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Enhancing Handwriting in the Peruvian Educational Context: Design of an Interactive Web Platform

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Abstract— The main objective of this research work is to design a web platform so that through its use they can learn to write, it is aimed at a general public regardless of their age. A Design Thinking methodology was used since it was found to be adequate to explain each stage of the research in their respective phases of the methodology. On the other hand, a survey was conducted with 15 people from an Alternative Basic Educational Center (CEBA) to find out if they were willing to use a web platform to learn to write.

Finally, it was concluded that it is necessary to take advantage of technological advances for problems that may occur in the field of education and have solutions through its use.

Keywords- Web Platform, Design Thinking, Writing, Advances.

I. INTRODUCTION

In Peru, illiteracy has been a historical concern, but efforts have been made to combat it. According to data from the National Institute of Statistics and Informatics (INEI) of Peru, in 2019 the illiteracy rate in the country was 4.7%. This figure represents a significant reduction compared to previous decades.

It is important to note that the illiteracy rate can vary between rural and urban areas, as well as between different regions of the country. Rural areas generally have higher illiteracy rates due to lack of access to education and other socioeconomic factors [1].

The Peruvian government has implemented various initiatives to combat illiteracy, such as literacy programs aimed at adults and educational projects in rural areas. In addition, there are non-governmental organizations and educational entities that also contribute to the reduction of illiteracy in the country.

Likewise, the illiteracy figure during 2021 had decreased significantly. [2].

On the other hand, technology provides access to a wide range of online educational resources, such as tutorials, courses, apps, and interactive websites. These resources can provide writing exercises, instant feedback, and interactive activities that help students practice and improve their writing skills. In this way, the technology allows the use of multimedia resources, such as images, videos and audio recordings, which can complement the writing. These resources can help students better understand and communicate their ideas, improve their vocabulary, and enrich their writing. [3].

It is important to note that although technology can be a useful tool for learning to write, it is still essential to have a solid foundation of teaching and guidance from teachers and tutors. Technology is a complementary tool that can empower learning, but human support and feedback

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Personalized also play a crucial role in developing effective writing skills. [4].

In this way, technology makes it possible to adapt the learning of writing according to the individual needs of each child. Programs can offer personalized exercises, tailored to each child's skill level, and provide additional examples and activities to reinforce concepts that need more practice. Writing programs and apps can provide immediate feedback on spelling, grammar, and other aspects of writing. This helps children correct mistakes and improve their writing skills more quickly and effectively. [5].

Technology can also be beneficial for kids with learning difficulties or disabilities that can affect their writing. Assistive technology tools, such as speech recognition programs or virtual keyboards, can make typing easier for these children and give them greater independence in their learning. [6].

The main objective of the research is to design a web platform so that they can learn to write through its use, it is aimed at a general audience regardless of their age.

The present work is structured as follows, in section number II the review of the literature, in section III the methodology used for the mobile application will be described, in section IV the results obtained are presented and finally in section V the conclusions.

II. LITERATURE REVIEW

The author [7], It focuses on the use of playful strategies to develop reading-writing skills using the educational platform. It is important to incorporate playful elements in the teaching of reading-writing, since it has been shown that learning through play can be more motivating and effective for students. It has been shown that technology can be used as a pedagogical tool to create interactive activities that encourage student participation and facilitate the development of reading and writing skills.

It was concluded that the article focuses on the use of the platform and playful strategies to develop reading and writing skills in students. It provides practical examples and reflects on the benefits of using playful approaches in teaching literacy.

Also, the author [8], It focuses on the instructional design experience in self-learning digital contexts, specifically on the ability to write to convince. The authors explore how instructional design can facilitate the process of self-learning in digital environments and how it can promote the development of persuasive writing skills.

The author [9], It focuses on the impact of the pandemic on reading and writing, especially in education. The author explores how the health crisis and confinement measures affected the reading and writing practices of students, teachers and families.

It also examines the difficulties and challenges that arose during the pandemic in relation to reading and writing, such as lack of access to printed materials, adaptation to online teaching and difficulty in maintaining motivation and interest in reading and writing. Different approaches and resources used in remote education to promote the development of reading and writing skills are discussed, as well as the role of the family in supporting these practices at home.

On the other hand, the author [10], It focuses on the use of dramatic play as a pedagogical resource in the context of primary education. It explores how dramatic play can be used as an effective tool to promote student learning and participation in the language classroom.

Likewise, the theoretical foundations of dramatic play are analyzed, as well as the benefits and challenges of its implementation in primary education. It examines how dramatic play can contribute to the development of students' linguistic, communicative and social skills, as well as their creativity and confidence.

III. METHODOLOGY

For the elaboration of this research work, the Design Thinking methodology was used, since it was created that was the most appropriate for its different phases that are adapted to the research. Each phase will be detailed below:

1) EMPATHIZE

Some people may have difficulty with the fine motor coordination needed for writing. They may have trouble controlling the pencil or pen and making precise movements to form letters correctly. Dyslexia is also a learning disorder that affects reading and writing. People with dyslexia may have difficulty recognizing and manipulating language sounds, which can make it difficult to associate sounds and letters when writing.[11].

2) DEFINE

Also, some people may have difficulty processing and visually discriminating letters, which can make it difficult to spell words correctly. They may reverse letters, have spacing problems, or have difficulty copying from a model.

Learning to write requires regular practice and exposure to different types of texts and writing styles. If a person has not had enough practice or has not been exposed to a variety of

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written texts, they may find it difficult to develop solid writing skills.

On the other hand, facing emotional or trust barriers that hinder their ability to learn to write such as fear of failure, low self-esteem or previous negative experiences can generate anxiety or insecurity When facing writing, which can hinder your progress [12].

It is important to keep in mind that each person is unique and may have a combination of factors that affect their ability to learn to write. Identifying these factors and providing appropriate support, whether through educational interventions, specialized therapies, or accommodations, can help overcome difficulties and promote better development of writing skills. [13].

3) DEVISE

Observing the new technologies that are available today, it was thought to design a web platform so that users can learn to write through its use.

I considered including features that allow users to track their progress, set goals, and receive personalized recommendations based on their skill level and individual needs. Also, add additional resources such as writing examples, video games, motivational messages for each unlocked level. On the other hand, attractive graphics, images and colors were used to make the platform visually appealing and pleasant to use. This will help maintain the interest of users, especially in the case of children, Figure 1 shows the architecture of the web platform where users, through a laptop with internet connection can access the platform and have their progress record that will be stored in a database.
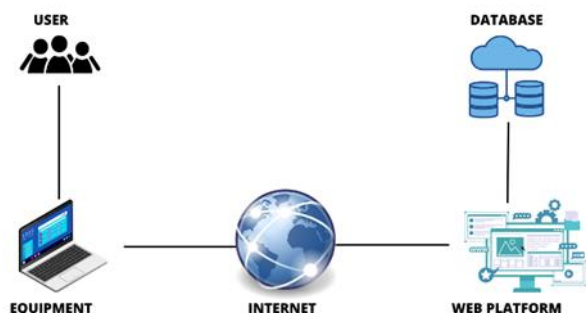
Figure 1. System architecture

4) PROTOTYPE

The prototypes of the platform were designed, which has the name "Quillpay", which in Quechua means to write. Figure 2 shows what would be the main screen that had two buttons that are: enter and register. It is important to have a record of users so that their progress can be stored in a database.

Figure 2. Main Screen

Also, in Figure 3, it would be shown what the platform would contain that had 4 modules that are: Booklets, graphomotricity, blackboard and games, each module has completely different contents, the user if he wants to enter only that he will have to click on the name of the module and another screen will open.

On the other hand, in Figure 4, it shows what would be the module of primers that has an activity that tries to order the word according to the referential image and write in the blanks. Through this activity it is expected that the user can learn how to write and practice writing.
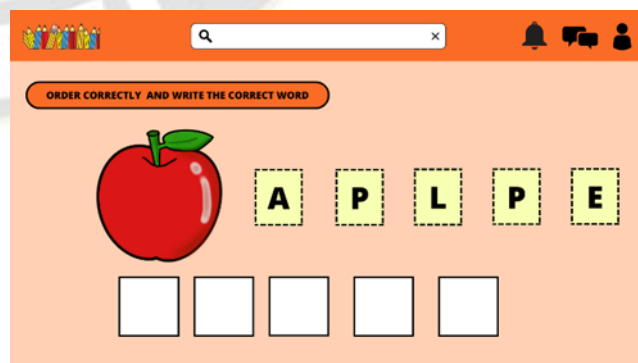
Figure 3. Whiteboard module
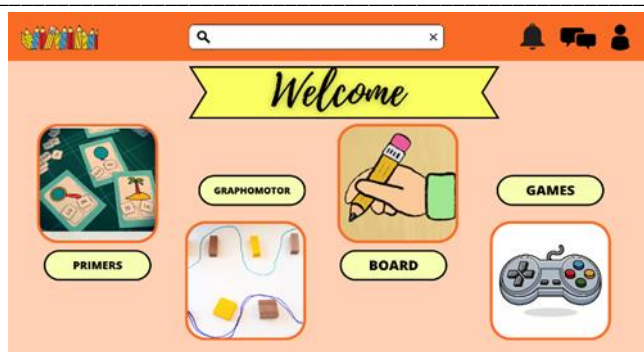
Figure 4. Booklet module

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Figure 5. Platform Content

In this way, Figure 5 shows the graphomotor module that has activities where users can have mobility of their fingers and become familiar with the letters of the alphabet. The module presents different activities that start from the basic, intermediate and advanced level, each level will be unlocked according to the progress of the user.
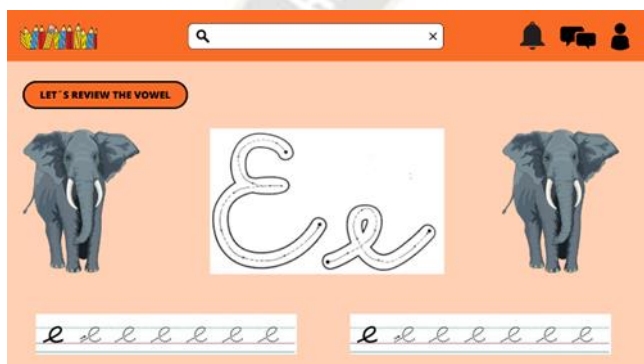

Figure 6. Graphomotricity module

Figure 6 shows the whiteboard module where the user can freely practice the words he has learned, also in this module has the option of having words and the user can write using his finger the words presented.
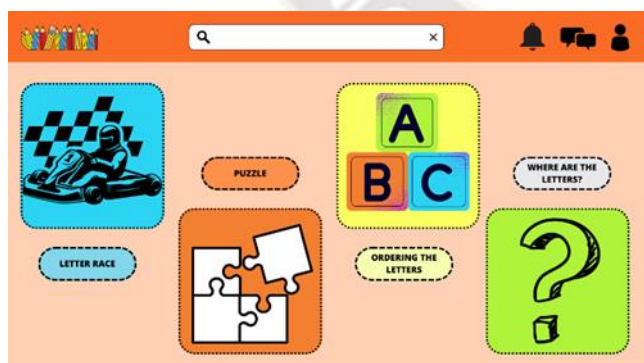

Figure 7. Games Module

Finally, Figure 7 shows the games module where the user can interact with the different educational games presented by the platform. Each game has the same goal as it is for the user to learn to write.

5)   Evaluate

A survey was conducted to 15 people from a CEBA "Alternative Basic Education Center" where the questions were oriented to see if they would be willing to learn to write through a platform, the questions that were asked were the following:

A)   *Do you think that technology could create a platform that teaches writing?*

This question was asked to know if CEBA students could learn about technological advances and how they could benefit from these advances, Figure 8 shows the results of the question.
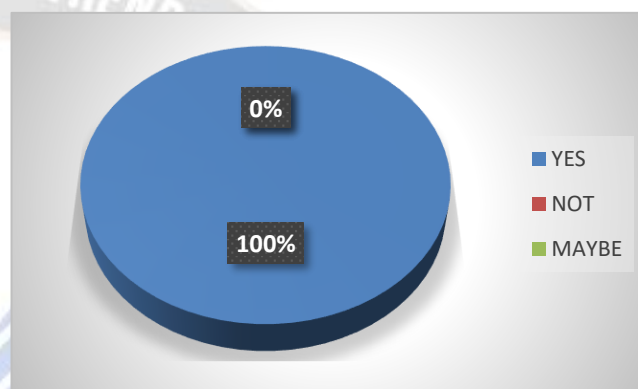

Figure 8. Technological advances

B)   *Would you be willing to learn to write through a web platform?*

The following question was posed in order for students to tell us if they would be willing to learn through a platform, where 100% pointed out that if they would be willing to use it, this generates that the use of technology benefits too much to the field of education. Figure 9 shows the results of the question.
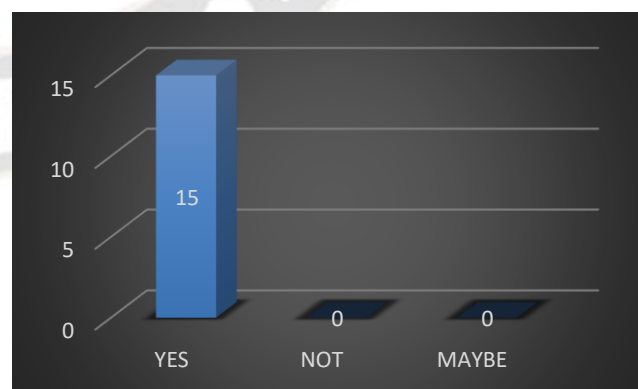

Figure 9. Using the platform

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C) *How long do you think it is necessary to be in front of a computer to learn to write?*

The next question was posed to know how many hours each student would be willing to use the platform to learn to write. Figure 10 shows the results where 6 indicated that 2 hours a day would be fine, while 5 indicated that one hour and 4 only 3 hours.
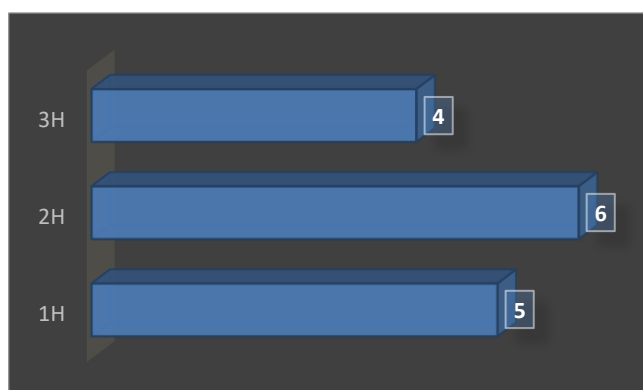

Figure 10. Hours for the Platform

D) *Would you recommend using a platform to learn to write?*

Finally, the following question was posed to know if the students would recommend the platform so that more people can use it and continue learning through its use, it was obtained that everyone agreed giving 100%. Figure 11 shows the results graphically.
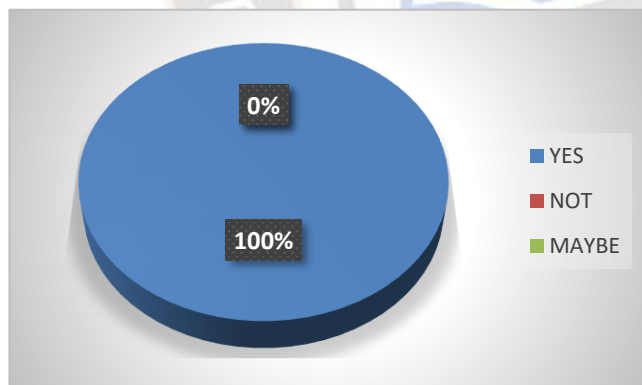

Figure 11. Recommendations

IV. DISCUSSION

It is important to know that designing an interface should be intuitive and easy to use by users. It should be friendly to users of all ages and skill levels. How will the content be organized? What navigation elements will be clear and accessible? How will the writing lessons and activities be presented?

Also, the platform must be compatible with different devices, such as desktops, tablets and mobile phones. In addition, it is essential to consider accessibility for users with disabilities, such as providing options to increase text size or using assistive technologies.

It is important to include elements of motivation and rewards to keep users engaged and stimulated. This may involve unlocking levels, earning points, or receiving virtual recognition for progress made. However, it is important to find a balance so that motivation is intrinsic and not based solely on external rewards.

V. CONCLUSION

It was concluded that the design of a platform to learn to write would be of great help in the field of education, since it would take advantage of technological resources for the creation of the platform.

It is recommended to continue implementing new technologies to improve the different problems that may arise in education.

The methodology used was the most appropriate for the different phases that helped with the design of the platform.

In the survey we concluded that CEBA students would be willing to use a platform to learn to write, dedicating different hours to their learning.

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