

Fundamentos Teóricos de las Inteligencias Múltiples y el Tratamiento a la Conciencia Ambiental en Estudiantes

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Abstracts: The present research is titled Theoretical Foundations of Multiple Intelligences and the Treatment of Environmental Awareness in Students, with the main objective of analyzing the potential application of the theoretical principles of multiple intelligences in the promotion of environmental awareness among students. For this, a qualitative methodology was developed in which a bibliographic review was carried out in different databases, initially finding 98 articles, proceeding to a discriminatory selection of them and finally managing to identify 45 articles which were used to obtain the data of this work. The results found showed that for the first variable referring to multiple intelligences it was identified in approximately 27% of the documents examined, while versatility was found in around 40%. On the other hand, the applications and uses were located in a percentage of 33% in the documents reviewed, in the same way the strategies for the treatment of environmental care, the articles that address these environmental strategies revealed that 24% exhibit innovative features, a 18% show flexibility, 24% have a critical approach, and 33% adopt a prospective and perspective orientation. Finally, it was possible to specify that the use of multiple intelligence enhances student learning, and even more so when they are aimed at developing knowledge and skills in caring for the environment.

Keywords: Theoretical Foundations, Multiple Intelligences, Teaching Strategies, Environmental Awareness.

1. INTRODUCTION

The progress of scientific knowledge drives the development of science and technology, enhancing the human capacity to continually alter nature. However, this advance goes hand in hand with an increase in the pressure exerted by social activities on the natural environment. Awareness of environmental and climate problems is closely linked to individual perceptions of global climate change and understanding of carbon dioxide pollution derived from respiratory processes [8].

The relationships between people and their environment make up their living environment, including everything that has an impact on it. In certain cases, the desire to improve the current quality of life, without considering a territorial development plan, contributes significantly to the accumulation of solid and organic waste [20]. The urbanization process and the adoption of modern technologies by families have led Malaysia towards environmental degradation, facing challenges arising from environmental modifications [2].

A worrying issue in the comprehensive education of the students is the promotion of environmental awareness from schools, which should be seen as the construction of an adequate sustainable future and considering, therefore, it is essential to redirect the educational focus towards environmental training that is more relevant and pertinent [14].

One way to establish guidelines for environmental sustainability is through education. Environmental education in the pedagogical field has the power to shape individuals with environmental awareness, fostering a critical and reflective attitude to address and understand environmental degradation. When education is integrated into sustainable development, it can generate citizens committed to their environment, equipped with attitudes and skills that promote conservation. In this line, higher education plays a crucial role; Universities have the responsibility to foster social responsibility by educating young generations, equipping them with entrepreneurial leadership, vision for the future and commitment to sustainable development in their respective fields [10].

In the study environment, students show little understanding of the importance of conserving the environment, which is reflected in a lack of interest in environmental care. This behavior is reinforced by the lack of action on the part of authorities and families in the face of obvious problems such as littering in public spaces and bodies of water, neglect of parks, waste of water and deforestation, actions that go against ecology. It is presumed that the lack of knowledge about educational methods and resources to promote environmental awareness based on the different intelligences of students, the reluctance to implement changes towards environmental sustainability in teaching, and time limitations due to administrative pressures to complying with the curriculum are contributing factors.

Multiple intelligences, developed by Howard Gardner, represent the valuing of the variety of abilities and aptitudes. In the early 1980s, American psychologist Howard Gardner introduced the theory of multiple intelligences, a proposal that had a significant impact on education on a global scale [22]. Furthermore, according to the theory of multiple intelligences, various forms of intelligence are distinguished, including linguistic-verbal, logical-mathematical, spatial, bodily-kinesthetic, musical, interpersonal, intrapersonal and naturalistic. [19] Likewise, according to Howard Gardner's theory of multiple intelligences, all people possess, at different levels, all intelligences, and the way in which these are strengthened and combined will determine the specific capabilities they develop [12]. Finally, this is known as "learning styles", where in each individual there is one that stands out, given that they use different areas of the brain. Even so, the more various intelligences are involved during the learning process, the greater the likelihood of remembering the information [9].

For that reason, it is pertinent to the extent that excessive human activity is generating irreversible changes on the planet, causing a global crisis. It is imperative to involve students in processes that sensitize and raise awareness about the environment. This acquires social importance by requiring a committed and active population. In addition, it has theoretical foundations supported by the Theory of Structural Goals of (Feuerstein, 1996) [7]. Which addresses the determining factors of pro-environmental behaviors, as well as Gardner's Theory of Multiple Intelligences (1983), which identifies different types of intelligence in human beings. The purpose lies in disseminating the theoretical principles of multiple intelligences and their relationship with environmental awareness in students. Likewise, it seeks to review the theories of intrapersonal, interpersonal and naturalistic intelligence, and understand the theoretical bases of environmental awareness [21].

Environmental awareness is an educational process that seeks to form conscious, committed and responsible individuals with the environment, promoting understanding of environmental problems and promoting sustainable practices [11]. As well, it seeks to ensure that teaching has sustainability, this principle that seeks to satisfy present needs without compromising the ability of future generations to satisfy their own needs, balancing economic, social and environmental development. [3].

In the same way, understanding and sensitivity towards the interrelationship between human beings and their natural environment, promoting responsible and careful attitudes towards nature. That is why the educational method involves direct and practical experience as a basis for learning, allowing students to connect with the environment and better understand environmental problems. The active involvement of society in decision-making and actions to protect the environment, promoting collective responsibility and commitment to sustainability [17].

One of the requirements that teachers seek is to achieve the teaching of Deep Ecology: This current proposes a change in the traditional anthropocentric vision, arguing that all living beings and ecosystems have intrinsic value, regardless of their usefulness for humans. Proposes a deep connection with nature, promoting respect and consideration for all forms of life [15].

A theoretical basis is sustainable development where it is suggested that economic development must take into account the conservation and preservation of the environment in the long term. Advocates a balance between human needs, economic growth and the conservation of natural resources, recognizing the interdependence between human well-being and the healthy state of the natural environment [13].

2. MATERIAL AND METHODS

It is essential to keep in mind that the literature review involves the application of a series of techniques associated with the scientific research method. It is not limited only to collecting information without order, but is the starting point for the production of a scientific article. This review provides us with a clear idea of the current situation regarding the topic of multiple intelligences and the approach to environmental awareness. By critically evaluating other studies on these topics, we contribute to contextualizing the topic within its environment. To carry out a comprehensive review of the literature, the work carried out must offer the reader a clear, objective and coherent summary of current knowledge about multiple intelligences and their relationship with environmental awareness [5].

Literature review as a method that involves the identification and collection of information supported by parameters and expert studies [23]. This allows the researcher to incorporate data from the perspective of other authors, as long as the content is relevant to the topic of study. In this case, reference is made to the theory of connectivism by Stephen Downes and George Siemens, which focuses on learning derived from the use of new technologies in the digital age. This theory allows learning through strategic planning of the use of virtual resources and tools, facilitating communication between educational actors [1]. In this context, the research focuses on two variables: multiple intelligences and environmental awareness, which are fundamental for the object of study [4].

The methodological approach used in this study is qualitative in nature, focusing on a bibliographic review. First, an exhaustive investigation of articles linked to the topic of study was carried out, followed by a detailed and complete analysis of the scientific academic literature. The key question that guides this integrative review was formulated following the PICOT (Population, Intervention, Comparison, Results, Time) strategy: ¿What is the potential for applying the theoretical principles of multiple intelligences in the promotion of environmental awareness among students of today?

In order to support the research, bibliographic managers and search engines were used in databases of journals indexed in Scopus, Web of Science and Scielo. A comprehensive review of all articles published up to May 30, 2023 was carried out to obtain relevant information and references, in order to understand the theoretical contribution of experts in the field and consolidate the theoretical basis of the research.

The term search was conducted using keywords suggested by the thesaurus, such as “theoretical foundations,” “multiple intelligences,” “treatment,” and “environmental awareness.” In addition, a search was carried out in the UCV virtual library. After applying exclusion criteria to eliminate duplicates and documents not relevant to the topic, 98 results were obtained. Review and original articles in English and Spanish that were related to the proposed research were selected, using filters for the title, abstract and full text. As a result of this process, 45 articles were included, the current review will be found in Table 1.

Table 1 Results description

Sources	Descriptor	Number
Scielo https://scielo.org/es/	Theoretical fundament	14
Redalyc https://www.redalyc.org/	Multiple intelligences	16
Alicia Concytec https://alicia.concytec.gob.pe/vufind/	Treatment and environmental awareness	19
Google Academic https://scholar.google.com/schhp?hl=es	Treatment and environmental awareness	21
Dialnet https://dialnet.unirioja.es/	Multiple intelligences	14
Access proposal provided by the Cesar Vallejo University https://www.proquest.com/	Theoretical fundament	14
Total		98

The search was carried out using the terms "Strategies", "Didactics", "Intelligence" and "Artificial" in quotes, with the purpose of focusing on the information desired in the search engines. Specific inclusion and exclusion criteria

were established. The inclusion criteria covered documents that address the notion of formative research, articles published between 2020 and 2023 in Spanish and English, and those that contain data on formative research in Latin America. Regarding the exclusion criteria, articles that do not refer to Latin America or do not present relevant information on the variable in question were eliminated.

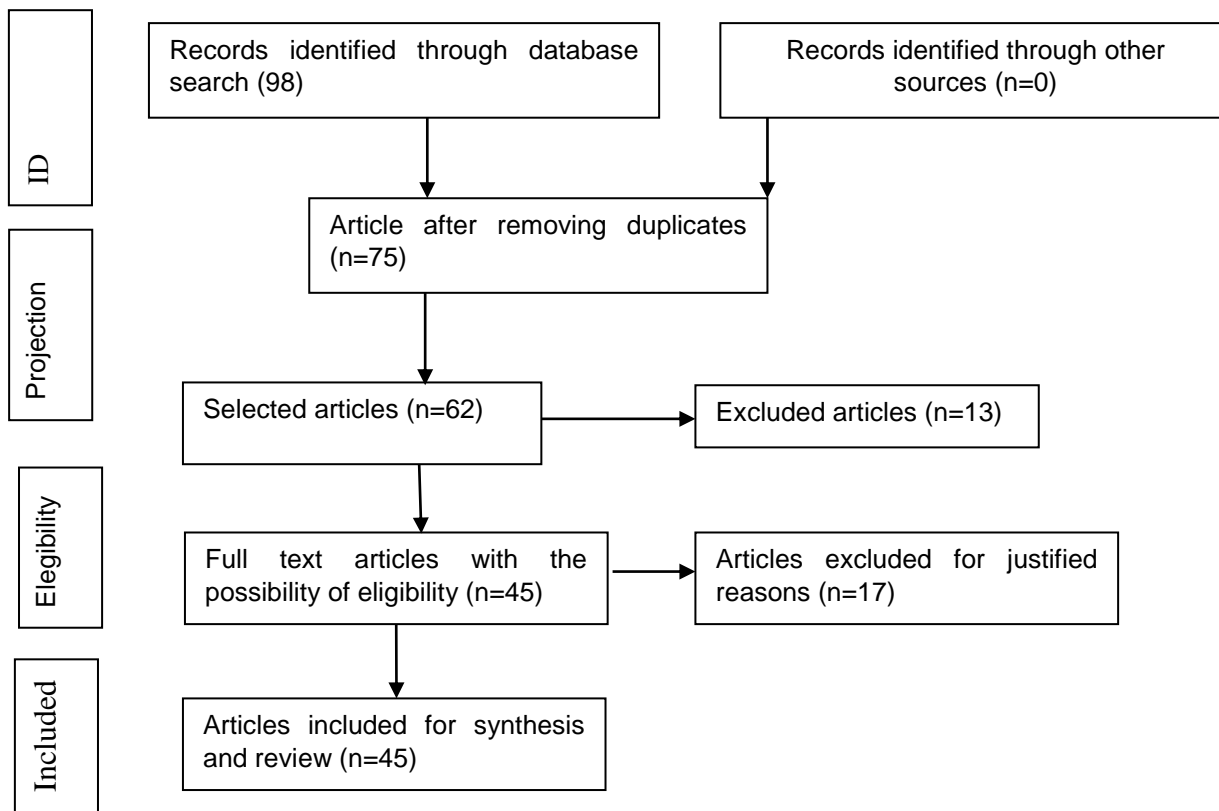


Figure 1. Prisma flowchart

The pedagogical actions and methods used by the teacher cover all activities and plans designed to facilitate student learning. These strategies may vary depending on the topic and educational level, and will also be influenced by the ideology of the educational center. Keeping students motivated is crucial in any teaching and learning process, even more so if the environmental aspect is taken into account. [17] The dimensions proposed for teaching strategies linked to environmental awareness are innovation, flexibility, critical focus, prospective perspective and orientation. As for the variable artificial intelligence, it refers to the ability of a machine to display human-like abilities, such as reasoning, learning, creativity and planning ability [16].

The dimensions associated with this variable include understanding, versatility, applications and uses.

3. Results And Discussions

For the first variable that refers to the Theoretical Foundations of Multiple Intelligences, the following results have been found from the articles presented in table 2. Results of the variable Theoretical Foundations of Multiple Intelligences and their comparison in figure 2.

Table 2. Results of the variable Theoretical Foundations of Multiple Intelligences

Theoretical Foundations of Multiple Intelligences		
Comprehension	12	27%
Versatility	18	40%
Applications and uses.	15	33%
TOTAL	45	100%

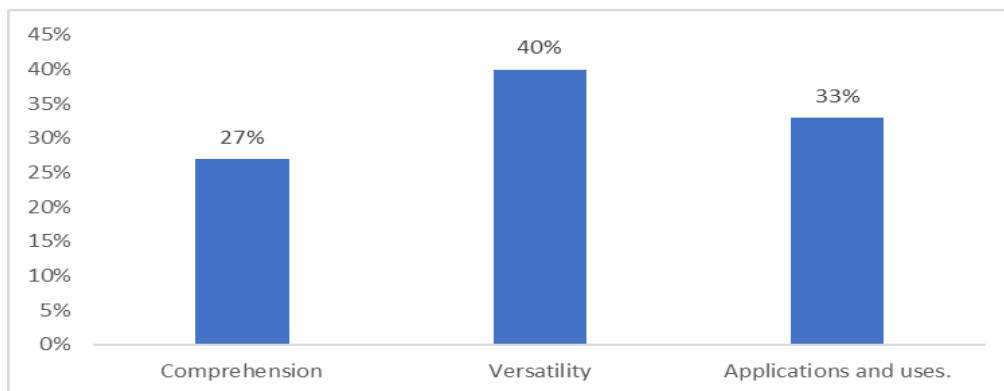


Figure 2. Theoretical foundations of multiple intelligence

The results found in Table 2 show that the reviewed documents have different perceptions regarding the dimensions proposed for this variable, in this sense it is shown that understanding is in the range of 27% of the reviewed documents, in the same way. The versatility is at 40% and the applications and uses are at 33%, it can be concluded that multiple intelligences allow the development of various competencies which allow people to consider diverse activities such as the development of music. The sciences, among other specialties are also present in their diversity, promoting not only the development of specific skills, but also proposing the development of a diversity of activities in which the individual can specialize and be able to develop actions that improve their competitiveness in the market.

For the second variable: Strategies and learning in the environmental aspect, Table 3 shows the results of the learning strategies in the environmental aspect and their comparison in Figure 3.

Table 3. The results of learning strategies in the environmental aspect[Error! Not a valid link.](#)

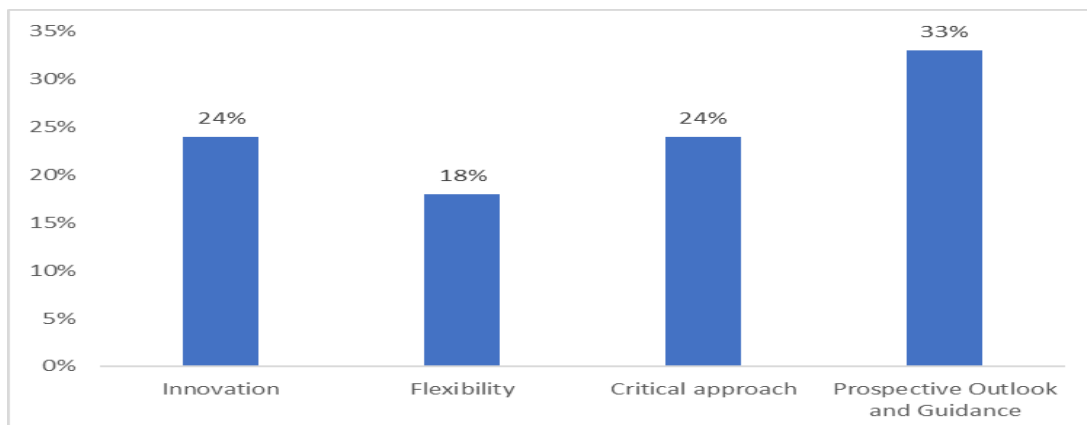


Figure 3. Learning strategies in the environmental aspect
3950

The results shown in table 3 and figure 3 show the results of the search for information in the articles referring to the strategies used for the environmental aspect, finding that 24% have innovative characteristics, 18% have flexible characteristics, 24% show a critical approach and 33% show a perspective and prospective orientation. Each of these characteristics being very important to ensure that students show real knowledge about learning about the environment, the combination of these strategies with the use of multiple intelligences raises various alternative competencies that can be developed by students in an approach closer to learning with a high significance regarding environmental knowledge.

CONCLUSIONS

It has been found that multiple intelligences have been widely studied and that they can be used for the development and execution of various activities of an educational nature and their use in daily life is possible to improve the competitive levels of the person, thus the main characteristics of multiple intelligences with understanding, versatility and the diverse applications and uses that can be given to this type of intelligence. In the same way these are important so that various learning can be developed, especially linked to the environment, this being increasingly most important to promote awareness of caring for the environment among young people, thus the main characteristics that were studied in this article are innovation, flexibility, critical approach as well as perspective, foresight and orientation, each being one of them very important for the achievement of specific results in the learning levels of the students. Finally, each of these variables can affect each other, in the sense that students who develop better levels of multiple intelligence will be able to develop better competencies in their educational process.

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