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Strengthening the teaching of the narrative genre: story and fable in primary school children in the Department of Magdalena – Colombia. A commitment to the use of ICT Games and BayesianLogisticRegression.

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Abstract

The low quality and relevance at all educational levels remain a problem present in education in Colombia, limiting the training and development of skills for work and for life. The above is evidenced in the results of the country in standardized tests. Colombia occupies one of the last places the two most recognized international tests (TIMMS and PISA); In fact, it is considered that ―at the international level, one of the benchmarks for measuring scientific competences is the PISA tests, which assess the knowledge, skills, and scientific attitudes of 15-year-old students in different countries. In 2006, PISA tests were applied to young Colombians. While it is true that the test results show the motivation of young Colombians to project in the scientific field (those evaluated had high scores in the subcompetence of identification of scientific phenomena), the country lags in other competences that are more related Direct with innovation processes, such as explaining scientific events and using scientific evidence. This article resulted from the research project: ―Strengthening of citizen and democratic culture in CT + I through the iep supported in ICT in the Department of Magdalena financed by SIGR funds - General System of Royalties.

Keywords: Teaching, Narrative Genre, Story and Fable, Primary School, Learning software

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1. Introduction

The insertion of Colombia in a globalized world, based on knowledge, technology, improvement of communications, new languages, innovation, and research, requires the definition of policies that make the way to make these issues a reality in National life, in this framework, public policy has contemplated the development of opportunities for the country, based on education and the development of technologies.

The National Development Plan of Colombia - Property for all, defines that —a program will be advanced to generate a process of cultural transformation that allows children and young people to link to CTeI activities through education by inquiry or by projects. This is the basis for the availability of qualified professional, technical and technological personnel with the capacity to transform ideas and knowledge into new or significantly improved products, services, or new processes in the market.

Basic research competencies in all students will be a long-term objective, so that pedagogical models will be included progressively by inquiry. Project learning will be a strategy that will allow you to acquire skills to observe, investigate and find solutions to productive and social problems. In the short term, experience in the training of the Techno-Academies of SENA - Colombia will be used to implement models that articulate the processes of basic and secondary education with issues of CTeI and entrepreneurship. Likewise, the coverage of the Waves Program for children and young people will be increased, allocating a percentage of its resources to the population in extreme poverty, beneficiary of the Red Juntos Program and the other percentage for the training of trainers"[1].

2. Educational innovation using ICT-based games

Professional development for educational innovation aims to prepare teachers to contribute to educational quality by transforming educational practices with the support of ICT, adopting strategies to guide students towards the use of ICT to generate change positive about their environment, and promote the transformation of educational institutions into learning organizations by strengthening the different institutional efforts [2]: academic [3], managerial [4], administrative [5] and community [6]. To achieve these ends, training programs, initiatives and processes for teacher professional development must be relevant, practical, situated, collaborative and inspiring; These constitute the guiding principles for the structuring of said proposals.

From this perspective, the competences for the development of educational innovation supported by ICT are: technological, communicative, pedagogical, investigative and management. The first three competencies defined in the previous route are complemented by: a) The investigative competence that responds to the country's priorities as a result of the consolidation of the National System of Science and Technology and is added given the importance of preparing teachers and students so that they are capable of transforming knowledge and generating knowledge that contributes to the development of their communities [7], b) Management competence as it is a fundamental part of the design, implementation and sustainability of innovative educational practices. Added to this is the availability of content management and learning management systems that make directive, administrative, pedagogical and communicative management more efficient. Competences are developed and evidenced at different levels or degrees of complexity and specialization that move across a broad spectrum.[8] ".

These efforts are concretized in the Strategy for Capacity Building in Educational Use of ICTs (Korean Project - CIER Regional Centers for Educational Innovation), where the construction of regional capacities for educational use of Information and Communication Technologies will be promoted (TIC), to improve the quality of educational practices in the institutions and entities of the Colombian educational system and to contribute to reducing the educational gap between the regions of the country, whose actions contribute to forming the human capital that Colombia demands, these Actions are summarized in five components: (a) professional development of the teacher, (b) content management, (c) virtual education, (d) promotion of research, (e) access to technology, which are assumed in this project in the strategy of self-training, collaborative training, production of knowledge and knowledge and appropriation for the teachers of the Department.

Open educational resources or OER are multimedia documents or material for educational purposes such as teaching, learning, evaluation and research, the main characteristic of which is that they are freely accessible and generally under an open license, which according to Unesco [9]. They can expand access to quality education, especially when they are shared by many countries and institutions of higher education. (...) OERs are a means of promoting access, equity, and quality in the spirit of the Universal Declaration of Human Rights.

1. Promote knowledge and use of open educational resources [10].
2. Facilitate an environment conducive to the use of information and communication technologies [11].

3. Reinforce the development of strategies and policies of open educational resources [12].
4. Promote the understanding and use of open licensing frameworks [13].
5. Support capacity building for the sustainable development of quality learning materials [14].
6. Promote strategic alliances for open educational resources [15].
7. Encourage the development and adaptation of open educational resources in a variety of languages and cultural contexts [16].
8. Encourage research on open educational resources [17].
9. Facilitate the search, obtaining and exchange of open educational resources [18].
10. Encourage the publication with open licenses of educational materials produced with public funds [19].

3. Methodology

The strategy was based on generating communities of practice, learning, knowledge, knowledge, innovation and transformation, understood as a transversal process, where collaborative learning, problematizing, by critical inquiry, permanent interaction, cultural negotiations and dialogue of knowledge, typical of the pedagogical proposal of the Ondas program. It is summarized in the following aspects:

a. Construction of an identity that incorporates the recognition of science and technology as a constitutive element of everyday culture both in individuals and in the communities and institutions of which they are part, involving various sectors of society: productive, social, political, state and in the various territorial areas: local, departmental and national [21].
b. Development of organizational forms oriented to the appropriation of values that recognize a cultural identity around science and technology in the aspects mentioned in the previous point. This implies models of participation, social mobilization, and public recognition of scientific and technological activity. On the other hand, the incorporation of the investigative activity in the basic and middle school supposes the development of mechanisms of national, departmental and local financing; in such a way that boys, girls and young people can develop their abilities and talents in a favorable environment of both social recognition and economic conditions [22].
c. Development of a methodological strategy supported by ICT that helps the Colombian population to recognize and apply both individually and collectively, science and technology through research activities designed according to the characteristics of the scientific method [23].
d. The appropriation of ICT as a constitutive part of the civic and democratic culture of CT + I and the construction of virtual reality as central to the process of democratization of knowledge [24].

This path leads to processes of social production of knowledge, valuation of diversity, stimulation of creativity, interaction with environmental problems and the endogenization of virtual and digital through the incorporation of ICT in the processes of social appropriation of the CT + I. This also implies the development of strategies aimed at evaluating research in the school context, so that these activities are recognized and promoted as an integral part of the educational process [25, 26].

To achieve that the communities incorporate a civic culture in TC + I, changes must be made both in the educational systems and in the political plans and administrative structures; But it is even more important that these changes be achieved, in the first instance, in individuals: boys, girls, youth, teachers, parents, managers and members of educational institutions, government entities and private companies. Likewise, the bases of scientific and technological thought must be created from childhood, since at this stage people build action structures that organizetheir present and future actions [27, 28].

The appropriation of this culture implies the development of scientific, technological, innovation, social, cognitive and communicative capacities, skills and competences and the abilities to investigate and observe, which are consolidated to the extent that children and young people receive an adequate orientation in approaching their problems, through daily work in the different spaces of socialization; In this sense, educational institutions play the main role: preparing their teachers in methodologies that favor such appropriation, and seeking alliances with academic and non-academic entities that carry out research [29,30].

This project has special interest in the construction of a citizen culture in science, technology and innovation,

promoting in students and teachers of the Department the formation of communities and the carrying out of investigations that seek to solve problems in their environment and build capacities to move in a world that makes its reorganization from the new processes of knowledge and knowledge, founded on CT + I. The constituent elements of this culture are:

- Demystification of science, its activities, and products to be used in everyday life and in solving problems.
- Democratization of knowledge and knowledge guaranteeing its appropriation, production, use, reconversion, storage, and transfer systems in all sectors of society.
- The capacity of judgment and criticism about its logics, its uses, and consequences.
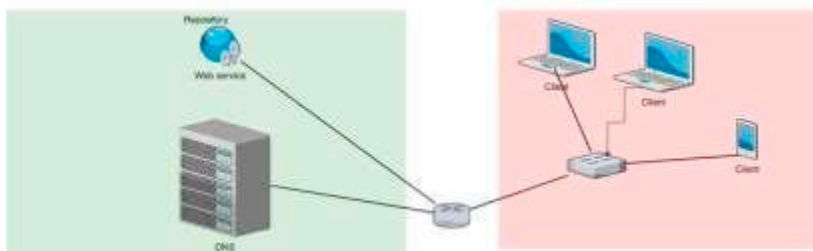
4. Application's Architecture

Fig 1. Application's Architecture.

The application is developed under client-server architecture, where in a central repository that interacts through an internet connection with the primary education institutions of the Magdalena department. In this way, the architecture guarantees the connection and access to all interactive resources.

5. Software's Details

The solution has academic resources to reinforce the concepts of both the story and the fable to the initial students and to carry out evaluative activities that allow post-modern analysis of the application of interactive games versus traditional forms of learning. In figure 2 and 3 you can see how the conceptual part is presented in the software, in an interactive way where children can work with audio images.

In the same way, different activities are carried out that tend to look at the performance of the students in the Spanish language subject using the platform. Some of the activities that are developed in the software can be shown in Figures 1 and 2.
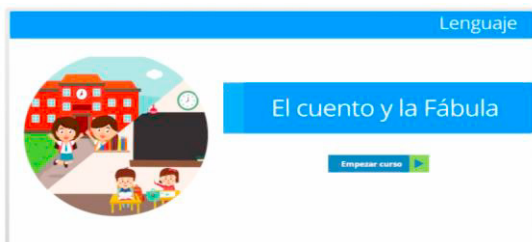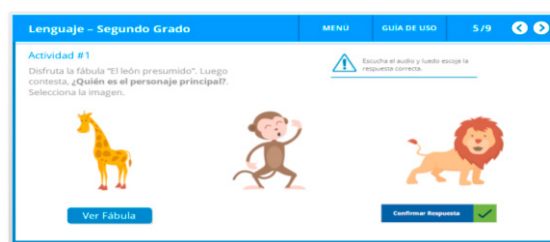

Fig 2. Main screen of the application
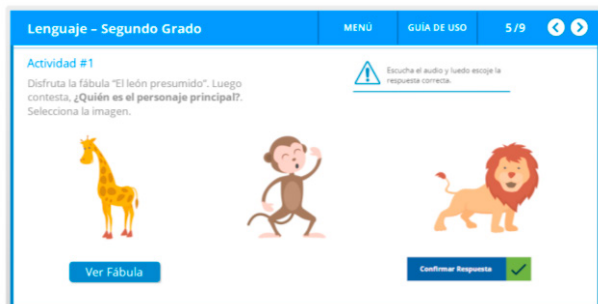

Fig 3. Multiple choice activity

Fig 4. Multiple choice activity

Fig 5. Location of options in the menu

6. Results

To analyze the data because of the students with the software iteration, data mining and computational intelligence techniques were applied to define aspects related to children's reading comprehension. The BayesianLogisticRegression technique was used for the analysis of the results of the children's interaction with the software, obtaining the following results in the quality metrics, which can be seen in Figure 6 and Table 1.
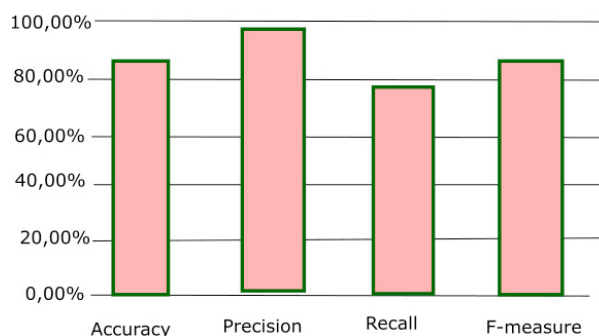

Fig 6. BayesianLogisticRegression results

Table 1.BayesianLogisticRegression results.

Accuracy	Precision	Recall	F-measure
85,71%	96,88%	73,81%	83,78%

7. Conclusions

The strategy was based on generating communities of practice, learning, knowledge, knowledge, innovation and transformation, understood as a transversal process, where collaborative learning, problematizing, by critical inquiry, permanent interaction, cultural negotiations and dialogue of knowledge, typical of the pedagogical proposal of the Ondas program. In the same way, it can also be identified that the techniques of data mining and computational intelligence serve as support for the identification of advances in the teaching-learning process in children and support the use of learning with technology.

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