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AN INTERCULTURAL TECHNOLOGICAL ELEMENT FOR THE LEARNING OF PROPORTIONALITY IN A RESERVATION OF THE EMBERÁ-CHAMÍ-COLOMBIAN ETHNIC GROUP

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Abstract: The panorama of ethno-education is compromising for the 115 native indigenous ethnic groups from Colombia, bearing in mind that some educational institutions have not advanced in the incorporation of their own knowledge in their intercultural curricula. The aim of this qualitative tradition (Educational Action Research) study was to implement a bilingual (Ebera-bedea/Spanish) Intercultural Technological Element (ITE) by using Geogebra in order to teach the concept of proportionality in an indigenous reservation of the ethnic group Emberá-Chamí. 13 students of basic secondary education belonging to ethnic group were included. Firstly, a diagnostic evaluation was performed to assess the initial knowledge of the students about the concept of proportionality in their own native language. Then the ITE was designed and applied to the students. The students were evaluated on three aspects (1) on their own knowledge, (2) on the affective and emotional aspect and on (3) their conceptions. In general, the students were able to contemplate the relationship between the topic developed (proportionality) and the activities of the culture with a reception of 77%. Regarding the emotional aspect 62% of the students see the solution of the guides as favorable since it promotes individual work as well as responsibility, and the other 38% perceive it moderately. On the other hand, the worldview and cosmogony conceptions were achieved in the 84% of the students.

Keywords: Intercultural technological element, ethnomathematics, Emberá–Chamí reservation, proportionality

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INTRODUCTION

Education is the foundation of society, it promotes intellectual progress, develops affective moral capacity and its cultural survival (Balamurugan, 2015; Fitrianawati & Setiyawati, 2021). Clinging to this action, society intends to preserve all their customs in the new generations, leaving a legacy through inherited conceptions

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and experiences (Pérez-Hernández, 2019). The present study focused on the interweaving of the academy and the survival of customs, based on the knowledge found in daily life and that is addressed to formal learning (D'Ambrosio et al., 2016).

The research carried out is located within an Emberá-Chamí indigenous reservation (Colombia), which precipitated the use of a pedagogical instrument that would allow the potentialization of the skills of this community and overcome the adversities presented in the educational context; the following research question was raised: How can an Intercultural Technological Element (ITE) be implemented that manages to merge the cultural tradition and the learning of the concept of proportionality in an indigenous reservation of the Emberá-Chamí people?

The scope that we considered was exploratory, since it was a relatively unknown phenomenon, which belonged to a particular context and on which there was little information (Koro-Ljungberg, 2015; Hernández et al., 2014). In regard, there are few investigations that highlight the universal and intercultural similarities exposed by Bishop (Espinar et al., 2014; Parra, 2006; Bishop, 1988), and that are the result of the intercultural interaction of relationships between various cultures uniting and creating links despite having different languages, these characteristics become visible in activities common to all ethnic groups and are associated with mathematical thinking through the actions of: measuring, designing, counting, explaining, playing and locating (Bishop, 1988); but no work is yet known on the use of an intercultural technological element from now on ITE, as a didactic and technological mediator for learning mathematics in the context of ethnomathematics.

It is important to highlight that the pedagogical practice was developed based on the educational environment, the response that projects in daily life students and the sum of all the experiences and reactions lived by the teacher, due to this, the following question working hypothesis was raised: The implementation of an ITE from the convergence of technology, mathematical knowledge and cultural survival, presents an evolution in the teaching-learning of mathematics in the students of the Emberá-Chamí reservation, intertwining what has been learned with the context social. On the other hand, the field of research presents particularities that require captivating practices emphasized on the needs of the context, so the selected teaching topic cannot be far from reality, this is how the objective of this research is to implement an Intercultural Technological Element (ITE) that managed to merge the cultural tradition and the learning of the concept of proportionality in an indigenous reservation of the Emberá-Chamí people.

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Theoretical Foundation

How to propose a relevant and situated frame of reference for the formulation of the analysis categories of this research?

The indigenous people in Colombia have undergone a process of deep deculturation in their historical transfer from the colony to today. Intercultural education seeks exchange and commitment to the incorporation of new content, new ways of doing, questioning the knowledge that arises from an ethnocentric position.

How did this proposal come about?

The roots of people will always live in the word of those people who have safeguarded the teachings and customs received from their ancestors, who with pride and courage will identify themselves in a small fraction of their cultural traditions.

Through the blood of the Emberá-Chamí people circulates a story that their ancestors have tried to overcome, a story of genocide, dispossession, massacres, and injustices that finally result in an attempt at acculturation; Some of the actions that marked these events were the dissolution of the towns, a strategic means to extinguish the indigenous culture of the department of Caldas (Plan de Salvaguarda Pueblo Emberá de Caldas, 2011).

Las raíces de un pueblo siempre vivirán en la palabra de aquellas personas que han salvaguardado las enseñanzas y costumbres recibidas de sus ancestros que con orgullo y coraje se convierten en una mínima fracción de las tradiciones de su cultura.

A part of this story can be read below:

> The government of President Eduardo Santos and his economy minister Jorge Gartner de la Cuesta had already conceived a way to solve the indigenous problem in Caldas, proceeding to dissolve the indigenous reservations from the colony. In 1943, the indigenous reservations San Lorenzo and Escopetera Pirza in Riosucio were dissolved (Plan de Salvaguarda Pueblo Emberá de Caldas, 2011, p. 22)

In 1946, the Totumal indigenous reservation was founded as a result of the migration of indigenous people from San Antonio de Chamí-Risaralda. Don Bertulfo Sucre - governor of the community - affirms that according to the story that his father Miguel Ángel Sucre Guaquirama told him, the first to come to form the Totumal partiality were Evangelista Sucre Guaquirama, who arrived with his entire family, then the family of Félix Sucre and Don Eugenio, whom they remember as the founders of this Reservation (SMT- ONIC, 2022). The Totumal indigenous reservation is located in the rural area of Belalcázar-Caldas, bordering the El Águila educational institution, an entity in charge of guiding academic studies for the reservation's child and youth population.

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The educational community of El Águila is made up of the majority by inhabitants of the reservation and in a smaller percentage by residents of the surrounding sectors (Kajumas), the name they give to the non-indigenous man in the reservation. From this simple fact arises a first problem for the inhabitants of the Totumal indigenous reservation, the education given to the indigenous people is immersed in purely Western knowledge without taking into account any of their customs or as they express it in their life plan of the year 2008 (document that exposes the cultural, political, historical, economic, educational and territorial level of each of the indigenous reservations in the department of Caldas), forced to be trained in educational processes other than the counsellors for the community's own education (SMT- ONIC, 2022) also expressed in the words of Wilson Sucre, ethno-educator of the Águila institution, where he responded to the following dialogue, after conducting an interview about the education provided by the Kajumas:

> The problem is how the native language is being lost in the boys, because the course is only oriented to primary and not to secondary, which is where they need it the most. If you make them write something, they speak it very well, they express it, but if we go to the way they write it, how they transmit it, they don't know (Wilson Sucre, personal communication, October 2019).

Through this action, the loss of indigenous identity becomes a notorious threat, the education that students receive is guided by kajuma teachers, who do not receive a prior induction on the environment where their students live. The directors of the institution, through constant communication with the community, have always sought to form the teaching group with indigenous people who meet the profile, to try to mitigate this problem, but unfortunately the supply of ethno-educators with the required profiles is minimal in our country.

Through an interview with one of the traditional doctors of Totumal (Jaibaná) Yoni Fernando Cardona, it was possible to draw the conception of mathematics for the indigenous community.

> At this moment when I talk about mainstreaming in mathematics it is important to relate it to the phases of the moon because there, we would be seeing something important which are the months and, in the months, we would be counting the phases of the moon: for example, we do not say a month, two months, three months. We only say “horje hidaco” the count of the moon, when we say “jidaco abaude utaiba udai” we say that it is the first moon, it means the first month of the year and if we are going to sow something we say “jidaco omene”, that is to say in two months, for us that is mathematics and we always have the sequence when it is decreasing, increasing. So, the mathematical part also goes there in counting the phases of the moon. (Yoni Cardona, personal communication, October 2019).

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In accordance with the above, for the Embera, mathematics from ancestral knowledge is presented as an indispensable knowledge in a large part of their daily tasks.

How to intertwine Bishop's intercultural approach with the Embera-Chamí culture of the indigenous reservation?

Each context in its set of knowledge and heritage must have its particularity in teaching, ethnomathematics is born from the articulated teaching between mathematics and culture, so teaching knowledge from a need of community taking into account the external guidelines and local customs, produces greater interest and utility in the student, "Mathematics is a pancultural phenomenon: that is, it exists in all cultures" (Bishop, 1991, p. 55) and although each one is autochthonous in its creations, the root conception contemplates similar principles, one could compare the process of measuring the area of a plot for the indigenous people of Totumal, such measurement of the land to cultivate is made from the use of their body parts without the requirement or need of any metric measuring instrument.

> To cultivate, they use mathematics, they use an arm from the tip of the middle finger to the middle of the shoulder, that is for one meter and they multiply that meter by two taking into account the two arms (Yoni Cardona, personal communication, October 2019).

Mathematical knowledge has been an axis in the development of humanity as well as language, both are vital components for evolution, from this thought Bishop's intercultural perspective is born, where he sustains that there is a great variety of similarities in all cultures (Bishop, 1991).

The construction of mathematical knowledge from Bishop's intercultural approach is presented under specific aspects structured from the choice of six activities that conceptualize and define the field of study, activities that link four main areas of mathematics: number, measurement, geometry and language/logic (Bishop, 1991, p. 22).

The six activities listed by Bishop (1991), have a direct relationship with the main areas and with the development of each culture; After a thorough investigation, it was also observed the existence of such connection with the Emberá-Chamí culture of the Totumal indigenous reservation.

Number and measurement are two necessary areas in the development of mathematical thinking that are directly linked to activities such as counting and measuring, both “deal with ideas related to number, although they are quite different ideas. The discrete aspect of counting in its essential characteristic contrasts notably with the continuity of the phenomena to which we impose measurement systems" (Bishop,

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1991, p. 20), counting in each culture has had a particular creation but as mentioned above , each knowledge in essence presents similar characteristics.

> I think that mathematics is very important for the Embera, we Embera count numbers with our bodies, all numbers are based on that. For example, for us the fingers of the hands are 10, and if we use our hands and feet, they are 20 (Wilson Sucre, personal communication, October 2019).

> On the other hand, measuring is a very common activity in the Embera people, they use it in agriculture using their own measurement system, as well as in pottery and also in their handicrafts, "for us we manage the measurement through the steps" (Wilson Sucre, personal communication, October 2019).

Locating and designing are two activities that Bishop familiarized from his intercultural approach and both are the support of geometry.

> The location is simple, if you go to a jungle that you don't know where you started, you have to leave something on the way, a sign, for example, when my grandmother took me hunting, the first thing she said to me was: let's leave this sign in case I go to other part, you follow the sign (Wilson Sucre, personal communication, October 2019).

Locating is cited by Bishop because "It highlights the topographic and cartographic aspects of the environment" (Bishop, 1991, p. 42), which is also evidenced in the Embera culture.

> Suppose a boy goes to the jungle and does not have the knowledge that our ancestors knew before, they are lost in the jungle today, taking into account a pole they make as if it were a compass (Yoni Cardona, personal communication, October 2019).

Another activity that is part of the development of geometry is designing that "deals with conceptualizations of objects and artifacts that lead to the fundamental idea of form" (Bishop, 1991, p. 38). For the Embera, the mentioned activity is one of the most evident in their pottery, basketry and handicraft creations, the culture is characterized by its original creations.

And finally, the activities of playing and explaining, which together with the four aforementioned activities nourish the language/logic area, since each one handles special types of language and representation. These two activities are accentuated in mathematics in such a way that the game "refers to the social rules and procedures for acting, besides, they stimulate the aspect of imagined and hypothetical behavior" (Bishop, 1991, 43), and although the game is seen within the culture as an activity for infants, the combination of roles and rules preponderate its participation in the teaching of mathematical knowledge.

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This is how the last activity that makes up Bishop's approach, where mathematics is postulated as a way of understanding, is explaining, which in the author's words consists of "indicating the various cognitive aspects of investigating and conceptualizing the environment and sharing these conceptualizations" (Bishop, 1991, 43). Registered in the cultures as a constructive need in communication, and observed among the indigenous people of Totumal every time they talk to each other and wish to clarify the situations presented among them or to instruct each new activity in their knowledge.

In summary, Bishop's intercultural approach lists six activities that stimulate various cognitive processes, which are essential for the development of mathematical knowledge in any culture and which acquire significant value when used alone or in parallel, similarities that are clearly evident in the transit of the Emberá-Chamí culture of the Totumal indigenous reservation.

Is proportionality an issue according to the needs of the context?

In particular, it is intended that the student acquires learning that can be used to solve their daily problems and although the theme that they can choose to satisfy this need is broad, the characteristics of the proportionality theme solve the basic requirements of the community, " Proportional reasoning is an important mathematical tool. Multiple physical and economic phenomena can be modeled using the concepts of ratio and proportion. There are also many everyday problems that can be solved with techniques related to proportionality" (Oller-Marcén & Gairín - Sallán, 2013).

This subject is generally oriented as a prerequisite for the beginning of algebra studies, whose characteristics allow the student to determine an unknown through a problem situation, a subject that in any context works as a review and culmination of school arithmetic and opens the gates to development of realistic context problems with a higher degree of difficulty.

Proportionality is considered an extremely important concept for the development of formal thought, so a deficient treatment of this concept prevents the understanding and mathematical thinking necessary for other disciplines such as algebra, geometry and physics (Bressoud et al., 2016). In this way, it was concluded that proportionality was a consistent and introductory theme to variational thinking, in parallel to the formal structuring of ancestral mathematics developed by the Totumal Indians. That is to say, it is used as the transition from the mathematics that they conceived and know, to the mathematics that is taught in school and that has caused so much rejection in the students.

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METHOD

This proposal was designed under the qualitative approach of the Educational Action Research type (Elliott, 1993) in accordance with the four phases proposed by Kemmis & McTaggart (1988) for Action Research. 13 students of the Emberá-Chamí ethnic group were included in the study. All the participants were males with an age ranging from 14-16 years old.

Phase I. Deconstruction of the pedagogical practice

The researchers made a diagnosis. The first part of the diagnosis was elaborated according to the experiences lived in the environment, relations with the community, participatory observation and field diaries. The second part was formulated from 5 semi-structured interviews carried out with representative characters of the Emberá-Chamí culture.

For the analysis of the information, a hermeneutic unit called Emberá Ethnomathematics was built, using the Atlas-TI software, 14 primary documents were organized: semi-structured interviews, elaborated sheets and field diaries of the researchers.

The similarities of the interviews with the theory exposed by Alan J. Bishop, written in his work Mathematical Enculturation (Bishop, 1991), were compared, from which two categories emerged, considered the starting point for the construction of action strategies: The Culture category and the Embera Cosmogony category. The first recognizes culture as a component of education, since through it, ancestral values are rescued such as: Language-dialect, harmonization (spiritual contact), Jaibaná wisdom (Traditional medicine) and specially all the recovery of their own education as the only means of Embera survival over time. And the second in the recognition of their ancestral roots.

Phase II. Reconstruction of pedagogical practice

According to the results of the deconstruction, six digital guides were designed with the GeoGebra software (Hohenwarter, 2001), taking advantage of the dynamic and interactive features of the application. The guides were developed in the Eberá-Bedea language and in Spanish. Each one of the guides was the result of combining Bishop's intercultural approach from the six universal activities and the particularities of the Emberá-Chamí culture, some forgotten by the new generations or abandoned due to their

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little importance; and the sequential development of the theme of proportionality as illustrated in Table 1.

Table 1. Distribution de las thematical de la propuesta didactic

Guide name	Universal Bishop's activity	Subject related to Embera-Chamí culture of Totumal	Subject related to proportionality
Guide 1. Neburu neburada.	Count	History of the Totumal indigenous reservation	Reason
Guide 2. Chi duana bari.	Localize	Geographical location of Totumal indigenous reservation	Proportion
Guide 3. Chi ne uobadau.	Measure	Agriculture	Proportion properties
Guide 4. Diseñai Artesaniarâ.	Design	Handicraft	Direct proportion
Guide 5. Chi jaibaraarâ urubena explikai	Explain	Cosmogony – Cosmovision	Inverse proportion
Guide 6. êbera bedea application problem	Play	Mother tongue of Emberá-Chamí	Exercises and applied problems

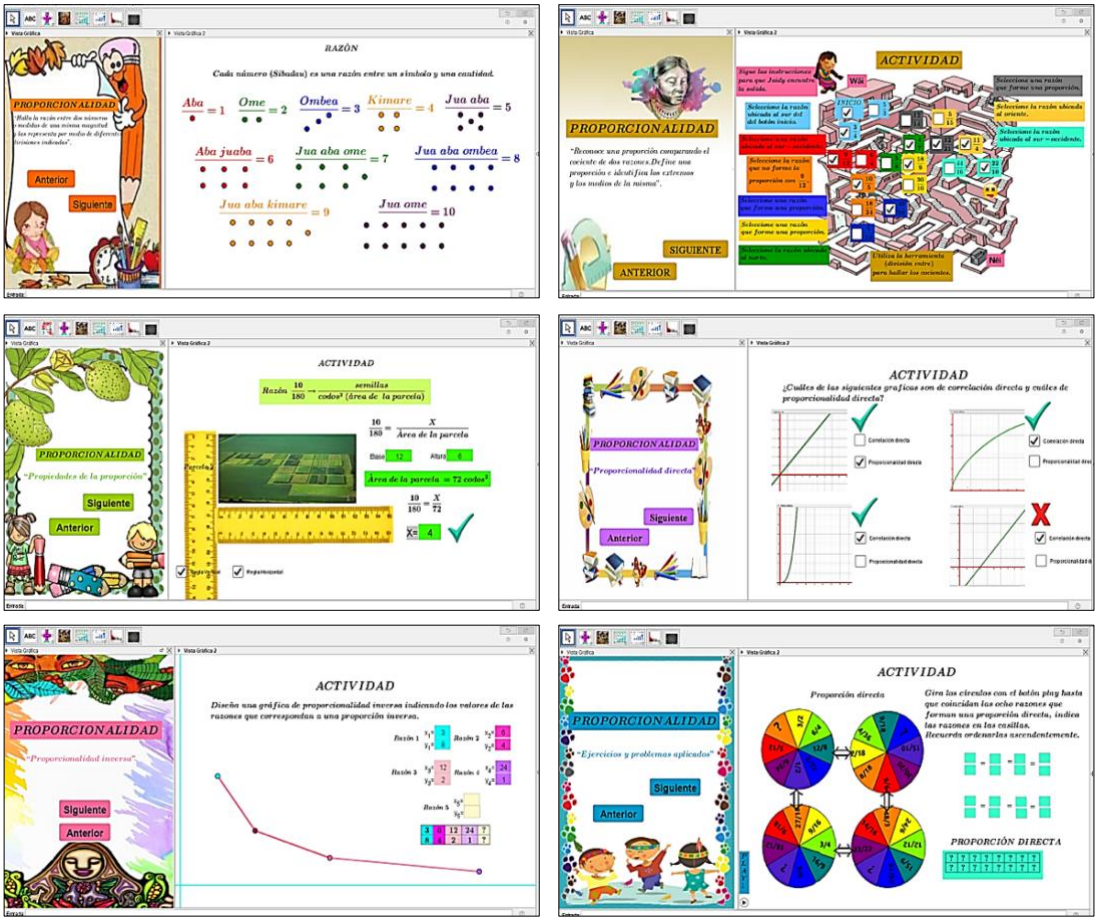

Figure 1. Proposed activities with the ITE in accordance with Bishop's six activities

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The guides were built with images of the environment, cultural activities and daily practices of the community, each one began with a text in Eberá-Bedea (a dialect of the Emberá-Chamí) and its translation into Spanish on the particularities of the culture, followed by the theory and explanation of the theme related to proportionality, and ended with various activities that combined Bishop's intercultural perspective, the theme related to proportionality and some exposed conceptions of the Emberá-Chamí culture. The guides as a whole were called with the name: Intercultural Technological Element (ITE) (Figure 1).

Phase II. Reconstruction of pedagogical practice

The chosen sample consisted of 12 ninth grade students of the intercultural baccalaureate. Each instrument had a theoretical part and another of exercises, whose solution was presented through a detailed explanation by the guide's indications and supported by the teacher's guidance. Each guide presented on its own one of Bishop's six universal activities as an antecedent in the teaching-learning action of proportionality.

For the reading, analysis and understanding of the data collected in the study, a research method was sought aimed at understanding the educational reality in order to transform it, which precipitated the use of the education-action-research method as an ideal means of self-knowledge, in the improvement of educational practice, in the understanding and interpretation of the classroom environment. Elliott (1993), defines Action Research as the study of a social situation in order to improve the quality of action within it.

For the analysis of reality and the specific collection of study information, taking into account that the information key is based on "techniques that allow for a holistic vision, from the perspective of the participants (informants) of the context of study (Bisquerra-Alzina 2009, p. 285) the instruments used to describe the evaluated reality were:

1. The interview-diagnosis.
2. Participant observation.
3. Documentary analysis.
4. The categorized questionnaire for teachers.
5. The categorized quiz for students.

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Phase IV. Validation of pedagogical practice

To measure the reliability of the instrument, the Cronbach's Alpha reliability coefficient was reduced. The validation of the ITE instrument was carried out by a group of four teachers, each one an expert in one of the following fields; Development of ICT, Mathematics, Emberá-Chamí Culture and its customs, this validation was done through a categorized questionnaire synthesized below and shown in Table 2.

Table 2. Estructura del cuestionario categorizado para docentes

Category	Factors
Cognitive	Objectives, previous knowledge, theoretical foundations, sequence, comprehension and evaluation.
About the virtual object	Interactivity, aesthetic design and presentation, functional and instructional design, reflective, relevance and coherence.
Own knowledge	Relevance, survival of culture, interaction with the environment, relationship between culture and mathematics.

Similarly, after applying the test in the classroom, we proceeded to implement the categorized questionnaire for students, which can be seen in Table 3.

Table 3. Structure of the categorized questionnaire for students

Category	Factors
Own knowledge	Relevance, survival of culture, interaction with the environment, relationship between culture and mathematics.
Motivational and affective aspect	Dynamism, estimation, cooperativism and intrapersonal skills.
Conceptions	Proportion, intercultural approach, intercultural knowledge and indigenous knowledge.

RESULTS AND DISCUSSION

About own knowledge

Regarding the analysis of the category of own knowledge in the group of students, it was possible to contemplate the relationship between the topic developed (proportionality) and the activities of the culture with a reception of 77%, and a percentage of uncertainty of 23%. Regarding the interaction between the instrument and the user with the mathematical information, and the native knowledge, 69% positively recognized it, 25% disbelieved it, and 8% negatively. Finally, the reciprocity between the knowledge of the culture and the knowledge of the instrument is perceived in 77%, presenting doubts in 15% and in 8% it is not appreciated.

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On the affective and motivational aspect

In this category, it can be seen how 62% of the students see the solution of the guides as favorable since it promotes individual work as well as responsibility, and the other 38% perceive it moderately. In the recognition of their own characteristics different from others, 54% evidenced this attribute, 38% with doubt and 8% did not. To evaluate the identification of skills from the ITE in correspondence with their use, 77% appreciate it and the other 23% see it with uncertainty; while in the identification of limitations for 46% it is notorious, for 38% it is intermediate and for 16% it is not evident.

About conceptions

This category allowed us to discover how the contribution of strengthening the indigenous knowledge of the Emberá-Chamí culture was achieved by 76%, on average by 8% and did not understand by 16%; For the survival of the mother tongue, 62% of the students recognized it satisfactorily, 30% doubtful and 8% without success. For the knowledge of the worldview and cosmogony, a success was achieved in their understanding of 46% and 38% respectively, with uncertainty of 30% for the worldview, and 24% for the cosmogony and finally the purpose of understanding in 24% and 38% for the term worldview and cosmogony.

ITE validity and reliability test by expert teachers

The results obtained regarding the evaluation of the ITE by the expert teachers showed a Cronbach's alpha of 0.982 (Table 4). According to what was stated by Frias-Navarro (2019), the alpha coefficient > 0.9 is excellent, which indicates that the instrument is applicable and meets all the necessary reliability characteristics.

Table 4. Validity test

Statistics of reliability	
Alpha of Cronbach	N of elements
0.982	24

Discussion

Why use technology in the educational practice of the Emberá-Chamí indigenous people of the Totumal reservation?

It is not a secret that in many fields technology has generated a positive transformation and since it began to be implemented in the education sector the results have been encouraging in many indigenous communities (Rebolledo, 2019), there are

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many projects that have received recognition from the ICT Ministry and some of them point out the use of technology in the classroom and the way in which they are fulfilling the task of raising the quality of education and promoting the positive transformation of educational processes in schools and colleges in the country (Ministerio de las Tecnologías de la Información y las comunicaciones, 2012).

The pedagogical practice requires multiple strategies that provide a healthy, entertaining and stimulating environment for the student, in order to captivate him towards the academic world. Within the analysis carried out in educational practice and the multiple variables to be evaluated, the motivational factor was investigated, discovering a great affinity of indigenous students for technological instruments such as cell phones and computers; For them, a class where these tools are used is more enjoyable and they present a higher level of understanding as a result of the interest shown (Tumino & Bournissen, 2020).

In practice it was much easier and more understandable to teach them to graph a linear function from their cell phones and/or computers that previously had the GeoGebra software. Their empathy with this program and their adaptability in management postulated it as a viable option to implement it in new teaching strategies (Mora, 2020).

The software appears as a means of teaching mathematics based on ICT, with elements that help in the elaboration of some actions in the development of logic and deductive thinking. The use of Bishop's intercultural approach facilitated the learning of proportionality, fulfilling the purpose of teaching mathematics from the six universal activities (Bishop, 1991) that were developed from the particularity of the context, experiences and family heritage.

In the classroom, pleasant emotions did not wait, and although the teaching of the properties of direct proportionality and inverse proportionality require a higher level of complexity, the enthusiasm to continue with the acquisition of knowledge of one's own knowledge (SMT- ONIC, 2022) and the mathematical knowledge applied to their context using the ETC stated that they continued with what was stipulated in the agreed times, they did not allow the interruption of their classes due to activities unrelated to their work.

Because their construction was directed solely at them, the theory drew the learner into their native knowledge by planting that seed of curiosity about aspects of their behavior; The understanding of the theme of proportionality was combined with many of the daily activities of the students and with Bishop's six universal activities, favoring the understanding of the theme through the plurality of activities. The instrument generated a great help in the teaching-learning of the subject of proportionality and consolidated

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this knowledge and strengthened the knowledge and identity of the indigenous people of the El Totumal reservation.

The end of a process demarcates the idea with which the exploration initially originated, the thought that was wanted to be verified and perhaps was not achieved. The Intercultural Technological Element was designed with the purpose of persevering in the youth population the forgotten customs of the Emberá-Chamí culture, to improve students' understanding of proportionality, to transform educational practice, turning it from a monotonous exercise to an activity. dynamic. and adapt the academic context to the community environment.

Purposes that were already observed in practice and that were verified with the obtained results

Each survey ended with a comment section, perhaps within the investigation one of the most encouraging parts; Comments were received from the teachers who qualified the ETC as a novel, impressive instrument and the result of hard work, an attractive combination for the indigenous community (mathematics and Emberá-Chamí culture), a tool that left a positive mark on the students' knowledge.

And even more exalted when the students themselves expressed their satisfaction, indicated that they felt comfortable in math class, made comments such as "the hour ran out so quickly, teacher let's continue and ask for another hour", "teacher what a cool combination". technology to explain mathematics", "teacher I finally understood a subject of mathematics", and not only comments referring to mathematical knowledge, also heard "teacher did not know how to write some words in our language", "how interesting to know about our ancestors" and our worldview", "how good it is to know that what we learn we can use at home".

CONCLUSION

The ICT used for the teaching of proportionality concept in Emberá-Chami students favored the learning of this definition by rescuing their own mother language concepts by including their own cultural and ethnographic knowledge according to ethnic cosmogony and their ancestral cultural and agricultural practices. The instrument was visibly pleasant for the students, the images were typical of their community, generating a feeling of familiarity and self-esteem.

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