USE OF AN EDUCATIONAL SOFTWARE TO MEDIATE READING AND WRITING DIFFICULTIES IN THE LOGOGRAPHIC AND ALPHABETIC STAGES

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ABSTRACT

For the mediation of reading and writing difficulties that usually occur in the initial logographic and alphabetic phases, in addition to using traditional teaching methods, it is also required the use of innovative pedagogical and didactic strategies, in order to achieve optimal results in students, for this reason this research proposal is proposed, which aims to incorporate Information and Communication Technologies (ICT), specifically through the appropriate use of a multimedia educational software, so that it can serve as a support for the educator in his pedagogical action, thus promoting the development of cognitive, linguistic and practical skills of students at this stage of life and therefore in the rest of their training process, essential for a better performance in their environment and in contemporary society. This article will begin with the contextualization and analysis of the problem to be investigated, in second instance the theoretical and conceptual foundation that scientifically supports the associated subject matter will be approached and finally the methodological aspects with which the research project will be faced will be determined and justified, for which the level of depth, the proposed purposes, the object of study and the epistemological foundation of the research design will be taken into account.

Keywords: Reading, Writing, Logographic phase, Alphabetic phase, Motor skills, Simple Dyslalia, Educational software.

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CONTEXTUALIZATION OF THE PROBLEM

The learning process of reading and writing in the first years of life of the human being, is an element of vital importance in our society, due to its dependence towards the future in the integral and autonomous development of people. In this sense, it becomes urgent from their initial school training, to treat and intervene the existing problems that occur in children in their reading-writing process, in specific aspects such as the inconvenience in outlining the letters, to distinguish the letters with phonetic similarity, the disorientation they have with the letters of similar writing, among other difficulties that from the educational process becomes a challenge its successful mediation, more so if it is taken into account that reading and writing is a skill at times complicated to acquire, as considered by (Ceccato, 2017) when he states that *"it requires attending to several aspects simultaneously ranging from more basic skills such as the motor control necessary to trace and link the letters to the implementation of more complicated skills in which cognitive functions are involved"* (p. 29). In order to take on this challenge, despite its complexity, it is necessary to scrutinize the existing literature on the subject, analyze the contradictions, divergences and turning points in the premises of various researchers, valuing the contributions that are considered relevant for the present research project, which proposes as a general purpose the use of a multimedia educational software that serves as pedagogical support to the educator to promote mediation of reading-writing difficulties, specifically those presented in the logographic and alphabetic phases of this formative process. For which it is required to gradually plan, measure and achieve specific objectives such as establishing in a concrete way the initial reading and writing difficulties, specifying the different methods and pedagogical actions applied by teachers, intentionally propitiating multimedia didactic activities to favor the mediation of such reading and writing difficulties and evaluating the effectiveness of this educational software as a didactic tool.

According to the above, in order to move towards the achievement of the proposed purpose, it is essential to examine the theory related to reading and writing, to have more clarity when approaching it in contemporary educational contexts, as a starting point we can refer to what is stated by (Jimenez & Artiles, 1995) *"From a constructivist conception, the learning of reading and writing is a process of sociocultural construction that takes place from a set of linguistic, metalinguistic, communicative experiences and knowledge of the world, which require an appropriate cultural environment"* (p. 10). In this postulate, it can be interpreted that when conceptualizing reading and writing, it is notorious that the processes or skills sought by reading and writing are not so much of a motor perceptive nature as of a cognitive linguistic nature. It cannot be ignored that the cognitive world of children is rich, from a very early age they have perceptual-cognitive skills and

competencies that are at the service of their relationship with the environment, and it is here where the reading and writing process plays an indispensable role, as it is the mechanism that allows cognitive change and the construction of knowledge. As the child's mental structure develops, he/she understands the temporal, spatial and causal sequences of different events, which will later make it possible to read and write comprehensively.

If it is taken into account that the development of reading and writing does not evolve naturally in children, then it can be deduced that reading and writing require the mastery of skills that have to be taught because they are cultural products, assuming that certain competencies are necessary in the subjects, children do not read or write simply because they are surrounded by written texts, therefore it is necessary to use assertive pedagogical methodologies that lead to obtaining the desired results. Within this framework, a fundamental question for this research project is how the use of pedagogical and interactive activities of an educational software would contribute to the mediation and overcoming of reading-writing difficulties, which are presented in children at the beginning of their primary school; starting from this question, it is intended that the development of the research to obtain more clarity in this regard. To such an extent that more information is acquired for the teacher to correctly mediate the teaching-learning process of these reading-writing difficulties, which are recurrent specifically in the logographic and alphabetic phases.

In the course of time, research proposals for the mediation of the different learning problems of students, as well as the consequent incorporation of new technologies lead to transformations and updates of educational curricula, the constant reflection of the teaching role as facilitator and essential mediator in the school process, learning rhythms and monitoring of the transfer of knowledge of students, in addition to the relevance and transcendence of fundamental learning. Regarding the latter, there is evidence of great deficiencies in basic and transversal learning in all areas of knowledge, which are indispensable for the different activities that a person has to carry out during his academic training and working life. This learning problem has been aired for decades in different circumstances, but in essence continues to have the same repercussions. Such is the case of what was emphasized by (Ball, 1996) in the book Fuocault and education:

The term *"levels"* has three essential and overlapping connotations. It can refer to literacy and numeracy proficiency, to the extent to which schools prepare students for work, or to the content of the curriculum. The most common connotation refers to levels of literacy and numeracy proficiency. The educational crisis is characterized, according to these arguments, by a devastating

decline in such levels. (P. 189)

Although it is true that to discern the factors that influence the educational crisis in contemporary society implies the exhaustive analysis of different causes and components, it is undeniable that one of the edges for such discussion is the reading-writing process and the application of pedagogical strategies to address it. The educator should not rest in the search for new and better methods aimed at the full and comprehensive development of students. The use of new technologies, particularly computer tools applied in education, has been seen as an innovation where most teachers do not have well defined how to use them to cover and reinforce the different contents of each subject, which leads them to develop skills and abilities with means other than pencil and paper, hence the importance and relevance of this research project.

Once the development of the research is completed, it is expected that the appropriate use of educational software as a didactic strategy in the teaching of the logographic and alphabetic stages of reading and writing will have a great impact, and it will also become a very useful tool for Spanish Language educators, to such an extent that in addition to traditional methods, they will also incorporate with intentionality the use of educational software as a didactic strategy in the teaching of the logographic and alphabetic stages of reading and writing, also incorporate with intentionality the ICTs, thus contributing to the application of strategies that will allow the child to strengthen the required skills that will be essential for the rest of their school education, and in turn, will be contributing to the creation of a new methodology and pedagogical action, worthy of being used in educational institutions.

THEORETICAL FOUNDATION

In order to correctly address this research and pretend to obtain its main purpose based on the exhaustive study of the problem posed, it is inexorable the theoretical foundation that scientifically supports the subject involved in the development of this research proposal, for which it is required to undermine all the relevant information that allows the support of the ideas that are exposed and in turn, for the holistic understanding of the problem that is intended to intervene.

Therefore, when relating Piaget's theory, the students who will be the target population of the present research proposal regarding the mediation of the reading-writing process in the initial logographic and alphabetic stages, are located in the preoperational stage of children's intellectual evolution, in the child's intuitive period, which is in the range between two (2) and seven (7) years

old. At this stage, the child is in full acquisition of reading and writing skills and will begin to develop language as an instrument that will enable him/her to achieve later cognitive achievements. It should be remembered that language acquisition is not something that is acquired in isolation, but is part of the semiotic function, i.e., the ability to use representations of objects or events. This function is developed with the contribution of drawing, imitation, playfulness, mental images and symbolic play. In this stage of the child's cognitive development, the symbolic function is evidenced, which is produced from the reconstruction of the thought that at the time was had in the first sensory-motor stage, as explained by Piaget (Piaget, 1964):

> In a second stage, we have pre-operational representation-the beginnings of language, of the symbolic function, and therefore of thought, or representation. But at the level of representational thought, there must now be a reconstruction of all that was developed on the sensory-motor level. (Pg 2)

It is understood that in this preoperational phase the child of this age is carried away by his sensory impressions, by his intuition, his thought is egocentric being his point of view the only possible one, he focuses his attention on the most striking and conceives the world as animated by magical forces giving to his perceptions animistic explanations.

At the same time, it is pertinent to point out that with respect to the learning of this literacy process, there are a plurality of proposals, most of which coincide in a sequence of phases during its evolution, according to the intellectual development of the recipient of this learning, in this case, the students. Among the variety of theoretical approaches that exist, there is one that has had great relevance, which is the model proposed by (Uta Frith, 1985) that proposes three (3) stages or stages: Logographic, Alphabetic (phonological) and Orthographic (Visual). As a general explanation, it can be stated that in the first stage, written words are identified by means of graphics that show some characteristic attributes; in the second stage, strategies are acquired that make possible the phonological encoding and decoding of the written word or text; in the third stage, strategies are developed that allow the direct identification of the words or text, based on their orthographic patterns. As shown in the following figure:

Figure 1.

Stages of learning to read and write.
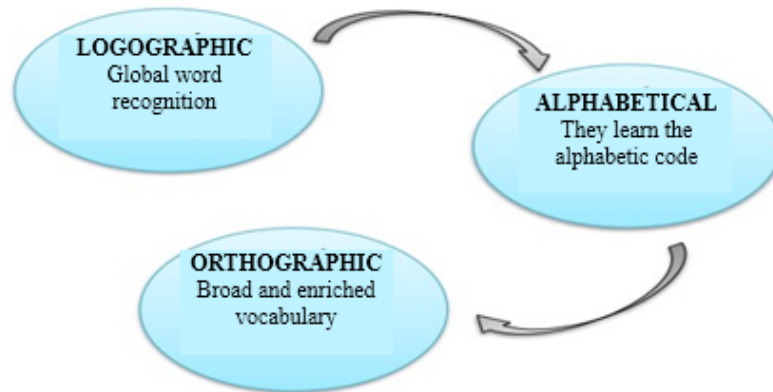
Note: Taken from (Trujillo Berzal, 2021; Aprendizaje de la lectoescritura en edades tempranas).

In reference to this classification by stages of literacy, various theorists have addressed in a particular way each of these phases, for the present research project we will delve only in the first two (2) stages of literacy learning which are the logographic and alphabetic, in such sense to begin with it is considered relevant what is theorized for the logographic phase, where in this regard the researcher (Serna Rodriguez, 2015) emphasizes that:

> This stage appears around 4-5 years of age, not being a proper reading stage but a stage of pattern recognition. The child recognizes a series of words by the context in which they appear as well as by certain features of them (size of the letters, color, inclination...). In this way it is very easy for the child to identify the word in the context, for example, the word *"Coca-Cola"* on the bottle or the word *"Sugus"* on the candy wrapper. (P. 9)

At this stage it can be considered that the learning process begins, where the child can identify a small group of words that seem familiar to them and that gravitate in their social environment, distinguishing them by certain visual properties such as color, size, silhouette, among others.

At the same time we can also find theoretical reasoning and its due characterization of the second stage called alphabetic, in specific relation to the activity of reading, in reference to this according to (Carpio Brenes, 2013) says:

In this stage the child learns to segment words into the letters that compose them and to establish the correspondence between letters and sounds to form words and sentences. It is crucial in learning to read because it involves the use of the grapheme-phoneme correspondence mechanism that allows converting the orthographic segment into a phonological one in order to identify unfamiliar words or even pseudo-words. (Page 15).

It is clear that the school child in this alphabetic stage may be able to phonologically relate the grapheme (symbol) with the phoneme (sound), i.e. associates what he can read with what he hears. At this stage of learning to read, the child indirectly understands that the organization of the written word is based on an alphabet codification, besides being aware that these words are not only made up of syllables, but also of phonemes, which are minimal sound units that allow differentiating words in each language.

It is possible to infer that the learning of reading and writing in the logographic and alphabetic phases begins with the memorization of images that often are not very significant for the child, so it must take into account all the necessary factors that promote the improvement of this learning, based on the fact that reading and writing is a permanent search for meaning, a permanent interpretation of reality through the different codes: visual, auditory, graphic, and linguistic.

To achieve this in children it is necessary to enrich their own schemes from contact with different experiences, hence the need to provide them with a computer educational tool that corresponds to their needs and interests and at the same time guide them according to their development and logical structures of their thinking. But just including the computer in the classroom as one more object does not guarantee all the benefits it offers; its use requires great commitment, planning and creativity in order to achieve good results. The appropriate use of ICT in the education of the new generations requires that it is done in an intentional, intelligent and creative way.

In accordance with the above, for this research project, the framework or conceptual basis of the variables to be intervened was developed and their behavior, the relationship and links that exist between them and their respective measurements will be analyzed in correspondence to the main purpose of the research proposal. Taking into account that two variables were defined, the dependent variable which are the reading-writing difficulties in the logographic and alphabetic phases and the independent variable which will be the interactive and didactic activities of the educational

software; where this independent variable will be intentionally operated, in order to produce a desired effect on the dependent variable, analyzing the degree of its incidence, manipulation and result obtained according to the purpose stated from the beginning.

In reference to the problems of reading and writing, which are presented in the teaching-learning process in the logographic and alphabetic phases in early primary education, for the present research proposal they are defined and condensed into three (3) types of categories and/or dimensions, which will be natural spelling, motor skills and simple Dyslalia. It is pertinent to emphasize that this specific taxonomy proposed, is derived from the general difficulties that frequently appear in children in their first years of primary education, in what could be associated the problems of Dysgraphia with the recurrent presented of Motricity, evidenced in the lack of ability to trace correctly the graphemes, with inappropriate use of space and line. In turn, in Dysorthography, when the child does not make the proper correlation between the sound and the corresponding grapheme, it is directly linked to the problems of Natural Orthography. Likewise, the difficulty known as Dyslalia, in a generalized form is characterized by the impossibility to pronounce the phonemes, in this research, Simple Dyslalia will be addressed, as this is the most common type in the initial stages of reading and writing.

Regarding the Interactive and Didactic Activities of the Educational Software, it is necessary to reflect that the learning of the initial reading-writing implies the mastery of a series of techniques and skills of a very varied and complex nature that demand a considerable effort on the part of the student, therefore with the use of the exercise and practice software it is sought to facilitate the acquisition of such learning, providing a work environment where the fundamental thing is the constant activity on the part of the child.

With the use of educational software, different interactive and didactic activities are proposed for the children to develop, which are complementary tools that will allow them to improve their reading and writing process. In accordance with this (Prieto, Pech , & Angulo, 2020) state that they are:

Activities in which the student has the possibility of manipulating digital images and the matrices that represent them; reading activities: in which the learner finds theory in general (in various formats); evaluative activities: where elaborated questionnaires are presented (Page 21).

Those involved in these activities participate actively throughout the process of their own learning, these enable the presentation of the thematic content in a didactic and dynamic way, facilitating the interaction of the student with the knowledge and its respective feedback, always accompanied by the timely and accurate mediation of the teacher.

The development and implementation of these didactic and interactive activities in an educational software used to intervene in the educational process of reading and writing, implies the creation and adaptation of some fundamental components that contribute to the successful mediation of the difficulties that usually arise during this process, in the specific case of this research project, the elements that were used are Simulation, Exercising, Digital Games and Builders. These digital resources will be included in the educational software, they will be manipulated by the students who will be the object of study, they will be part of that interface of the multimedia application, combining and interweaving images, audios, instructions, animations and videos, highlighting that during the manipulation of the software will have constant guidance and mediation of the teacher.

FUNDAMENTAL METHODOLOGICAL ASPECTS

Nowadays, in general and specifically in Latin America, in the field of scientific research, there is an ongoing debate about the importance and relevance of the epistemic model used to give an approach to a research project, which in turn makes it possible to describe, explain, transform or verify the reality or problem to be investigated, since this becomes relevant when deciding the type of research, the paradigm, the method, the techniques and all other determinations to be taken in the course of such research, in order to ensure coherence and suitability.

In accordance with the above, it was determined to approach the present research project from the epistemic paradigm PRAGMATISM, whose philosophical foundation is framed under the assumption that any source of knowledge for any area of human knowledge, is directly and unconditionally subject to praxis or practice. In that sense (Barrena, 2014) states that:

> Pragmatism has to do with the practical in the sense of that which is experiential or capable of being tested in action, of that which can affect behavior, to self-controlled voluntary action, that is, controlled by proper deliberation; pragmatism has to do with behavior imbued with reason; it has to do with the way in which knowledge is related to purpose. (P. 4)

In order to face the problem posed in this scientific research proposal, it is imperative to link

theory with practice, where the former will guide how to do praxis in a better way.

Regarding the collection and analysis of data, they will be based on a QUANTITATIVE APPROACH, since the purpose is to understand the origin or causes of the problems of reading and writing in its initial stages, as well as the proposal of a didactic strategy as a solution alternative, which leads to the manipulation and measurement of certain variables, to later quantify the systematic observation and the respective knowledge tests and from these obtained data to perform statistical analysis to determine the effect produced.

It is pertinent to emphasize that in order to achieve the main purpose, which is to appropriately use educational software as a didactic strategy that favors the mediation of reading and writing difficulties in their initial stages, it should also be clarified that the research METHOD to be used necessarily requires several sequential steps.

Therefore, in the first instance, the study problem was posed and delimited, in addition to specifying the research questions to be answered; In the second instance, a review of bibliographical sources that have been carried out in the past to propose alternative solutions to the exposed problem was carried out. The following step is a detailed analysis of the scientific literature that has dealt with the use of information and communication technologies in the field of pedagogical mediation of initial reading and writing difficulties, analyzing the results obtained, as well as deepening and clarifying the conceptual bases that allow the theoretical foundation of the present research project.

To verify whether it is true or not that the appropriate use of ICT and their respective interactive-pedagogical activities, in the treatment of reading and writing difficulties in the initial cycle of primary school, has positive and significant effects on this learning, a sample of students will be analyzed, which will be distributed in 2 groups, where with one of the groups, classes will be developed using the didactic and interactive activities of the Educational Software for a stipulated time, while with the second group the traditional strategies used by the Spanish Language teacher will be used.

After carrying out the previous pedagogical experiment, this previously selected sample will undergo skills and knowledge evaluations through workshops, with the purpose that the children demonstrate the literacy learning acquired during the mediation process. Finally, the results obtained with the group to which the interactive activities of the educational software are applied,

will be crossed with the results obtained with the control group, with the intention of verifying the hypothesis formulated in the research proposal.

Taking into account that the type of research is subject to the degree of depth and the way in which an object or phenomenon of study is approached, this research process will be developed based on EXPLANATORY RESEARCH; To clarify the conceptualization of this type of research, it is appropriate to analyze what is expressed by (Hernandez Sampieri, 2014) when he emphasizes that:

> Explanatory studies go beyond the description of concepts or phenomena or the establishment of relationships between concepts; that is, they are aimed at answering for the causes of physical or social events and phenomena. As its name indicates, its interest is focused on explaining why a phenomenon occurs and under what conditions it manifests itself or why two or more variables are related. (Page 95).

The type of explanatory research will set the methodological guideline to follow in the research process of this project, it will be the right way to achieve the proposed objectives, with which we seek to determine the causes that can lead students in the initial grades of primary school to present reading and writing difficulties, in the logographic and alphabetic phases, based on this we will try to explain why in some cases this linguistic competence is not fully developed, but in turn will contribute to the didactic intervention of this learning problem.

In accordance with the PRAGMATISM paradigm, it is considered that the QUASI-EXPERIMENTAL research design is the right path to follow, thus admitting that theory or knowledge cannot be separated from praxis. In reference to this research design (Hernandez Sampieri , 2014) emphasizes that:

> They also deliberately manipulate, at least, one independent variable to observe its effect on one or more dependent variables, only that they differ from *"pure"* experiments in the degree of certainty that can be had about the initial equivalence of the groups. In quasi-experimental experiments, subjects are neither randomly assigned to groups nor matched, but the groups are already formed before the experiment: they are intact groups. (P. 151)

This design for the development of this research contemplates phases such as: identification of the problem, explanation of the reason for the problem, elaboration, execution of an action

plan, implementation and cyclical follow-up of the plan; in this last stage, controlled and self-corrective experiments are tested in their practices, to collect information, which serves as input for the respective reflection of the researcher, which allows understanding the situation and planning new changes. It is also pertinent to highlight the reasoning of (Bono Cabre, 2012):

> Quasi-experimental designs have a high level of availability and flexibility, since their application is advisable when, due to the limitations of the context, an experimental design cannot be used. Therefore, in those cases where it is not possible to apply the ideal of experimentation, one should not give up research and try to use designs that, although lacking complete control, may offer the possibility of obtaining scientifically valid results. (Page 12).

In correspondence to these postulates, for the case of this research it reinforces in a determinant way at the moment of selecting the QUASI-EXPERIMENTAL design as the most adequate to fulfill the objectives outlined, taking into account that they will be primary data because they will be obtained directly from the study subjects who will be part of the development and implementation of the proposal. According to (Hernandez Sampieri, 2014) states that *"Field quasi-experiments are studies conducted in a "realistic" situation in which the researcher manipulates one or more independent variables under conditions as carefully controlled as the situation allows"* (p. 150).

In reference to the population to be taken into account in this research project will be the elementary school students of the Canito de los Sabalos Educational Institution, located in the municipality of Cerete, department of Cordoba (Colombia). In relation to this population, it is relevant to select a SAMPLE that meets a fundamental criterion, which is that the students are in the logographic and alphabetic phases of the teaching-learning process of initial literacy.

Therefore, the NON-PROBABILISTIC method of sample selection will be used, where in this case the researcher will define the sample that will be represented in the subgroup that corresponds to the population previously described. In reference to this sampling method, the writer (Hernandez Sampieri, 2014) highlights that:

> In non-probabilistic samples, the choice of the elements does not depend on probability, but on causes related to the characteristics of the research or the researcher's purposes. Here the procedure is not mechanical or based on probability formulas, but depends on the decision-making process of a researcher or a group of researchers and, of course, the samples selected obey other research criteria. (Page 176).

In correspondence to the previous premise, the sample will be formed by the students of the first grade (1°) of the Exploratory Cycle of basic elementary school, which has a total of 51 students. This grade is divided into two (2) groups, the first group, which we will call A, is composed of 25 students; the second group, which we will call B, is composed of 26 students, in both groups the ages of the students range between 5 and 7 years old.

With these groups a quasi-experiment will be carried out in a controlled manner, the didactic and interactive activities of the Educational Software will be applied to the students of group A, otherwise group B will remain as a reference sample, these students will not interact with these activities, with these the learning process of reading and writing will be approached, with the pedagogical strategies used by the teacher assigned to the subject of Spanish Language.

The key informants for collecting the required information, in accordance with the quasi-experimental design that was established for this research project, will be the elementary school teachers of the exploratory cycle and those of Spanish language, the parents of the first grade (1st), and the students who are part of the sample under study.

It is important to specify that the data collection techniques are the different ways of obtaining information, while the instruments are the material means used to collect and store the required data. These tools play a primordial role at the moment of collecting all the essential information for a scientific research, as highlighted by (Saez Lopez, 2017) when he says that:

> The design and application of techniques and instruments is fundamental to obtain and collect the necessary data to analyze and interpret in the research process. It is essential to be precise in the design and in obtaining data because the whole research and the validity of the results depend on this essential section. (Page 69).

For the present research proposal, techniques and instruments for data collection will be established, such as: direct and structured observation through a pre-established guide, where the processes of the class in the subject of Spanish Language will be observed; surveys with questionnaires and structured interviews with a previous script, to acquire a general notion of the methodology used by the educator; surveys with questionnaires to parents, to determine how they are collaborating in the teaching-learning process of reading and writing. In addition to a survey by means of an achievement test to evaluate the didactic and interactive activities in the pilot test to determine the feasibility of the proposal.

By way of detailing the application of the technique and instrument mentioned above, it is important to emphasize that the purpose sought is to previously collect the essential information that will be the input of the initial diagnosis, to later contrast with the evidence taken and the effect produced, after these didactic and interactive activities are activated, on the dependent variable reading-writing difficulties in the logographic and alphabetic phases, in the categories and/or dimensions of natural spelling, motor skills and simple dyslalia, specifically in difficulties such as the confusion of graphemes that present similar writing or similarity in their sound; problems when tracing the letters making them illegible, in addition to the incorrect use of the extension of the line; as well as the difficulty in relating a figure with its respective word and reading-writing in a fragmentary manner.

The result will be evaluated through several tests of knowledge and competencies, workshops will be developed, in which the children will be able to demonstrate the knowledge and skills they have acquired during the process of learning reading and writing with the help of the proposed didactic strategy. The workshops are composed of activities in which the children will be able to expose their motor, auditory and visual skills (work with plasticine, identification of the sounds of letters, syllables and words, writing and reading exercises, among others), these activities will be previously programmed, taking into account the interests of school children, in order to keep them motivated and obtain more objective results.

It is also pertinent to clarify that the activities carried out through the multimedia educational software will be carried out by means of sessions, determined according to the children's progress; follow-up cards will be used to store the information corresponding to the processes carried out by the students in the development of these interactive activities. To carry out the process of analysis of the information collected, some data processing techniques were used, such as coding, tabulation and Likert Scale.

ETHICAL CONSIDERATIONS

Knowing beforehand that for the following research proposal, pragmatism and the quantitative paradigm were established as the epistemic approach, it is imperative that during the research process and in the use of the knowledge generated, the researcher assumes a behavior within the framework of ethics. If this behavior is not adopted, it must be categorically rejected, and ipso facto eliminated. To assess whether the researcher's behavior is within this framework during the scientific study, the ethical considerations described below will be taken as a reference:

- The identity of the students, teachers and parents who were subjects of the study will be protected.

- The data collected at the time of the analysis of the results will be for the exclusive use of the researcher and the participants in a generalized manner, not individualized. No observation or negative mention will be made in this regard.

- Since the population is made up of minors, it is imperative to request informed consent from their parents, who will be given an authorization form describing the role their children will play in the research project, the purpose of the information collected, and permission to take photographs of them.

- In turn, it will be essential to request, by means of a formal letter, the authorization of the rector of the educational institution; in addition, the duly signed consent will be verbally requested from the teachers and parents collaborating in this research project. These forms will be acquired from the link of the Research Bioethics Committee in the UMECIT web page.

IN CONCLUSION

It is important to emphasize that this research proposal will be implemented in the first semester of next year 2023, time in which, logically, it is expected to analyze the results obtained and the contributions that this research can provide in the reading-writing process that is present throughout the student's schooling and that its adequate treatment is reflected in his future life; Therefore, after the respective analysis, it will be inferred if it is pertinent and/or feasible to think of constant implementations of educational software as didactic strategies that potentiate the exercise and practice of this process, promoting in the Educational Institutions the adequate and periodic use of an innovative methodology, where through the use of interactive and pedagogical activities will enable students to strengthen the skills required during the logographic and alphabetic stages of the reading and writing process, thus developing their different human dimensions.

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