as: the ball must be passed by all the children in the group to be thrown onto the screen, enabling the enhancement of inclusion and cooperation. In the case of screen activities, it could increase or decrease the number of targets and their movement speed.

In addition, the intentionality in the development of the plot of the game's proposal focuses on the opportunity for its players to reflect, either directly through the teacher's mediation in the final round of each phase of the game, or indirectly in the story that involves the game, contributing to the strengthening of good attitudes, empathy, the importance of caring for the environment. These strategies, together with the use of the chosen theoretical approaches, seek to strengthen the idea of a game proposal for the integral development of children.

Final remarks

The opportunity to create and develop an intervention program for a digital game is explained by the urgency of innovative pedagogical strategies in the field of education. Technology through digital games can become a great and enjoyable opportunity for children's learning and development. For this to happen, it is necessary to have a theoretical basis that includes the objectives that we intend to achieve in order to differentiate ourselves from the creators of purely commercial games.

Thus, the objective of this work was to present a theoretical model developed for the creation of an educational digital game that seeks to enhance aspects of child development. The model proposed here was based on the integral development of the child (physical, cognitive

and social) and on current studies in this area of knowledge, which articulates thinking, doing, feeling and experiencing.

In this proposal, we use the potential of digital games to foster cognitive learning, considering executive functions and their importance to achieve what is socially expected of us, such as working, studying, performing daily tasks. We also include the motor aspects, fundamental for the integral development and health of children. And the psychosocial aspects to contemplate an exchange, empathy, coexistence, to develop aspects that teach children to elaborate frustrations, to understand that during losses we develop skills to reframe and contribute to the reduction of possible causes of socialization difficulties, such as the increase in bullying, as this may be related to the scarce collective experiences among peers.

We emphasize that this model is a proposal based on child development, but there are other theories that can be used and even incorporated into this model. Furthermore, during the development of an educational digital game, it is important to consider game design aspects so that the created product is of high quality and achieves its objective.

This model was designed for the creation of a digital game that is still under development, thus, as a limitation of this investigation, we observed that, despite being applied, the model has not yet been tested in terms of functionality. Therefore, it is suggested for future studies to test this model based on theoretical assumptions (such as content validation) and empirical assumptions (with experimental studies).

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