



## **PEDAGOGICAL TOOLS IN THE INCLUSION OF HEARING-IMPAIRED STUDENTS TO MANTA'S EDUCATIONAL SYSTEM**

### **HERRAMIENTAS PEDAGÓGICAS EN LA INCLUSIÓN DE ESTUDIANTES CON DISCAPACIDAD AUDITIVA AL SISTEMA EDUCATIVO DE MANTA**

Muñoz-Zambrano Shalea Melissa <sup>1</sup>

López-Mero Patricia Josefa <sup>2</sup>

<sup>1</sup> Licenciada en Ciencias de la Educación mención Cultura Estética – Profesora en la Unidad Educativa Bahía de Manta. Manta, Ecuador. shaleamunoz@gmail.com

<sup>2</sup> Decana de la Facultad de Trabajo Social de la Universidad Laica Eloy Alfaro de Manabí. Manta, Ecuador. patricia.lopez@uleam.edu.ec <https://orcid.org/0000-0002-6628-9586>

#### **ABSTRACT:**

Both globally and nationally, a considerable segment of the population is hearing impaired, many of them are students entering the educational system who for various reasons do not receive an education according to their own needs. This research aims to determine the impact of the pedagogical tools applied by teachers on the inclusion of hearing-impaired students. It is for this reason that the intention of the research is focused on promoting the inclusive education of these students. Therefore, the objective of the research is to determine the impact of the pedagogical tools applied by teachers in the inclusion of vulnerable students with hearing disability in the educational system of the canton Manta in the 2019-2020 school period. A descriptive research with a quantitative approach was carried out that allowed to know the mentioned problem in the educational centers of the city of Manta, Ecuador. For this purpose, surveys were applied to a sample of 400 teachers belonging to educational institutions in the city of Manta, Ecuador. It was obtained that 44.6 % of the participants apply the inclusive pedagogical tools for hearing impaired students. In addition, it is shown that 56.3 % of the teachers participating in the research have received between one to three trainings related to the inclusive pedagogical tools. Through the research it has been possible to evidence the importance of the inclusive curricular design proposed by the administration of the educational system; however, it also establishes the importance of articulating the assertive participation based on three aspects: parents-teachers-educational environment.

**Keywords:** Pedagogy, inclusive education, teachers, training, hearing disability.

#### **RESUMEN:**

Tanto a nivel mundial como nacional, un segmento considerable de la población presenta discapacidad auditiva, muchos de ellos, estudiantes que ingresan al sistema educativo y que por diversas razones no reciben una educación acorde a sus propias necesidades. La presente investigación pretende determinar el impacto de las herramientas pedagógicas que aplican los maestros en la inclusión de los estudiantes con discapacidad auditiva. Es por esta razón que la intención de la investigación está enfocada en promover la educación inclusiva de estos estudiantes. Por lo tanto, el objetivo de la investigación es determinar la incidencia de las herramientas pedagógicas aplicadas por los docentes en la inclusión de estudiantes vulnerables con discapacidad auditiva en el sistema educativo del cantón Manta en el período 2019-2020. Se llevó a cabo una investigación descriptiva con enfoque cuantitativo que permitió conocer la problemática mencionada en los centros educativos de la ciudad de Manta, Ecuador. Para ello, se aplicaron encuestas a una muestra de 400 profesores pertenecientes a las instituciones educativas de la ciudad de Manta, Ecuador. Se obtuvo que el 44,6% de los participantes aplican las herramientas pedagógicas inclusivas para los estudiantes con discapacidad auditiva. Además, se demuestra que el 56,3% de los docentes participantes en la investigación han recibido entre 1-3 capacitaciones relacionadas con las herramientas pedagógicas inclusivas. Mediante la investigación se ha logrado evidenciar la importancia del diseño curricular inclusivo planteado desde la administración del sistema educativo; no obstante, se establece también la importancia de articular la participación asertiva basada en tres aristas: padres de familia-docentes-entorno educativo.

**Palabras Clave:** Pedagogía, educación inclusiva, profesores, formación, discapacidad auditiva.

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## **1. INTRODUCTION**

The World Health Organization (WHO) stated that more than 5% of the world's population is hearing impaired, and more than 360 million people have disabling hearing loss (WHO, 2019).

In Ecuador, according to the National Council for Equality of Disabilities (2020), 55,020 people have been reported with disabling hearing loss, so that of the total number of people with disabilities, 14.05% are hearing impaired. The rate of people suffering from this disability increases progressively and it is evident that in the accessibility of basic aspects for the human being there are restrictions and signs of exclusion. In addition, there are educational institutions at the national and local level, which have students with hearing disabilities (Cedeño et al., 2020), therefore, teachers must apply pedagogical tools for the inclusion of these students guaranteeing educational inclusion as a universal right. In many educational institutions, students with this type of disability are affected in their learning processes, mainly due to the difficulty of generating phonological representations, which are mental representations produced from sounds. This difficulty causes

inconveniences or differential aspects in the different areas of the student's development (Liu & Hong, 2006; Razalli et al., 2018).

In this sense, the WHO calls on countries to take appropriate action to mitigate, prevent and reduce cases of hearing impairment; however, it also states that actions should be promoted to enable people with hearing disabilities to be included in society. In this specific case, the teaching of sign language in schools should be promoted and social support also plays a transcendent role in the policies adopted by government agencies (WHO, 2019).

This research has as a field of action the application of inclusive pedagogical tools by the teachers of the educational institutes of Manta, in order to determine their effect on the inclusion of hearing-impaired students, since according to Santamaría & Gutiérrez (2018) such tools have a fundamental role in the curricular adaptations needed to guarantee and promote inclusive education.

By applying inclusive pedagogical strategies according to the educational needs of hearing-impaired students, equal conditions and opportunities in the learning process of



these students can be guaranteed. Figueroa & Lissi (2005) point out that the handling of a sign language in the acquisition of written language in people with hearing disability, represents an opportunity for academic development regarding reading strategies and skills; considering some approaches derived from the possibility of transference of linguistic skills for the development of competences in written language.

The UN Convention on the Rights of Persons with Disabilities (2006) states in Article 24 that:

States Parties recognize the right of persons with disabilities to education. With a view to realizing this right without discrimination and on the basis of equal opportunity, States Parties shall ensure an inclusive education system at all levels (p. 18).

This regulation applied in all UN member states proposes that each country should ensure inclusive education systems for all students, regardless of educational level.

Article 6 of the Organic Law on Intercultural Education (2011) on Obligations states that the required curricular adaptations must be created and implemented to ensure the

inclusion and permanence of students with disabilities in the educational system.

At the local level, the Secretaría Técnica del Consejo de Protección de Derechos de Manta (Technical Secretariat of the Council for the Protection of Rights in Manta) (2018) carries out actions with representatives of educational institutions to address the inclusion of priority groups, and specifically people with disabilities.

It is evident that there are regulations at the international, national and local levels that show the imperiousness of providing quality and warmth education that guarantees this human right. With regard to hearing impaired students, teachers are required to assertively apply inclusive strategies that promote and enable the development of the entire group of students at school, guaranteeing equal conditions and opportunities for all students, with the appropriate adaptations so that these students have access to knowledge, including in this field the teaching of sign language (Santamaria & Gutiérrez, 2018).



## **2. METHODS AND MATERIALS**

- **Methodological design**

It is a descriptive-correlational research with a quantitative approach that allowed to know the mentioned problem in the educational centers of the city of Manta regarding the educational inclusion of hearing-impaired students during the 2019-2020 school period. In addition, the situation was described and the effects of the tools used by teachers to promote educational inclusion in students with this disability were analyzed.

The research had a quantitative approach, because the results of the research were obtained in a numerical way and they are also presented as tabulated information by means of numerical indicators. In addition, Hernández-Sampieri (1991, p. 5), points out that the quantitative approach "uses data collection to test hypotheses, based on numerical measurement and statistical analysis, to establish patterns of behavior and test theories. In this research, the quantitative approach is employed through the survey technique.

### **a) Research participants**

According to the Administrative Records of the Ministry of Education, in the educational institutions of Manta there are 2,929 teachers (population) distributed in public, private and public-private institutions. A sample of 400 teachers from the local educational system was surveyed.

### **b) Field of study**

This research had a local impact on the schools and high schools where educators from Manta, Manabí, Ecuador work.

### **c) Techniques used**

The survey was used to detect the application of inclusive pedagogical tools and the level of perception about the academic performance of hearing-impaired students.

## **3. RESULTS**



#### **4. DISCUSSION**

It is clear that for educational systems to assertively apply inclusive education, it is necessary to redefine and guide educational policies, so that inclusion must be considered a process that never ends, posing it as the search to actively respond to student diversity. Some Latin American countries have a more comprehensive vision of inclusion in educational centers, among which Ecuador is mentioned, understanding it as a priority in the first years of a student's education (Payá, 2010).

According to Garcia et al. (2018) In the classroom teachers are faced with diverse conditions to understand and adapt pedagogical strategies towards the inclusion of hearing-impaired students, however, this research has determined that the presence of students with total hearing impairment is very rare, so that in this study it was determined that the vast majority of these students (57.14%) have a degree of disability between 50-59%.

Table 5 of this research shows that slightly more than half of the participants do not use the inclusive teaching tools for hearing impaired students. In this sense, it should be noted that Del Rocío-Sánchez et al. (2019)

mention that inclusive methodological tools are important because they facilitate learning in hearing-impaired children at the basic level, in order to provide them with a quality education, promoting inclusion in the classroom with the regular teaching of the children. It is relevant to take into consideration that there is a remarkable number of teachers who do not apply these tools, showing a negative indicator in the teacher's management compared to the management of the classroom with hearing impaired students. Likewise, it is mentioned that the combination of these inclusive pedagogical tools and the sign language constitutes an incentive to promote an integral, inclusive, quality and warm education.

With regard to the application of curricular adaptations, "education systems must offer lifelong learning opportunities, implementing effective methodologies that take diversity into account, with the necessary curricular adaptations to ensure quality education and the acquisition of specific skills" (Payá, 2010, p. 131). The above mentioned allows us to infer that the student must receive educational conditions conceived from the plane of respect to his



rights, contemplating the need to implement appropriate teaching systems for students with hearing disabilities, in which an accompaniment with signs and images complementary to information is handled, playful and integration activities, strengthening of visual and tactile channels, educating them in sign language.

From what has been previously described, Huang et al. (2018) point out that millions of hearing impaired people around the world usually use some variant of sign language to communicate, so the automatic translation of a sign language is significant and important. Currently, there are two sub-problems in sign language recognition (SLR), i.e., isolated SLRs that recognize word by word and continuous SLRs that translate complete sentences. Existing continuous RLS methods often use isolated RLS as building blocks, with an additional pre-processing layer (time segmentation) and a post-processing layer (sentence synthesis). Unfortunately, time segmentation itself is not trivial and unavoidable, since it propagates errors in subsequent steps. Worse, isolated RLS methods generally require strenuous labeling of each separate word in a sentence, which severely limits the

amount of training data attainable. To address these challenges, a new framework of continuous sign recognition, the latent space hierarchical attention network, is proposed, which eliminates the pre-processing of time segmentation. This network consists of three components: a two-flow convolutional neural network for the generation of video feature representation, a latent space for the bridging of semantic gaps, and a hierarchical attention network for latent-space based recognition.

On the other hand, it has been shown that most teachers indicate that it is always important to use active inclusive methodologies; however, an important segment points out that their application depends on the situation. It should be noted that Ramos-Navas et al. (2019) in their study on gamification in the classroom conclude that the master class continues to predominate in the classrooms, despite the fact that this method does not equally address the diversity that can occur in students with disabilities; therefore, teachers should readapt their classes under the teaching of active inclusive methodologies that enhance the integral



development of students with hearing disabilities.

However, in order to comply with the above, teachers are required to receive ongoing training and specialized continuing education according to the type of education required by hearing impaired students (Del Rocio-Sanchez et al., 2019).

As for the teacher's planning, it is inferred that the teacher is reviewing his or her plans and updating them every year, however it is advisable to carry them out in a shorter period of time, either monthly or weekly, so that the classes respect the diversity of learning for vulnerable students and the inclusive environments for students with all types of disabilities. Additionally, the classroom and teacher strategies must be under constant evaluation and feedback from the welfare department or student counseling, also called STUCO.

Meanwhile, Guzmán (2019) mentions that in addition to the strictly educational aspects, all the attention given to hearing impaired students must start from the family environment, since it is the first support premise that must be attended from a systemic approach in order to self-regulate

the various adaptations that they must assume as the defender and main support in the needs of their members.

It is clear that educational institutions must adopt substantial improvements that optimize the teaching-learning processes in environments that demonstrate the presence of hearing impaired students, thus proving that it is not only the teacher's responsibility, but also a shared responsibility between administrative authorities and parents or student representatives.

## **5.CONCLUSIONS**

Through this research, the importance and significance of the inclusive curricular design proposed by the educational administration of the educational system has been demonstrated; however, the importance of articulating assertive participation based on three aspects has also been established: parents-teachers-educational environment.

The pedagogical tools applied by teachers in the inclusion of hearing impaired students have a significant role in the learning process in inclusive environments, however, less than 50% of teachers use inclusive



pedagogical tools; therefore, it is necessary to promote the use of such tools in order to improve inclusive environments in the Ecuadorian educational system. Likewise, it should be noted that the majority of teachers have received continuous training in at least 1 to 3 trainings related to inclusive pedagogical tools.

It is concluded that the teacher plays a transcendent role in the educational process of students with hearing disabilities, therefore, it is imperative that the tools and methodologies of inclusion are properly managed, among which are mentioned an accompaniment with signs and images complementary to the subject taught by the teacher, recreational and integration activities, strengthening visual and tactile channels, and the implementation of sign language and signs, so that students with this type of disability have an effective and assertive communication with their peers, teachers and authorities.

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