

# Educational Strategies for Students with Hearing Impairment: An International Perspective and Developmental Path Analysis

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**Abstract.** The context of this study highlights that globally there is a growing trend toward inclusive education for students with hearing loss, however, this model may not always adequately address the unique needs of students with hearing loss. This study explores the balance between inclusive education and special education schools for students with hearing loss. It finds students with hearing impairment are facing the cognitive, linguistic, and socio-emotional challenges. The article compares education policies in different regions through a transnational lens. Based on the comparison between Finland and China, this paper argues that Finland's inclusive education is relatively mature. In contrast, China's special education is transforming towards inclusive education. Finland's education model can provide useful reference for the development of special education in China. Finally, this study proposes tailored strategies for students with hearing impairments to optimize educational outcomes. This study provides insights for realizing a balanced and effective educational model for this group.

**Keywords:** Special Education, inclusive education, hearing impairment.

## 1. Introduction

Education seeks to provide a more inclusive and equitable environment, but fully inclusive education may not be able to meet all the specific requirements of the deaf students. While inclusive education has emerged as a key trend in global educational development, its implementation varies across countries due to factors such as economic conditions and cultural contexts. Although numerous studies have examined the application of special and inclusive education for students with hearing impairments, many focus on single aspects of educational policy or specific regional case studies. Therefore, this study aims to analyze and compare educational strategies for hearing-impaired students from a cross-national perspective. Finally, the article explores the complementary relationship between different educational strategies in the education of deaf students and proposes targeted measures to help achieve balance and optimization in the education of hearing-impaired students.

## 2. Background of Hearing Impairment

### 2.1. Concept of Hearing Impairment

The World Health Organization (WHO) defines hearing loss as a condition where a person's hearing threshold in both ears is less than 20 decibels, which may manifest as difficulty understanding daily conversations, inability to hear environmental sounds clearly, or difficulty perceiving even loud noises [1, 2]. Hearing loss can be classified into different levels - mild, moderate, severe, or profound, depending on the extent of the hearing loss. The World Health Organization's World Hearing Report 2021 gave statistics about hearing loss. From the report, more than 1.5 billion people all over the world suffer from this particular condition [3]. According to this report, about 20% of the population in the world faces challenges associated with hearing, but by 2050, this number will have increased to 25% [3].

## 2.2. Classification and Impact of Hearing Impairment

There are mainly two types of hearing loss: Sensorineural hearing loss and Conductive hearing loss [4]. Especially, Sensorineural hearing loss (SNHL) is the most common type since most people with a hearing loss fall into this category. SNHL is usually caused by damage in the inner ear—specifically, in the cochlea or auditory nerve—that fails to pass sound signals to the brain [4]. Conductive hearing loss, on the other hand, is a situation where the process of sound transmission through the middle ear is interfered with, usually by infection, trauma, or pressure changes that cause injury to the delicate structures [5]. However, the major difference lies at where the problem originates from: sensorineural hearing is due to damage in the inner ear and conductive hearing loss is due to sound waves failure to reach the inner ear [4]. In such a manner, the Rinne and Weber test can be established as a fundamental determining diagnostic of sensorineural versus conductive hearing loss [5].

The consequences of hearing loss do not only limit themselves to language but cut across general cognitive and socioemotional development and adjustment. Some studies indicate that children with hearing impairment normally start to acquire language and develop certain social skills later in their lifetime [6]. Similarly, Sharmista [7] indicates that Cognitive development is influenced by children's ability to perceive and understand their environment through hearing, which in turn affects their learning and interaction. Studies have indicated that countries and regions have diverse strategies in identification and response to the educational needs of students with hearing impairment. Different regions meet the educational need of the student with hearing impairment through early identification, interventions geared towards the identified problem, and integration approaches with general education. These might depend on the economic status or medical facilities available at a particular time [8]. On the other hand, there is a vast disparity that exists in these low-resource countries about the preventive measures for the incidence of hearing loss; it poses a remarkable challenge, especially in low and middle income countries [8, 9].

## 3. Inclusive Education Models: A Case Study of Finland

### 3.1. Development of Inclusive Education in Finland

Different countries and regions have adopted various educational strategies for students with hearing impairments, which can generally be divided into two categories: those that focus on developing inclusive education and those that still rely on special schools to some extent but are gradually advancing toward inclusion. On one hand, countries like Finland, a pioneer in inclusive education, have educational policies that emphasize all students being educated in mainstream schools with comprehensive support services to meet diverse needs. Today, most students with hearing impairments in Finland attend regular schools [10]. This phenomenon began with the educational reform in Finland in the 20th century, which gradually promoted the initial practice of inclusive education. The Basic Education Act of Finland first proposed the idea that all children should receive education in ordinary schools [11]. Later, the revision of the Basic Education Act in 1998 required local schools to provide individualized education plans (IEP) and necessary support services for students with special needs [12]. It stipulates that all students with disabilities, including hearing-impaired students, have the right to receive education in ordinary schools [12]. Therefore, the principle of integrated education has been employed more extensively all across the nation during this era and beyond. In the 21st century, Finland has also fine-tuned its policy of integrated education to the maximum extent, specifically educational support for the students with hearing loss. Policy adjustments made by the government include integrating layered support systems, strengthening teacher training programs, and making networks of teachers, special education professionals, and families collaborative in order to adequately support all students in general educational environments [13].

### **3.2. Support Mechanisms for Hearing-Impaired Students in Finland's Inclusive Education System**

More emphasis is paid to special education as well as inclusive education in Finland, which internationally is considered one of the fairest and finest education systems across the globe [14]. In Finland, children with special needs, including support for students with hearing impairment, are viewed as integral part of the school system. In Finland, special schools are aimed not only at education for students with special needs but also at the National Educational Development and Service Center; they provide other schools with expertise and support services. Therefore, a combination of special education and inclusive education is well represented in Finland.

Inclusive education of students with special needs, such as hearing impairment, has been developed broadly in Finland. In fact, to a great extent it has become possible for children with severe hearing loss to be included in mainstream education through technological developments, including cochlear implants [15]. Some of the research results reflect successful practice in implementing inclusive education in Finland. In a survey assessing the success of integrating hearing-impaired children, 109 teachers from various schools in Finland generally believed that the inclusion was successful and they were satisfied with the present situation, saying that the inclusive practice was rooted in the school [10].

## **4. The Transition Towards Inclusive Education: A Case Study of China**

### **4.1. Development and Current Status of Special Education in China**

On the other hand, countries like China are gradually moving towards inclusive education but still rely some extent on special schools. Since 1987, China has progressed a lot in inclusive policy, especially in teacher education and the development of the national curriculum for special education. However, as UNESCO points out, to this day, students with disabilities still face barriers to mainstream education or have fewer opportunities to access traditional formal education [16]. This phenomenon is mainly because of increasing special schools, regarded as the core resources of special education.

Moreover, the cultural background, to a certain extent, has influenced China's educational policy. Traditional Confucian values like "teaching according to individual abilities" and "education without discrimination" stress giving care to people with disabilities more than realizing completely inclusive education. With this trend of cultural influence, China's policies have turned increasingly dependent on special education resources. The use of special education and inclusive education terminologies together in the policy language results in ambiguity in the concept and practice of inclusive education during actual implementation [17]. Therefore, although inclusive education has been taken as a good development trend in China, its carrying out has met with practical limitations. Special schools still play a vital role in meeting the educational needs of disabled students, especially those with hearing impairments.

Therefore, although the expansion of special schools has increased the enrollment rate of disabled children to a certain extent, it conflicts with the promotion goal of inclusive education to a certain extent [17]. A similar situation can be observed in Japan. Despite the gradual introduction of inclusive education, a large number of special schools remain, and many students with disabilities, including those with hearing impairments, continue to be educated in these schools [18, 19]. The research report pointed out that the obstacles faced by Japan in achieving inclusive education include policy restrictions, insufficient professionalization of school psychology, limited teacher capabilities, and social stigmatization [20].

### **4.2. The Role of Special Schools in Supporting Hearing-Impaired Students**

In fact, the study shows that special schools still show positive results in the education of special students, especially hearing-impaired students. First, a study was conducted in the form of a

questionnaire survey with music teachers, students, and parents in special schools in Qinhuangdao, China. The results showed that most hearing-impaired students believed that the personalized music classes in special schools were very helpful for their hearing recovery and affirmed the professional level of the teachers. As many as 72% of the students believed that music classes brought improvements to their emotions and personality [21]. Similarly, 80% of the parents of the students were positive about the hearing recovery of students in special schools [21]. Therefore, especially for students with severe hearing impairment, special schools provide them with a good learning environment, enabling them to make progress in an adaptive educational environment.

In particular, a Swiss study found that even though more than half of disabled students in Switzerland choose mainstream schools, a certain proportion of hearing-impaired students feel marginalized and develop a negative social identity. This is mainly due to a lack of social inclusion, communication challenges and often being the only hearing-impaired student in the class [22]. These students often suffer from bullying, isolation and the burden of being different. After transitioning to a deaf school, these students reported significant positive changes in their social identity and self-esteem [22]. In a school environment for the deaf where sign language is the main form of communication, they feel a sense of belonging and equality because this special environment allows them to communicate more freely and be understood, thereby improving their academic performance and social well-being. Similarly, one study found that students with disabilities were significantly more likely to be ignored by their peers and less likely to have friends in class, even when they were not explicitly rejected [23].

### **4.3. The Complementary Role of Special Schools in Inclusive Education**

Traditionally, special schools, with its personalized learning plans and supportive environment, has helped hearing-impaired students improve their learning abilities. However, it has also led to social isolation and raised concerns about equity. Evidence proves that inclusive education may be an ideal development trend in theory to a certain extent, but in actual implementation, due to resource and environmental limitations, special education still plays a certain role in meeting the needs of disabled students, especially hearing-impaired students, and is even more effective than inclusive education in some cases. This is because special schools help hearing-impaired students reduce their sense of isolation and enhance social interaction through their special supportive environment, thereby achieving educational equity to a certain extent.

In particular, in some countries, special schools still play an irreplaceable role in meeting the educational needs of students with disabilities due to their long-standing stable status and professional resources. The importance of special schools becomes more prominent, especially when the lack of resources leads to insufficient teacher training. Therefore, under the dual influence of traditional cultural background and actual conditions, the education systems of some countries are committed to promoting inclusive education and regard it as the main direction of future educational development. However, in actual operations, these regions still rely on special schools to a certain extent to meet the individual needs of students with disabilities.

## **5. Balancing Educational Policies for Hearing-Impaired Students: Challenges and Strategic Approaches**

### **5.1. Advantages and Implementation Challenges of Inclusive Education**

Inclusive education has not only demonstrated significant advantages in meeting the needs of students with disabilities, but has also gained policy support from more and more countries around the world. A literature review provides a strong theoretical basis for the advantages of inclusive education for students with special needs. According to the authors, inclusive education is closely associated with more equitable learning outcomes, providing equal opportunities not only for students with disabilities but also for all learners, promoting equity in academic and social achievement, and

thus leading to better overall learning outcomes [24]. In addition, inclusive education helps to strengthen students' social networks and community participation, preparing them for adult life, further education, and employment. In the long run, inclusive education leads to higher graduation rates and better employment prospects, while operating costs may be lower than those of segregated schools, making it more economically viable.

In addition, inclusive education can bring academic advantages to students with hearing impairment, and this effect may vary depending on the subject and educational stage. In this regard, Allen and Osborn's study found that even after controlling for other factors, the academic performance of hearing-impaired students participating in inclusive education was still better than that of students not participating in inclusive education [25]. Ekeh and Oladayo also reported that in inclusive classrooms, students with special needs had better academic performance than students in non-inclusive environments [26]. In particular, one study pointed out that in inclusive high school classrooms, with the help of sign language interpreters, hearing-impaired students performed even better than their hearing-normal peers in certain subjects such as computer logic [27].

However, it is important to note that although inclusive education can promote a more inclusive environment, this change is not thorough to some extent, and more progress is still needed to achieve true equality and acceptance. Specifically, according to research, although students without special education needs may have a more positive image of their classmates with special needs, their acceptance of these classmates is still lower than that of other classmates without special needs [28]. At the same time, in inclusive classrooms, students without special education needs usually have a more positive attitude towards their classmates with special education needs. These students may reduce prejudice and be more willing to interact socially with classmates with special needs [28]. That is, ordinary students still tend to treat classmates without special needs more positively.

## **5.2. Develop Educational Strategies for Hearing-impaired Students Based on Needs**

When developing educational strategies for hearing-impaired students, the diverse needs of students at different levels should be fully considered. Since the degree of hearing impairment ranges from mild to severe, students' needs and adaptability to the environment are also different. In this regard, educational policies and practices must be flexible to ensure that different hearing-impaired students can get appropriate support.

Special schools provide a completely personalized learning environment for hearing-impaired students, but it may also cause students to feel isolated in their interactions with mainstream society. Inclusive education environments improve educational equity and academic achievement for hearing-impaired students. However, up to now, there are still hearing-impaired students who are isolated in mainstream classrooms, which will hurt their emotional development. Special education training for teachers is crucial in addressing these issues. Inclusive education requires teachers to be knowledgeable and skillful to cope with diverse needs so that hearing-impaired students can receive fair education. This should include the academic knowledge of hearing impairment, competence in the use of the assistive tools, and the communication approaches and teaching method modifications that lead students to acceptance of the classwork developments and active engagement. Simultaneously, it is also essential for teacher training to include recognition and response to emotional and social struggles on the part of hearing-impaired students. The teacher should know how to further social integration in students and how to develop the supportive classroom climate. For example, through social emotional learning (SEL), students can enhance their self-esteem and establish good peer relationships, thereby reducing the isolation that may occur in the learning environment. In addition, relevant departments can promote educational measures such as "peer-mediated intervention". According to the research of Herring and Woolsey, this measure not only improves the classroom participation and enthusiasm of hearing-impaired students, but also enhances the academic achievements of disabled and non-disabled students [29]. Close collaboration between schools and families is equally important. Schools can communicate with parents to understand students' individual needs, develop special solutions, and encourage hearing-impaired students to

participate in extracurricular activities, thereby reducing their social encouragement and promoting a sense of social belonging.

The level of support for students with disabilities varies between countries due to differences in economic resources, cultural backgrounds, and national contexts. Inclusive education advocates the realization of educational equity through inclusion and represents the future development direction. However, special schools still play an important role in the context of scarce resources and cultural restrictions. China's experience shows that special education schools provide personalized support for hearing-impaired students, which, to a certain extent, makes up for the shortcomings of inclusive education.

Thus, in the process of making inclusive education accessible to students with special needs, special schools should not be seen as an obsolete model but rather as a valuable complement to inclusive education. Special schools and inclusive education should work in tandem, rather than in opposition. Finland has successfully achieved educational equity for students with disabilities through the combination of inclusive education and special education, providing a reference for other countries. Special schools provide resources for students who need personalized support, while inclusive education ensures that they participate in mainstream social activities. In the process of promoting inclusive education, special schools and their teaching staff can provide key support to mainstream schools, helping them to improve their level of inclusion.

## 6. Conclusion

In general, the educational strategy for hearing-impaired students should seek a balance between inclusive education and special schools, and provide targeted and personalized support. In the context of the global special education policy increasingly leaning towards inclusive education, different countries face different challenges and opportunities, and the allocation of resources and cultural backgrounds in different regions have become key influencing factors. Inclusive education has demonstrated its unique advantages by promoting social equity and improving academic achievement, while special schools, with their long-term accumulated professional experience, still play an irreplaceable role in supporting the development of hearing-impaired students, especially those with severe hearing impairments. In particular, in the process of promoting the development of inclusive education, special schools should serve as an important supplementary force to ensure that hearing-impaired students receive maximum support in academic and social participation. The future education system can be more committed to the cooperation between mainstream schools and special schools, and make full use of the advantages of both schools according to the needs and characteristics of regions and hearing-impaired students. This coordinated development will not only contribute to the comprehensive growth of hearing-impaired students, but also provide an important practical reference for the optimization of the global education system.

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