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Level of preparedness of pre-service and faculty member teachers to teach English to deaf students.

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Presented By

Carlos Josué Fernández Parra

Thesis Director:

Dra. Catalina Juárez Díaz

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This Thesis has been read by the members of the committee of

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LICENCIATURA EN LA ENSEÑANZA DEL INGLÉS

Thesis Director

Dra. Catalina Juárez Díaz

Committee Member

Mtra. María Elena Rincón González

Committee member

Mtra. Amelia Hernández Grande

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Dedications

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Abstract

In Mexico, the teaching of the English language plays a fundamental role in opening educational, work, and personal growth opportunities in English-speaking countries due to globalization. However, the educational system in Mexico has not had the correct implementation of the study plans and this causes an educational lag at different educational levels, including not adequately addressing the dynamics of teaching English to people with disabilities, specifically, students. deaf. The objective of this research was to identify the level of preparation of language teachers in training to teach English to deaf students and analyze their lack of knowledge and training. Non-experimental quantitative research was used by applying a survey on the ability and preparation to teach English to deaf people to students and teachers of the Faculty of Languages of the Benemérita Universidad Autónoma de Puebla (BUAP) of the degree in English teaching. A total of survey 11 questionnaires were answered by faculty member teachers and 77 preservice teachers answered it. It was applied through convenience sampling, finding that there is a deficiency in both preparation and teaching topics for deaf people. The results showed that neither the faculty teachers nor the preservice teachers have the necessary knowledge and skills to be able to teach English to deaf students, creating communication barriers and making the teaching-learning process difficult.

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Chapter I Statement of the problem

1.0 Introduction

Nowadays, the importance of learning a foreign language has grown considerably such as French, Spanish, Italian, German or Japanese, but English has ranked mainly among the other languages. Moreover, it has become a lingua franca for its use around the world, also it is the current global language, enjoying a more universal status than Latin, Arabic, or any other lingua franca throughout the history of the human being. The wide scope of this language is unstoppable and undeniable, since its role as a vehicular language in most activities, ranging from tourism to political conventions, confers competitive advantages in the labor and professional world, such as growth possibilities, development and enhancing skills so that citizens can participate in the global economy (Villalobos, 2015). In addition, various factors such as tourism in Mexico, international imports, entertainment, work, and education make the need to learn English arise. Above all, it streamlines communication within multiple contexts and can provide more inclusion than exclusion and the most important factor is that the United States is a country adjacent to Mexico and its great influence on us has been impressive due to the different job and educational opportunities that it offers us through migration and as a result of globalization.

However, the globalization of English has generated great competition among people to obtain a better quality of life and a huge demand for English course, and this need to learn English for different purposes has led people to take individual or group classes, and many teachers who have years of experience in teaching languages may find difficult to teach people with special needs in their groups due to poor preparation or information they have on these areas. Disability is the interaction between people with a special health condition

such as cerebral palsy, Down syndrome, or depression. In addition, these people also present personal problems such as negative attitudes and obstacles in environmental factors such as transportation and public buildings and limited social support (World Health Organization [WHO], 2020). Teaching English to these groups with disabilities is not an easy task and requires training and knowledge of how, when and to whom the pertinent adjustments and methodological changes should be made (Chacón, 2017). This knowledge allows to know the different types of problems that the students present and that prevent them from participating in equal conditions during the English classes. One special case is that of people with hearing disabilities, who are a large community in Mexico. This community uses sign language to communicate, and this consists of making different positions of the hands, making gestures and body expressions to communicate messages.

However, the deaf community is a marginalized and vulnerable group that has struggled over the years. One of the main problems is that the communicative-linguistic resources of people with hearing disabilities are limited. In addition, these cause difficulties when communicating in their daily life. This is due to the lack of interest in hearing people towards people with hearing disabilities in society (Muñoz, 2015). This limits the opportunities to obtain a formal job in the labor field or to have access to basic education and complete higher education.

In educational inclusion, students are very important for the use of alternative communication systems, prevailing among them, sign language. The existence of the figure of a Sign Language Interpreter within the ordinary classroom is essential to make the curricular content taught by the teacher reach the hearing-impaired students (Ruiz,2015). Although inclusive education has gained in popularity during these years, the topic of

teaching English to people with hearing disabilities has not developed enough in Mexico, and that is why it is important that more research is conducted on this topic to provide them young people with hearing disabilities have an accessible and quality education so that they have the opportunity to develop professionally. In addition, it is essential to include English in the school curriculum for the hearing impaired. For these reasons, the need arises to know how to teach them English as a foreign language and how they can have meaningful learning. Moreover, the teacher must incorporate not only his academic experience in teaching the different areas of the language but must also learn to adapt his methodology to the current requirements of the disabled students (Chacón, 2017).

1.1 Statement of the problem

Education is a valuable resource in Mexico and an effective tool for social change, capable of promoting the virtues of citizenship and developing a democratic political culture. It is a determining activity for the development of people and an engine for the progress of society (*Instituto Nacional para la Evaluación de la Educación* [INEE], 2018). Nevertheless, there is a deep inequality in access to education because Mexico still lacks many opportunities in this area, where teachers and students are immersed in an educational crisis, which is seen as the sectors with the highest income are those who have access to education (Bernal, 2017). On the other hand, it is also mentioned about reviewing the failure rates, since this precedes the desertion, for which it would also be necessary to take the pertinent strategies to work on it (Bernal, 2017). As a result of these problems, high-quality, competent schools are really required for initial teacher training, giving priority to the attention of communities in situations of vulnerability. Furthermore, the current circumstances, in which education is found, are still far from conducting the adequate integration of the hearing-impaired students, and unless the specialized care required by this minority group is provided,

the equity that has been achieved cannot be achieved longed for. However, the problems that Mexican education presents are of urgent attention, we must be aware that education is a tool to fully incorporate into society and not discriminate. Therefore, people have the right to receive a quality education, which represents, among other elements, acquiring the skills and knowledge necessary to ensure recognition and permanent respect for all human rights (INEE, 2018).

It is frequently believed that students are less likely to learn a language when they face greater obstacles such as student demotivation, lack of effort and perseverance, or show signs of anxiety (Pizarra, 2017). But all this is due to several factors that affect the student, starting with the type of disability, in this case, hearing impairment, the environment in which the student develops during class and the relationships he has with the teacher and classmates among several others. In addition, most schools and specialized centers do not provide them with an efficient language teaching that allows them to satisfy their basic needs, nor an educational level according to their abilities. Besides, there are no expert personnel in public and private schools that have only admitted non-hearing-impaired students to provide training, which makes the existing problem even more difficult, since language teachers do not know how to make curricular adjustments or use specific methodological techniques. for this population (Pizarro, 2017). It is necessary that they have the resources that allow them to solve their needs for maintenance, equipment, improvement of their facilities, and are freed from unnecessary loads and tasks (INEE, 2018).

According to Pizarro (2017), there are factors that hinder the teacher's work:

•Some teachers standardize their curriculum and activities to a specific group and do not allow modifications to be made throughout the teaching and learning process; This results in poor academic performance or loss of the course

•The use of inclusive language that does not insult, exclude, retype, or trivialize the student because of his disability, race or gender should be the norm among language teachers.

•The lack of help received makes difficult to understand the type of disability that the student presents and how the required changes must be made, so that he learns the language successfully.

That is why it is necessary to be aware of the problem that affects the deaf community and the importance of investigating how to apply the correct tools to teach English and remove obstacles that impede the development of language skills of students and are not at a disadvantage and have high expectations of learning successfully. Additionally, there must be a commitment on the part of the student to make an effort during the study topics so that he can enjoy the topics and activities developed in class, and the commitment that the teacher has with the student and their teaching process in writing and explain the contents orally, to allow the student to read lips and interpret what is explained.

1.2 Justification of the Study

Progressively, the fight to combat the social and educational exclusion of deaf people, eliminating the physical, personal, educational, curricular and participation barriers suffered by this community and their rights and social duties have been enforced and therefore actions have increased. That promote their participation in the community from the laboral, social and educational sphere (Ruiz, 2015). But the fact that more progress is being made in inclusion does not mean that its integration in Mexican education is highly explored, since

there are numerous studies, whose results show that the majority of teachers do not have sufficient preparation to respond to deaf students and that the courses received should be more qualified (Ruiz, 2015). This can be detrimental to students since teachers would not have the same considerations with them and affect their academic performance and not help them in different situations that make it difficult for them to face. Deaf students are often seen as an obstacle that slows down the learning process of other students and not as something enriching at the classroom level (Ruiz, 2015).

In most cases teachers try to marginalize them as much as possible resulting in them feeling lonely or trying to attract attention in a negative way. In addition, this can lead to teachers being able to reprimand these students in a negative way and see the school as a place that is not comfortable and safe for them and decide to drop out or in other cases the other students discriminate against them and feel superior for being different and not being able to speak. In other cases, teachers only plan classes and design activities that, rather than meeting the needs of deaf students, seek that these children spend the day entertained without causing problems in the classroom (Ruiz, 2015). This leads to them not understanding what is happening in their environment and not being able to learn anything and that the student got bored and felt ineffective in solitude. That is why students should stop being made invisible and forced to learn in the same way as those without special educational disabilities (Chacón, 2017)

So, this study is based on my personal experience. I have lived with the deaf community since I was born because my parents belong to that community. Since I was a child, my grandparents have taught me not to discriminate against people with disabilities and to try to include them in different activities so that they do not feel marginalized. In

addition, I saw how the hearing children of my parents' deaf friends with speech disabilities could speak Spanish and sign language fluently and that attracted my attention to learning more leagues. Over the years, I have noticed that the expansion of English has been very rapid and covered many areas of everyday life. However, he also saw that many people in this community had no studies or only basic education such as primary and this was because in his time it was very difficult to find a school where teachers are prepared, and students can learn without barriers. Unfortunately, my father's education was very expensive, and he was unable to continue his specialized high school studies, in addition to not being admitted to a non-specialized high school. On the other hand, my mother had no education because she lived in a marginalized rural area, and she did not have access to education until she moved to the city, and she was able to become literate a little. As a result, my parents cannot read in English and have been affected by the changes that the globalization of English has brought in the different media and have had difficulties reading and understanding instructions or manuals that do not have a Spanish translation or read English subtitles in movies and television series. I had to translate everything for them so they wouldn't have trouble understanding what they were seeing.

It is sad to know that issues about English and its teaching towards deaf in Mexico have not been discussed frequently. This has motivated me to do more research on how to teach English to deaf students using the correct methods and tools for meaningful learning. Moreover, the main objective of the teacher is to plan their curriculum, establish methodological strategies and develop activities based on the objectives and contents of the course, in order for the hearing-impaired learners to develop their linguistic skills and learn the target language (Pizarra, 2017).

1.3 General objective

To identify the level of preparedness of pre-service and faculty member teachers to teach English to deaf students.

1.3.1 Specific objectives

To identify the level of preparedness of faculty member teachers to teach English to deaf students.

To analyze the level of preparedness of pre-service to teach English to deaf students.

1.3.2 Specific Research Question

What is the level of preparedness of faculty member teachers to teach English to deaf students?

What is the level of preparedness of pre-service to teach English to deaf students?

1.4 Significance of the study

Most of the studies related to the teaching of English as a foreign language to people with different abilities are focused on people with hearing problems and deaf people from other countries, but talking about people with hearing disabilities in Mexico, there is a lack of research in this area. This situation delays the development and implementation of strategies, techniques, and methodologies. This research can be used to help teachers and administrators to support deaf students when learning English as a foreign language and know all their needs in classroom.

1.5 Overview of the study

This research is organized into 5 chapters. The first chapter presents the introduction of problems of hearing-impaired people when they learn English in Mexico and the lack of preparation that teachers have when they face this situation. The second chapter is the literature review: it explains the background of the deaf community through the years and the role of this in the society. Furthermore, it gives the explanation of all the problems of the education in Mexico and the impact it has on this community. The purpose of the third Chapter is to investigate and analyze the difficulties that hearing impaired students and English teachers face during class.

1.6 Conclusion

To summarize, it is important to raise awareness of the inclusion of people who have disabilities, in this case, deaf people. Many people of this community are not considered for a job due to the lack of educational preparation. The government does not offer a complete and adapted educational opportunities to these people. That is why it is important to start studying and testing materials to English classes focusing on writing, reading and grammar with methods that would make students have a meaningful learning and they become able to deal with daily life without barriers that stop them due to lack of studies.

Chapter II Theoretical framework

2.0 Introduction

Topics such as the definition of hearing impaired and the conditions in which they are found will be addressed in this chapter. The components of sign language, its acquisition by deaf children and the learning of Spanish as a second language. In addition, the deaf culture in Mexico and the social impact they have had due to social and academic factors will be analyzed. Finally, the different adapted teaching tools and materials will be explained and, the influence of education in Mexico and the learning of English as a foreign language.

2.1 Hearing impairment definition

Hearing impairment is the deficiency or alteration of correct hearing that can strike either one or the two ears and gives rise to difficult hearing conversations or light and ear-piercing sounds. (World Health Organization, [WHO], 2021). To determine that a person is hearing impaired, the decibel (dB) measurement is used, which measures the pressure level of sound. National Center for Biotechnology Information [NCBI] (2020) explains:

A hearing loss of up to 20 dB below the hearing threshold is still considered to be normal hearing. More severe hearing loss can be described according to severity, as follows:

- Lenient hearing loss that goes from 20 to 40 dB.
- Middling hearing loss, which can vary from 41 to 60 dB.
- Critical hearing loss that can be from 61 to 80 dB.
- Overpowering hearing loss or deafness, express in more than 81 dB.
- A hearing disability when it is more than 40 dB.

2.2 LSM Mexican Sign Language and its structure

The Mexican Sign language is a visual, gestural, and spatial language with its own lexicon, phonetics, grammar, and syntax that has all the characteristics and fulfills the same functions as any other language (*Consejo Nacional para el Desarrollo y la Inclusión de las Personas con Discapacidad* [CONADIS], 2016). Sign languages have characteristics not found collectively in oral languages, such as complex linguistic systems whose organization involves sequentially, spatiality, and simultaneity. (Miroslava, 2016). Therefore, the deaf community can express and communicate their ideas, thoughts, and feelings, allowing them to develop their cognitive and social abilities. Furthermore, hearing impaired people can communicate not only with their own community, but with hearing people who have knowledge of their language.

This language uses a series of signs articulated with the fingers and hands located in different parts of the body, accompanied by facial expressions, intentional glances, and body motions, supply with linguistic function. Signs are made with the dominant hand, which is to say, whether the person is right-handed, use the right hand, and if the person is left-handed, use the left hand. When signing with two hands, the dominant hand performs the main movements, and the other hand supports it. At other times, both hands perform the same movement. (Conapred, 2011).

Mexican sign language is made up of dactylology and ideograms. It is known as dactylology to what could well be the spelling in the oral language, and it is represented mainly with the alphabet. Each word can be represented with the corresponding hand articulation of each letter that makes it up and Ideograms represent a word with one or more

hand configurations. (Conapred, 2011). All these elements make the message transmitted by the Mexican Sign Language (LSM) clear, precise, and complex like any other oral language.

2.2.1 Acquisition of the first language (LSM Mexican Sign Language)

In order to acquire Mexican sign language, deaf children must be immersed in that language by going to a specialized school or one that has a private teacher. Deaf students need to interact with deaf adults to be models of identification and provide them with a wealth of experiences through sign language that help them understand the world. This way of understanding the world will be mediated by the so-called visual experience that characterizes the learning of the deaf (Conrado, 2001). The people who teach sign language classes must be professional signers and if they are not done correctly, they can be transmitted with incorrect knowledge or message. Another option for children to learn LS is for parents to be deaf and mute. The acquisition will be much faster, and the learning process can be complemented in special classes. To communicate a message, hearing-impaired children have to make fine and gritty movements with their body, hands, and face. Not only the acquisition of motor parameters is determined by biological reasons or by ontogenetic development, but by the communicative function. The deaf child differentiates the movements that have a linguistic value from those that do not (Miroslava, 2016).

2.3. Learning Spanish as a Second language

Children who were born deaf or who lost their hearing before being in contact with their mother tongue are part of the 90-95% who live in hearing families. This causes them to live in an environment in which they are not able to fully or partially perceive and understand the mother tongue (Kontra *et al*, 2014). This means that in the case of deaf children they must learn Spanish as a second language in Mexico.

Furthermore, interaction with other people cannot be limited to deaf people. It is necessary to interact with hearing people. One of the first educational priorities is the learning of oral language, in this case Spanish, and this learning involves interacting with other speakers who present models, uses and strategies for the use of oral language, and provide opportunities to develop oral skills. As well as rules of conduct and social knowledge (Conrado, 2001).

In teaching a Second Language (L2) for hearing impaired students, learning planning must be done considering that the main objective is to ensure that students have good writing and reading (Fernández, 2004). The material should be adapted to the needs of hearing-impaired students. Furthermore, adapting the topics, in this case, the grammar, vocabulary and spelling of Spanish as their second language.

2.4 Deaf community in Mexico

The deaf community has been a diverse and numerous group that has its own culture, customs, and form of social coexistence. This community has 5,049,598 people with hearing impairment or disability even using a hearing aid according to *Censo de Población y Vivienda 2020 del Instituto Nacional de Estadística y Geografía* (INEGI,2020) in Mexico. It should be noted that in the state of Puebla there are 271,799 people with hearing impairment or disability even using a hearing aid according to (INEGI, 2020). Nevertheless, for a long time their inability to communicate with an oral language, in this case, Spanish, did not allow them to be relevant to society and they were seen as incapable of communication fend for themselves. Despite the contempt of the people, there has been a struggle to include the deaf-nonspeaking community in society as people capable of fending for themselves and conducting complex activities. In addition, various organizations, and groups such as the

Sistema Nacional para el Desarrollo Integral de la Familia (DIF), CONADIS or the *Comisión Nacional de los Derechos Humanos* (CNDH) try to eradicate their negative and discriminatory perspective in society.

2.4.1 Context of deaf students

The deaf community has had many difficulties to communicate within society due to the conditions in which the majority of disabled people live, it might be the lack of financial resources or the lack of education they had. Unfortunately, there are few places where general knowledge of sign language can be taught to Mexicans, and this affects their professional development. According to INEGI (2020) there are a total of 1,024,794 people with hearing impairment or disability even using hearing aid who do not have schooling. It is a very alarming figure since this number is due to the different negative conditions that Mexican education provides to this community.

2.4.2 Deaf students in Puebla

In Puebla there are a total of 271,799 people with hearing impairment or hard hearing even using hearing aid (INEGI, 2020). Of those 271,799 people, 21,748 have higher education and it is shown that over the years, deaf and hard of hearing people decide to continue studying to improve their quality of life. See Table 1.

Table 1

Incidence of deafness in student populations

Total Population /Age	From 18 to 19 years	From 20 to 24 years	From 25 to 29 years	From 30 to 34 years	From 35 to 39 years	From 40 to 49 years	50 years or more
21,748	154	1,085	1,105	1,096	1,113	2,896	14,299

Source: Own elaboration.

2.5 Education in Mexico

In Mexico, education in general has played an important role in the formation of children and adolescents. However, more than 4 million children and adolescents in the world do not have the resources to access an educational institution. In addition, 600,000 children and adolescents are at risk of dropping out of school due to various factors such as poverty, distant schools, violence, and bullying. United Nations Children's Fund, [UNICEF], 2020). Added to this, education has had difficulty adapting its educational programs to the general public. This affects the development of youth and children due to poor implementation of school resources and their performance in higher education and cause them not to develop the necessary aptitudes and abilities to be candidates to study a bachelor's or master's degree; this includes students with hearing disabilities.

2.5.1 Inclusive education

Inclusive education is based on the idea that all students should learn together, regardless of their differences or disabilities, and that they all have unique and special

characteristics, tastes, abilities, and learning needs. (United Nations [UN], 2016). Students with disabilities are supposed to have access to a general educational system, but most schools do not provide them with an efficient language teaching that allows them to satisfy their basic needs, nor an educational level according to their abilities and hearing-impaired students have been excluded from school and language classrooms. According to Florian (2013), explains that:

> Importantly too, exclusionary, or disrespectful practices towards children with different levels of abilities in school are viewed as having consequences not just for these students, but for all learners. Deprived from the early experience of respectfully dealing with and accepting disability as part of human diversity, non-disabled children will more likely become adults who will themselves reproduce, instead of combating, prejudicial and discriminatory practices towards persons with disabilities and their place in society.

This implies that the exclusion and discrimination of disabled people begins as soon as they are children in school and public environments, and this affects their educational and work opportunities. Therefore, when hearing disabled people reach Higher education does not have the minimum English bases to achieve A2, much less B1. The need to develop English teaching materials that are inclusive for students with total or partial hearing disabilities is proposed. Furthermore, the material must be enriching and accessible to deaf student, but also accessible to his hearing classmates, not only facilitating interaction between them, but also facilitating the acquisition of skills and shared knowledge for each of them and differentiated according to their needs and potentialities (Formoso, *et al*, 2017). These methods can be retaken, adapted, and applied in elementary education in Mexico.

2.6 Monolingual model

For several years, the teaching of hearing-impaired students was through a monolingual or so-called oralist method, this means that only the oral language spoken in the country or region was taken as a basis for teaching. This method was focused on lip reading and that the disabled student was able to interpret the messages. However, deaf education has in many cases insisted on using oral language as the basis for all classroom learning (González *et al*, 2012). Unfortunately, this oralist method left the hearing-impaired students isolated because they did not have the necessary tools to communicate in the oral language of their region and only the hearing student was the only one with the possibility of participating in a teaching-learning process and of developing in a way correct in the classroom. Furthermore, one of the reasons why deaf students had a poor education was that teachers stated that the use of sign language in the classroom did not allow students to develop abstract ideas and did not motivate them to try to learn spoken language (González *et al*, 2012).

The oralist model did not allow students to have a correct teaching and learning process. Based on the needs that arose from deaf students, a model was proposed that included sign language as an important tool in the classroom, and that was the bilingual and bicultural model (Robles,2012).

2.7 The bilingual and bicultural educational model

The bilingual and bicultural model consists of using both the mother tongue, which is sign language, and the second language, which is oral, in the learning of the deaf student (Robles,2012). The use of oral language is very important since students with hearing disabilities can develop their writing and reading and thus they are able to acquire knowledge and have a structured and complete language that benefits in different social contexts are

access to a wide variety of experiences. But also sign language will be an important pillar in the development of the hearing-impaired student as a person and will allow to establish the foundations of the knowledge that they are learning with the oral language awakening their curiosity, assuming norms and guidelines of conduct.

Within the bilingual model we can highlight 2 types of bilingualism, simultaneous bilingualism, which consists of exposing the hearing child from birth to two languages at the same time. The second is successive bilingualism, which prioritizes the natural acquisition of a language in order to later learn a second language (Robles,2012). These factors determine that the English teacher who will apply the bilingual bicultural model must know and use sign language correctly. In addition, the teacher must achieve inclusion by planning and developing techniques and instruments that can improve the communication, participation, and relationship of the hearing- and hearing-impaired students.

According to Conrado (2001), the objectives of bilingual and bicultural education are the following:

- Give the same psychosociolinguistic and educational possibilities to the deaf and hearing student.
- Develop a bicultural identity that allows to approach the deaf and hearing culture.
- Incorporate two cultures and two languages within the school, in different contexts, with representatives of both communities playing pedagogical roles.
- Establish an appropriate learning environment for deaf children.
- Facilitate a socio-emotional development based on identification.

• Promote relationships with the world around them.

• Give full access to curricular and cultural information.

On the other hand, the inclusion of this method is not an easy task due to the fact that the oralist method has always been used for a long time and that is why not all teachers or school workers are prepared, and there may be difficulties during the course implementation process that according to Conrado (2001) are the following:

- Reflection on the type of intervention you want to practice bilingualism successive or simultaneous.
- Inclusion of sign language in the educational project of the centers and in the curricular project.
- Possibility of accessing and learning sign language through contact with people who are proficient in sign language (deaf and hearing)
    - Deaf advisers
    - Hearing teachers competent in sign language
    - Deaf teachers
    - Sign language interpreters.
- Organization of groups of deaf students in natural contexts
    - Schooling in preferential (or exclusive) integration centers
    - Relationship with other deaf students (sign language)
    - Relationship with hearing students (oral language and sign language)
- Decisions on the teaching of oral and written language. Pedagogical supports and speech therapists. Relations between written and signed language.

- Development of teaching materials with sign language as a support (video, computing)
- Support and training for parents. Very close collaboration.

Despite the difficulties that its implementation presents with the necessary modifications and correct adaptation to the school curriculum, it can be very useful for learning a third language, as occurs when it is applied in English classes. Furthermore, the oral language of the region and the sign language must serve as a support tool for the foreign language so that the deaf student's knowledge is meaningful. However, the objective should be more focused on the development of reading and writing skills. With these two skills, the student will be able to communicate in English depending on their exposure to this language outside and inside classes.

2.8 Teacher preparation problems to teach English

Undoubtedly, teaching has always benefited a certain group of people who are students who do not have disabilities, in addition to being focused and taught for them. Furthermore, disabled people who had access to education were not adapted for their needs and it was always applied as planned for non-disabled students. Over the years, education has evolved, becoming inclusive and supporting people who belong to minorities, in this case hearing-impaired students. However, the change has not been as impressive in various parts of the world where it is still being planned or implemented.

In non-English speaking countries, the number of deaf students entering upper secondary and higher education in colleges and universities has increased considerably due to the importance of English as an international language. Students must understand that taking the English course serves to develop the necessary skills and access academic

materials in English, the Internet, and other resources (Gerald, 2007). Unfortunately, the teachers do not have the academic preparation or the methods to provide them with a quality education here in Mexico.

Teachers and administrators have denounced that in educational practices there is marginalization of deaf students. Additionally, deaf students have dropped out of school due to educational programs that do not help deaf students achieve their educational outcomes. (Thompson, 2004). That is why, administrators and teachers should plan to provide a workshop for hearing students and especially for deaf students to help them to cover their needs related to literacy.

2.9 The learning process of deaf students' development and performance in classes

The learning of deaf students is slower compared to that of students who are hearing. The communicative-linguistic resources of the hearing impaired are limited; in addition, they cause difficulties when communicating in their daily life. (Muñoz, 2015). These students have experienced hurdles when developing their literacy skills and their intake is reduced considerably during English classes. This makes it difficult for them to continue with other educational levels. Ideally, the student feels comfortable and thus can achieve to participate constantly and break the factors of fear of being wrong or error, nerves when speaking (signing) or participating, and the evaluation must be objective since all skills are examined and valued in the same way. Moreover, the introduction of multipurpose and effective strategies and resources is needed to facilitate interaction based on collaborative or cooperative work between hearing and deaf students, helping them to acquire those skills and respecting the individual and collective needs of students (Formoso, *et al*, 2017).

2.10 Recent studies

In Ecuador, an investigation was conducted on the problems of 2 English teachers who had deaf and hearing-impaired students at the "Francisco Febres Cordero" Public School during the 2021-2022 school year. Teachers faced problems such as difficulty in assessing the knowledge and skills of deaf students using material suitable for hearing students and not adapting to their needs, as well as lack of preparation to teach curricular topics. It was necessary to use qualitative research and the case studies were applied to English teachers. The proposals offered for a better teaching-learning process were the correct application of technology as a teaching strategy for deaf and hard-of-hearing students. Subtitles on audiovisual material and images are examples that may support deaf students' access to information and have active and comfortable participation in class. (Peralta and Guamán, 2023).

In El Salvador, a diploma course was created according to the needs that arose from language teachers when they had contact with students with hearing disabilities. It was qualitative research and was of an exploratory-descriptive type and four people with hearing disabilities with experience as language students were interviewed, three language teachers who had the opportunity to serve deaf students in different institutions and academic careers. Likewise, an expert in inclusive education was included who provided fundamental details for the support and training of deaf people. The findings indicated that, to facilitate foreign language learning for deaf students, teachers can focus on teaching reading, writing, grammar, and pronunciation, as well as the use of technological tools and Sign Language Salvadoran as instruments implement strategies in favor of the teaching-learning process of students with hearing disabilities. (Membreño and Pineda, 2023)

Research was conducted on the effectiveness of intervention learning materials developed in improving language comprehension ability among students with hearing impairment in inclusive classrooms of Kazima Secondary School, Bwiru Boys Secondary School, and Buhongwa Secondary School in Tanzania. The study used mixed research and questionnaires and interviews were applied to special education teachers and English teachers in general. The findings determined that the collaborative work of English teachers and specialists in the area of inclusive education together with the implementation of the learning intervention material managed to improve the ability to understand and learn the English language and the confidence of deaf students to participate in class (Philip and Kumburu, 2023).

This research aimed to uncover the problems that English teachers faced when teaching deaf and hard of hearing students and describe the strategies they used to address these challenges. The methodology of this study was qualitative, exploratory research and data was collected through observation, interviews, and documentation. Four challenges were found that represent the challenges that teachers encountered. Communication between teacher and students is confusing, the teacher's lack of knowledge about deaf culture and little knowledge of sign language generates difficulties in transmitting and receiving messages. The preparation of materials is not adequate since it is not planned in advance with the correct activities and tools for the student's comfort. The incorrect selection of digital resources for class, only for hearing students. Finally, the distribution of materials that are inaccessible for many students and that teachers find difficult to repeat. To address the challenges, teachers used certain strategies such as personalizing materials, choosing visual media using a total communication approach (Juhaeni *et al*, 2022). See table 2.

Table 2

Studies on teaching English to deaf students

Author	Participants	Purpose	Instrument	Findings
Peralta and Guamán. (2023)	High School English Teachers	To identify the needs of English teachers dealing with deaf people, as well as the effectiveness of English teaching methods and strategies.	Qualitative research (case study).	Responses from English teachers show that teaching deaf students requires special training and assistance to address the special needs of deaf students and provide an inclusive and comfortable environment.
Membreño and Pineda. (2023)	Students with hearing impairment English teachers and an expert in inclusive education	To focus on specifying the needs of deaf students in the areas of languages, in order to detail the didactic skills that teachers must develop to teach English to deaf people.	Qualitative research, (exploratory-descriptive research).	Using sign language by the English teacher is important in the development and motivation of deaf students in the classroom. In addition, technological tools and visual resources are of great benefit for deaf students in learning English.
Philip and Kumburu. (2023)	Teachers, English teachers, special needs teachers, hearing students and deaf students	To improve the English comprehension ability of deaf students in Tanzania using the instructional approach and applying the intervention learning materials.	Mixed methods (phenomenographic, pre- and post-test quasi-experimental).	The collaborative work of the teachers and specialists plus the implementation of the learning intervention material managed to improve the ability to understand the English language and the confidence of deaf students to participate in class.
Juhaeni *et al*. (2022)	English teacher	To discover the problems that English teachers face when teaching deaf students and describe the strategies applied to improve the classroom environment.	Qualitative research (exploratory research).	Four problems were found that make it difficult for students to learn English: student-teacher communication, preparation of materials in class, and their application. The teacher has to use sign language to communicate, prepare material that motivate the student, such as videos with subtitles, and repeat so that the student can understand the topics.

Khasawneh (2021)	English language teachers in special education schools	To determine the problems in teaching English to deaf students from the point of view of English teachers.	Quantitative research (Descriptive design).	It was found that the school's curriculum does not meet the needs of deaf students. In addition, the administration must provide teachers with the necessary resources so that they can teach their class properly with the correct strategies and objectives.
Birinci and Sariçoban (2021)	High school students	To investigate the effectiveness of the use of visual materials in teaching English vocabulary to deaf students.	Quantitative research (experimental research).	Visual materials are shown to be very effective in long-term retention to further teach the use of sign language in the classroom for deaf students. Unlike if only sign language was used as the only means of teaching English
Yunisari *et al*. (2021)	Special school English teachers	To describe the problems faced by English teachers, the way, and strategies they use to teach English to deaf students.	Qualitative research (case study).	There are communication problems between the teacher and the student due to the lack of sign language of the teachers, the lack of vocabulary, the environment in which the students develop, and the inadequate study plan and materials cause a delay in learning of the deaf student. The teachers brought material and the use of the Internet to show them audiovisual resources. Teachers had to focus on grammar and vocabulary to facilitate the learning process.
Syukri and Humaera (2019)	Deaf students and hard-hearing student	To understand whether electronic educational media, flashcards, foldable books, and posters are appropriate for teaching students who are deaf and hard of hearing.	Qualitative research (case study).	The use of the proposed material after its application increased the motivation and interest of deaf students in class. Most of the students improved their performance, confidence and good memorization of vocabulary and there were fewer feedback corrections.
Domagała-Zyśk and Podlewska (2019)	Hard-hearing students	To identify and describe oral communication strategies in the English class in deaf and hard of hearing students.	Qualitative research (case study).	Deaf students were able to have conversations according to their language level, using appropriate vocabulary and grammatical structures. It was achieved thanks to their experiences, such as exchange visits and participation

				in international conferences to increase self-esteem.
Getnet (2019)	Students with hearing impairment	To explore communication challenges between students with hearing disabilities and English teachers in the classroom.	Qualitative research (Semi structured interview).	It was found that there was no sign language interpreter in the classroom and the class had been conducted with a regular teacher. The teacher had no special training in teaching deaf students.

Source: own elaboration.

Chapter III Methodology

3.0 Introduction

This chapter 3 reviews the study's methodology in eight parts: method, research context, sampling, participants, data collection techniques, instruments and materials, ethical considerations, procedure, and data analysis.

3.1 Method

Quantitative research aims to quantify the variation of a phenomenon, situation, or problem. The most common resource is to use statistics that help verify or refute the conclusions that have been drawn from the understanding of the data analyzed through different instruments. Additionally, they help measure the dimension of an association or relationship, indicate how reliable the findings may be, and help discriminate the effect of different variables (Kumar, 2011). Non-experimental quantitative research was used by applying a questionnaire to effectively achieve the objectives: to analyze the level of knowledge and training of teachers and pre-service teachers of English in the area of inclusive education aimed at deaf students.

3.2 Context of the research

The study was developed at *facultad de lenguas* BUAP towards teachers who have knowledge of the English language in addition to students who study *Licenciatura en la Enseñanza del Inglés* from different semesters. A questionnaire was administered to these participants to determine how involved they are in inclusive education and how prepared they are to deal with students with special needs, mainly deaf. It is not a requirement that BUAP English teachers have had experience with students with special needs, in this case deaf students.

3.3 Sampling

A population can be defined as all members of a group of people, events, or objects, and a sample is a selected portion of that population. This implies that sampling takes a portion of the population, observes, and analyzes this group, and then generalizes the findings to the main population from which the sample was taken. (Ary *et al*, 2009). There are two types of sampling: probability and non-probability. This research will focus on the non-probability due to the availability of time of the students, groups of students and teachers at the time of delivering the surveys. A convenience sample was conducted, because it was necessary to have enough students from the different semesters to be correctly analyzed.

3.4 Participants

The participants in this study are 77 students from different semesters and 11 teachers who belong to the language faculty of the English teaching career at BUAP. The information is represented in 2 pie charts. The first graphic indicates that there are 30 men and 58 women. See figure 1.

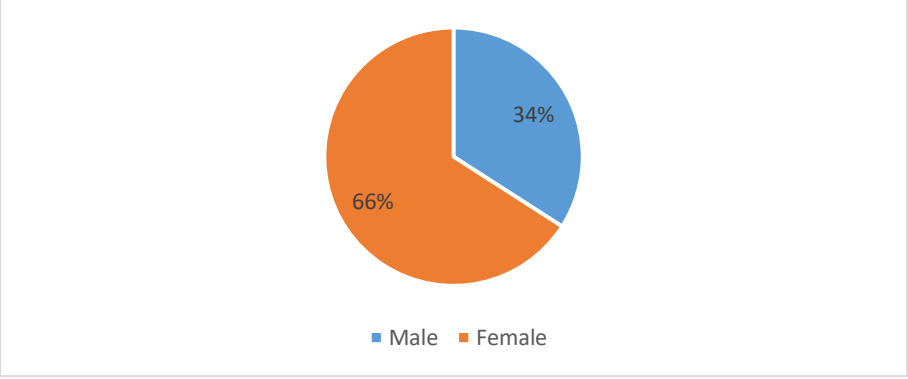

Figure 1: Population compositions by gender.
Source: own elaboration.

The second graph shows that there are 17 students from the first semester, 24 from the second semester, 8 from the third semester, 2 from the fourth semester, 7 from the fifth

semester, 11 from the sixth semester, 8 from the eighth semester, 10 master's professors and 1 Ph professor. See figure 2.

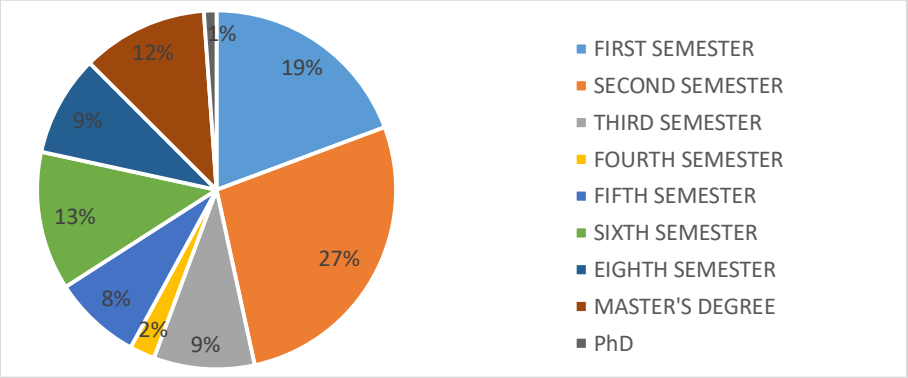

Figure 2: Population compositions by levels of study.
Source: own elaboration.

3.5 Data collection techniques and instruments

To collect the necessary information, a survey was applied to the participants. According to Ary (2009), In survey research, researchers ask about each person's beliefs, characteristics, and behaviors. The survey that was administered to the participants will provide the information necessary to answer the research questions. The survey was administered in person on paper in several sessions on different days and times to multiple participants who had time to answer it in the language faculty after each class and in some cases during class with the teacher's permission. Participants who could not answer it in the language facility were provided with a Google Forms link so that they could answer it at the time most suitable for them. The survey collects demographic information of the subjects such as age, years of experience in the field of teaching, gender, and academic degree. Additionally, this instrument uses the Likert scale from 1 to 6 with strongly agree as 1 and strongly disagree as 6. It has 26 items that are divided into 5 different topics, which are:

1. Teacher attitudes toward inclusion of deaf students

2. Preparation of English teachers and the institution in inclusive education for deaf people.
3. Teacher knowledge and confidence in teaching deaf students
4. Effect of inclusion on deaf and hearing students
5. Effect of inclusion on teacher workload

3.6 Ethical consideration

The selection of participants was random, and each subject agreed to be surveyed. Each person was told that all information was going to be confidential and for academic use. Each survey had the phrase "All information collected is confidential and its use is for academic purposes only" written at the top of the page. All participants have the right to anonymity. The researcher must maintain the confidentiality of participants and not maintain records that identify individuals unless absolutely necessary. Fake names or code numbers can be used to replace real names and keep track of what information comes from whom without revealing identities (Ary *et al*, 2009).

3.7 Procedure

The application of instruments and data collection was conducted from May to October in the language faculty of BUAP. On Mondays, Wednesdays, and Fridays from 12 pm to 4 pm, the surveys were given to teachers and students. Participants who were not available were given the survey and came to pick up another day. However, many participants, in this case teachers, did not complete the surveys and their data could not be collected. Another factor to consider was that many surveys were not properly answered by the participants and the information provided was incomplete and invalid for data analysis.

3.8 Data analysis

Quantitative data analysis has the function of reducing data in addition to summarizing the information that comes from the statistics conducted. This can be done in two ways: through descriptive statistics which is used to describe the population and inferential statistics to make inferences and generalize from a sample to a larger population. This study focuses on inferential statistics, taking a significant sample of teachers and pre-service teachers from the language faculty and generalizing characteristics of entire population. Moreover, descriptive statistical analysis seeks to present and organize the information so that it is possible to observe the tendency and behavior of the population in the variables considered, providing an interpretation of the results. When surveys are used as an instrument, they can describe, record, and interpret phenomena without interfering with existing variables (Masseron *et al*, 2016).

According to Canova *et al*.,2017, a variable is any characteristic that can be observed or measured in a subject or population. Therefore, univariate analysis attempts to analyze and describe the distribution of the variable in a sample. In addition, pie charts can be an option to describe distributions for nominal variables where each sector represents the proportion of observations in each category. The variable in this study is the preparation of teachers and pre-service teachers for the presence of students with hearing disabilities in the classroom.

Chapter IV Results

4.0 Introduction

In this fourth section is shown, analyzed and explained the results of the gathered information and the discussion. The results are divided and described into 5 different sections with a graphic representing each item's results and a short explanation of the findings. Finally, the finding in the results is summarized in the discussion.

4.1 The inclusion of deaf students and teacher attitudes

This section shows what knowledge, attitudes and behaviors teachers and pre-service teachers show regarding the issue of inclusion and presence of deaf students in class. The items from 1 to 4 in the survey are represented in 4 subtopics.

4.1.1 Knowledge about inclusive education and its popularity

The pre-service teachers have some knowledge about inclusive education as 25% chose strongly to agree, 27% generally agree and 25% somewhat agree while the remaining participants who had no knowledge were 17% who chose somewhat to disagree 5% generally disagree and 1% strongly disagree. See figure 3.

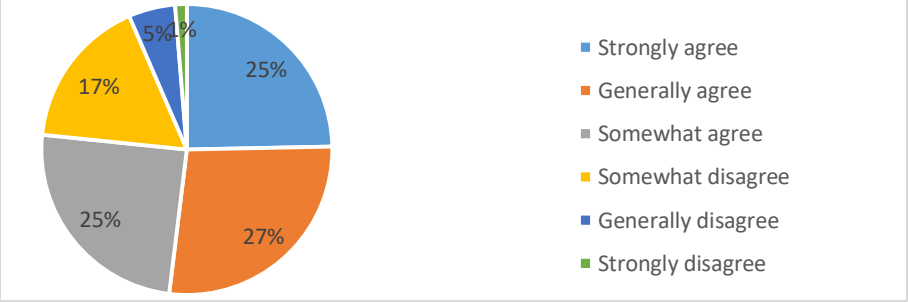

Figure 3: Pre-service teacher knowledge about inclusive education and its popularity. Source: own elaboration.

On faculty member teachers mentioned that have some knowledge about inclusive education as 18% chose strongly agree, 28% generally agree and 27% somewhat agree while

the remaining participants who had no knowledge were 9% who chose somewhat disagree 9% generally disagree and 9% strongly disagree. See figure 4.

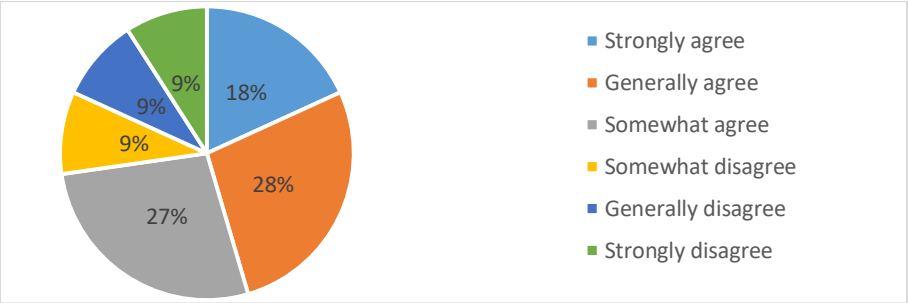

Figure 4: Teacher knowledge about inclusive education and its popularity.
Source: own elaboration.

4.1.2 Knowledge about teaching deaf students

The pre-service teachers have some knowledge about teaching students with hearing disabilities as 11% chose strongly agree, 16% generally agree and 25% somewhat agree while the remaining participants who had no knowledge were 15% who chose somewhat disagree 5% generally disagree and 28% strongly disagree. See figure 5.

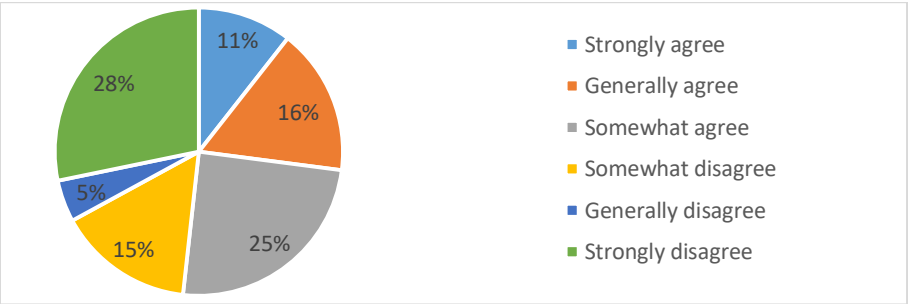

Figure 5: Pre-service teacher knowledge about teaching deaf students.
Source: own elaboration.

On faculty member teachers said that have knowledge about teaching students with hearing disabilities as 0% chose strongly agree, 18% generally agree and 9% somewhat agree while the remaining participants who had no knowledge were 18% who chose somewhat disagree 18% generally disagree and 37% strongly disagree. See figure 6.

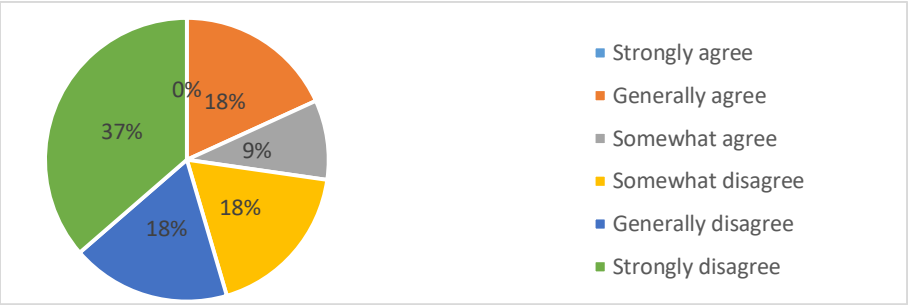

Figure 6: Teacher knowledge about teaching deaf students.
Source: own elaboration.

4.1.3 Teachers and pre-service teachers' initiative to learn about hearing impairment

The pre-service teachers have the initiative to prepare and learn about hearing impairment as 16% chose strongly agree, 18% generally agree, and 28% somewhat agree while the remaining participants who had no initiative were 17% who chose somewhat disagree, 9% generally disagree, and 12% strongly disagree. See figure 7.

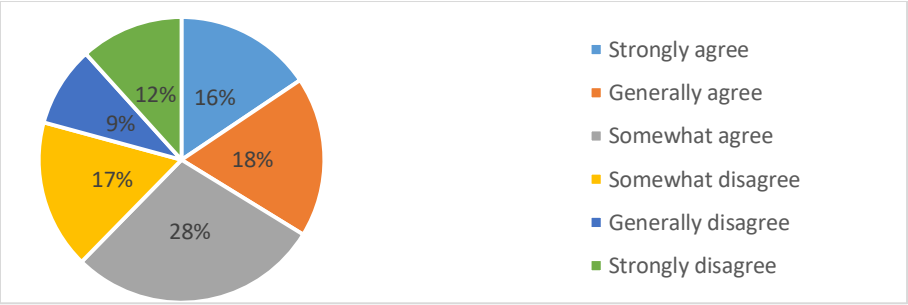

Figure 7: Pre-service teachers' initiative to learn about hearing impairment.
Source: own elaboration.

On faculty member teachers said have the initiative to prepare and learn about hearing impairment as 9% chose strongly agree, 9% generally agree, and 37% somewhat agree while the remaining participants who had no initiative were 18% who chose somewhat disagree, 0% generally disagree, and 27% strongly disagree. See figure 8.

Figure 8: Teachers' initiative to learn about hearing impairment.
Source: own elaboration.

4.1.4 Knowledge about hearing impairment and Mexican Sign Language

The pre-service teachers have knowledge about hearing impairment and Mexican Sign Language as 31% chose strongly agree, 18% generally agree, and 21% somewhat agree while the remaining participants who had no knowledge were 16% who chose somewhat disagree, 8% generally disagree, and 5% strongly disagree. See figure 9.

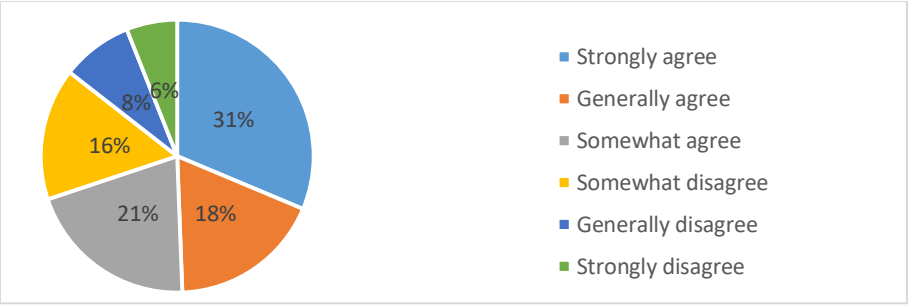

Figure 9: Pre-service teacher knowledge about hearing impairment and Mexican Sign Language.
Source: own elaboration.

On faculty member teachers said that have knowledge about hearing impairment and Mexican Sign Language as 9% chose strongly agree, 9% generally agree, and 27% somewhat agree while the remaining participants who had no knowledge were 37% who chose somewhat disagree, 0% generally disagree, and 18% strongly disagree. See figure 10.

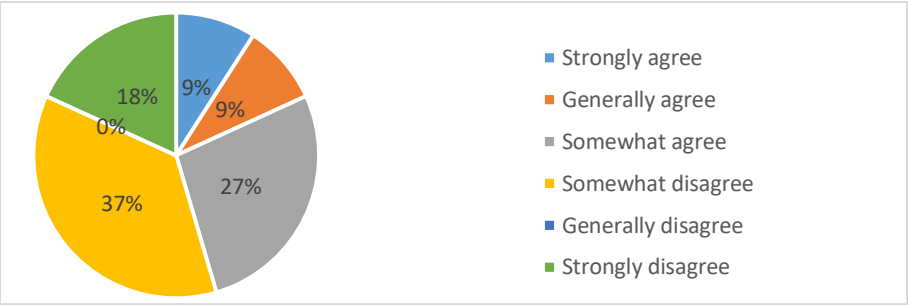

Figure 10: Teacher knowledge about hearing impairment and Mexican Sign Language. *Source:* own elaboration.

4.2 Preparation of schools and teachers to teach students with hearing disabilities

This section shows how schools and teachers, and pre-service teachers are prepared to teach students with hearing disabilities. The items from 5 to 9 and item 16 of the survey are presented in 6 subtopics.

4.2.1 BUAP is capable of dealing with deaf students

The pre-service teachers believe that the level of preparation of BUAP to deal with students with hearing disabilities were 11% who chose strongly agree, 22% generally agree, and 23% somewhat agree while the rest of the participants selected were 18% who chose somewhat disagree, 16% generally disagreed, and 10% totally disagree. See Figure 11.

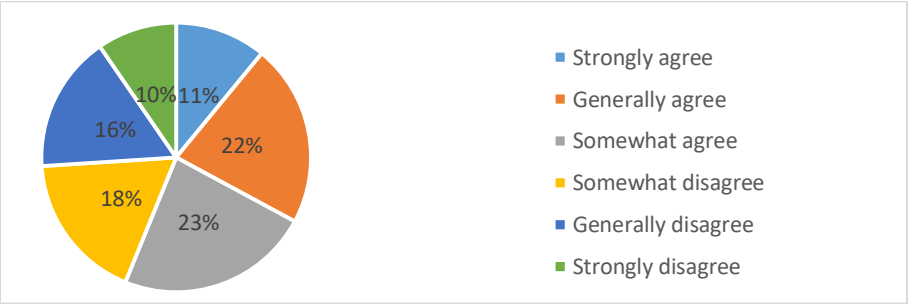

Figure 11: Pre-service teacher BUAP is capable of dealing with deaf students. *Source:* own elaboration.

On faculty member teachers believe that the level of preparation of BUAP to deal with students with hearing disabilities were 9% who chose strongly agree, 9% generally

agree, and 27% somewhat agree while the rest of the participants selected were 18% who chose somewhat disagree, 0% generally disagreed, and 37% totally disagree. See Figure 12.

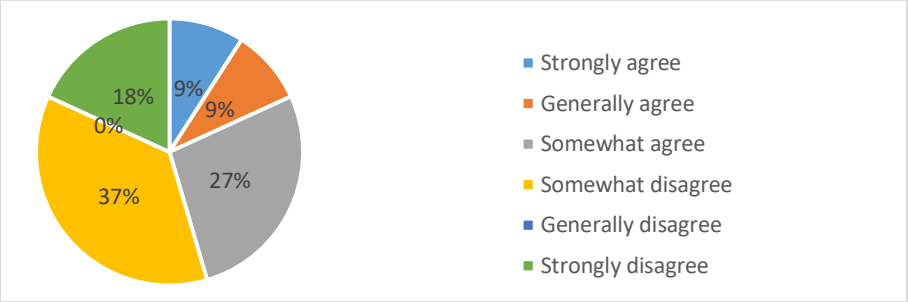

Figure 12: Teacher BUAP is capable of dealing with deaf students.
Source: own elaboration.

4.2.2 Hearing disability topics in the teacher training program curriculum

The pre-service teachers mentioned that they were taught topics about special education during their teacher training were 15% who chose strongly agree, 23% generally agree and 17% somewhat agree while the rest of the participants selected 18% who chose somewhat disagree, 12% generally disagree, and 15% strongly disagree. See Figure 13.

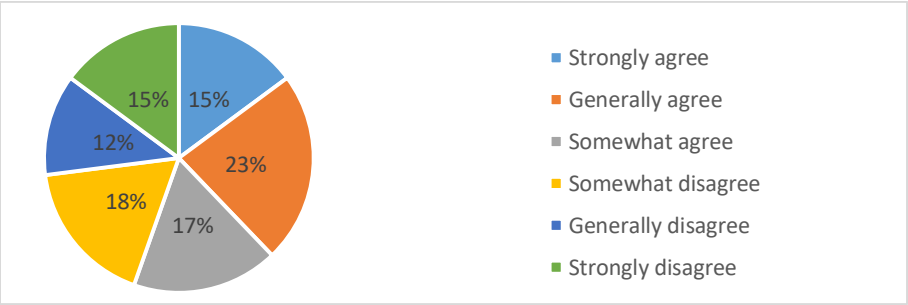

Figure 13: Pre-service teacher hearing disability topics in the teacher training program curriculum.
Source: own elaboration.

On faculty member teachers mentioned that they were taught topics about special education during their teacher training were 9% who chose strongly agree, 9% generally agree and 27% somewhat agree while the rest of the participants selected 18% who chose somewhat disagree, 0% generally disagree, and 37% strongly disagree. See Figure 14.

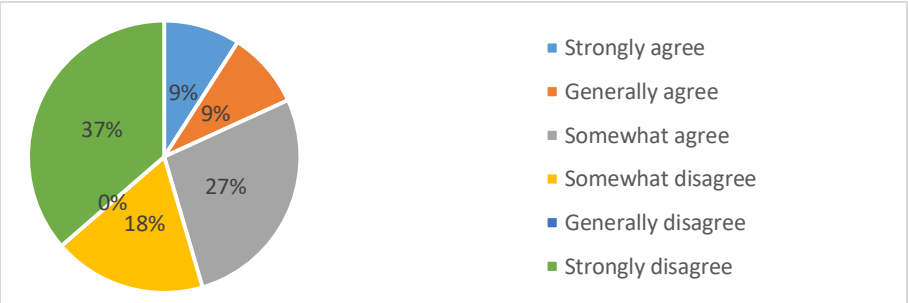

Figure 14: Teacher hearing disability topics in the teacher training program curriculum.
Source: own elaboration.

4.2.3 Specialized training to prepare teachers to work with deaf students

The pre-service teachers mentioned that special education training for teachers is necessary to deal with deaf students were 51% who chose strongly agree, 14% generally agree and 7% somewhat agree while the rest of the participants selected 15% who chose somewhat disagree, 6% generally disagree and 7% Strongly disagree. See Figure 15.

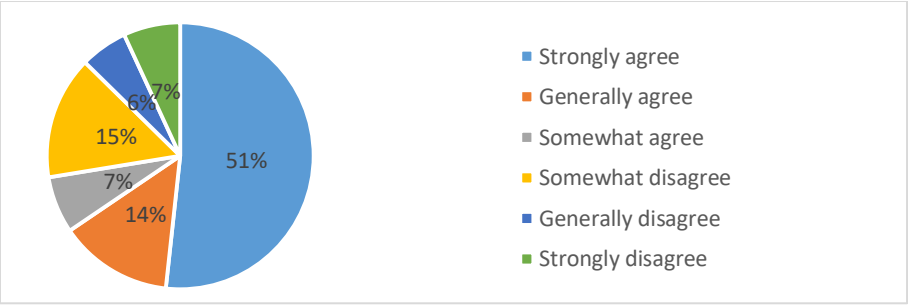

Figure 15: Pre-service teacher specialized training to prepare teachers to work with deaf students.
Source: own elaboration.

On faculty member teachers mentioned that special education training for teachers is necessary to deal with deaf students were 64% who chose strongly agree, 9% generally agree and 9% somewhat agree while the rest of the participants selected 0% who chose somewhat disagree, 18% generally disagree and 0% Strongly disagree. See Figure 16.

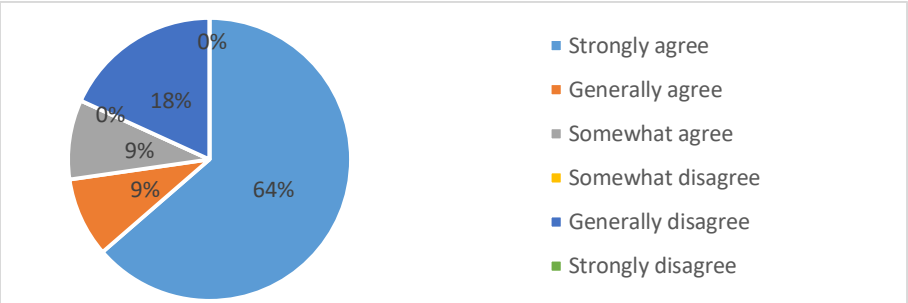

Figure 16: Teacher specialized training to prepare teachers to work with deaf students. *Source:* own elaboration.

4.2.4 School administration promotes inclusion for deaf students

The pre-service teachers mentioned that the school administration in the language faculty promotes inclusion towards students with hearing disabilities were 10% who chose strongly agree, 27% generally agree and 26% somewhat agree while the rest of the participants selected 17% who chose somewhat disagree, 12% generally disagree, and 8% totally disagree. See Figure 17.

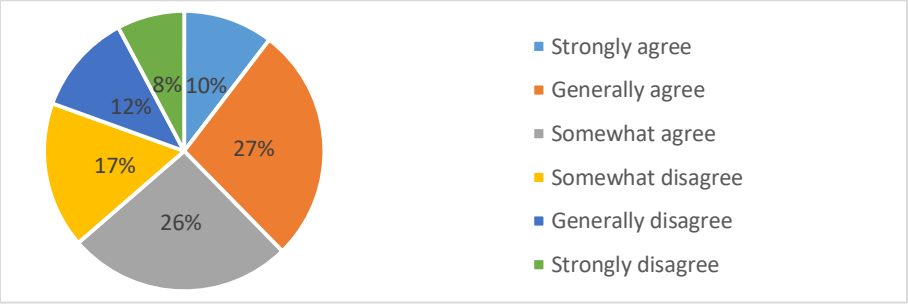

Figure 17: Pre-service teacher school administration promotes inclusion for deaf students. *Source:* own elaboration.

On faculty member teachers mentioned that the school administration in the language faculty promotes inclusion towards students with hearing disabilities were 9% who chose strongly agree, 9% generally agree and 37% somewhat agree while the rest of the participants selected 27% who chose somewhat disagree, 9% generally disagree, and 9% totally disagree. See Figure 18.

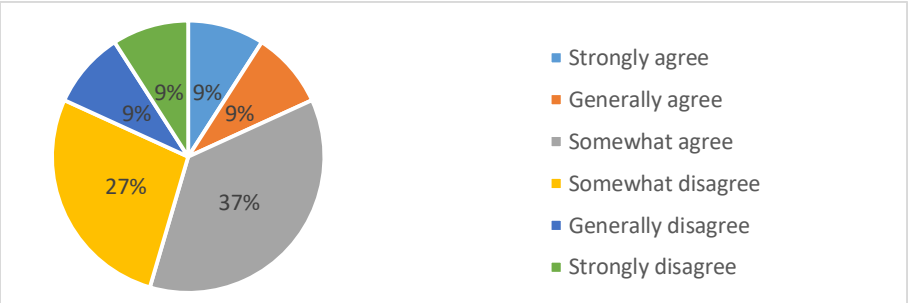

Figure 18: Teacher school administration promotes inclusion for deaf students.
Source: own elaboration.

4.2.5 Teacher training programs to teach with deaf students

The pre-service teachers mentioned that they received enough preparation to deal with students with hearing disabilities through school programs were 9% who chose strongly agree, 12% generally agree and 23% somewhat agree while the rest of the participants selected 16 % who chose somewhat disagree, 16% generally disagree and 24% Strongly disagree. See Figure 19.

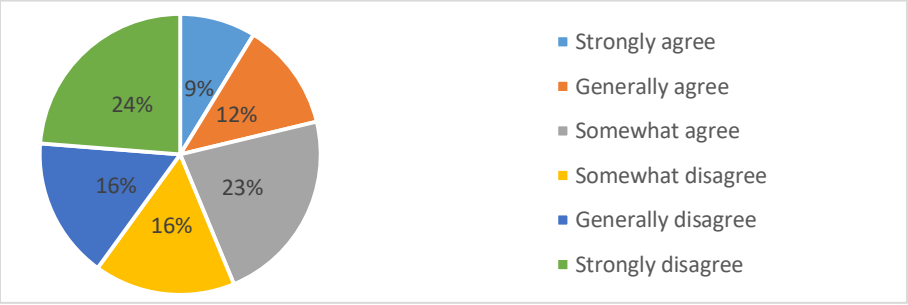

Figure 19: Pre-service teacher training programs to teach with deaf students.
Source: own elaboration.

On faculty member teachers mentioned that they received enough preparation to deal with students with hearing disabilities through school programs were 0% who chose strongly agree, 18% generally agree and 9% somewhat agree while the rest of the participants selected 28 % who chose somewhat disagree, 27% generally disagree and 18% strongly disagree. See Figure 20.

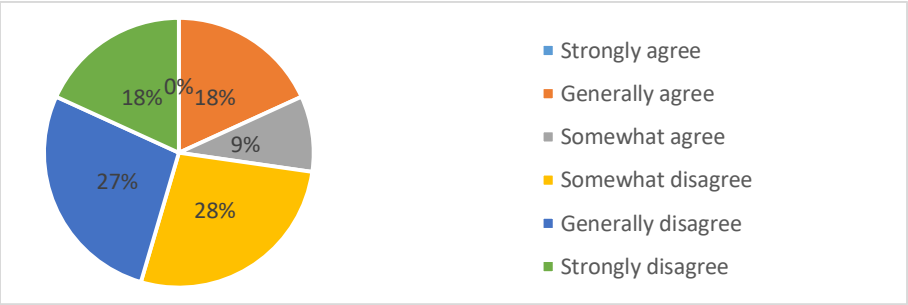

Figure 20: Teacher training programs to teach with deaf students.
Source: own elaboration.

4.2.6 Adapted equipment to the needs of deaf students

The pre-service teachers mentioned that the classrooms are adequately equipped in addition to having audiovisual material to teach classes to deaf students were 24% who chose strongly agree, 13% generally agree and 24% somewhat agree while the rest of the participants selected 15% who chose somewhat disagree, 12% generally disagree, and 12% strongly disagree. See Figure 21.

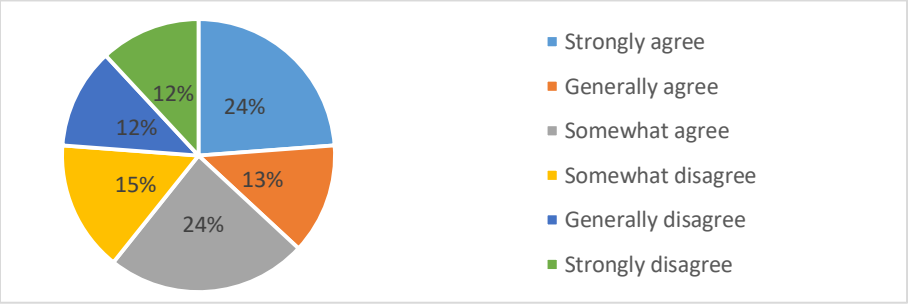

Figure 21: Pre-service teacher adapted equipment to the needs of deaf students.
Source: own elaboration.

On faculty member teachers mentioned that the classrooms are adequately equipped in addition to having audiovisual material to teach classes to deaf students were 46% who chose strongly agree, 9% generally agree and 9% somewhat agree while the rest of the participants selected 0% who chose somewhat disagree, 18% generally disagree, and 18% strongly disagree. See Figure 22.

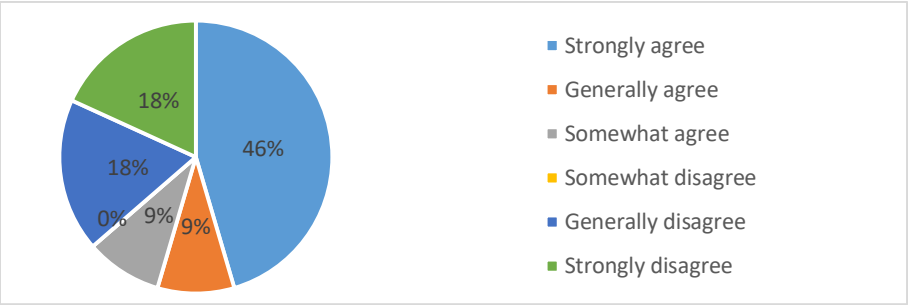

Figure 22: Teacher adapted equipment to the needs of deaf students.
Source: own elaboration.

4.3 Teacher knowledge and confidence in the classroom with deaf students

This section shows the knowledge and confidence that teachers have in a situation in which they have students with hearing disabilities. Items 10 to 15 of the survey are presented in 6 subtopics.

4.3.1 Confidence in adapting methods to the needs of a deaf student

The pre-service teachers mentioned that they feel confident in their capacity to adapt teaching methods to the needs of deaf students were 11% who chose strongly agree, 24% generally agree and 31% somewhat agree while the rest of the participants selected 16% who chose somewhat disagree, 11% generally disagree, and 7% strongly disagree. See figure 23.

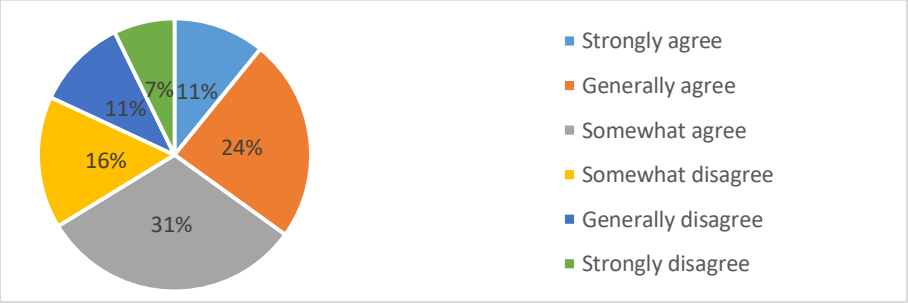

Figure 23: Pre-service teacher confidence in adapting methods to the needs of a deaf student.
Source: own elaboration.

On the faculty member teachers mentioned that they feel confident in their capacity to adapt teaching methods to the needs of deaf students were 0% who chose strongly agree, 18% generally agree and 28% somewhat agree while the rest of the participants selected 27%

who chose somewhat disagree, 18% generally disagree, and 9% strongly disagree. See figure 24.

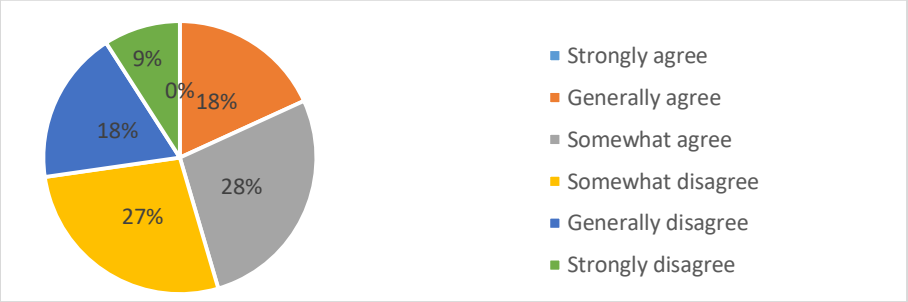

Figure 24: Teacher confidence in adapting methods to the needs of a deaf student.
Source: own elaboration.

4.3.2 Knowledge about hearing loss to adapt strategies for deaf students

The pre-service teachers mentioned that they have required knowledge about hearing loss to adapt their teaching strategies to the needs of deaf students were 7% who chose strongly agree, 10% generally agree and 25% somewhat agree while the rest of the participants selected 19% who chose somewhat disagree, 20% generally disagree, and 19% strongly disagree. See Figure 25.

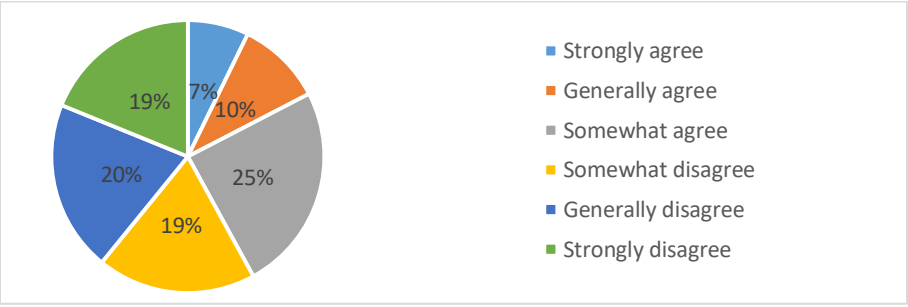

Figure 25: Pre-service teacher knowledge about hearing loss to adapt strategies for deaf students.
Source: own elaboration.

On faculty member teachers mentioned that they have required knowledge about hearing loss to adapt their teaching strategies to the needs of deaf students were 9% who chose strongly agree, 9% generally agree and 27% somewhat agree while the rest of the

participants selected 37% who chose somewhat disagree, 9% generally disagree, and 9% strongly disagree. See Figure 26.

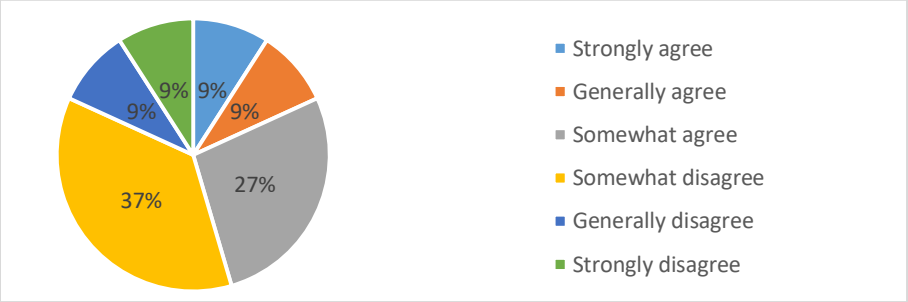

Figure 26: Teacher knowledge about hearing loss to adapt strategies for deaf students. *Source:* own elaboration.

4.3.3 Experience working with deaf students

The pre-service teachers mentioned that they have the necessary experience to work effectively with deaf students were 6% who chose strongly to agree, 13% generally agree and 13% somewhat agree while the rest of the participants selected 17% who chose somewhat to disagree, 22% generally disagree, and 29% strongly disagree. See Figure 27.

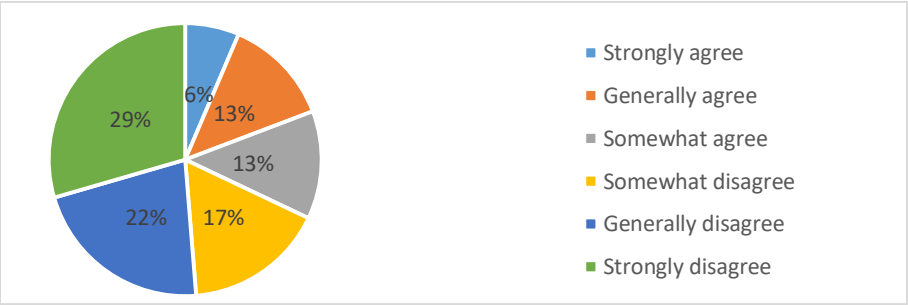

Figure 27: Pre-service experience working with deaf students. *Source:* own elaboration.

On faculty member teachers mentioned that they have the necessary experience to work effectively with deaf students were 0% who chose strongly agree, 0% generally agree and 9% somewhat agree while the rest of the participants selected 37% who chose somewhat disagree, 36% generally disagree, and 18% strongly disagree. See Figure 28.

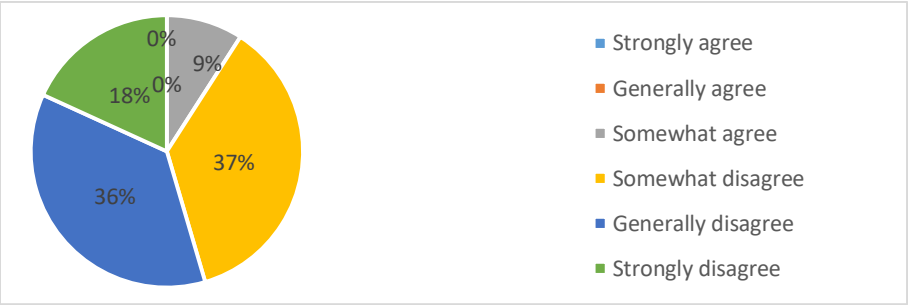

Figure 28: Teacher experience working with deaf students.
Source: own elaboration.

4.3.4 Deaf student in a positive classroom learning environment

The pre-service teachers mentioned that they feel confident that a student with a hearing impairment would experience a positive learning environment in their classroom were 11% who chose strongly agree, 26% generally agree and 27% somewhat agree while the rest of the participants selected 17% who chose somewhat disagree, 13% generally disagree, and 6% strongly disagree. See Figure 29.

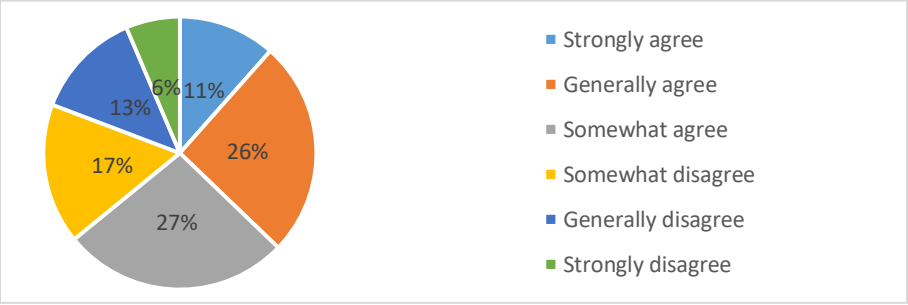

Figure 29: Pre-service teacher deaf student in a positive classroom learning environment.
Source: own elaboration.

On faculty member teachers mentioned that they feel confident that a student with a hearing impairment would experience a positive learning environment in their classroom were 0% who chose strongly agree, 37% generally agree and 9% somewhat agree while the rest of the participants selected 36% who chose somewhat disagree, 18% generally disagree, and 0% strongly disagree. See Figure 30.

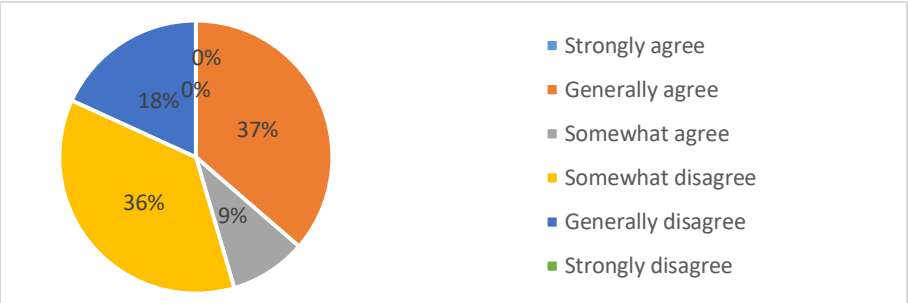

Figure 30: Teacher deaf student in a positive classroom learning environment.
Source: own elaboration.

4.3.5 Knowledge about hearing loss in students' language development and learning

The pre-service teachers mentioned that they are familiar with the effects of hearing loss on language development and learning were 12% who chose strongly agree, 11% generally agree and 25% somewhat agree while the rest of the participants selected 16% who chose somewhat disagree, 16% generally disagree, and 20% strongly disagree. See Figure 31.

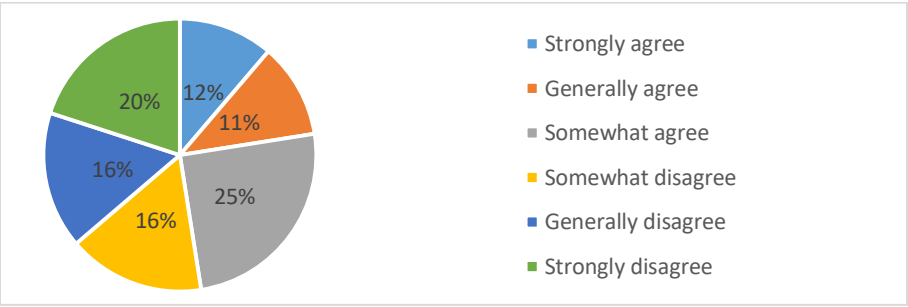

Figure 31: Pre-service teacher knowledge about hearing loss in students' language development and learning.
Source: own elaboration.

On faculty member teachers mentioned that they are familiar with the effects of hearing loss on language development and learning were 9% who chose strongly agree, 9% generally agree and 28% somewhat agree while the rest of the participants selected 18% who chose somewhat disagree, 18% generally disagree, and 18% strongly disagree. See Figure 32.

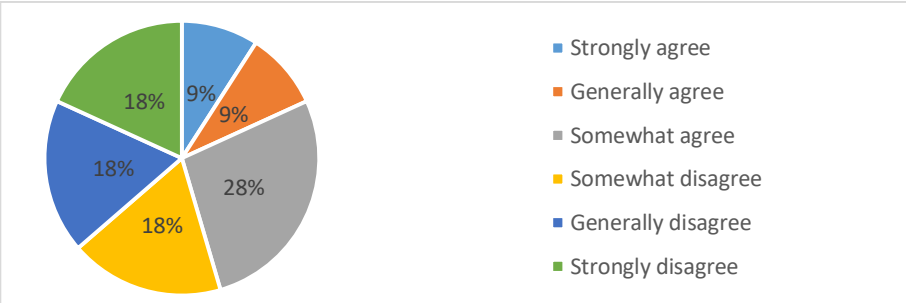

Figure 32: Teacher knowledge about hearing loss in students' language development and learning.
Source: own elaboration.

4.3.6 Teaching deaf students requires skill and patience

The pre-service mentioned that teaching deaf students requires additional skill and patience on the part of the teacher were 44% who chose strongly agree, 16% generally agree and 15% somewhat agree while the rest of the participants selected 15% who chose somewhat disagree, 5% generally disagree, and 5% strongly disagree. See Figure 33.

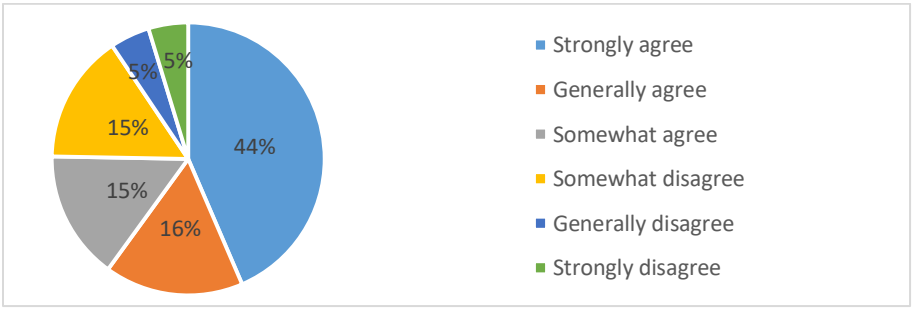

Figure 33: Pre-service teacher teaching deaf students requires skill and patience.
Source: own elaboration.

On faculty member teachers mentioned that teaching deaf students requires additional skill and patience on the part of the teacher were 46% who chose strongly agree, 36% generally agree and 9% somewhat agree while the rest of the participants selected 0% who chose somewhat disagree, 9% generally disagree, and 0% strongly disagree. See Figure 34.

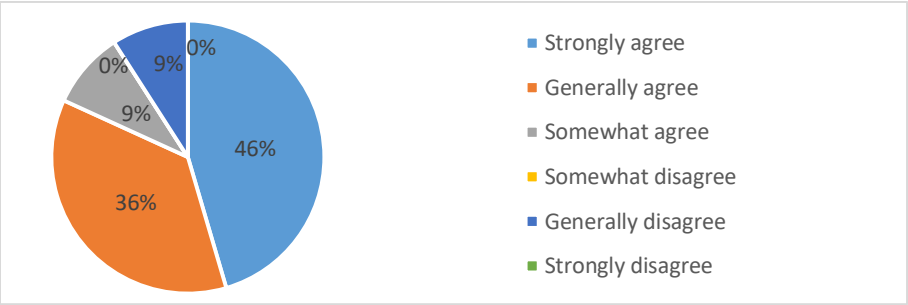

Figure 34: Teacher teaching deaf students requires skill and patience.
Source: own elaboration.

4.4 The inclusion of deaf and hearing students and its effects

This section shows the effect of inclusion on students with hearing disabilities and hearing students. The items from 17 to 24 of the survey are presented in 8 subtopics.

4.4.1 Positive effects of classroom inclusion on the English development of deaf students

The pre-service teachers mentioned that inclusion in the classroom has a positive effect on the language development of deaf students were 38% who chose strongly agree, 20% generally agree and 16% somewhat agree while the rest of the participants selected 15% who chose somewhat disagree, 7% generally disagree, and 4% strongly disagree. See Figure 35.

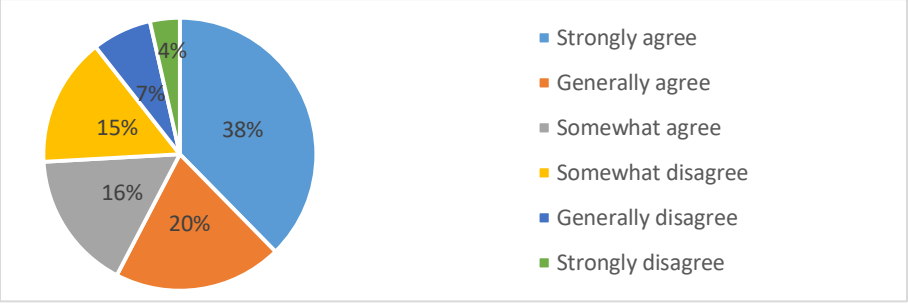

Figure 35: Pre-service teacher positive effects of classroom inclusion on the English development of deaf students.
Source: own elaboration.

On faculty member teachers mentioned that inclusion in the classroom has a positive effect on the language development of deaf students were 37% who chose strongly agree,

9% generally agree and 36% somewhat agree while the rest of the participants selected 0% who chose somewhat disagree, 9% generally disagree, and 9% strongly disagree. See Figure 36.

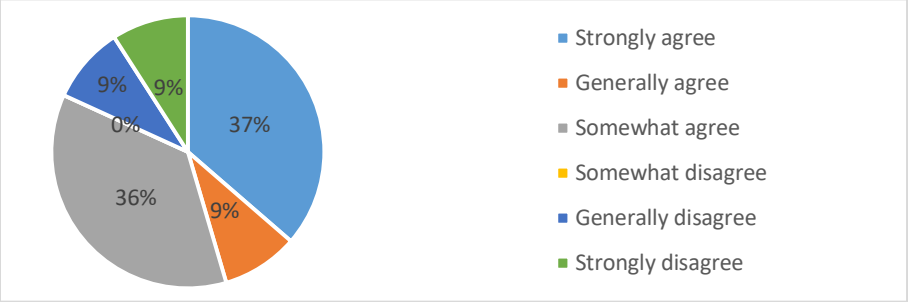

Figure 36: Teacher positive effects of classroom inclusion on the English development of deaf students.
Source: own elaboration.

4.4.2 Greater supervision of deaf students than of hearing students

The pre-service teachers mentioned that deaf students who are included in the class require more supervision than hearing students were 35% who chose strongly agree, 25% generally agree and 18% somewhat agree while the rest of the participants selected 16% who chose somewhat disagree, 3% generally disagree, and 3% strongly disagree. See Figure 37.

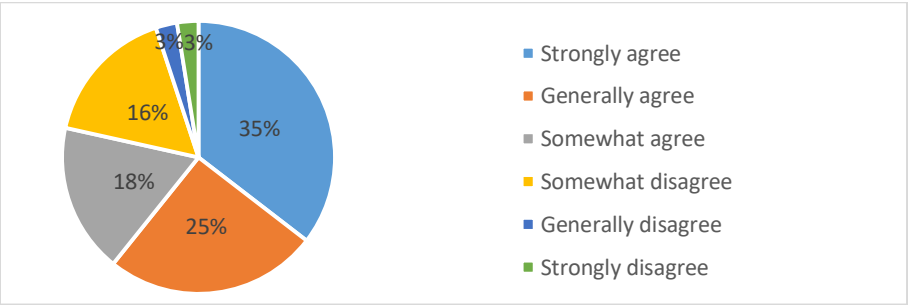

Figure 37: Pre-service teacher greater supervision of deaf students than of hearing students.
Source: own elaboration.

On faculty member teachers mentioned that deaf students who are included in the class require more supervision than hearing students were 35% who chose strongly agree, 25% generally agree and 18% somewhat agree while the rest of the participants selected 16%

who chose somewhat disagree, 3% generally disagree, and 3% strongly disagree. See Figure 38.

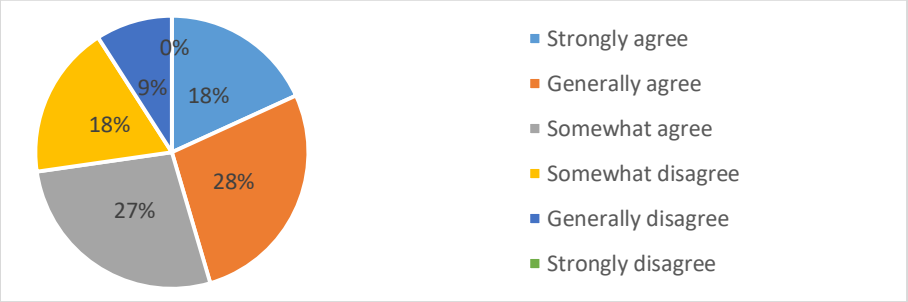

Figure 38: Teacher greater supervision of deaf students than of hearing students.
Source: own elaboration.

4.4.3 Less instructional time class for hearing students due to including deaf students

The pre-service teachers mentioned that including deaf students in the classroom reduces the instructional time to hearing students were 5% who chose strongly agree, 26% generally agree and 35% somewhat agree while the rest of the participants selected 16% who chose somewhat disagree, 8% generally disagree, and 10% strongly disagree. See Figure 39.

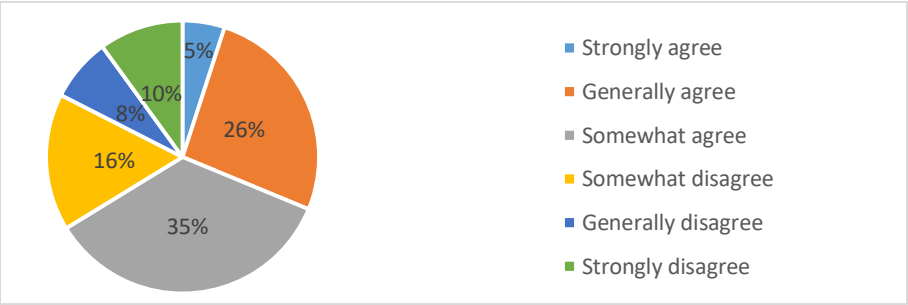

Figure 39: Pre-service teacher less instructional time class for hearing students due to including deaf students.
Source: own elaboration.

On faculty member teachers mentioned that including deaf students in the classroom reduces the instructional time to hearing students were 9% who chose strongly agree, 9% generally agree and 0% somewhat agree while the rest of the participants selected 46% who chose somewhat disagree, 27% generally disagree, and 9% strongly disagree. See Figure 40.

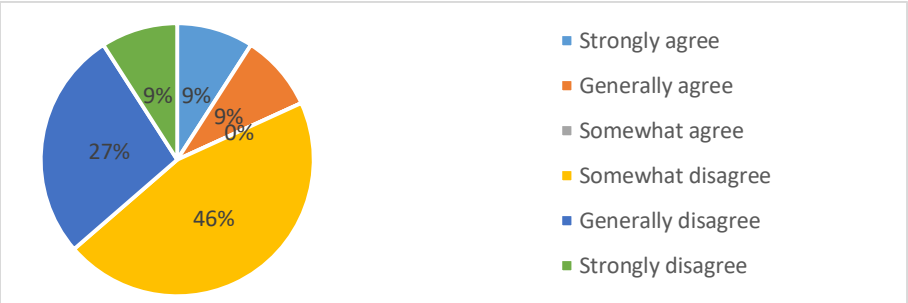

Figure 40: Teacher less instructional time class for hearing students due to including deaf students.
Source: own elaboration.

4.4.4 Comparison of the English level of deaf students with of their hearing classmates

The pre-service teachers who mentioned that deaf students can achieve levels of academic achievement comparable to their hearing classmates were 18% who chose strongly agree, 21% generally agree and 36% somewhat agree while the rest of the participants selected 17% who chose somewhat disagree, 5% generally disagree, and 3% strongly disagree. See Figure 41.

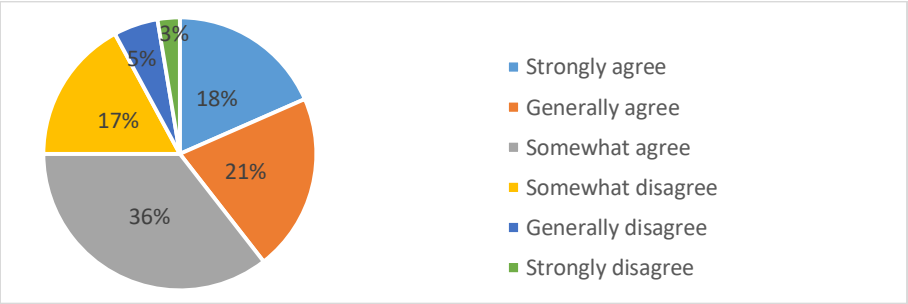

Figure 41: Pre-service comparison of the English level of deaf students with of their hearing classmates.
Source: own elaboration.

On faculty member teachers mentioned that deaf students can achieve levels of academic achievement comparable to their hearing classmates were 9% who chose strongly to agree, 18% generally agree and 37% somewhat agree while the rest of the participants selected 27% who chose somewhat to disagree, 9% generally disagree, and 0% strongly disagree. See Figure 42.

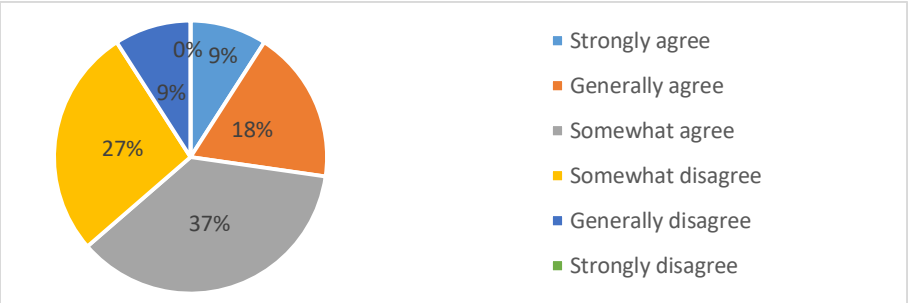

Figure 42: Teacher Comparison of the English level of deaf students with of their hearing classmates.
Source: own elaboration.

4.4.5 Classroom Inclusion as an appropriate environment option for deaf students

The pre-service teachers mentioned that inclusion in the classroom is an appropriate educational environment option for the majority of students with hearing impairment were 38% who chose strongly agree, 18% generally agree and 17% somewhat agree while the rest of the participants selected 16% who chose somewhat disagree, 10% generally disagree, and 1% strongly disagree. See Figure 43.

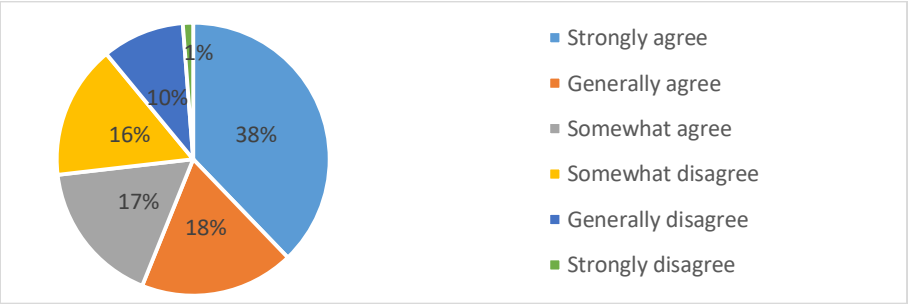

Figure 43: Pre-service teacher classroom inclusion as an appropriate environment option for deaf students.
Source: own elaboration.

On faculty member teachers mentioned that inclusion in the classroom is an appropriate educational environment option for the majority of students with hearing impairment were 9% who chose strongly agree, 27% generally agree and 46% somewhat agree while the rest of the participants selected 18% who chose somewhat disagree, 0% generally disagree, and 0% strongly disagree. See Figure 44.

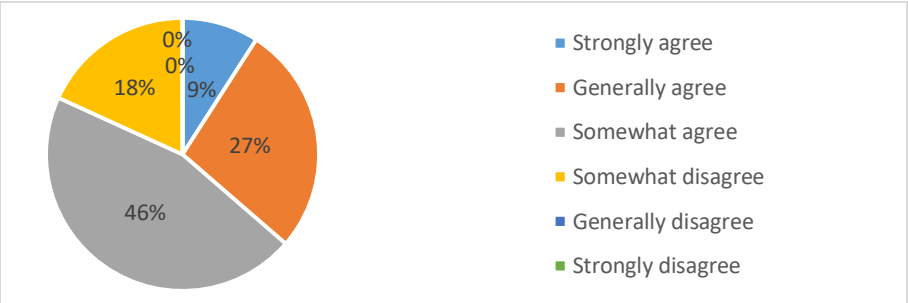

Figure 44: Teacher classroom inclusion as an appropriate environment option for deaf students.
Source: own elaboration.

4.4.6 The influence of deaf students on the performance of hearing students

The pre-service teachers mentioned that inclusion of deaf students in the classroom does not influence the performance expectations of hearing students were 18% who chose strongly agree, 16% generally agree and 32% somewhat agree while the rest of the participants selected 17% who chose somewhat disagree, 9% generally disagree, and 8% strongly disagree. See Figure 45.

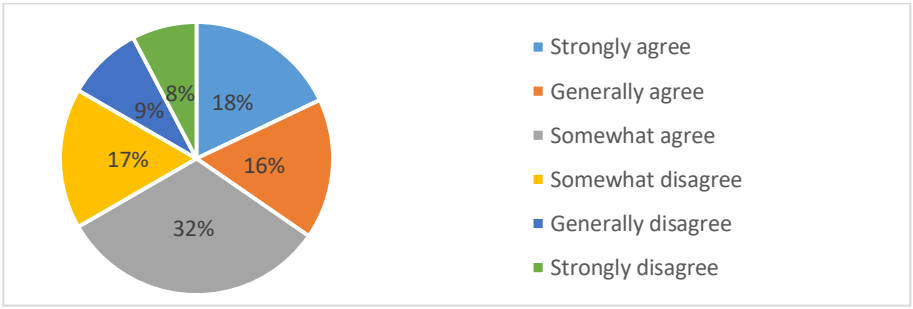

Figure 45: The pre-service teacher influence of deaf students on the performance of hearing students.
Source: own elaboration.

On faculty member teachers mentioned that inclusion of deaf students in the classroom does not influence the performance expectations of hearing students were 28% who chose strongly agree, 27% generally agree and 18% somewhat agree while the rest of the participants selected 9% who chose somewhat disagree, 18% generally disagree, and 0% strongly disagree. See Figure 46.

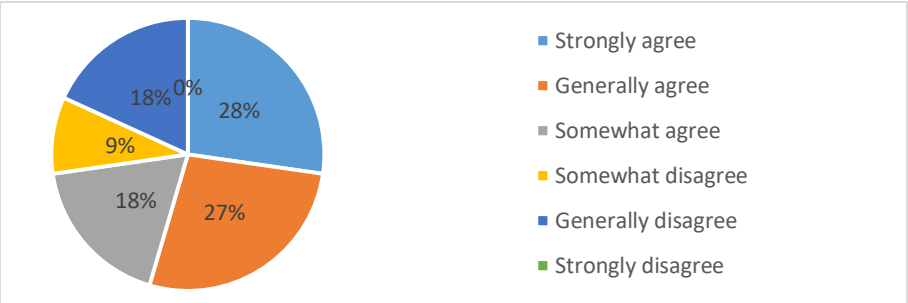

Figure 46: The teacher influence of deaf students on the performance of hearing students. *Source:* own elaboration.

4.4.7 Reduction of students in a classroom with a deaf student

The pre-service teachers mentioned that the number of students must be reduced when a deaf student is included in the class were 13% who chose strongly agree, 19% generally agree and 24% somewhat agree while the rest of the participants selected 18% who chose somewhat disagree, 8% generally disagree, and 18% strongly disagree. See Figure 47.

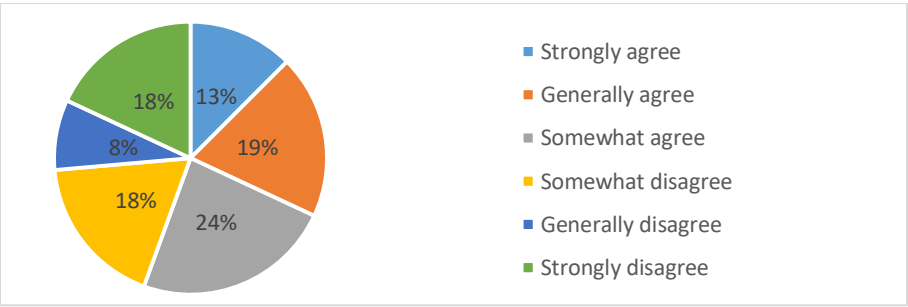

Figure 47: Pre-service teacher reduction of students in a classroom with a deaf student. *Source:* own elaboration.

On faculty member teachers mentioned that the number of students must be reduced when a deaf student is included in the class were 9% who chose strongly agree, 9% generally agree and 28% somewhat agree while the rest of the participants selected 27% who chose somewhat disagree, 18% generally disagree, and 9% strongly disagree. See Figure 48.

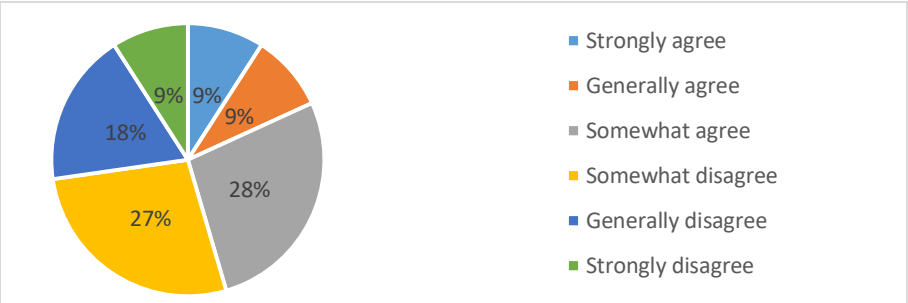

Figure 48: Teacher reduction of students in a classroom with a deaf student.
Source: own elaboration.

4.4.8 Positive effect of the inclusion and social development of deaf students in the classroom

The pre-service teachers mentioned that inclusion in the classroom environment has a positive effect on the social development of deaf students were 35% who chose strongly agree, 19% generally agree and 21% somewhat agree while the rest of the participants selected 16% who chose somewhat disagree, 5% generally disagree, and 4% strongly disagree. See Figure 49.

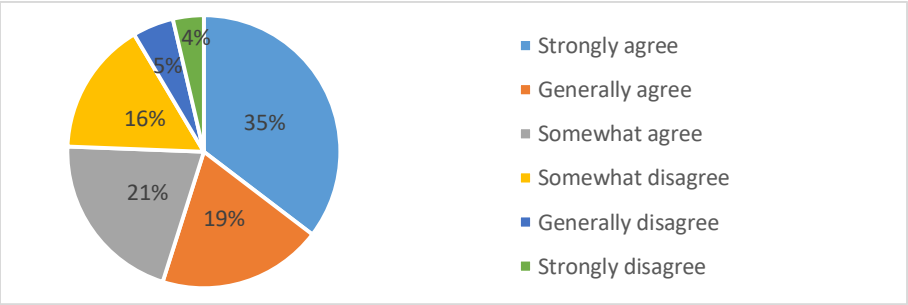

Figure 49: Pre-service teacher positive effect of the inclusion and social development of deaf students in the classroom.
Source: own elaboration.

On faculty member teachers mentioned that inclusion in the classroom environment has a positive effect on the social development of deaf students were 37% who chose strongly agree, 0% generally agree and 27% somewhat agree while the rest of the participants selected 18% who chose somewhat disagree, 18% generally disagree, and 0% strongly disagree. See Figure 50.

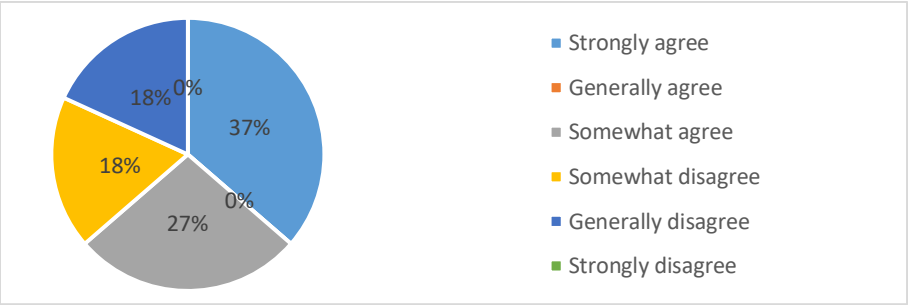

Figure 50: Teacher positive effect of the inclusion and social development of deaf students in the classroom.
Source: own elaboration.

4.5 Inclusion of deaf students and its effect on teaching workload

This section shows the effect of inclusion on teacher workload. Items 25 and 26 of the survey are presented in 2 subtopics.

4.5.1 Classroom routines and activities are not interrupted by the inclusion of deaf students

The pre-service teachers mentioned that including deaf students in the classroom does not disrupt classroom routines and activities were 27% who chose strongly agree, 17% generally agree and 24% somewhat agree while the rest of the participants selected 17% who chose somewhat disagree, 10% generally disagree, and 5% strongly disagree. See Figure 51.

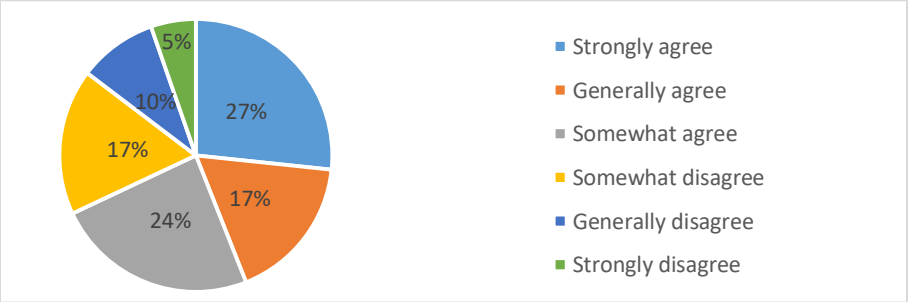

Figure 51: Pre-service teacher classroom routines and activities are not interrupted by the inclusion of deaf students.
Source: own elaboration.

On faculty member teachers mentioned that including deaf students in the classroom does not disrupt classroom routines and activities were 27% who chose strongly agree, 18%

generally agree and 18% somewhat agree while the rest of the participants selected 37% who chose somewhat disagree, 0% generally disagree, and 0% strongly disagree. See Figure 52.

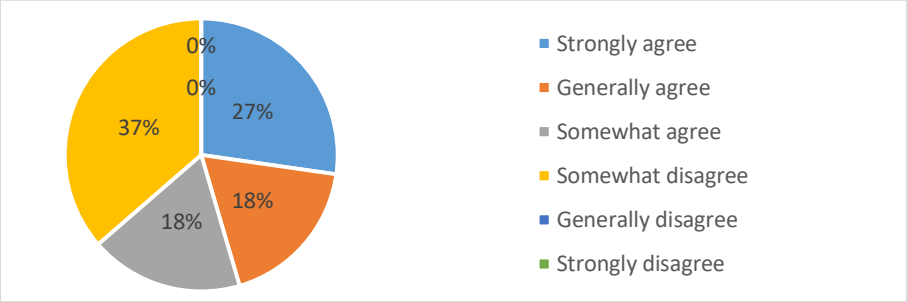

Figure 52: Teacher classroom routines and activities are not interrupted by the inclusion of deaf students.
Source: own elaboration.

4.5.2 Modify the syllabus to include students with hearing disabilities

The pre-service teachers mentioned that inclusion of deaf students in the classroom requires extensive syllabus modification were 26% who chose strongly agree, 24% generally agree and 20% somewhat agree while the rest of the participants selected 17% who chose somewhat disagree, 4% generally disagree, and 9% strongly disagree. See Figure 53.

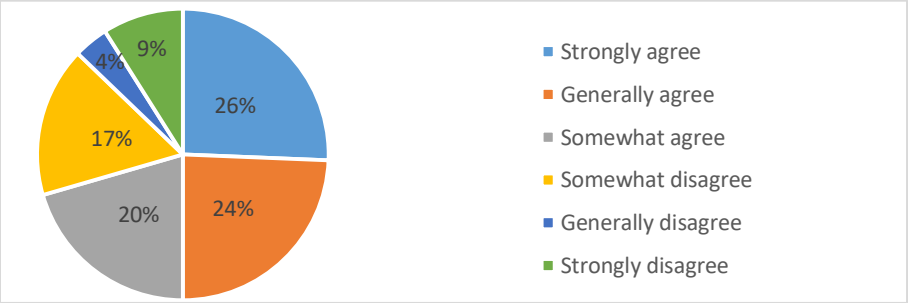

Figure 53: Pre-service teacher modify the syllabus to include students with hearing disabilities.
Source: own elaboration.

On faculty member teachers mentioned that inclusion of deaf students in the classroom requires extensive syllabus modification were 9% who chose strongly agree, 46% generally agree and 18% somewhat agree while the rest of the participants selected 9% who chose somewhat disagree, 9% generally disagree, and 9% strongly disagree. See Figure 54.

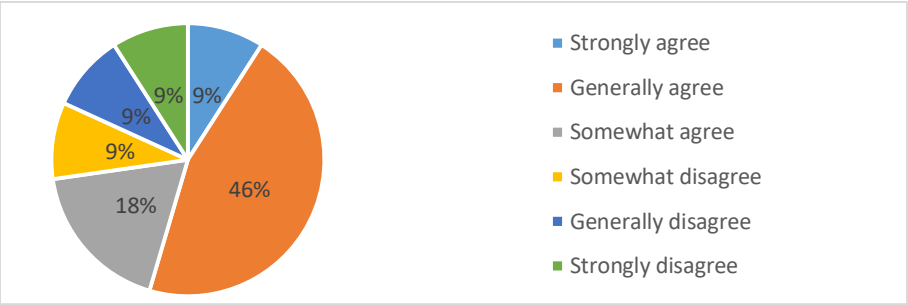

Figure 54: Teacher modify the syllabus to include students with hearing disabilities.
Source: own elaboration.

4.6 Discussion

Analyzing the results of the research, in item 2 "knowledge about teaching deaf students" 28% of the pre-service teachers do not have knowledge about teaching students with hearing disabilities and 11% of participants who do have, is very limited. On the other hand, 37% of teachers do not know about teaching deaf students and 0% of teachers selected the option of strongly agree to teach deaf students. In these times, inclusive education has been gaining relevance, but there still needs to be more dissemination of information so that teachers are trained because in the state of Puebla there are 21,748 people with hearing disabilities or hearing problems who have higher education. This shows that pre-service teachers and teachers must prepare for any situation that involves a student with special needs when they are accepted in a university (INEGI, 2020).

Item 3 "teachers and pre-service teachers' initiative to learn about hearing impairment" shows that 28% of the pre-service teachers somewhat agree with learning or preparing independently about inclusive education, especially about hearing impairment. On the other hand, 37% of teachers somewhat agree with learning or preparing independently about inclusive education. Many people, not having much knowledge about inclusive education, are not interested in learning about the subject due to the complexity of the topic and it does not have much coverage in mass media and social media.

Item 5 "BUAP is capable of dealing with deaf students" shows that 18% of the pre-service teachers somewhat disagree that the BUAP is not capable of dealing with students with hearing disabilities and 23% of the participants somewhat agree. On the other hand, 37% of the pre-service teachers somewhat disagree that the BUAP is not capable of dealing with students with hearing disabilities and 27% of the participants somewhat agree. Both the administrative staff and the teaching staff are not very involved in the issues of inclusion. When a student with a hearing disability is admitted, it will be difficult to deal with the obstacles of not being able to deal with the communication barriers.

In item 7 "specialized training to prepare teachers to work with deaf students" 51% of the pre-service teachers strongly agree that specialized preparation is necessary to teach students with hearing disabilities. On the other hand, 64% of teachers strongly agree that specialized preparation is necessary to teach students with hearing disabilities. Not having adequate preparation can cause problems in communication between the teacher and the deaf student, affecting their academic achievement, emotional and learning process in class (Juhaeni *et al*,2022).

Item 10 “confidence in adapting methods to the needs of a deaf student” shows that 31% of the pre-service teachers somewhat agree that they are confident in their ability to adapt their teaching methods to the needs of a deaf student. On the other hand, 28% of teachers somewhat agree and 27% of these somewhat disagree that they are confident in their ability to adapt their teaching methods to the needs of a deaf student. The lack of adaptation of teaching materials for students with hearing disabilities became an obstacle for teachers because they have to explain more than double the information given to students for activities that involve listening in the issued textbooks. by the government (Peralta *et al*, 2023). It is

vital that teachers have the confidence to be able to adapt and innovate their materials and methods so that the student does not have to depend on the textbook and struggle to understand it.

Item 16 “adapted equipment to the needs of deaf students” shows that 24% of the pre-service teachers agree that the classroom does have the necessary technology for students with hearing disabilities. On the other hand, 46% of teachers strongly agree that the classroom does have the necessary technology for students with hearing disabilities. As matter of fact, the language faculty classrooms have screens, internet access in specific areas, computers and programs that have digital books that include videos with subtitles to improve student learning with more dynamic classes. In the same case of the teachers of the Sekolah Luar Biasa school who used adapted technology to teach students with hearing disabilities, such as a laptop and a projector to show videos from digital platforms and images (Juhaenia *et al*, 2022).

Chapter V: Conclusion

5.0 Introduction

This last chapter summarizes the research seen in the other chapters. Furthermore, Chapter V is divided into four sections: conclusions, in which the problems of the topic will be found; implications, where the resolutions to the different problems are; limitations, which describe the drawbacks that appeared when applying the instruments; and suggestions for future research.

5.1 Conclusions

During the research and collection of data on the ability of English teachers, specifically in BUAP language faculty, on the subject of educational inclusion that derives English teaching to students with hearing impairment and according to the research question: What is the level of preparedness of pre-service to teach English to deaf students?

Based on the results, it is concluded that the level of pre-service teacher preparation is low since they did not receive any training to work with this kind of students. In other words, English teachers have not been taught about topics related to inclusion and they will find themselves in difficulties if the case is presented to them. This also leads to the teachers themselves not taking the initiative to train on this subject and seeing it as of little relevance.

What is the level of preparedness of faculty member teachers to teach English to deaf students?

It was found in general faculty member teachers at facultad de lenguas BUAP did not get training courses as English teachers to work with deaf students, so that they can deal with students with special abilities. This could create many difficulties for both teachers and pre-

service teachers in case they have to teach deaf students in this institution and other institutions they would work.

With this result it is expected to raise awareness in this school about the need to implement special education subjects, and move the perspective of people who do not belong to the deaf community and that makes it visible. Otherwise, ignoring this need can cause hearing people to think that the reality of a deaf person is very similar to their own. However, it is vital to start eliminating the communication barriers between teachers and deaf students.

5.2 Implications

After carefully analyzing the different responses provided by the participants. The ideal suggestion in this case is that English teachers and pre-service teachers receive constant training. Another suggestion is to bring sign language interpreters or qualified deaf people to teach them Mexican sign language so that in addition to training, teachers can also learn to communicate with people in the deaf community. This can be implemented in the form of workshops and courses that have a good diffusion during the different semesters.

Another point is the way that deaf students can be taught. With the use of specific materials such as videos and illustrative images, the school should order to adapt the content of the course such as the books that were to be used so that the student can have a better understanding of the information imparted.

So that a school does not fall into the oralist or monolingual model, it must be focused on the bilingual bicultural model, making use of Spanish as a second language and sign language as the first language, in which case the student is capable of understanding the Spanish. Since it was previously said that Spanish is a language that people in the deaf

community do not understand very well. This language serves more as a tool in case the student cannot understand the content in English.

5.3 Limitations of the study

One of the limitations is that the research is quantitative non-experimental at the time it was elaborated. Some of the limitations of the research are the use of a 6-option Likert scale questionnaire (strongly agree, generally agree, somewhat agree, somewhat disagree, generally disagree, strongly disagree), since participants were limited to selecting the available options and feeling forced to choose one they did not want if their preferred answer did not appear in the options.

Another limitation is that since the English teachers did not have time available to conduct the survey or were unable to deliver the survey, the number of participants had to be reduced due to the difficulty in finding them. Due to the reduction of teachers, a rethinking of objectives was taken into consideration to conduct the surveys and apply them to pre-service teachers from different semesters.

5.4 Suggestions for further research

From a general view of the study, it can be seen that in Mexico there has been a lack of preparation on the part of teachers and in addition to this, educational institutions do not have the resources and the interest in training teachers to deal with disabled students. This severely affects the perspective that these students have about the institutions, and they are discouraged when they want to study. That is why it is important to be aware that teachers take constant training and make a space in their free time to learn about the different types of students that may be found in their classes.

Additionally, as a new point of intervention to boost the quality of deaf students is the implementation of Mexican Sign Language interpreters because the role of the interpreter is to make easier communication between deaf and hearing people effectively. Interpretation by a person knowledgeable in sign language leads to a broader field of research since facilitating communication between a visual communicator and an auditory communicator is achieved using a variety of modalities. The visual learner, in this case, the deaf person, chooses a modality according to their needs (National Deaf center [NDC], 2019). Interpreters must understand the meaning, cultural context and expressed intentions of an oral language and express those meanings and intentions in sign language and be able to retain information and manage the flow of communication in the moment. Inside the classroom the Sign Language Interpreter interpreted what the English teacher taught to the deaf students. The English teacher and sign language interpreter clarified difficult words using visualization strategies such as diagrams, images and maps. In addition, interpretation in sign language facilitated the understanding and learning of difficult concepts (Philip *et al*, 2023). This shows that different strategies can be investigated and implemented to improve the teaching-learning process of these students in developing countries.

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Appendix

SURVEY: *ANALYSIS OF THE CAPACITY FOR TEACHING ENGLISH OF TEACHERS AND PRE-SERVICE TEACHERS FROM THE FACULTY OF LANGUAGES BUAP TO DEAF PEOPLE*

All information collected is confidential and its use is for academic purposes only.

MALE ___ FEMALE___ Age: < 22 23-35 36–45 46–59 60>

Write your academic Level:

If you are a pre-service teacher, write in which semester you are in:

How many years of experience in teaching English do you have? Choose one.

0 years 1-3 years 4-6 years 7-10 years 11 –15 years 16 + years

Select each item according to your experience and knowledge.

1	2	3	4	5	6
Agree	Agree	Agree	Disagree	Disagree	Disagree
Strongly	Generally	Somewhat	Somewhat	Generally	Strongly

1	I know what inclusive education is and why it has become so popular these days.	1 2 3 4 5 6
2	I have knowledge about teaching students with special needs, in this case hearing impairment.	1 2 3 4 5 6
3	I have had the initiative to learn about inclusive education and have taken courses to learn how to deal with students with special needs, in this case hearing impairment.	1 2 3 4 5 6
4	I know what hearing impairment and Mexican Sign Language are.	1 2 3 4 5 6
5	Educational institutions. In this case BUAP, are capable of dealing with students with special needs such as hearing-impaired students.	1 2 3 4 5 6

6	Special education topics, in this case hearing impairment, were sufficiently addressed in the curriculum of my teacher training program.	1 2 3 4 5 6
7	Specialized training is necessary to prepare teachers to work effectively with students with special needs in this case hearing impairment.	1 2 3 4 5 6
8	The school administration promotes in the institution an atmosphere of inclusion for students with special needs, in this case hearing impairment.	1 2 3 4 5 6
9	Teachers receive sufficient preparation through their teacher education programs to work effectively with students who are hard of hearing.	1 2 3 4 5 6
10	I am confident in my ability to adapt my teaching methods to the needs of a hearing-impaired student.	1 2 3 4 5 6
11	I have sufficient knowledge about hearing loss to adapt the Teaching Strategies to the needs of students with hearing impairment.	1 2 3 4 5 6
12	I have the necessary experience to work effectively with hearing impaired students.	1 2 3 4 5 6
13	I am confident that a student with a hearing impairment would experience a positive learning environment in my classroom.	1 2 3 4 5 6
14	I am familiar with the effects of hearing loss on language development and learning.	1 2 3 4 5 6
15	Teaching hearing impaired students requires additional skill and patience on the part of the teacher.	1 2 3 4 5 6
16	Technology adapted to the needs of hearing-impaired students (e.g., computers, screens, projectors, closed-captioned videos) is available for use in my classroom.	1 2 3 4 5 6
17	Inclusion in the classroom has a positive effect on the language development of students with hearing impairment.	1 2 3 4 5 6
18	Hearing impaired students who are included in the class require more supervision than students without special needs.	1 2 3 4 5 6
19	Including hearing impaired students in the classroom reduces the instructional time available to hearing students.	1 2 3 4 5 6
20	Hearing impaired students can achieve levels of academic achievement comparable to their hearing classmates.	1 2 3 4 5 6

21	Inclusion in the classroom is an appropriate educational environment option for the majority of students with hearing impairment.	1 2 3 4 5 6
22	The inclusion of hearing-impaired students in the classroom does not influence the performance expectations of hearing students.	1 2 3 4 5 6
23	The number of students must be reduced when a student with a hearing impairment is included in the class.	1 2 3 4 5 6
24	Inclusion in the classroom environment has a positive effect on the social development of hearing-impaired students.	1 2 3 4 5 6
25	Including hearing impaired students in the classroom does not disrupt classroom routines and activities.	1 2 3 4 5 6
26	Inclusion of hearing-impaired students in the classroom requires extensive syllabus modification.	1 2 3 4 5 6

Source: Likert scale sample 6-point adapted from previous studies (Eriks-Brophy A, Whittingham J, 2013).