

Pro-environmental Characterization attitudes of natural sciences and physics teachers in training

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Abstract. Given that environmental pollution is one of the main challenges facing humanity, a qualitative, exploratory research is presented, which, through an adapted version of 15 questions from the EAPA test, characterizes the pro-environmental attitudes of 20 science and physics teachers in training in Chía, Cundinamarca, Colombia. The results show that pre-service teachers recognize that fostering environmental awareness in themselves and in their future students constitutes an alternative to halt the deterioration of the planet. Finally, there is an identified need to evaluate how to teach students to carry out daily activities without affecting ecosystems in a sustainable manner.

Introduction.

After the Second World War, the world experienced economic development which according to [1] consolidated a renewed confidence in industrialization processes. This worldview related economic development with industrial development, generating a series of environmental problems. In this sense, and from a reflective framework, environmental problems are connected to various situations which in some development models depend on natural resources and put the planet at risk [2], leading to the consideration that environmental pollution is one of the main problems facing humanity today.

The aforementioned generates a kind of unsustainability and gives way to the "risk society" mentioned by [3]. Particularly for Colombia, environmental issues have been identified in 175 municipalities in Colombia, where the outlook is as follows: water pollution, air pollution, poor solid waste management, deforestation, soil degradation, food contamination by agrochemicals, among others. In this sense, it is considered essential that future teachers receive specific training on climate change and environmental sustainability. However, for this they need to learn to teach about climate change in an effective and attractive way. This includes the use of innovative and participatory pedagogical strategies, such as project-based learning, service learning, and experiential education [4]. In turn, pre-service teachers see the need to participate in environmental projects inside and outside the classroom, allowing them to put their knowledge and skills into practice, developing a greater understanding of local and global environmental challenges.

In this regard, there are multiple studies linking teacher training with environmental engagement, including the study conducted by [5] who make an approach to the study of renewable energies in teacher training. Likewise, a study conducted in Malaysia stands out, which proposes including subjects related to the social, cultural and biophysical environment in the teacher training curriculum, in order to achieve a balanced and harmonious relationship not only between human beings and nature, but also between different ethnic groups [6].

In recent decades, the environmental crisis has driven new strategies to raise community awareness about the human impact on the environment. One of them is pro-environmental attitudes, which [7] describes as individuals' actions to minimize environmental damage or active help to restore the natural environment. These attitudes can take different forms, such as the one presented by [8] where it is presented in terms of environmental activism in a social sphere.

Likewise, teacher training on environmental issues should be considered with critical thinking, since Environmental Education is an important process that teachers must handle before indirectly imparting it in the classroom. According to [9] this can lead to problems during its implementation in schools; such as the conception that environmental education together with pro-environmental attitudes represents an additional burden for educators when teaching.

Considering then that science and physics teachers occupy a privileged position to instill in students a sense of environmental responsibility. By cultivating an emotional connection with nature, they are the ones who can potentially influence students' attitudes towards the environment and their subsequent pro-environmental behaviors. As demonstrated in the study by [7] the emotional connection with nature acts as a predictor of pro-environmental behavior among the general population. Understanding the influence of age, gender and context is vital for science teachers to refine teacher training initiatives by adapting

interventions to address the demographic differences required by the context, optimizing their impact on pro-environmental education in schools.

Thus, according to [10] pro-environmental attitudes are the subject of multidisciplinary interest, which has generated tools such as field observation, general and specific reports, trained observers, technical devices and laboratory work.

Methodology.

This article presents a qualitative, exploratory research that investigates the pro-environmental attitudes of a group of 20 science and physics teachers in training, which answers the research question. What are the pro-environmental attitudes of a group of physics and natural sciences teachers in training?

The study population is between 18 and 22 years old and consists of 10 men and 10 women. This investigation was carried out using an adapted version of the EAPA test proposed by [11] and composed of 15 questions, the instrument was validated through expert judgment by professors from the Faculty of Education of the Universidad La Sabana de Chía, Colombia. The results were analyzed on a Likert scale and Cronbach's alpha coefficient was determined, with a value of 0.76 to demonstrate reliability.

Results.

The results show that in general, pre-service science and physics teachers recognize that generating environmental awareness in themselves and in their future students could be a way to start thinking about the planet in order to stop deteriorating it. Also, the need to assess how students should be taught to carry out daily activities in a way that does not further affect the ecosystems from which raw materials are extracted is acknowledged. Finally, the research manages to identify that a good attitude and willingness is a critical factor in pro-environmental education.

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