

PROMOTING ENVIRONMENTAL CONSERVATION THROUGH TECHNOLOGY: RESULTS OF PHASE V OF THE PEDAGOGICAL SUPPORT PROJECT IN THE SAN SEBASTIÁN COMMUNITY, MANIZALES.

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Abstract

This article is the result of a social project carried out in the city of Manizales. Through joint work, "Universidad Católica de Manizales (UCM)" and "Obras Sociales de Betania" foundation developed this fifth phase, which intended to promote environmental conservation culture among the children and youngsters who take part in the soccer and dance schools in the community of "San Sebastián Manizales" and participate in technological projects. In this regard, a qualitative methodology was implemented using the research-action educational approach, with the purpose of working together with the students involved in the project, parents, and UCM teachers. The research findings permitted to identify the students' qualities and skills in managing solid waste and recycling to construct the various proposed technological devices in different sessions. In conclusion, it highlights the involvement of families in the development of activities outlined by UCM and how students recognized the importance of environmental care for a better quality of life.

Keywords: environmental education, technological projects, pedagogical support, social projection, technological tools.

Resumen

El siguiente artículo es el resultado del proyecto social, el cual se ejecutó en la ciudad de Manizales, en articulación entre la Universidad Católica de Manizales (UCM) y la Fundación Obras Sociales de Betania. Siendo esta la quinta fase del proyecto, se propuso como objetivo de la investigación fomentar mediante los proyectos tecnológicos la cultura de la conservación del medio ambiente, en los niños, niñas y jóvenes de la escuela de fútbol y danzas de la comunidad de San Sebastián de la ciudad de Manizales. En ese sentido, se implementó una metodología cualitativa desde el enfoque de la investigación, acción educativa, con el propósito de trabajar en conjunto con los estudiantes que hacen parte del proyecto, padres de familia y docentes de la UCM. Los hallazgos fruto de la investigación permitieron identificar las cualidades y habilidades de los estudiantes con el manejo de los residuos sólidos y el reciclaje para la construcción de cada uno de los artefactos tecnológicos propuestos en las diferentes sesiones. A modo de conclusión, se resalta la vinculación de la familia para el desarrollo de las actividades planteadas desde la UCM y cómo los estudiantes reconocieron la importancia del cuidado del ambiente para tener una mejor calidad de vida.

FOMENTANDO EL CUIDADO DEL MEDIO AMBIENTE A TRAVÉS DE TECNOLOGÍA: RESULTADOS DE LA FASE V DEL PROYECTO DE APOYO PEDAGÓGICO EN LA COMUNIDAD DE SAN SEBASTIÁN, MANIZALES.

Palabras Clave: Educación ambiental, proyectos tecnológicos, apoyo pedagógico, proyección social, herramientas tecnológicas.

I. INTRODUCTION

In today's world education must focus on developing skills and competencies that students can use throughout their lives. For this reason, Delors (2013) states that teaching and learning processes need to be immersed on 4 fundamental pillars namely: learning how to know, a tool for understanding; learning how to do, being able to influence one's own environment; learning how to live together, to participate and cooperate with others in all human activities; and finally, learning to be, a fundamental process that integrates the first three elements. In this context, the importance of the articulation of technological projects to promote environmental care is recognized.

Regarding this, educational institutions must promote spaces for reflection based on their own experiences and recognition of the context of each student, so that graduates have the ability to face the realities that life brings. In this sense, qualified professionals are required, and they need to show, not only discipline skills, but also the ability to give answers to global demands, generating in this way a positive impact on the society that surrounds them. They also need to maintain peaceful coexistence, and grant the presence of generations committed to the development of their country and who know their environment and immediate reality.

So, it is imperative to strengthen the education of learning by becoming because universities put knowledge first, and to a certain extent they ignore the fundamental basis of being a person. Due to this, companies recruit excellent professionals many times, but abandon them because they consider them to be mean. For that reason, they need a holistic presence that

needs to go hand in hand with their professional practice. Thus, we all should go back to the basics, and avoid the use of so much paperwork, and instead, promote strong verbal commitment.

The advent of technology in the 21st century has provided tools, not only to circulate and store data and information but also to ease communication posing a double requirement for education that, at first glance, seems almost paradoxical: education must disseminate, on a large scale and effectively, an increasing number of theories and knowledge by means of technology, adapted to civilization, since they are the basis of future skills. At the same time, it must find and define guidelines so as not to be overwhelmed by the more or less ephemeral flow of information that invades public and private spaces, and keeps individual and collective development projects on track. In certain way, schooling is forced to provide a nautical chart of a complex, constantly exciting world and, at the same time, a compass to navigate in it (Delors, 2013).

Additionally, Serna et al., (2017), remark the environmental conditions at “El Recreo” primary school branch. These conditions were presented in their research, and at the same time they proposed to find solutions to the environmental problem of the institution. It is worth considering that the students and the whole community were not used to recycling. Instead, all the materials they collected both at home and at school were burned near their homes. Sometimes, when a large amount of waste accumulated and its burning was delayed, this attracted flies, ants, mosquitoes and various rodents, which gave rise to diseases and unpleasant odors.

On the other hand, research works like those carried out by Largo-Taborda et al., (2022) and Gutierrez-Giraldo et al., (2023), have delved into pedagogical processes focusing on strengthening environmental sensibility by articulating technological inside the pedagogical ones. In this sense, the researchers highlight the importance of the use of technological tools in the teaching and learning processes aimed at reinforcing the recycling culture to take care of the environment.

In line with the above mentioned, it is worth commenting that several intervention projects have been developed since 2018 through joint work between “Obras Sociales de Betania” foundation and “Universidad Católica de Manizales” (UCM) aiming at collectively building formative spaces in San Sebastian neighborhood in Manizales. This work has been done with active participation of boys, girls and young adults who take part in the *“Apoyo Pedagógico para niños de la Escuela de Fútbol y Danzas*

de la Comunidad de San Sebastián Manizales.” Program.

II. METHODOLOGY

This research project is carried out using the qualitative approach to analyze both, the context and the relationships among the young population involved in dance and football at San Sebastian schools in Manizales Colombia. The main aims of this research project are to foster the culture of protecting the environment by means of technological projects, as well as to instill in these children the importance of preserving natural resources.

This research project employs a qualitative approach to analyze both the context and the relationships among the young populations involved in dance and football at San Sebastián schools in Manizales, Colombia. The primary aims of this project are to promote a culture of environmental protection through technological initiatives, as well as to instill in these children the importance of preserving natural resources.

Methodological procedure: This is carried through the following stages.

- First Stage: Research Baseline.
 - . Identify the actions that boys, girls and youngsters do regarding the protection of the environment, in order to determine and define the different technological projects that are going to be designed.
- Second Stage: Intervention Stage – Follow up.
 - Environment technological protection projects will be designed and implemented.
- Third Stage: Evaluation, impact, sustainability.
 - A post-test will permit to establish the extent of appropriation of boys, girls and youngsters regarding the protection of the environment, and in this way, it would be possible to analyze whether or not there was improvement on this issue thanks to the implementation of the technological projects used during the development of the study.

In order to carry out our research proposal, we have conceived an educational action research (IAE). This methodology allows us to identify and analyze the moments of reflection that arise in the interactions between the teacher-researchers, the students and the parents that make up our study community (Duque & Largo, 2021).

III. RESULTS

With the implementation of the project, it was possible to carry out the intervention with the community through support using the ZOOM platform. These meetings took place every 15 days, applying technical sheets in which support was given in the construction of the technological projects.

At first, a robotic hand was built, then a booklet was designed and finally, a picture frame was created. For each of the previous activities, the materials had to be recycled or reused in order to mitigate and reduce the environmental impact and, make students more aware of its importance but especially to the parents.

Each developed activity took a month, and followed the sequence shown in figure 1.

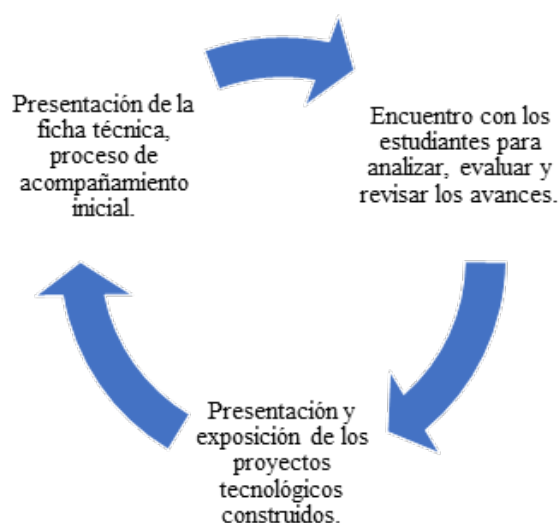


Fig. 1. Work sequence with boys, girls and youngsters.

As a final process, a socialization exercise was carried out in which the students-participants had the opportunity to present their activities with the participation of teachers, leaders of the foundation and, mainly, parents who were able to demonstrate the results obtained during the accompaniment that took place in the first semester of 2021.

It is important to emphasize that, through the support given to the children and the young people, who take part of the San Sebastian football and dance schools at the foundation called "Obras Sociales de Betania", various activities, which focus on several areas of knowledge like: Mathematics, language, environmental education and critical thinking, have been implemented, and these have always been permeated by the use of ICT tools.

Environmental care and technological projects

Environmental education and environmental care are topics of great importance at schools and other educational institutions, especially in the teaching of natural sciences. It is essential that students understand how these concepts relate to their daily lives and their educational process. Environmental concepts have traditionally focused on natural resources, such as biodiversity, water, flora and fauna. However, environmental education goes beyond nature and relates directly to human interactions in society.

In this context, technology plays a fundamental role in today's education. Technology influences the way we teach and learn. The implementation of technological projects in environmental education can motivate students and promote habits that contribute to the protection and preservation of the natural environment. Technology becomes a key tool for solving environmental problems and improving the quality of life.

The emergence of property and its relationship with the State are crucial factors in understanding the interaction between humans and the environment. Property leads to the creation of the State as a means of ensuring the preservation of property and wealth. This often leads to the exploitation of some individuals by others. Technology becomes a solution to address this problem, while promoting environmental conservation. Governments have established regulations to protect the environment and promote technological advancement.

Promoting environmental care through technological projects in educational settings is essential to motivate students and enable them to understand the importance of preserving the natural environment. Technological projects encourage student motivation and connect them with their environment, allowing for a greater understanding of the importance of environmental education.

Environmental education in primary schools is essential for students to strengthen their environmental awareness and develop skills that enable them to address environmental issues. Technological projects help students interact and develop skills for recycling and reusing materials.

The use of information and communication technology (ICT) allows us to identify students' prior knowledge and adapt teaching to their needs. In addition, it allows to encourage the development of their entrepreneurial skills and abilities.

In conclusion, the implementation of technological projects in environmental education in the community of San Sebastián has proven to be an effective strategy to motivate students, promote environmental awareness and develop technological and entrepreneurial skills. These projects have allowed students to understand the importance of preserving the environment and contributing to society from a sustainable perspective.

Technological projects and the environment: A contribution from vulnerability

Environmental education is an essential tool to safeguard the sustainability of development and to promote skills aimed at caring for and preserving the environment. It is essential to understand how the implementation of educational alternatives contributes to the sustainable development of regions. Educational processes are intertwined with social problems to propose solutions and strategies for change.

As technology advances, environmental problems become more complex and urgent. Education becomes a key agent of change to address these challenges and transform society. The speed of development and the multiculturalism of today's society bring about significant challenges for educational systems, which must adapt to an uncertain and complex future.

Education becomes the connection point between technological progress and social and environmental responsibility. Students become active agents of change, contributing to peacebuilding and promoting environmental awareness. Technology and innovation play an important role in this process, motivating students and improving the quality of education.

Society is immersed in an interdependent cycle, where nature, technology and education are related to maintain balance and stability. Education must be contextualized and relevant so that each member of the educational community is aware of their role in preserving the planet.

The articulation of environmental education with technological projects allows students to understand the world through educational processes adapted to their context. Technology drives innovation, motivating students and improving the quality of the education. Social innovation delves into the necessities of vulnerable people and promotes initiatives that aim for the protection of the environment.

Innovating involves the interaction of processes that consider the exchange of information with the exterior.

Schooling plays a paramount role in the transformation of the environment, and it also promotes dialogs among the context, the technology and the environmental education. The generated ideas and the efficient practices replicate and adapt in diverse contexts, enriching the innovation process.

The intervention process not only contributes to the learning experiences of the students regarding the environment and the technological projects, but it also generates accompaniment and reflection spaces for the entire community, promoting at the same time collective learning, as well as wider environmental conscience.

IV. DISCUSSION

During the course of the Pedagogical Support project for children from the "San Sebastián-Manizales Community Football and Dance Schools" and the Foundation, we carried out the fifth phase, which focused on promoting environmental awareness and preserving the natural environment through technological projects. The results of this research have revealed a series of highly relevant findings.

Firstly, it was observed that the participating students demonstrated greater appropriation and recognition of the positive influence of technology in their educational process. They better understood how technological tools can enhance their learning and contribute to the development of society in general. The increase in technological awareness can be translated into better use of digital resources in future stages of their education.

Authors such as Alzate et al., (2018); Parra-Bernal & Agudelo-Marín (2022); Largo-Taborda et al., (2022) and Hurtado (2020), state that the use of technology in schooling processes allows students to increase their interest and motivation (Ruiz-Ortega & Rodas, 2023), when addressing new concepts that were not initially attractive.

In addition, an improvement was seen in the areas in which pedagogical support was provided. Students who received this assistance experienced an increase in their levels of socialization and greater respect for the norms established in the program activities. This strengthening in social coexistence is essential for their personal development and future success in society.

In this context, the use of technological tools not only improved aspects related to the learning of some concepts of natural sciences, but it also promoted the

care of the environment from the perspective of the conservation of materials that can have other uses or that can be recycled, thus generating spaces for reflection around the recognition of environmental problems (Largo-Taborda & Rosero-Moreano, 2016; Largo-Taborda, 2022).

Finally, it is relevant to highlight that the project not only promoted academic training, but also emphasized academic qualification of students. Integration and development activities were carried out during the scheduled days. In addition, the participation of the students' families was promoted, fostering spaces for reflection and dialogue. Parents showed significant commitment to "Obras Sociales de Betania" foundation as well as "Universidad Católica de Manizales", which further strengthens the positive impact of the project on the community and contributes to a more comprehensive and holistic education.

In short, the fifth phase of this project proved to be highly beneficial in terms of technological awareness, social development and academic qualification. The positive results obtained highlight the importance of addressing not only academic aspects, but also values and social interaction in the education of young people in the community of "San Sebastián-Manizales". These findings can serve as a basis for future educational programs and projects that seek a positive and lasting impact on society..

V. CONCLUSIONS

After working in the community through the project called Pedagogical Support for the children of the soccer and dance schools of the community of "San Sebastián - Manizales", which was developed with "Obras Sociales de Betania" foundation, and was implemented with a focus on strengthening environmental awareness, it can be concluded that students show greater disposition and recognition of the value of protecting the environment. Besides, it allowed to highlight the contribution of technology in the training process throughout the fifth stage of the technological project and care for the environment, especially into social impact.

At the same time, there was also improvement in teaching support, which in turn showed that students who participated in Stage 5 experienced an increase in their level of socialization and respect for the rules

established in the activities designed to promote social coexistence. Most importantly, this stage also helped to strengthen the culture of conservation and care of the environment.

Finally, it is important to recognize that through the pedagogical processes aimed at building environmental awareness in the community, students and their families have strengthened this aspect, since by developing support through the use of ICT, it was possible to involve parents in the construction and development of activities, fostering collaborative and joint work that extended from the home of each student.

Through the project "Pedagogical Support for Children belonging to the Soccer and Dance Schools of the Community of "San Sebastián" in Manizales, "Obras Sociales de Betania" foundation, we have implemented phase 5 of the project, which focuses on strengthening environmental awareness and care for the environment through technological projects. The results indicate a greater level of appropriation and recognition by students of the contributions of technology in their learning process and in the development of society in general.

Likewise, we have observed significant improvements in the areas where pedagogical support has been provided. In particular, the students who participated in phase five showed an improvement in their socialization skills and greater respect for the rules established in the activities, which has contributed to a more harmonious coexistence.

In addition, the project has enriched the process of human qualification, not only through the areas of intervention, but also through integration and development activities during the established days. Collaboration has been encouraged within the family as a means of consolidating spaces for reflection and dialogue between the children participating in the program and their parents. The latter have demonstrated an outstanding commitment to "Obras Sociales de Betania" and "Universidad Católica de Manizales" University of Manizales in the continuation and progress of the project.

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