Construction of educational intervention model based on deaf students' English learning disabilities

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Abstract: Compared with hearing students, deaf students show the following obstacles in English learning: weak long-term memory ability; being more susceptible to Chinese thinking style; weak abstract thinking ability; interference of sign language in English sentence output. The root cause of these problems is that hearing impairment reduces deaf students' participation in English class, which leads to inadequate training and development of their cognitive, memory and thinking abilities. The development of communicative abilities is also hindered, and even leads to insecurity, shyness and negativity, which will inevitably have a negative impact on deaf students' English learning and integration into society in the future. Deaf students' English learning and teaching can be improved by constructing ecological learning model, implementing classroom communication intervention, and creating cooperative learning groups. At the same time, it can cultivate their cooperative and social abilities, and lay a foundation for their better adaptation to society and integration into society.

1. Introduction

As a major component of the disabled, deaf learners accounted for a relatively large proportion of the total number of disabled learners. According to the World Health Organization (WHO, 2013), a total of 360 million people worldwide had hearing impairment in 2011, of which about 32 million were children. Due to technological innovations (such as digital hearing aids and early bilateral cochlear implants), the lives and learning of many deaf learners have changed greatly. However, there are differences in cognition, experience and social emotion between deaf students and hearing students, which makes the learning styles of them quite different, and English learning requires a lot of language input, which is especially challenging for deaf students. In order to fully understand the English learning disabilities of deaf students in Jiangsu Province and take corresponding intervention measures, the author conducted a one-year survey on the English learning of deaf students in Nanjing School for the Deaf, which has the largest number of deaf students in Jiangsu Province.

2. Material and Methods

This study is based on theoretical analysis and adopts qualitative research method, focusing on the application of interview, observation and material collection methods. That is to say, with the help of pedagogy, sociology, psychology and other theoretical foundations, as well as the basis of sufficient data collection, the study of deaf students' English learning disabilities is carried out. On this basis, the description and social interpretation of deaf students' English learning are carried out, and the disabilities of deaf students' English learning are explored from a multi-level perspective of individuals and institutions.

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3. Results

3.1 It's difficult for deaf students to memorize words and easy to forget

Language learning requires the training of four basic skills: listening, speaking, reading and writing. Deaf students lack the stimulation and assistance of sound due to hearing impairment. They can not learn and memorize words according to syllable and letter combination pronunciation, nor can they memorize words by reading, reciting and pronunciation. They can only rely on their finger language to keep the mechanical memory, so they often appear to present words in inverted alphabetical order, increase or decrease the letter and so on (Zhao Yaqi, Wang Qingqing,2016).As a matter of fact, words memorized by finger language are only symbols for deaf students. It is difficult for deaf students to internalize and implant these words and sentences made up of English letters into their brains because of the lack of sustained auditory stimulation and a large number of pronunciation readings, thus forming a long-term memory disorder. On the one hand, deaf students have difficulty in memorizing these words and sentences. Memorizing words, phrases, etc. is more difficult for deaf students and they often have errors which hearing students seldom have, such as the formation of the word in reverse alphabetical order (there is spelled as three), arbitrarily add or subtract letters (father is written as fater) and so on. On the other hand, many deaf students can temporarily memorize words, but forget them faster. They have shorter storage time for the brain, and can not convert the memory content into long-term memory and then store it in the brain.

3.2 Deaf students are more susceptible to Chinese thinking, resulting in negative transfer

In the process of second language acquisition, learners are generally affected by their mother tongue, forming positive transfer and negative transfer. Similar language structures between mother tongue and target language can produce positive transfer, otherwise negative transfer. Second language learners usually rely on their mother tongue in the early stages of learning, especially deaf students. The lack of language sense makes deaf students only rely on Chinese when learning English (although sign language is the first language of deaf students, but at present English teaching in schools for the deaf generally relies on written Chinese, and sign language is rarely used), while Chinese and English belong to two different kinds of systems of language thinking, so deaf students often present English somehow in Chinese style. For example, many deaf students tend to say" On the table has a book. "" I think you are not an honest man.". Although hearing students may make similar mistakes at the beginning of learning English, they quickly develop a sense of language by means of intensive training in listening, reading aloud, recitation and other forms of input, and errors can be gradually corrected, while deaf students lack certain ways and means of strengthening.

3.3 Deaf students' ability of abstract thinking is weak, so it is difficult for them to understand the deep logical relationship of sentences

Deaf students rely mainly on the visual to obtain information, and are more sensitive to intuitive and visual things, but their understanding and expressing of abstract language is extremely difficult, especially part of conjunctions, prepositions, function words, to a large extent, which is affected by sign language. Sign language is a visual symbol system expressed by the deaf through gestures, expressions and postures. It is the first language of the deaf. Compared with written Chinese, sign language is the first language acquired by the deaf and has an important influence on their thinking. When deaf people use sign language, imagery thinking plays a dominant role, and most of the words expressing logical relations in English can not have corresponding gestures in sign language, so it is difficult for deaf students to understand the logical relations contained in English sentences. In the long run, the inadequate input of English sentences has resulted in the inability of deaf students to develop their linguistic and logical thinking abilities. For example, deaf students can't understand that "but" for turns, "and" for progresses, "unless" for concessions, "if" for hypothesis and so on. Deaf students can translate the sentence "You should wear white if you are feeling stressed." correctly with the help of their teachers, but when asked, "What does this say about wearing white?" Most deaf students can't answer it, but hearing students can easily convey the

implication that wearing white clothes can reduce stress. It shows that deaf students can not accurately grasp the hypothetical relationship conveyed by the conjunction "if" and the logical relationship of the sentence itself.

4. Discussion

Hearing students depend on a series of intermingled language, cognitive and social abilities, which need students to participate in the classroom to develop. Therefore, the cognitive, memory and thinking barriers of deaf students in learning English are closely related to their inability to participate in classroom activities. Deaf students' absence of classroom participation is an important factor affecting the effectiveness of their classroom learning. In addition, studies have shown that there is a certain correlation between students' classroom participation and their good social integration (N Wolters ,H Knoors ,AH Cillessen ,L Verhoeven,2012). Antia et al. found that classroom participation was one of the most effective predictors of whether deaf students could integrate into society in the future (Benedict K M, Johnson H, Antia S D,2011). however, in fact, deaf students' participation in English class is not satisfactory.

First of all, due to hearing impairment, deaf students' spoken English is generally defective. They often have difficulty in accepting and expressing spoken English in terms of semantics, pronunciation and grammar. It is found that deaf students' oral ability is related to their word memory(Nicholas J G, Geers A E,2003). In addition, deaf students' oral ability is also related to their learning motivation(Fellinger J, Holzinger D, Beitel C, et al,2009).

Secondly, language barriers reduce deaf students' ability to communicate and participate in group activities in class, thus affecting their intensive training of English thinking. As a result of the negative impact of oral ability, deaf students' classroom activities need the participation of organs of visual sense more than those of hearing students. However, in most classrooms, due to the arrangement of vertical and fixed seats, it is unlikely that there is always eye contact between the teacher and all deaf students in the classroom. In addition, intensive training of English thinking requires frequent communication between teachers and students. This interactive challenge requires deaf students to integrate visual information through a variety of channels. It is also necessary to decide which information to give up within a given time, and this process will lead to the loss of information collected, thus increasing the burden of the working memory(Mather, Susan M.|Clark, M. Diane,2012).On the other hand, teachers' improper behavior may strengthen deaf students' Chinese thinking, such as the traditional English teaching method of translation, too fast to impart knowledge, not good at using teaching methods of visual compensation, which are not conducive to the training and formation of deaf students' English thinking.

Finally, deaf students' social and emotional problems caused by hearing impairment can also affect the formation of abstract thinking, such as insecurity, shyness and negative attitudes caused by hearing impairment, which leads to deaf students' unwillingness to communicate with normal people. They often use sign language to communicate with their peers, which makes their image thinking always in the leading position.

Some studies have found that the delayed development of deaf students is somewhat similar to that of autistic children, but has not yet shown permanent damage. This is an important difference, which provides an opportunity for educational intervention for deaf students. However, any early delay will lead to academic difficulties for deaf students in the future, because the cognitive problems and thinking limitations faced by deaf students in English learning will gradually increase with their age, and English learning skills in higher level will become more complex. To a certain extent, deaf students' English learning needs the intervention of educational system and social system.

4.1. Improve teaching conditions of deaf schools and broaden the channels of language input

The brain is composed of a large number of brain cells or neurons. Structurally, the brain can be divided into left and right hemispheres. Environmental inputs not only increase the number of neurons, but also, more importantly, promote closer connections between them. Over time, various

neural networks have produced specific functions, such as the left hemisphere of the brain, which is dedicated to processing language comprehension and production, both in spoken and in written. However, deaf students have been using sign language since early childhood, and they tend to organize language more bilaterally, that is, both hemispheres may be used. On this basis, deaf students' English learning can strengthen their left brain processing and language production by stimulating the environment input. Generally speaking, children acquire language by listening to tape recordings, watching TV, communicating with their parents. In the process, they observe the language produced in various situations, then process the acquired information, create corresponding psychological representation, actively construct and test its hypothesis of relevant significance. According to this model, we can create an ecological learning model suitable for deaf students, so that they can learn in a good educational environment. The implementation of this learning model requires the government and schools to work together to improve school conditions, using modern technology and media in large scale to stimulate the visual channels of deaf students, and also need to introduce the high-tech teaching equipment improving hearing of deaf students. Thus, it can help to improve English language input of deaf students and provide them more complex and diverse training channels.

4.2. Guide teachers to adjust teaching ideas and implement classroom interaction intervention

Compared with hearing students, deaf students need more skills to integrate and adapt to society, so deaf teachers are facing greater challenges, and the changing social environment has increased its complexity, which requires teachers to adjust teaching concepts and teaching methods according to the changing social environment.

First of all, successful English classroom teaching should involve students' certain cognitive and social abilities, including basic abilities such as hearing, vision, attention, and more complex abilities such as language development and social cognition. Hearing students can develop these abilities from the time they come to school, though some social cognitive abilities, such as attention and non-verbal interaction, may have arisen in the early stages of students' enrollment. But these abilities are fully developed by classroom language and communication. This higher level of training is particularly important for students' development. Through classroom language and communication, students can understand more complex concepts of social cognition, but these are more difficult for deaf students, for hearing impairment has affected deaf students' early interaction and language development, delayed their social cognitive development, and ultimately reduced their learning effectiveness. In addition, social cognition has a positive effect on deaf students' performance in the classroom. Rich language and interaction in a good environment of home and school can provide a good social cognitive foundation for deaf students. Therefore, teachers should determine the cultivation of social cognitive ability in deaf students' English education goals.

Secondly, teachers should fully understand how deaf students view others and how they understand their own and other people's way of thinking and behavior. Deep understanding of deaf students in this respect will help teachers to design a teaching model in line with the law of cognitive development of deaf students, because that deaf students do not understand the way of thinking of others will affect their participation in the class. Cultivating deaf students' social awareness and understanding of others in classroom teaching are the key factors to promote deaf students' full integration into the classroom, and classroom participation is an important part of deaf students' learning process. Classroom discourse provides deaf students with the opportunity to "speak" and "listen" and the opportunity to present various views. It will cultivate their self-cognition, critical thinking ability and communicative ability, and eventually develop their cognitive ability, social ability and self-awareness. The goal of English education for deaf students is to cultivate their ability to communicate and think in English, so that they can adapt to and integrate into the developing social life. Classroom participation requires students to pay attention to teachers' explanations and questions. However, the process of "listening" in class is difficult for deaf students. It requires deaf students to deal with various psychological and physiological disturbances, such as hearing impairment, fatigue, lack of interest, and inattention. Other factors,

such as language impairment, memory difficulties, unexplained non-verbal factors, lack of self-confidence and social difficulties, may also hinder deaf students' classroom participation, especially when they come into contact with new learning materials. These problems may become more prominent. Deaf students' hearing impairment makes it difficult for them to participate in class, but teachers can become the key factors to overcome these difficulties and promote the success of classroom teaching. Teachers' teaching style, teaching methods, understanding of students' speech cognitive impairment and classroom communication skills affect deaf students' self-confidence, enthusiasm and effectiveness of participation in class greatly. In English class, teachers can implement language promotion strategies for deaf students, such as expansibility training, corrective feedback training and open-ended problem training, so as to improve deaf students' ability to participate in dialogue actively and their language and pragmatic competence. Because language ability is closely related to mental health, classroom communication intervention is also an effective means of mental health intervention for hearing-impaired children. Classroom communication skills training can not only improve deaf students' classroom participation and English learning effectiveness, reduce deaf students' social and emotional problems caused by hearing impairment, but also promote the development of their social communication skills.

4.3. Strengthen cooperation with ordinary schools in the school districts and create collaborative learning groups off campus

For deaf students, to build a good learning atmosphere is an effective educational strategy, which can create a safe and caring learning environment. Results of research show that good learning environment has a significant positive impact on students' social emotion and academic performance (Durlak J A, Weissberg R P, Dymnicki A B, et al,2011). Group collaborative learning is an effective way. Learning is not only limited to teacher-student interaction, but peer learning is also important for information input. Students need both individual learning and collective learning, that is, cooperative learning. This form of learning emphasizes the equal interaction between students. Compared with individual learning, group collaborative learning can solve problems better, especially for more complex learning tasks, because different individual students can display their own talents, thus effectively solving problems. The composition of group learning should not be limited to schools. Education departments can coordinate the cooperation between ordinary schools and schools of special education in the school district. Students of the same grade can form cooperative learning groups. To some extent, group cooperative learning needs to complete activities together and share their understanding of knowledge. This not only has a positive impact on cognitive ability of deaf students, but also can cultivate their social skills, including the expression of ideas, stimulate peers, provide and receive help, listen to peers, elaborate tasks, which are conducive to academic success. Of course, due to deaf students' hearing impairment, the role of teachers' guidance is indispensable.

In addition, communication and cooperation between deaf students and hearing students will play a positive role in the social and emotional development of deaf students, which determines integration of deaf students into society in the future and their quality of social life.

5. Conclusions

Good classroom environment and social relations play an important role in deaf students' English learning. They can enhance deaf students' ability of vocabulary memory, English thinking and abstract thinking by strengthening their input as well as improving their communicative competence.

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