

5th International Conference on Research in Applied Science

11-13 March, 2022
Berlin, Germany

Jogo das Emoções: Proposal for a Therapeutic Tool Aimed at Children's Audience and Based on the Development and Recognition of Emotions

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Abstract

Childhood is the stage of life when there is the beginning of the construction of creative and critical thoughts and the development of emotions, the focus of this research. Among the basic emotions, four are addressed: happiness, sadness, anger and fear. Through the relationship between technology and games, the child will be encouraged to exercise self-control and expressiveness, involving the identification and recognition of emotions, favoring their development. This research describes the prototype of the “Jogo das Emoções” application, whose target audience is children from two to seven years old. As research methods, a descriptive study was performed based on research with themes involving child development and feelings and emotions. The programming instrument used was the App Inventor®, through which the application was prototyped. The application will work as a therapeutic tool developed in four phases that involve everyday situations related to feelings and emotions, namely: identification, recognition, representation and resignification phase, respectively. The app's functionality is based on a reward system and its ornamentation was designed in a playful and attractive way. It is believed that this work contributes to children's development and learning, working as a professional aid in order to improve children's daily knowledge of giving meaning and meaning to their emotions and feelings.

Keywords: Child Psychology; Emotion Identification; Mobile Application; Child Support; Therapeutic Tools.

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1. Introduction

Childhood is one of the most important phases with regard to the construction of an individual's mental health. The rapid growth and development of the central nervous system during this period makes children acquire important cognitive and socio-emotional skills that shape their future mental health and are fundamental in adulthood. In addition, the quality of the environment in which the child grows up, associated with their experiences, can also contribute to this, since negative experiences at home, at school or in digital spaces increase the risk of developing diseases mental (Malik & Marwaha, 2020).

Among the population of children and adolescents, high prevalence rates of mental disorders are found, with an overall mean prevalence of 15.8% being reported, a rate that tends to increase proportionally with age. In preschoolers, this number reaches 10.2 percent, while in teenagers, up to 16.5%. In Brazil, studies have reported prevalence rates ranging from 7 to 12.7% (Thiengo et al., 2014). Thus, the importance of promoting practices related to

the development of emotions, responsible for giving meaning and opening to the expression of positive and negative emotions in children, is noted, aiming to generate higher levels of social competence and fewer behavior problems (Schwartz et al., 2016). Given its importance, the expression of emotions and the recognition and naming of feelings should be encouraged from childhood, so that the child is instigated to exercise self-control and expressiveness (Schwartz et al., 2016).

Emotions are defined as a process that involves multiple variables, being, therefore, a complex and momentary condition that arises in affective experiences, causing areas of psychological and physiological functioning (Fonseca, 2016). Although there is no consensus on which and how many are the “basic emotions”, most authors include in this group, with some variations, six: joy, fear, surprise, sadness, disgust and anger (Fonseca, 2016). Anger, joy and fear are present from birth and, from them, children develop a trajectory of expected socio-emotional stages according to each age group (Malik & Marwaha, 2021), so it is important that, from In childhood, the child is encouraged to exercise self-control and expressiveness, mainly involving the recognition and naming of feelings, the expression of emotions and knowing how to deal with one's own feelings (Schwartz et al., 2016).

In this sense, a complete education cannot dissociate emotion and interpersonal relationship from learning (Fonseca, 2016). As this trajectory is still developing in childhood, the presence of technology allows for greater interaction and more opportunities for knowledge (Machado & Lima, 2017; Sullivan et al., 2021). Thus, the creation of an application that allows children to develop the ability to identify and reframe their emotions, facilitates and expands emotional and social cognitive levels.

In addition, this application would aim to establish therapeutic bonds between the child and the professional, as well as the family member, through the help of those responsible for the tasks, adding efficiency to the child psychosocial advance, and enabling the child to differentiate and recognize feelings such as joy, fear, sadness and anger in the various hypothetical situations proposed.

Therefore, even with the existence of apps that help children to identify emotions, the vast majority do not propose the development of recognition and reinterpretation skills (Chart 1).

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Therefore, the importance of the proposed implementation of this project is justified. The present work emphasizes the age group from two to seven years of age, since this age, according to Piaget's theory, corresponds to the period called pre-operational age in which children are characterized by difficulty in recognizing their own emotions and, there is often a gap in the education of how to deal with them in everyday situations (Schirmann, 2016). Considering the age group studied, four of the six basic emotions will be addressed: joy, fear, sadness and anger, due to their lesser complexity and ease of recognition of facial expressions (Fonseca, 2016). In addition, as a frequent child behavior, the importance of also relating the act of crying throughout the conceptual construction of the learning process is highlighted.

Studies show that applications and technology are strong allies in children's educational development (Aragão et al., 2019; Lucian & Stumpf, 2019, Silva et al., 2021). Thus, the association of these two concepts (technology and education) can be an important tool for neurodevelopment, reinforcing the harmony of emotional interactions (Fonseca, 2016). Games, specifically, are seen as the best way to lead the child to activity, self-expression, knowledge and socialization. In this sense, the proposed application aims to relate this influence of technology and the game tool in something playful, positive and enriching for development.

It is known that there are other applications aimed at children (of all ages) in order to help them identify emotions through interactive games, providing dynamic learning, as shown in Table 1. From this same perspective, these existing programs can be compared with the new Game and Mental Health project, considering the advantages and disadvantages of each one.

Table 1: Advantages and disadvantages of applications with similar proposals

| Applications | Advantages | Disadvantages | Comparison with the proposed application |
|--|--|--|--|
| Família e Sentimentos para Crianças (2015) | Helps the child to strengthen family relationships; It has two interactive games about emotions: memory game and puzzle; Based on the Montessori game; Free version.. | The app does not contribute rewards, which may not encourage the child to want to play more; Last update in 2016; Limited age range from 1 to 4 years old. | It is aimed at a broader age group; It has a reward system that increases the child's interest in the app; Stimulates the development of empathy; Develops the ability to recognize emotions from real situations; It proposes the recognition, identification, definition and resignification of emotions. |
| ABC Jungle - Angry Sad Smile (2015) | It is an emotion recognition game through the facial expressions of three monkeys: anger, sadness and joy; It has a scoring method, which makes the game more interesting. | Encourages the recognition of only 3 emotions; It only has an English version; Available to Apple users only; Last update 5 years ago. | Greater number of worked emotions; Portuguese language (BR); Develops the ability to recognize emotions from real situations. |

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Source: Authors, 2022

2. Methods

This is a descriptive study that used bibliographical research as a method through a literature review. The descriptors used in this initial process were: emotions, children, technology, mental disorders, child development and learning.

The main sources of information consisted, in the scope of scientific literature, in national and international scientific articles, experience reports, master's theses and articles from journals in the field of psychology. The search was performed by accessing the following databases: Medline (International Literature in Health Sciences and Biomedical) through Pubmed and Scielo (Scientific Electronic Library Online) through the VHL (Virtual Health Library), with ten works being selected base, corresponding to the period between the years 2014 and 2021. Furthermore, the visual information base was supported by the Canva, FreePik and Unsplash websites, all of them with images available without copyright and in the public domain.

The entire process involved in the research enabled the selection of scientific papers on the topic addressed, which were inspirations during the production of this study. Therefore, fundamental issues for the development of the work were established, involving: the selected age group, the proposed approach and the project's target audience, in order to reach the proposed objective of promoting the encouragement of self-knowledge and the expressiveness of the children's audience.

After this first stage, work was carried out covering the phases of the project for the assembly of a mobile application through the MIT APP inventor (Souza et al., 2020). The App Inventor programming tool was made by Google and is maintained by the American University Massachusetts Institute of Technology (MIT). The APP Inventor Team was invented in 2010, with Hal Abelson and Mark Freidman as the main responsible. In 2013 the web software had some improvements that resulted in the MIT APP Inventor 2 (<http://appinventor.mit.edu>).

The application execution mechanism is facilitated by APP Inventor, as this is a free tool that allows the creation of applications for the Android platform. Added to this, its simple language and the availability of free online tutorials are advantages of this method of creation, thus eliminating the need for a professional programmer.

The project is aimed at children aged two to seven years with a diagnosis of psychological disorders and difficulties in interaction and problem solving, who are in therapeutic processes accompanied by health professionals (psychologists, pediatricians, psychiatrists, neurologists, speech therapists, Occupational Therapist). These must be duly accompanied by their guardians and specialized professionals (Figure 1), since the focus is to help users address emotions and this goal will be easier and more fully achieved with the endorsement and help of these professionals and guardians.

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Figure 1: Organization chart of those involved



Source: Authors, 2022

3. Results

The Game of Emotions (Jogo das Emoções) is an application developed through interfaces that works as a therapeutic tool, helping children in the understanding and recognition of emotions, thus allowing the expansion of the possibilities of approaching everyday situations related to the four emotions worked on: joy, fear, sadness and anger.

Thus, it becomes more practical and concrete for the child to put them into practice and identify them in their daily lives. A flowchart containing the rules and sequence of the application's operation was created (Figure 2).

The information related to the users' profile can be provided by themselves, if the child already has reading and writing skills, or, otherwise, it can be provided by their guardians. Access to the proposed tool should preferably be carried out through the monitoring of a health care professional, especially in cases where there is a report of a problem in child development.

Figure 3 represents the demonstration of the application's initial screens, including login, registration and the creation of an avatar. The first interface allows the user to login to have access to their progress in the game, being necessary to fill in the fields related to their "user"

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and "password". In addition, if they do not have a registration yet, the individual can register, being directed to a new page, where you must fill in your data: name, age, gender, identification of those responsible and professional follow-up.

An important component of the Game of Emotions is its reward system, which will be done through the creation of an avatar, which will be created with limited character options. As the stages are conquered, points will be accumulated that can be exchanged for other physical characteristics and accessories for the built character.

Once this is done, the user will be directed to the application's sequence of activities, which works as a game of questions and answers divided into four phases with distinct objectives that relate hypothetical situations to emotions and feelings (Figure 4). The phases are named, respectively: identification, recognition, representation and resignification.

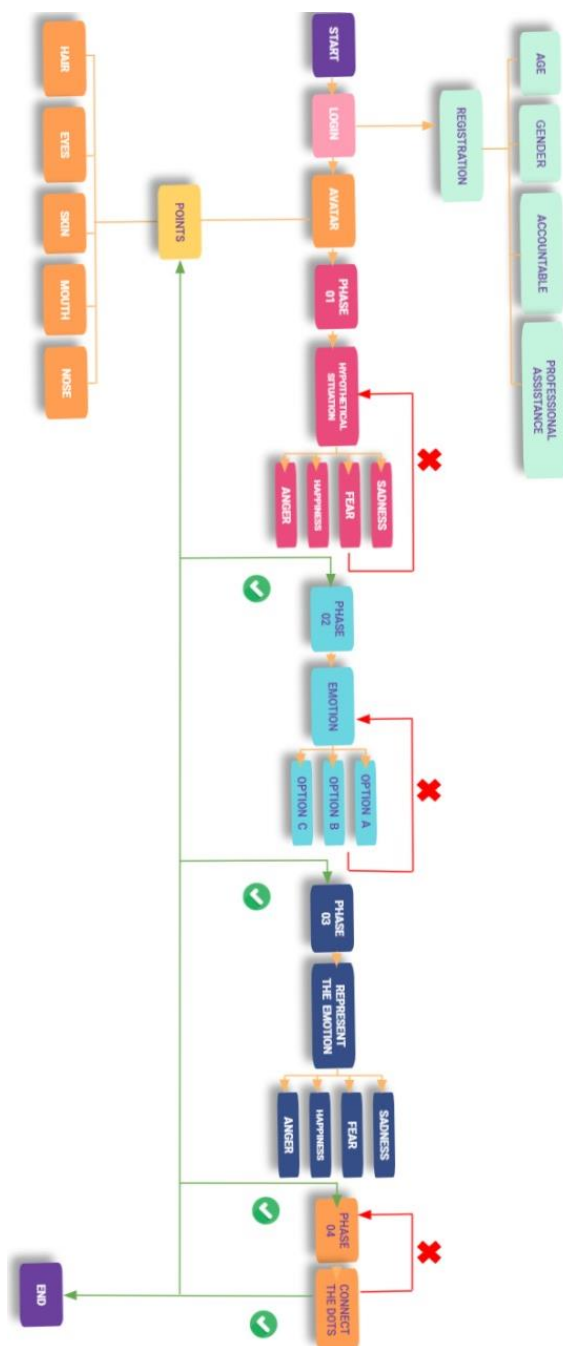
In the first phase, the individual must define emotions through hypothetical situations involving each of the four proposed feelings (joy, sadness, anger and fear). Next, the user must bring the feelings and emotions dealt with in the previous phase into their reality. Following the game, the child should represent the feelings and emotions in a personal and concrete way, such as through a drawing. Finally, the last phase aims to consolidate learning through associations between feelings/emotions, situations and attitudes.

The application will have a bank of questions determined for each phase according to its learning objective. In case of success, the reward will be given in the form of coins that can be invested in the reward system (avatar). In case of error, the child will have access to the expected answer and will have to repeat the question later, before being able to proceed to the next stage. Once the game is over, the user will be able to access his final score, his trajectory and his customized avatar following his preferences and choices.

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Figure 2: Application Sequence and Operational Rules



Source: Authors, 2022

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Figure 3: Screen demo: Registration and Avatar

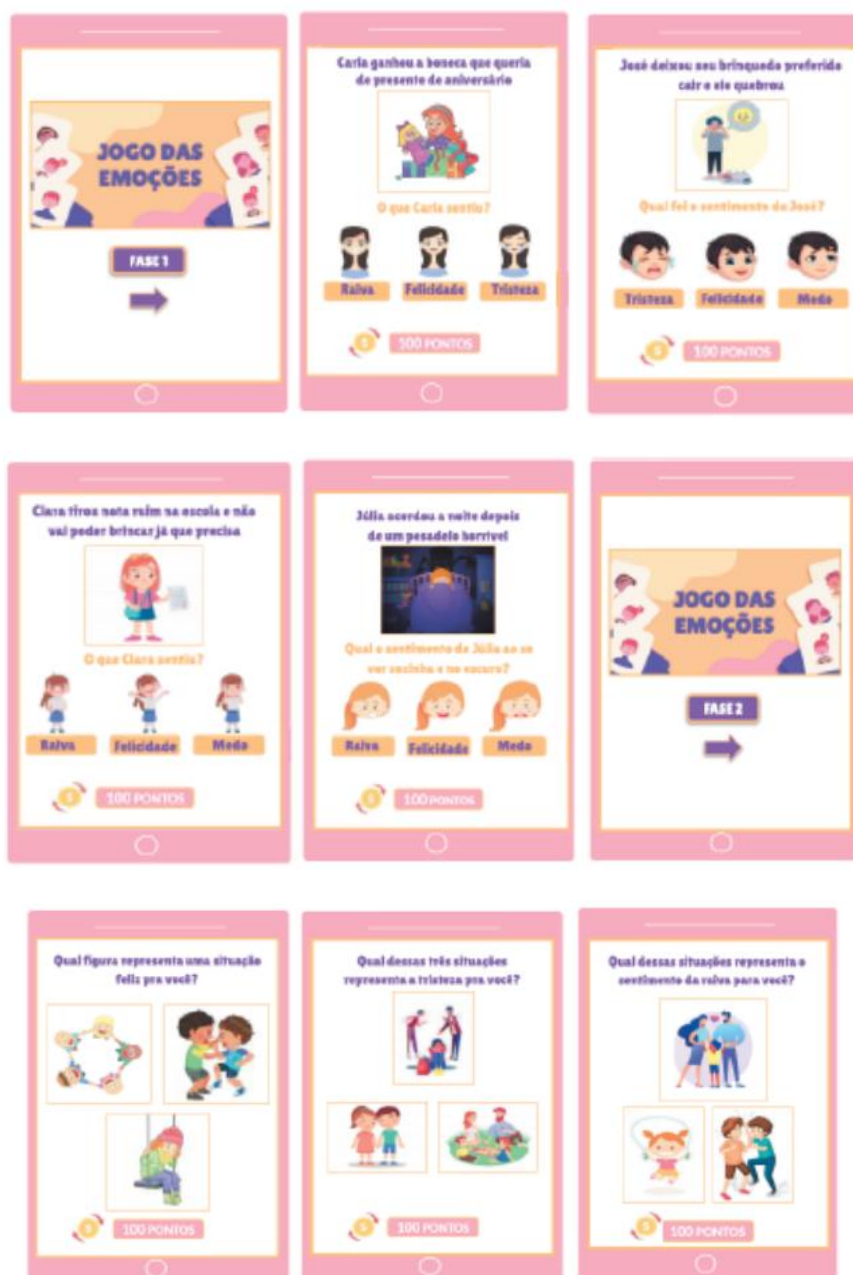


Source: Authors, 2022

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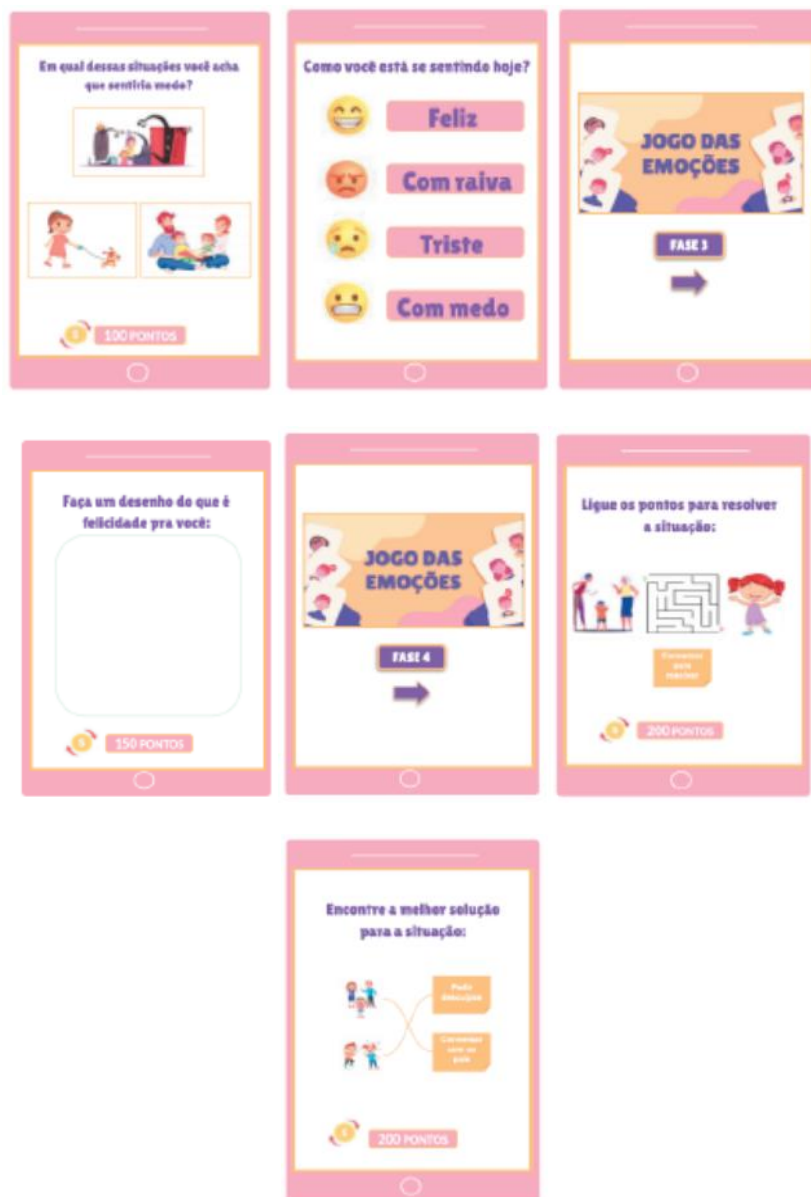
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Figure 4: Screen Demo: Phases



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Source: Authors, 2022

4. Discussion

During the development of the application, important impasses were found, especially with regard to the approach to situations proposed to children, due to the age group involved and the complexity of defining and focusing on emotions and feelings. Focusing on its objective of functioning as a therapeutic tool, its relevance as an educational tool and as a contributor to the psychosocial development of the user is noted. Furthermore, the context and format of the application favor the involvement of users, as children are increasingly inserted in the context of technology and the age group worked shows a remarkable interest in games. Thus, the

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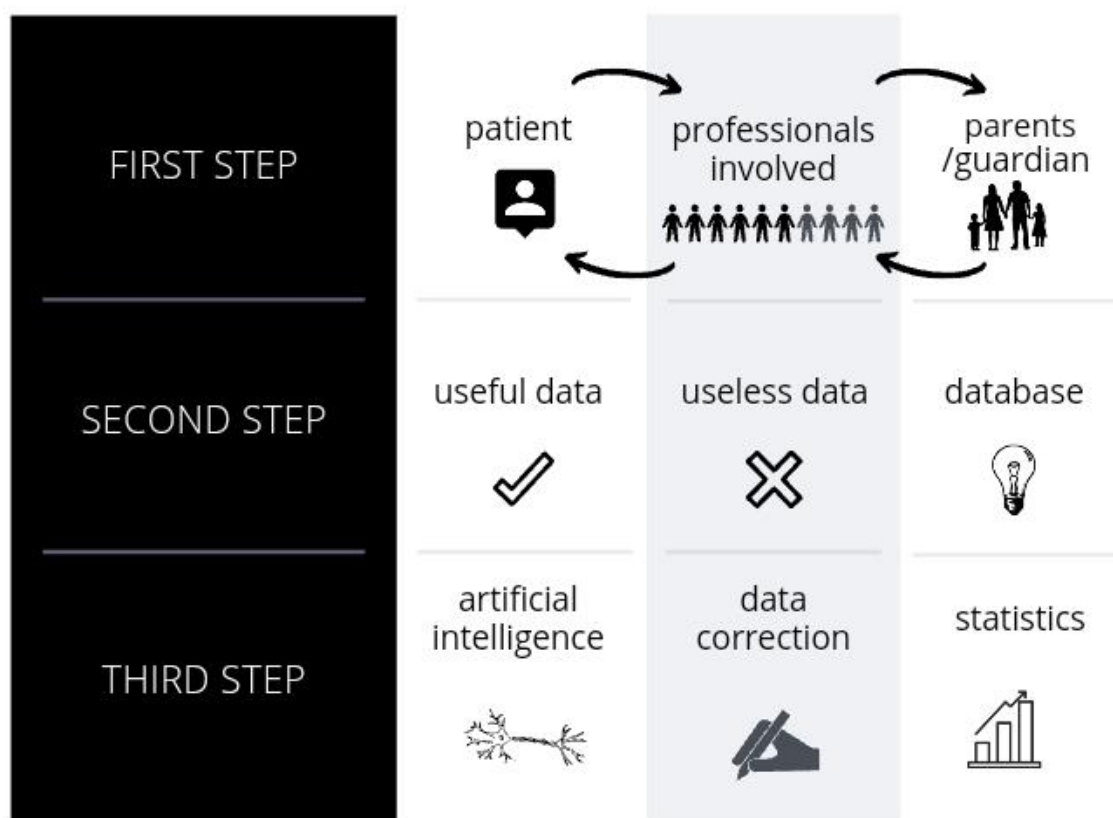
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virtual tool is positive in terms of the approach and acceptance by the user, allowing for a greater number of possibilities and more interaction.

In addition, the group involved in the project intends, with a view to future stages, to expand the application's functionality, in accordance with and respecting Law number 13.709 (2018), which provides for the protection of personal data. Furthermore, the security that involves the operation of the application will be supported by the regulations of the Federal Council of Psychology, considering the criterion of therapeutic secrecy.

The developed platform, as users obtain their progress and performance, will have the creation of a database aspiring to the application of a strategic management tool, useful for users and professionals involved, as shown in Figure 5.

Figure 5: Development steps for application expansion



Source: Authors, 2022 (Adapted from Souza et al., 2021)

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5. Conclusion

The prototype app presented aims, through play, to assist in the child development of children aged from two to seven years old. Its functionality allows the user a deeper knowledge about their feelings and emotions, pillars for the construction of individual mental health. Through its implementation, self-knowledge and improvement with regard to socialization and the creation of interpersonal bonds will be promoted.

The project's potential is to function as a therapeutic tool developed to meet the child's needs, through professional monitoring, in order to better instruct them about the recognition and redefinition of their own feelings and emotions.

It is important to mention, however, that the game's proposal aims to work together with the individualized educational process and with the appropriate professional monitoring, enabling learning regarding everyday situations that involve feelings and emotions.

It is clear that investments are needed for the proposal to be implemented effectively. The proposal, when improved and with final adjustments, would be a support tool for parents, health professionals and for the child itself, enabling the development of important skills for the construction of a child's mental health.

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