# MODULEMA

## Revista Científica sobre Diversidad Cultural

# ACCESO, APOYOS TÉCNICOS Y PRÁCTICAS LECTORAS DE ESTUDIANTES CON DÉFICIT AUDITIVO EN TRES UNIVERSIDADES ECUATORIANAS

*ACCESS, TECHINAL SUPPORT, AND READING PRACTICE OF STUDENTS WITH HEARING IMPAIRMENT AT THREE ECUADORIAN UNIVERSITIES*

Santillán-Palma,Victor Elián[1]. & Villafuerte-Holguín, Jhonny[2].

[1] Universidad Laica Eloy Alfaro de Manabí. Proyecto Interdisciplinario de Alfabetización Integral con Componentes de Gamificación para el Desarrollo Sostenible de Niños, Jóvenes y Adultos mayores de Manta, Ecuador.

[2] Universidad Laica Eloy Alfaro de Manabí. Propuesta de adaptación curricular en la enseñanza del idioma inglés para la inclusión de estudiantes con necesidades educativas especiales auditivas, de las unidades educativas de Chone. Grupo de investigación: Innovaciones pedagógicas para el desarrollo sostenible de ULEAM (Ecuador).

## RESUMEN

El acceso de estudiantes con déficit sensorial a servicios educativos de calidad persiste como uno de los desafíos de la educación superior a nivel mundial. El objetivo de este trabajo es determinar el nivel de acceso y apoyo técnico que tres universidades ecuatorianas ofrecen a los estudiantes con discapacidad auditiva para el desarrollo de la destreza lectora. Se acude al enfoque mixto de la investigación científica para la recolección de datos. El instrumento utilizado es el Cuestionario de Acceso a la Educación Inclusiva creado por Real (2011). Las técnicas utilizadas fueron: observación contextualizada, entrevista a profundidad y encuesta. Los resultados muestran que, en las universidades estudiadas, persisten las limitaciones para brindar apoyos técnicos a los estudiantes con discapacidad sensorial, reduciendo el desarrollo de las habilidades lectoras del grupo estudiado. La investigación concluyó que, para mejorar la destreza lectora de estudiantes con déficit auditivo, las universidades participantes deben instalar soportes pedagógicos/técnicos, diseñar rutas de intervención y fortalecer los conocimientos y la motivación del profesorado para implementar adaptaciones curriculares y tutorías específicas.

**Keywords**

Accessibility

Pedagogical support

Disability

Inclusive education

Second language instruction

## ABSTRACT

The access of students with sensory deficits to quality educational services persists as one of the challenges of higher education worldwide. This work aims to determine the level of access and technical support that three Ecuadorian universities offer to students with hearing impairment for the development of reading skills. The mixed approach of scientific research is used for data collection. The instrument used is the Inclusive Education Access Questionnaire created by Real (2011). The techniques used were: contextualized observation, in-depth interview, and survey. The results show that in the universities studied, limitations persist in providing technical support to students with sensory disabilities, reducing the development of reading skills in the group studied. The research concluded that to improve the reading skills of students with hearing impairment, the participating universities must install pedagogical/technical supports, design intervention routes, and strengthen the knowledge and motivation of the teaching staff to implement curricular adaptations and specific tutorials.

## INTRODUCTION

Students with sensory deficits still face barriers to access to quality education in Ecuadorian universities, even the advances in government policy for improving the inclusive educational system.

Thus, the specialized literature review shows that students with hearing impairment frequently present low literacy levels. This situation may be related to the discrepancies between the incomplete spoken language system that they possess in contrast to the multiple reading demands that characterize the current professionalization processes (Geers & Hayes, 2011; Moreira & Villafuerte, 2022). Besides, Inclusive Education in Ecuadorian universities needs to innovate the teaching practices, but the commitment and effort of the teaching staff administrators, and agents of Education are crucial (Bravo et al., 2021; Villafuerte-Holguín, 2022). Consequently, researching and contributing to strengthening the reading skills of students with hearing impairment is a niche to research.

Inclusive Education is to ensure every student's access to educational programs offered in a territory under the principles of accessibility, quality, and social relevance (Corral et al., 2015; Villafuerte & Pinoargote, 2020). It considers government policies, teaching processes, and cultural practices for inclusiveness in every educational institution worldwide (Alonzo & Villafuerte, 2020).

In addition, according to Luzardo et al. (2018), Inclusive education promotes to stop all possible forms of exclusion that persist in the educational system of any country. However, instructors

around the world need more training actions and procedures to improve the attention to the diversity of students (Villafuerte & Pinoargote, 2020).

General progress in Inclusive Education is linked to the development of cultural values, but the promise of greater inclusion in schools requires apropriate teaching material and techinal supports (Saloviita, 2019). Thus, Abdulrahman et al. (2021) affirm that:

> Zibah Nwako's submission seeks clarification for what happens when the very concept of education is exclusionary when it does not always take into cognizance marginal groups, alternative knowledge(s), and other forms of both schooling and education in the context of South-East Nigeria in West Africa. (p. 49)

The interaction of interdisciplinary professional teams strengthens the understanding of Inclusive Education. It involves people's health and well-being (Ocampo, 2018). Besides, inclusive education aims for each school to accept, recognize, and include the existing diversity and seeks all people's individual and social well-being (Rodríguez et al., 2020; Rueda et al., 2020). Thus, teacher's attitudes towards inclusive Education are critical indicators for the successful inclusion of learners (Garrad et al., 2022).

In addition, it is also necessary to understand that diversity in the educational communities is not a problem but an opportunity to enrich the society (Abdulrahman et al., 2021; Macías & Villafuerte, 2020). Therefore, Matos & Fukuda (2016) find difficulties in the personal relationship and teaching practices between instructors and students with hearing impairment. Besides, Fernández et al. (2017) argue that professors express discomfort in the presence of students with disabilities in the classroom. However, the work of Pegalajar & Colmenero (2017) shows that professors, especially women, have attitudes that favor attention to students with disabilities. They add that new generations of instructors state that they are better prepared to care for students, although it is necessary to improve in short terms the teaching practices to ensure attention to the student's specific learning needs.

Furthermore, scholars such as Mateus et al. (2017) and Bravo et al. (2021) affirm that inclusive practices persist in Ecuadorian schools with disability cases. Macías & Villafuerte (2020) conclude that laws favor social and educational inclusion in Ecuador. However, inclusive teaching practices require urgent innovations of teaching strategies (Bello et al., 2023). Consequently, Inclusive Education in the Ecuadorian context must consider investing more in technical supports than in building educational architecture (Bravo et al., 2023).

Hearing impairment is the difficulty in hearing sounds and negatively influences daily activities. It not only depends on the physical or biological characteristics of the person, but it is a condition that interacts with an unfavorable environment (López & Valenzuela, 2015).

Finally, Velázquez & Villafuerte (2020) determine that games strengthen the muscles of the oral cavity, improving learners' intonation, pronunciation, and fluency of verbal expression, improving learners reading practices in the use of their mother tongue or any other additional language. Therefore, one of the challenges of educational research in Ecuador is to identify strategies to improve students - professors communication in the educational environment, favoring maximum learning and the integral development of children, teenagers, and adults with hearing deficits.

The following research questions guided this study:

a. What are the physical accesses, logistic facilities, and technical supports installed for reading practice of students with hearing impairment in three universities located in Manabí?

b. What is the population of students with hearing impairment in the three universities located in Manabí?

c. What good practice and curricular adaptations do instructors use for improving reading skills in students with hearing impairment in the universities of Manabí?

d. What technical supports for students with hearing impairment are implemented in three Ecuadorian university?

e. How to improve reading comprehension of students with hearing impairment?

This work aims to determine the level of access and technical support that three Ecuadorian universities offer to students with hearing disabilities for improving their reading skills.

## LITERATURE REVIEW

### 1. Hearing disabilities in the university context

Reading skills are essential for students' social integration. Alegre & Villar (2019) argued that hearing-loss students face difficulties developing their linguistic abilities. It can affect students' communication skills in vocabulary acquisition, grammar use, language articulation, fluency, comprehension, or pronunciation.

According to Pulgar (2018), educating students with hearing limitations must be understood as a challenge because they require an education according to their characteristics and needs. Thus, Mateos & Jiménez (2018) claim that hearing loss can appear at any age of the child, at birth or later; It can appear abruptly or progressively, temporarily, or partially. In addition, Sánchez Salazar et al. (2019) affirm that severe hearing loss in the early stages of life will affect the children's oral language acquisition and learning process.

To Wass et al. (2019), students implanted with cochlear implants (CI) vary their levels of language and reading skills. However, they have generally performed more poorly than regular hearing peers on most predictors of reading comprehension, including word decoding, vocabulary, spoken language comprehension, and working memory.

## 2.  Reading skills and students with hearing impairment

In the words of Nikolaraizi et al. (2013, p. 485), "One of the major challenging tasks of educators of deaf and hard of hearing students is to enhance the reading comprehension performance of their students." According to Connor & Zwolan (2004), students with hearing impairment struggle to execute basic processes such as phonological awareness, access to the lexicon, vocabulary acquisition, and morphosyntactic skills.

Thus, students with hearing impairment need help to extrapolate prior knowledge because they have a reduced number of concepts and linguistic meanings stored in their memory. In addition, Cañizares (2016) remarked that reading includes visual or spelling (character recognition by sight) and auditory or phonemic (correlation between the letter or grapheme and its sounds or phonemes). Therefore, to achieve good reading fluency, students must master phonology, one of their most significant difficulties. Consequently, Worsfold et al. (2018) state that the difference that emerges when comparing the severity of hearing loss and reading ability in late adolescence is notorious.

The practice of reading comprehension in the university context requires instructors' attention to develop students' cognitive, reflective, and critical abilities during the learning process (Ocampo, 2018). Nevertheless, Romo (2019) states that reading practices can improve people's knowledge, communicational skills, and strategies to understand the different contexts of everyday life. In addition, reading comprehension means applying cognitive and metacognitive thinking strategies to understand a text.

In the reading process, the control of individual decoding is more critical when language and vocabulary are learned (Wass et al. 2019). Besides, McCreery et al. (2019) affirm that the individual variability in speech recognition scores is related to the individual differences in amplitude compression settings among children. However, Socher et al. (2019) affirm that educational interventions for children with Cochlear Implants should improve the connection between conversation, verbal fluency, and pragmatic language ability to reach the pragmatic language domain.

## 3.  Inclusive education in university contexts

Inclusive Education aims to achieve quality education. Thus, it has two factors to consider; they are excellence and equity (López-Vélez, 2018). Besides, Perilla Granados (2018)

mentions inclusive Education as an opportunity to guarantee the rights of people with special educational needs. However, inclusive Education advances concentrate more on the attention of primary and secondary education learners.

However, Crisol Moya (2019) affirms that Educational Inclusion is related to all students' access, participation, and achievements. Therefore, according to Galván (2019), Inclusive Education is a human right to live, learn and develop with all the people who make up our community, including mainly the school, without forgetting the rest of the itineraries that make up the right to learning throughout the entire life.

Among the previous works revised in this research framework, Worsfold et al. (2018) point out that even though students with hearing impairment have difficulties completing the reading process, they show good stability of reading skills from middle childhood to adolescence and show moderate stability in reading comprehension and a high level of stability in reading accuracy scores. In addition, Socher et al. (2019) found that students with Cochlear Implants develop their semantic network associated with pragmatic language ability. They can use the language more flexibly when they reach a higher semantic network. Consequently, the quality and quantity of oral interaction contribute to the progress in semantic networks and pragmatic language abilities.

Besides, Miñana Blasco (2020) remarked that inclusive Education implies recognizing the learners' different trajectories, needs, expectations, and interests. In addition, Clavijo & Bautista-Cerro (2020) concluded that access to an educational system under equal conditions and learning opportunities is an aspiration that all governments and public and private institutions must assume. However, the current conditions of professors' practices and inclusive culture should be improved to warrant efficient inclusion levels in Ecuadorian Education.

## METHODOLOGY

The article extracts results from three case studies. They are two national universities and a private university. They are in the province of Manabí in Ecuador. The research used the mixed research approach.

The informants were 18 people. They were 6 teachers (30% female and 70% male) and 12 students (60% female and 40% male).

The instrument used in this research is the Questionnaire for Inclusive Education in Spain, designed by Real (2011). The research team adapted the instrument to the Ecuadorian university context. The instruments for collecting information were an observation form, in-deep interview guide, and a survey.

**1. Contextual observation form.** – This instrument consisted of 14 items to explore access, installations, and technical supports for the university care of students with disabilities. The research team adjusted the instrument of Real (2011) from the Spanish language in the original version to the Castellan language used in Ecuador. A panel of experts examined the instrument. They were affiliated with the University Laica Eloy Alfaro de Manabí in Ecuador. They were professionals in the fields of Psychology, Language, and Educational Inclusion. The expert panel advised concentrating the items on students with hearing loss. The research team executed a total of 6 observations in the period Oct/2021 to Jul/2022.

**2.- In-deep interview guide.** – This instrument allowed the collection of information concerning technical supports to improve reading skills in students with hearing impairment in the universities that participate in the study. The interview categories are (1) university installations and (2) technical support required to develop reading skills. The same panel of experts examined this instrument. The expert panel advised reducing the number of items from 14 to 8. The in-deep interviews used the Zoom application, considering the local regulations to reduce the risks of infections of COVID-19. The interviews took place in the period Sep - Nov/2022.

**3.- Survey.** – This instrument's purpose was to determine the population of students with different levels of hearing impairment in the three universities that took part in this study. The instrument used was a Google form designed by the research team. The data collected were analysed using the SPSS program. The survey took place in Dec/2022.

**Procedure and instruments:** The investigation consisted of five stages, explained below.

Stage 1: Literature review regarding the fundamental concepts such as reading competence, hearing deficit in young people, and inclusive education. The review used national and international specialized repositories in the field of hearing impairment available on the Internet. This activity took ten months.

Stage 2: The stage of empirical work. – It selected an instrument of Real (2011) named The Educational Inclusion of Universities in Spain. The original version of the instrument was for the Spanish context. Consequently, it was necessary to adjust the instrument to the Ecuadorian context and observation format. A panel of experts evaluated the instrument. This activity took three months.

In addition, the research team selected three universities located in the province of Manabí, considering the institutions' disposition and geographical location. This activity took one week.

Stage 3: Survey. – The research team conducted a survey to determine the population of students with hearing impairment in the three universities participating in this study. This activity took three weeks.

Stage 4: In-deep Interview. – The research team organized three in-deep interviews with professionals of inclusive education and experience in attention to students with hearing impairment. The selection of the interviewed considered local professionals with five or more years of experience in inclusive education and English language teaching.

Stage 5: Information/data analysis. – This stage consisted of tabulating the data collected using the statistic package for social studies SPSS version 27. The categorial analysis of the information used the program Atlas Ti version 8. This activity took six weeks.

## RESULTS

The presentation of the results follows the order of the research questions that appear in the introduction section.

   **a. Physical access, logistical facilities, and technical support installations for attention of students with hearing impairment.**

The information in Tables 1 and 2 corresponds to the observations regarding students' access to the universities participating in this study. They are the logistical facilities and technical supports installed in the universities for the attention of hearing impairment students.

**Table 1.**

*Accessibility of students with hearing impairment in three universities located in Manabí*

| Parameters | University 1 | University 2 | University 3 | Trends |
|---|---|---|---|---|
| Accessibility | Good: University main gates. Safe area. | Acceptable: University main gates Exit of the city. Lonely area of the city | Good: University main gates. Safe area. | The three universities show appropriate accessibility for students with hearing impairment. |
| University entrance | Well organized and fast. 4 access gates.<br><br>There is no control for the people entrance.<br><br>They control the entrance of vehicles. | Well organized but slow. 2 main access gates. There is no entry control for students.<br><br>They control the entrance of vehicles. | Well organized. 3 access gates.<br><br>There is electronic controls for entry/exit of people.<br><br>They control the entrance of vehicles. | The three universities have a vehicular control, but the control of the students can be improved at the entrances. |

Source: Contextual observations (2023) using questionnaire of Real (2011).

The three universities have security guards at all the gates. There are no signal or technical supports for inclusive purposes, and guards are not trained to care for people with hearing deficits. They concentrate on the control of professors' and students' vehicle entry. In

addition, university 1 and 2 students do not present identification at the main gates. However, in university 3 students and professors must access through electronic controls with face readers to get in, and ID card controls to go out of.

**Table 2.**

*Facilities and installations for students with hearing impairment*

| Parameters | University 1 | University 2 | University 3 | Trends |
|---|---|---|---|---|
| Classrooms | Classrooms with good lighting for reading. 50% of the classrooms are equipped PC and projection equipment for reading practice.<br><br>10% have touch screens | Classrooms with good lighting for reading. 60% of the classrooms are equipped with PC and projector for reading practice.<br><br>40% have touch screens | Classrooms with good lighting for reading. 30% of classrooms are equipped with PC and projector for reading practice.<br><br>10% have touch screens | The three universities offer students good facilities for reading practice. Teaching staff use touch screens in reading practice in the classrooms. |
| Laboratories | Laboratories are scarce, but they have lighting and air conditioning.<br><br>They have no technical support for reading practices. | Laboratories are scarce. Lighting and air conditioning. They have institutional agreements to access into chemistry laboratories locally. They have no technical support for reading practices. | Deficient: Laboratories are scarce. Insufficient equipment for the number of students. Lighting and air conditioning. They have no technical support for reading practices. | The three universities show deficit in laboratories. They have no technical support for reading practice. |
| Internet access for all students | Good: Wi-Fi available.<br><br>Instructors always use internet in Reading practice | Enough. Wi-Fi available.<br><br>Instructors very frequently use internet in Reading practices. | Good. Wi-Fi available.<br><br>Instructors seldom use internet in Reading practice. | The three universities offer students Wi-Fi and open internet. They frequently use internet in their reading practice. |
| Libraries | Acceptable: Medium library. No access to technical support for the attention of hear impairment students. | Good large library. No access to technical support for the attention of hear impairment students. | Acceptable. 2 small libraries. Limited. No access to technical support for the attention of hear impairment students. | Universities offer acceptable physical and online libraries service. No access to technical support for the attention of hear impairment students. |

Source: Contextual observations using questionnaire of Real (2011).

The universities showed limitations in laboratories and classroom facilities. They do not have high-speed Wi-Fi. They offer an educational platform that allows people with hearing deficits to perform autonomous work at home. Reading practice is not a frequent activity executed in classrooms.

**b. Population of students with hearing impairment in the three universities located in Manabí.**

**Table 3.**

*Students with hearing impairment attending three universities in Manabí*

| Levels of students | Universities | | | Trends |
|---|---|---|---|---|
| **Hearing impairment** | **1** | **2** | **3** | |
| Slight deaf | 2 | 4 | 3 | Students report mild deaf level between 25 and 40 dB. |
| Medium deaf or semi-deaf | 2 | 0 | 3 | Students report mild deaf level between 50 and 64 dB. |
| Deep deaf | 0 | 0 | 0 | Students do not report deep deaf over the 80 dB. |

Source: Survey in three universities of Manabí/2021.

The survey result shows that 9 participants have a slight deaf level (25 to 40 dB.); 7 participants have a medium deaf level (50 and 64 dB). No cases were reported for Deep deaf level.

**c. Teaching good practice and curricular adaptations for improving reading skills in students with hearing impairment.**

Tables 3 and 4 show the most frequent good practice and curricular adaptations professors do to work with students with hearing impairment in the three universities of Manabí, Ecuador.

**Table 4.**

*Teaching good practice for improving reading skills in students with hearing impairment.*

| Parameters | University 1 | University 2 | University 3 | Trends |
|---|---|---|---|---|
| Teaching strategies to teach reading to students with hearing impairment | Use of videos with capture that facilitate the understanding of the topics of the syllable. | Use of videos with capture that facilitate the understanding of the topics of the syllable. | Use of videos with capture that facilitate the understanding of the topics of the syllable. | All instructors showed to know teaching strategies to work with having hearing impairment. |
| Research about inclusive education or hearing impairment | No | No | Yes, professors at the College of Education | Most professors do not consider inclusive education in their research priorities. |
| Professors' qualifications for teaching students hearing impairment. | No | Yes. Professors have been trained in inclusive education. Sign language. | Yes. Professors have been trained in inclusive education. Sign language. | Groups of the professors learned the sign language and inclusive education policy. |
| Curricular adaptations for reading practice of students with hearing impairment. | Professors expect students to submit their request for curricular adaptations to the program office. | Professors expect students to submit their request for curricular adaptations to the program office. | Professors expect students to submit their request for curricular adaptations to the program office. | Professors do not adapt the curriculum to any practice spontaneously. Students should submit their request to the administration office formally. |

Source: Contextual observations using questionnaire of Real (2011).

The information collected confirms that professors were trained in sign language learning and inclusive education. However, they do not show an open attitude to inclusive education. Most of the instructors do not ask students about their disabilities or limitation; consequently, they do not use sign language. Professors do not make any curricular adaptations spontaneously.

**Table 5.**
*Curricular adaptations for reading practice of students with hearing impairment.*

| Parameters | University 1 | University 2 | University 3 | Trends |
|---|---|---|---|---|
| Curricular adaptations in evaluations or exams. | Yes | Yes | Yes | Most of the professors do not adapt the curricula to the students' hearing impairment condition. |
| Flexible schedules work to students with hearing impairment | No | Yes | It sometimes happens. | Professors accept to extend deadline when students submit a formal request for hearing impairment or any other condition. |
| Adaptation in the reading comprehension practice | No | Yes | No | Most of the professors do not execute reading practices. |

Source: Contextual observations using questionnaire (Real, 2011).

The information shows that the three universities have limitations in the three universities have limitations executing the curricular adaptations. Reading practice with students in hearing impairment condition do not exist. Professors do not make any curricular adaptations without the students' formal rformal request and professional diagnostic.

d. Pedagogical and **Technical supports for students with hearing impairment implemented in three Ecuadorian university.**

**Table 6.**
*Pedagogical and technical supports provided to students with hearing impairment in reading practice.*

| Categories | Evidence | Challenge for the universities |
|---|---|---|
| Educational environment for students with hearing impairment | *Doc. 1. "… Classrooms with all the necessary tools to develop efficient teaching processes have not been implemented."*<br><br>*Doc. 2. "The educational environment in the university does not have all the available materials since it is challenging to get materials that the university itself lends or facilitates."*<br><br>*Doc. 3. "No, the institutional infrastructure is inadequate; the institution's budget is insufficient to implement efficient tools for the educational process."* | To produce teaching materials and resources for inclusive education. |

| Categories | Evidence | Challenge for the universities |
|---|---|---|
| Technical support offered to students with hearing impairment. | *Doc. 1. "There are areas that are very scarce in technological equipment necessary to develop activities."* <br><br> *Doc. 2 "Precisely not, and it is because in the classroom there are no students with hearing disabilities, but in my previous institution where I worked, I had an experience with a person with hearing impairment, but the DECE (students service Dept.) took care of that since the level of deafness was severe. "* <br><br> *Doc. 3 "Not since we simply rely on curricular adaptations executed in the classroom but also as a university if we maintain tools aimed at teaching and acquiring the English language for people with hearing deficits."* | To motivate professors to use computer devices for teaching students with hearing impairment. <br><br> To improve campus signals and install devices and another kind of technical supports. |
| Curricular Accommodations for Students with hearing impairment. | *Doc. 1. "I believe that there has not been a continuous process within the curricular adaptations, which hinders academic progress in these students."* <br><br> *Doc. 2 "Naturally, the inclusion of students with disabilities has led to changes in the organization of schools, curricular adaptations, and implementation of more flexible and functional teaching methods."* <br><br> *Doc. 3 "If we make mandatory curricular adaptations of type 1, 2, and 3 simultaneously, we have the training and permanent research work on disability".* | To promote inclusive education in the institution. <br><br> To warranty curricular adaptations and accommodations for students with any disabilities. <br><br> Test adapted to students with sensorial disability do not exist. |
| Training of professors on attention to diversity | *Doc. 1 "It is a latent problem in Ecuador. However, respect for people with SEN or, more specifically, with students with hearing deficits is not always encouraged."* <br><br> *Doc. 2 "The university lacks training for working with people with hearing deficits."* <br><br> *Doc. 3 "We constantly stay in pieces of training about diversity and student disability, but we do not produce teaching materials for inclusive education"* | To improve the communication between professors-student. <br><br> Negative attitudes of instructors towards the disability policy. <br><br> Basic training about inclusive education. |

Source: Interview with professors from universities in Manabí, Ecuador (2022).

**e. Route to improve reading comprehension of students with hearing impairment.**

Table 7 shows the analysis of an interview to an expert concerning the strategies to follow to improve the reading comprehension of students with hearing impairment.

**Table 7.**
*Route to improve reading skills in students with hearing impairment.*

| Objective | Strategy |
|---|---|
| 1. Improve the communication in class between professors and students with hearing-impaired students | Communication strategies: |
| | 1.1. Start talking when the student makes eye contact with the instructor. |
| | 1.2. Instructors must speak when there are no background noises that distract the attention of the students. |
| | 1.3. Avoid talking while a circumstantial noise lasts |
| | 1.4. Instruct the student when necessary to raise or lower the intensity of the voice in case of a Cochlear Implant. |
| 2. Strength the deaf students' confidence for improving the participation in the class. | Communicative relationship strategies: |
| | 2.1. Provide students with hearing deficits in the classroom with the same opportunities for participation and expression as hearing peers, helping them overcome shyness and consolidate their self-confidence. |
| | 2.2. Provide feedback to fellow listeners about the impact of deafness in communication and information management. |
| | 2.3. Provide the deaf student with "extra time" to interpret the information given by the professor or provided by the interpreter. |
| 3. Show strategies aimed at establishing the most appropriate location of the deaf child in the ordinary classroom. | Strategies of the student classroom environment: |
| | 3.1. The location of the deaf student in the classroom must be close to the professor to perform a correct lip reading and appreciate the instructors' body attitude and facial expression. |
| | 3.2. In situations of group interaction, the deaf student must adapt his situation so that he can see all the classmates who speak to enable lip reading and participate when necessary. |
| 4. Create appropriate reading habits and attitudes. | 4.1. Encourage the love of reading in class and outside of it. |
| | 4.2. Work on texts related to the student to promote the learning acquisition. |
| | 4.3. Work on the reading of short texts. |

Source: In-deep Interview (2021).

## DISCUSSION

The literature review regarding inclusive education, hearing impairment, and reading skills allow the authors of this paper to confirm that the interaction between professors and students diagnosed with hearing impairment requires of time and confidence. Thus, instructors should look for the specific method and sometimes the use of several teaching-learning strategies to interact with students having any disability condition. In simpler terms, this work ratifies professors' disposition and commitment crucial elements for improving Inclusive Education in Ecuadorian universities in harmony with the statements of Bravo et al. (2021); Corral et al. (2015), and Macías & Villafuerte (2020).

The research results find harmony with Socher et al. (2019) when they affirm that parents overestimate their children's communicative competence. Thus, authors found that many children with Cochlear Implants report good pragmatic language ability comparable to their hearing peers. The research results find harmony with Socher et al. (2019) when they affirm that parents overestimate their children's communicative competence. Thus, authors also found that many children with Cochlear Implants report good pragmatic language ability comparable to their hearing peers. Consequently, authors agree with Moreira & Villafuerte (2022) when they suggest that the quality and quantity of face-to-face interactions can influence hearing impairment students' pragmatic language ability

**Access and Barriers for inclusive Education in the university context:**

Professors frequently do not accept students who have sensory disabilities when there exists no professional diagnostic and attribute their students' low performance to a lack of interest in learning. This result confirms the position of Matos & Fukuda (2016) when they affirm that the main barrier to Inclusive Education could be in the instructors.

Students need instructors to include interactive activities in the curricular adaptations, didactic materials, and technological tools to create better learning environments and significant learning. Consequently, the authors join the position of Velázquez & Villafuerte (2020) regarding the contributions of using playful games to work on language in students with special educational needs.

Development of persuasive communication. - To obtain a response or an action from the other person, it is necessary to work on the communication styles of instructors, especially to promote the use of suggestive and motivational language to impact positively on their students' performances.

**Improving reading practice in students with hearing impairment:**

a. **The innovation of reading practices**. - It is understood that innovations contemplate using educational technology, didactics, and attractive reading material.

b. **Instructors team building**. – They exchange and combine their abilities and knowledge to favour Inclusive Education.

c. **Strength of teaching skills for Inclusive Education**. - It is a process in which professors can improve their teaching skills, abilities, compromise, and knowledge regarding Inclusive Education.

d. **Training in Inclusive Education**. – It is crucial for the professors to know about teaching strategies to improve the work with students with hearing impairment.

e. **Research programs**. – To contribute to improving the knowledge about Inclusive Education and inclusive community is necessary to organize and execute the research project.

**Technical support and Logistics for Inclusive Education in the universities:**

Regarding the logistics and infrastructure for inclusive Education at the three universities that took part in this research, the lack of devices and furniture that support the students with hearing impairment in classrooms, libraries, and laboratories is evident.

Educational technology allows students to learn about a foreign language. It can help the professors to create more interactive and dynamic learning environments, develop new learning strategies, and improve communication. These conscious voluntary decisions to invest in the installation of devices have a specific objective, to make effective use of educational technology tools in the hope of having better access to a quality education system.

## CONCLUSIONS

Based on the literature review and empirical work results, the authors declare full compliance with the objective proposed in this research. It is to determine the level of access and technical support that three Ecuadorian universities offer students with hearing impairment to improve their reading skills. The research concluded that the lack of technical resources in the three Ecuadorian universities influenced negatively on the development of reading skills in students with hearing impairment.

This research determined that few university professors stand out among their colleagues in the execution of curricular adaptatíons and in motivating students with a sensory disability to advance in their professional training studies. Professors carry out very little reading practice through interactive and meaningful activities; however, educational technology is used extensively to facilitate their communication. Professors implementing curricular adaptations require specialized training and institutional support to improve inclusive processes. In addition, the observation process of the three higher education institutions that participated in the study allowed the research team to highlight the need for investment in installing technical support.

The limitation of this research is the small number of case studies considered in the territory. However, the research team intends to provide valid information to support formulating new educational inclusion policies in Ecuador. For this, the scientific community is invited to replicate this study in other Ecuador provinces and other nations using a more extensive sample corpus. The research team proposes the line of research: efficiency of technical support for inclusive online education. It is expected that this work contributes to the positioning of inclusive education in the university context of Ecuador and other nations of the world.

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| Autores / Authors | Saber más / To know more |
|---|---|
| **Víctor Elián Santillán Palma**<br><br>Student at Pedagogía de los idiomas nacionales y extranjeros at University Laica Eloy Alfaro de Manabí, Ecuador. Researcher-student of the Project: "*Comprensión Lectora y Escritura Académica*". *Research group: "Innovaciones Pedagógicas para el Desarrollo Sustentable*". | (iD) 0000-0001-7193-3164 |
| **Jhonny Villafuerte-Holguín**<br><br>Professor at University Laica Eloy Alfaro de Manabí, Ecuador. Doctor in Psychodidactics from the Basque Country University of Spain. Leader of the Project: "*Comprensión Lectora y Escritura Académica.*" Researcher of the Project: "*Propuesta de adaptación curricular en la enseñanza del idioma inglés para la inclusión de estudiantes con necesidades educativas especiales auditivas, de las unidades educativas de Chone*". Research group: "*Innovaciones Pedagógicas para el Desarrollo Sustentable*". | (iD) 0000-0001-6053-6307 |