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**BACHELOR'S THESIS**  
on the topic:

Development of a visual complex for hearing-impaired child

Performed by: a student of the BED-20 group

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## ABSTRACT

### **Xuntong Guo. Development of a visual complex for hearing-impaired child**

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"Hear your voice" is a visual innovation and development based on the combination of hearing-impaired children and sign language. According to the World Hearing Report in 2023, approximately 230 million children and 150 million adults suffer from moderate to severe hearing loss worldwide. In addition, approximately 720 million children and 68 million adults suffer from mild hearing loss. According to the survey, the sign language and visual aspects of artistic research is still less, sign language for deaf children, the design focuses on deaf children this group as the theme, study how to put the sign language with simple cartoon image, one can make children more interested in learning sign language, the second is to let the public quickly and directly learn some simple daily sign language and deaf children communicate, through listed help treatment series of poster design, illustration design, title design, IP image design and product design.

**Key words:** *Hearing-impaired children; Visual art; Poster design; Illustration design*

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## INTRODUCTION

**Relevance of the study.** In modern society, with the increasing attention to the needs of special groups, the education and growth of hearing-impaired children have gradually attracted the attention of all sectors of society. As a large special group, hearing-impaired children face many difficulties in obtaining information and communicating. They are unable to receive and understand information from the outside world through hearing, which limits their learning, life and social ability to some extent. Because they cannot express their emotions and language well, they are also under great pressure psychologically and emotionally. There are communication barriers with peers, easy to feel lonely, helpless and low self-esteem. This psychological state not only affects their study and life, but also may have long-term adverse effects on their mental health.

The research on hearing-impaired children has made rich achievements, and in-depth research and discussion have been carried out in many fields such as medicine, psychology and pedagogy. However, in the field of visual communication design, there are relatively few researches on the combination of sign language and vision. The existing research mainly focuses on the visual perception, color perception and symbol understanding ability of hearing-impaired children. Sign language, as the main communication method for hearing-impaired people, has the characteristics of intuition, image and vividness. In this regard, more in-depth research is needed. Based on this gap, I integrate hearing-impaired children and sign language elements into visual communication design, which can not only help them better understand and accept information, but also enhance their aesthetic ability and creativity, and enable the public to be better popularized.

**The purpose of the research:** To study and understand the psychological and emotional characteristics of hearing-impaired children and the degree of sign language popularization, and to design visual communication works that better meet the needs and characteristics of hearing-impaired children based on

the research results, how to help hearing-impaired children better understand and accept the external world through these works, and how to enable the external world to learn basic sign language faster and more effectively.

### **Research Objectives:**

1. Analyze literary materials according to the theme, the general requirements for the object of the direction, and the normative documents that must be considered when designing the object of this category.
2. "Understanding the current situation of hearing-impaired children at home and abroad".
3. Collate relevant data and analyze the cases of children with congenital hearing impairment.
4. To sort out the methods to help hearing-impaired children recover their psychological emotions.
5. Complete the data and determine the main content of the design.
6. The sign language science map was drawn according to the sign language data
7. According to the research results, a set of sign language science map and a series of illustrations, font design and interaction design were made for hearing-impaired children.

**The research subject (theme)** It is an exploration and research on visual design of hearing impaired children combined with sign language.

**The object (focus) of the research** Hearing impaired children, sign language, color graphic combination program.

**Research methods.** The work adopts the following theories and special research methods: Analyze the literature sources and normative literature of the research topic, make a comparative analysis of the methods and current situation of how to help hearing-impaired children integrate into society at home and abroad, consult the information online and investigate the understanding of the status quo of hearing-impaired children's mental health to accurately locate and comprehensively conceive the design plan. Conduct mind mapping, conceive and design sign language science map, illustration drawing, IP image design,

font design. Use Adobe Photoshop, Adobe Illustrator, Adobe InDesign, PROCREATE, etc.

**Elements of scientific novelty.** By converting complex sign language extraction into simple graphics, a series of poster design is carried out, so that hearing-impaired children and the public can learn more simply and clearly, and new changes are made according to the existing artistic style.

**Practical significance.** It can enable hearing-impaired children aged 0-6 to learn sign language, so that social groups can care for hearing-impaired children, so as to restore and improve their psychological and emotional recognition ability and emotions.

**Structure and volume of the thesis.** The bachelor's thesis consists of an introduction, three chapters, conclusions and general conclusions for each chapter, a list of sources used for 30 projects, and an appendix (5 pages). The work contains 31 drawings. The results totaled 61 pages.

# **CHAPTER I**

## **SOURCES OF SELECTION**

### **1.1 Background Of the Selected Topic**

The issue of visual design and sign language for deaf children is an interdisciplinary challenge that spans areas as diverse as special education, linguistics, design, and social inclusion. Here is an overview of the topic:

#### **Communication challenges for deaf children**

As a result of hearing impairment, deaf children face communication barriers in daily life and education. They cannot understand language by hearing like their peers, so sign language becomes their primary means of communication. Sign language, as a form of visual communication, allows deaf children to express ideas and emotions through gestures, movements and facial expressions, providing them with an effective means of communication.

Sign language is a silent language that communicates meaning through hand movements, finger gestures and hand position. It is commonly used by deaf and hearing-impaired people, for whom vision is the primary means of communication. The uniqueness of sign language is that it is a completely different form of communication from spoken language, and users communicate through gestures and expressions. Sign languages are not restricted by any spoken language and can cross linguistic and cultural boundaries, allowing people to communicate in a completely new way. Sign language plays an important role not only in helping deaf people integrate into society, but also in promoting cross-cultural communication and understanding.

Sign language is not only a way for deaf children to connect with others, it also helps them express ideas and grasp concepts. Sign language has its unique language structure and expression mode, and its vocabulary, grammar and expression mode are obviously different from oral language. This uniqueness highlights the indispensable role of sign language in the education and daily life of deaf children.

The integration of visual design in deaf education is very important. In the teaching process, the use of visual design can help deaf people better understand and learn, improve their learning effect. Through appropriate visual design, deaf students can stimulate their learning interest, enhance their learning motivation, and promote their learning outcomes. Therefore, integrating visual design into deaf education can provide more possibilities and opportunities for their education.

With the development of the field of special education, more and more attention has been paid to integrating visual design into the education of deaf children. Visual design communicates information through visual components such as images, colors, and shapes, providing a clear and engaging approach to learning for the hearing impaired. In the field of deaf education, visual design can be applied to various aspects, including the design of teaching materials, the creation of learning environments, and the development of communication AIDS.

The combination of visually impaired children and sign language in visual design has important practical significance and social value. First, it helps hearing-impaired children understand and use sign language by transforming sign language movements into animated symbols, thereby improving their communication and learning environment. Secondly, this integration can improve teaching methods and quality and promote innovation in special education. Finally, the visual design shows sign language culture and their living conditions to promote more social support and care, helping to increase people's understanding of hearing-impaired children and promote their social integration.

Through the analysis of real cases, it can be found that many methods of integrating hearing impaired children with sign language have been successfully applied in visual design. For example, special education schools use animation technology to create sign language instructional videos to help students learn vocabulary and expressions. Non-profit organizations develop sign language symbols and picture books to provide diverse educational resources for hearing-impaired children. In addition, designers are exploring virtual reality technology



to create immersive communication and learning environments for hearing-impaired children. These examples not only highlight the feasibility and potential of integrating hearing impaired children with sign language in visual design, but also provide valuable lessons and insights for future efforts.

In summary, the combination of visual design and sign language for hearing-impaired children covers a range of disciplines, including special education, linguistics, design and social inclusion. This integration has significant practical benefits and social value, creating a more immersive and accessible communication and learning environment for hearing-impaired children. It also fosters innovation and progress in the field of special education, while increasing awareness and inclusion among this population.

The choice of hearing-impaired children as a focus stems from a compassionate understanding of their challenges. This unique and vulnerable group faces many barriers to daily communication and interaction that limit their ability to communicate, learn, and socialize. Hearing loss can inhibit a child's speech development and hinder a child's mental health. Therefore, providing support and intervention from an early age can greatly contribute to their physical and mental growth and recovery.

In today's society, the research on hearing-impaired children has made rich achievements, from the medical, psychological, pedagogy and other fields have conducted in-depth research and discussion on hearing-impaired children. However, in the field of visual communication design, there are relatively few researches on the combination of sign language and vision. The existing research mainly focuses on the visual perception, color perception and symbol understanding ability of hearing-impaired children. Sign language, as the main communication method for hearing-impaired people, has the characteristics of intuition, image and vividness. In this regard, more in-depth research is needed. Based on this gap, I integrate hearing-impaired children and sign language elements into visual communication design, which can not only help them better understand and accept information, but also enhance their aesthetic ability and creativity, and enable the public to be better popularized.

Therefore, this design aims to solve the following problems: how to

design visual communication works that better meet the needs and characteristics of hearing-impaired children, how to help hearing-impaired children better understand and accept the outside world through these works, and how to enable the outside world to learn basic sign language more quickly and effectively.

In modern society, with the increasing attention to the needs of special groups, the education and growth of hearing-impaired children have gradually received the attention from all walks of life. As a huge special group, hearing-impaired children are faced with many difficulties in obtaining information and communicating. Their inability to receive and understand information from the outside world through hearing, which partly limits their learning, life and social skills. Because they cannot express their emotions and language well, they are also under great psychological and emotional pressure. There are communication barriers with peers, easy to feel lonely, helplessness and low self-esteem. This psychological state not only affects their study and life, but also may have long-term adverse effects on their mental health.

Although the country's contributions to hearing-impaired children have made high contributions and rich achievements in medicine, psychology, pedagogy and other fields, there is still a large space for the development of the fields of sign language and art combined through investigation. Therefore, in the field of art, providing a more interesting, effective and efficient way to understand the information has become a problem that can be further studied. Art design mainly through some simple graphics, harmonious color and typesetting elements can effectively convert complex information into clear, simple, simple information, can better help children and social public opponents to understand, at the same time hear your voice can also bring hearing impaired children more rich visual experience, can wake up and stimulate their creativity and imagination, make them can have certain development in art. Through the research of their needs and psychology, we can design works that are in line with their actual needs and

visually effective, so as to help them better integrate into the normal study and enjoy life.

## 1.2 Reasons For Choosing The Topic

"Hear Your Voice" wants to create a more friendly and easier visual environment for hearing-impaired children to understand and communicate

through the power of design. Hearing-impaired children face many difficulties in obtaining information and expressing themselves due to their hearing impairment. So the visual stimulation is particularly important, visual communication design the main form of expression is the combination of color, font, graphics, on the impact of the visual can cross language barriers, through their information directly, not only can help deaf children better into society, enjoy the normal study and life, can also let the social group also intuitively learn some words and they better communication.

The significance of this choice lies in how to pay attention to the needs and psychology of hearing-impaired children. The guidance of a person's physically and mentally healthy growth in early childhood is unimportant. Through the combination of hearing-impaired children and sign language, it is to promote the innovation and development in the design field. Design is not only a process of pursuing aesthetic feeling and visual effects, but also a process of solving practical problems. Paying attention to the needs of hearing-impaired children and tailoring better and more suitable design schemes for them can stimulate my innovative thinking and empathy, broaden my vision, pay attention to the needs of hearing-impaired children, and also make me think about design problems from a broader perspective, and also better improve my design ability and social responsibility.

For children, improve the communication ability of deaf children, enhance the confidence of hearing impaired children, through the design beautiful, lovely, practical, easy to understand the visual elements and symbols for sign language for deaf children feel the social care and respect, to better understand and express themselves, improve their communication ability, enhance their self-confidence and self-esteem, inspire their enthusiasm for the pursuit of a better life.

In short, choose hearing impaired children as visual convey the purpose

and significance of graduation design is to focus on the needs of this special group, promote innovation and development in the field of design, for hearing impaired

children to create more friendly, easier to understand and communication visual environment, improve their communication ability and self-confidence, promote social tolerance and equality. This is not only a design practice, but also a social responsibility and responsibility.

### **1.3 The Current Situation Of Domestic And Foreign Research**

According to Wang Yanchao, Jia Ling's research hotspots and frontier trends of Hearing impaired children in China (CNKI) —— Visual analysis paper based on CiteSpace can be withdrawn. The basic situation of the research of hearing impaired children in China is on the rise, indicating that the research heat of hearing impaired children in China is constantly increasing. The number of papers from 1992 to 2003 was largely below the trend line. In 12 years, the number of articles in 3 years was only 1,2 in 4 years, and the maximum number of articles in 2003 was 11. From 2004 to 2022, the number of publications was basically above the trend line, with an average number of 30.32 publications in the past 19 years. During this period, the popularity of research on hearing impaired children increased significantly compared with the previous period, with 2015 and 2018, reaching 43 articles.

In sign language research on Yang xue, LeiJiangHua, Sun Ke in China intellectual network (CNKI) published the evolution and trend of sign language research —— based on the visual analysis of CiteSpace withdrawal: from 2009 to 2022 research results is rich, compared with the first two stages, this stage, this shows that sign language research between 2009 to 2022 heat fluctuations.

In China, the research and application of hearing-impaired children and sign language in visual communication design is gradually receiving attention.

However, compared with other fields, the development of this field is still

in its infancy. Through the search of two Chinese papers titled "deaf children"

and "painting" on China (CNKI), there is a large space for development. At present, there is still a large space for the exploration of visual communication design for hearing-impaired children and sign language in China.

Although there are some papers in the fields of hearing-impaired children and sign language, there is still a shortage in the field of combining sign language with visual effects, so this design wants to try to combine them together for innovation and practice.

With the progress of society and the development of science and technology, an objective attention is paid to hearing-impaired children in foreign countries. It is a deep and complex topic for hearing-impaired children and sign language in visual communication design.

Does — pictography important for the papers retrieved by Madlen Goppelt-Kunkel, Anna-Lena Stroh, and Barbara Hanel-Faulhaber? The paper suggests that older children are more likely to learn more likeness gestures, while younger children are less affected by likeness when learning gestures. Children with SEND did not benefit more from visualization than children without SEND. These results suggest that whether likelihood plays a role in sign language learning depends on child age. Especially in the western developed countries, the education and care for hearing-impaired children have long attracted wide attention. Designers strive to build a new platform to communicate with hearing-impaired children through innovative visual symbols, graphics and colors.

Qurat-Ul-Ain, Sadia Saleem, Anila Sarwar, Zahid Mahmood children with hearing impairment: Research showed that a cross-sectional study of scale development in Multan, Muzafagal, and Dragazi Khan from August 2018 to

January 2019. The sample included hearing impaired children aged 18 to 23 years studying at Special Education schools in Multan, Pakistan. The internalization of psychosocial problems in children with hearing impairment

requires timely identification and intervention to prevent the pain of silence and improve the psychosocial functioning of children with hearing impairment.

In the process of investigation, after searching the keyword "hearing impaired children" through China CNKI (CNKI), we found that 1030 papers were published, and only one paper was published after entering the keyword "painting". It shows that although there is attention to the attention of hearing-impaired children, it is also studied in the field of vision.

However, despite foreign hearing-impaired children, sign language and psychology, how to better combine sign language with visual communication design to make it more expressive and appealing; how to design more hearing-impaired children of different ages and backgrounds needs further research and exploration.

### Project Research

"Hear Your Voice" focuses on the effects and impact of the combination of hearing impaired children and sign language in visual design. Hearing impaired children have limited hearing, so sign language is a very important bridge for them to communicate with the outside world. In the field of visual arts, sign language is a unique tool that allows hearing-impaired children to learn in a more intuitive and vivid way. Since their hearing is limited, visual stimulation is crucial to their education. The integration of sign language and visual arts creates a vibrant learning environment for these children. Each gesture and action conveys a specific meaning, enhancing their understanding and memory. This visual approach also inspires their interest and enthusiasm for learning. In addition, clear and intuitive sign language science posters can facilitate rapid learning by the public, thereby enhancing communication with hearing-impaired children and providing valuable assistance in enhancing their self-confidence, improving their social skills, building their self-esteem and helping them integrate into society. By mastering sign language, hearing-impaired children can more accurately express their thoughts and emotions, better understand and accept external information, and support their overall development. As such, Hear Your Voice will analyze the unique needs of hearing-impaired children and gather relevant literature, official data, and news articles to provide a theoretical basis and guidance for language acquisition and design in this community.

**Ошибка! Источник ссылки не найден.**

## **Conclusion to Chapter 1**

1. Visual design for hearing-impaired children is a complex issue that combines multiple dimensions of special education, linguistics, design, and social inclusion.

2. Children with hearing loss face serious communication difficulties in daily life and learning due to limited hearing. They cannot hear and understand language like ordinary children, so sign language becomes their main means of communication with the outside world.

3. Sign language has its unique language structure and expression mode, and its vocabulary, grammar and expression mode are significantly different from spoken language. This uniqueness makes sign language play an irreplaceable role in the education and life of hearing-impaired children.

4. More and more attention has been paid to the application of visual design in the education of children with hearing impairment. Visual design conveys information through visual elements such as images, colors, and shapes, providing an intuitive and vivid way for hearing impaired children to learn.

5. Through some simple graphics, harmonious colors and typographic elements, art design can effectively transform complex information into clear, simple and simple information.

## **CHAPTER II**

### **SUBJECTS RESEARCH**

#### **2.1 Preliminary Research**

The choice of hearing impaired children as the subject of the graduation project has important academic value and also demonstrates a deep care and social responsibility for special populations. This section delves into the intent and importance behind this choice.

First, the objectives of this topic include:

Academic inquiry and originality

The decision to focus on graduation programs for hearing-impaired children was made primarily to delve into the academic field of special education. By analyzing the psychological, behavioral, and educational needs of these individuals, we can gain a more comprehensive understanding of their developmental needs and the environment in which they grew up. At the same time, the introduction of new theories and methods provides innovative solutions for the practical application of special education, thus promoting the progress of the academic department.

Prioritize the necessities of certain groups

As a marginalized group in society, children with hearing impairments face challenges in communication, learning and mental health. Centering our graduation design around them allows us to focus on their unique needs, gain insight into their obstacles and requirements, and provide accurate and effective assistance. This effort not only reflects care and reverence for special groups, but also reflects a sense of social responsibility and obligation.

Enhance its capabilities and attributes

Setting a demanding theme for the graduation project can ignite our enthusiasm for learning and curiosity for exploration. Through an in-depth understanding of the characteristics and needs of hearing-impaired children, we can continuously develop our professional competencies and practical skills. In addition, while solving problems, we can perfect our creative thinking and teamwork skills, thus laying a solid foundation for our future endeavors.



Furthermore, emphasizing the importance of the subject is key in advancing both the theory and practice of special education. By concentrating on hearing-impaired children, we can gain a better grasp of the theoretical and practical requirements of special education. This focus allows for the integration of new theories and methods into special education to foster theoretical advancements and practical growth in the field. Such efforts not only enhance the quality and efficacy of special education but also offer valuable insights for the education of other marginalized groups. By highlighting the needs and challenges faced by hearing-impaired children, we can cultivate greater societal awareness and inclusivity. Centering our graduation design on this topic enables us to draw attention to the unique needs of this special group, conveying a message of compassion and respect for them. This heightened awareness can help combat societal biases and promote a more inclusive and harmonious social environment. Additionally, a thorough examination of the characteristics and requirements of hearing-impaired children allows us to provide them with more precise and effective support. This may involve developing tailored educational programs, communication aids, rehabilitation strategies, and more, all geared towards aiding their adaptation to academic and everyday life. Such targeted assistance not only enhances their quality of life and educational outcomes but also lays a solid foundation for their future professional growth and social integration.

Encouraging interdisciplinary research and collaboration is essential for the study of hearing-impaired children, which involves fields as diverse as psychology, education, linguistics, and medicine. By choosing this topic, we can promote integration and collaborative innovation across disciplines. Through interdisciplinary research and cooperation, we can gain a deeper understanding of the growth and development of hearing-impaired children and provide them with more comprehensive and effective help. In addition, such interdisciplinary efforts can drive progress and creativity in related fields.

It is essential to develop individuals who are socially responsible and motivated to innovate. Choosing a hearing-impaired child as a thesis topic can

help foster these qualities. Throughout the research process, it is critical to address the unique needs and challenges of marginalized groups and work to discover new solutions. This dedication to social welfare and innovative thinking will be a valuable asset in our future efforts. At the same time, by providing assistance to hearing-impaired children, we can instill in them gratitude and the importance of giving back to the community.

Helping to develop informed policies is another key benefit of studying hearing-impaired children. The research and practical experience in this area can provide scientific basis for formulating relevant policies. For example, we can identify problems in existing special education policies and suggest improvements. Assessing the effectiveness and impact of various education and rehabilitation programs will provide empirical evidence for policy development. This approach enhances the scientific rigor and effectiveness of policies, ensuring better safeguards and support for the growth and development of hearing-impaired children.

To sum up, the selection of hearing-impaired children as the topic of graduation project has far-reaching purpose and significance. It can not only promote the development of special education theory and practice, improve the social attention and inclusiveness of hearing-impaired children, and provide more accurate and effective help for hearing-impaired children; It can also promote interdisciplinary research and cooperation, cultivate talents with social responsibility and innovative spirit, and provide scientific basis for relevant policy formulation. Therefore, we should actively pay attention to the research and practice progress of this topic, and contribute our strength to the development of special education.

Over the past decades, the society has paid more and more attention to the special groups, and the hearing-impaired children, a special group, have also been concerned about and valued by many people. In the field of visual

communication design, how to better meet the needs of hearing-impaired children and integrate sign language elements into the design has become a topic

worth discussing. Therefore, this market adjustment will carry out research from home and abroad.

For the research on the current situation of hearing-impaired children at home and abroad, we first conducted a research on the art combination of sign language at home and abroad, and then understand policies and regulations, rehabilitation, social integration, psychology and emotion. As well as the psychological and emotional needs of hearing-impaired children, the psychological challenges and difficulties they face, as well as the treatment methods already made at this stage. Collect relevant literature, official statistical data, news reports, etc.

According to Yanchao Wang and Ling Jia's research hotspot and frontier trend of hearing-impaired children in China -- the visualized analysis paper based on CiteSpace published on CNKI, the basic research situation of hearing-impaired children in China is on the rise, indicating that the research popularity of hearing-impaired children in China is constantly increasing. The number of papers from 1992 to 2003 was basically below the trend line. In the past 12 years, the number of published papers was only 1 in 3 years, 2 in 4 years, and the maximum number of published papers in 2003 was 11. From 2004 to 2022, the number of published papers was basically above the trend line, with an average of 30.32 published papers over the 19 years. In this period, the popularity of research on hearing-impaired children showed a significant increase compared with the previous period reached 43 in 2015 and 2018.

In sign language research, Yang Xue, Lei Jianghua, Sun Ke published on CNKI the evolution and trend of sign language research in China -- Based on the visualization analysis of CiteSpace: The research results from 2009 to 2022 are quite rich, with the number of papers remaining between 23 and 53. Compared with the previous two stages, the number of papers in this stage shows a fluctuating increase, which indicates that the popularity of sign language research fluctuates between 2009 and 2022.

In China, the research and application of hearing impaired children and

sign language in visual communication design are gradually receiving attention. However, compared with other fields, the development of this field is still in its infancy, and there are 2 Chinese papers appearing through the search of keywords "hearing-impaired children" and "painting" on CNKI, which has a large space for development. At present, there is still much room for exploration of visual communication design for hearing-impaired children and sign language in China.

Although there are some papers in the fields of hearing impaired children and sign language, there is still a lack in the field of combining sign language and visual effects, so this design wants to try to combine them for innovation and practice.

With the progress of society and the development of science and technology, the importance of hearing impaired children in foreign countries is also very objective. The current situation of hearing impaired children and sign language in visual communication design in foreign countries is a deep and complex issue.

Madlen Goppelt-Kunkel, Anna-Lena Stroh, Barbara Hanel-Faulhaber paper on Sign Language learning for hearing children in inclusive day care Centers: Does pictography matter? The thesis points out that older children are more likely to learn gestures with a high degree of iconicity, while younger children are less affected by iconicity when learning gestures. Children with SEND did not benefit more from imagery than those without. These results suggest that whether iconicity plays a role in sign language learning depends on the age of the child. Especially in Western developed countries, the education and care for hearing-impaired children have already aroused wide concern. Through innovative visual symbols, graphics and colors, designers strive to build new platforms for communicating with hearing-impaired children.

Psychosocial problems in children with hearing impairment: Qurat-Ul-Ain, Sadia Saleem, Anila Sarwar, Zahid Mahmood in Psychology: A four-stage model cross-sectional study of scale development was carried out in Multan, Muzafagar and Dragazi Khan in Pakistan between August 2018 and January 2019. The sample included hearing-impaired children aged 18 to 23 attending

special education schools in Multan, Pakistan. The internalization of psycho-social problems in children with hearing impairment requires timely identification and intervention to prevent the suffering of silence and improve the psycho-social function of children with hearing impairment.

In the process of research, after searching the keyword "hearing-impaired children" through CNKI, it was found that out of 1030 published papers, only 1 was published after entering the keyword "painting". This indicates that although the attention of hearing-impaired children has been paid, there is still a lot of research space in the field of visual integration.

However, despite the foreign research on hearing impaired children and sign language and psychology, there is a growing concern about how to better combine sign language with visual communication design to make it more expressive and appealing; How to design more problems for hearing impaired children of different ages and backgrounds need to be further studied and explored.

Use sign language animation for visual representation

Using animation techniques: Using animation techniques to capture and depict sign language movements in a dynamic sign language animation format. This animated form can effectively convey the complex details and fluency of sign language to help hearing-impaired children understand and replicate.

Focus on visual components: Emphasize key aspects of sign language communication by enhancing visual elements such as color, shape, and movement. For example, in sign language bright colors and exaggerated movements are used to highlight specific words or grammatical structures.

Improve educational outcomes: Sign language animation helps engage and motivate hearing-impaired children. By repeatedly watching and imitating these animations, children can quickly master the expression and skills of sign language.

In addition, the use of sign language symbols simplifies communication

**Simplify symbol understanding:** Develop sign language symbols that are easy to understand and remember for the identification of everyday objects and public facilities. These symbols should be concise and able to express their intent intuitively.

**Increased efficiency of expression:** By using sign language symbols, hearing-impaired people can communicate their needs and ideas more effectively. This helps them communicate more smoothly in their daily interactions with others.

**Potential for personalization:** Sign language symbols can be tailored to meet the specific needs and interests of deaf children, improving their sign language skills. Customizing these symbols can effectively meet the unique needs of deaf children, thereby improving their communication skills.

**Increase educational resources by creating sign language picture books**

**The value of picture book content:** Develop sign language themed picture books by aligning with the cognitive characteristics and preferences of deaf children. These books can cover the basics, practical applications and cultural significance associated with sign language.

**Visual and text combination:** By combining images with text, the meaning and usage of sign language can be vividly illustrated. This integration enables deaf children to deepen their understanding of sign language meaning and expression.

**Promote interaction and participation:** Incorporate participation elements and hands-on activities into picture books to encourage deaf children to participate in role play. This interactive learning approach helps deaf children understand and retain sign language more deeply.

In short:

Visual design plays a crucial role in improving deaf children's sign language skills. Through sign language animation design, symbol design and picture book creation, we establish a more immersive and comprehensive

communication and learning environment for deaf children. These visual design media not only stimulate deaf children's learning curiosity and motivation, but also speed up their acquisition of sign language skills and techniques. At the same time, these approaches increase the social awareness and inclusion of children with hearing impairment, providing strong support for their overall growth and development.

## **2.2Data sorting**

When studying the visual design aspects of hearing impaired children in conjunction with sign language, we can focus on the following key areas:

### **I. Theoretical basis and background research**

Visual Linguistics and Sign Language studies: First, we must master the theoretical basis of visual linguistics and the basic characteristics of deaf sign language. For example, delving into the emergence and significance of visual linguistics discussed in Article 3 allows us to understand how it supports the examination of sign language for deaf people. At the same time, referring to the exploration of sign language design in the field of visual communication in Article 4, the important role of sign language in visual communication is clarified.

Special Education Research: Insights gleaned from research on hearing-impaired children in special education provide a valuable background knowledge base. These investigations may include the psychological

development, learning patterns and educational requirements of hearing-impaired children. By absorbing this basic information, we can enhance our understanding of the visual design needs and sign language use of hearing-impaired children.

### **2. Visual design application and sign language for hearing-impaired children**

Case studies: Collating successful case studies that demonstrate how visual design enhances communication between hearing impaired children and

sign language in real-world Settings is critical. For example, exploring how certain art teachers in schools for the deaf combine sign language with visual representation to craft innovative art education models (as outlined in Article 1) can provide valuable insights and inspiration for our efforts.

**Educational products and design:** It is beneficial to study the educational products and product designs available in the market for hearing-impaired children, including software for learning sign language, instructional videos for sign language, and other relevant tools. These products often incorporate cutting-edge educational ideas and technological advances, providing valuable insights and strategies for our own design work.

**Design skills and tools:** Proficiency in basic design skills and methods, such as color coordination, layout planning, and graphic design, is essential to visual design. In addition, it is important to familiarize yourself with specialized methods and tools to accommodate hearing-impaired children and the unique requirements of sign language, such as accessibility design principles and symbol creation.

**Innovative technology and its utilization:** As technology continues to advance, new technological innovations offer exciting opportunities to enhance visual design and sign language for hearing-impaired children. Technologies such as virtual reality (VR) and augmented reality (AR) provide immersive and engaging pathways to learning that can greatly benefit children with hearing impairments. Understanding the latest applications and trends of these technologies is essential for effective design implementation.

**Social and cultural context:** Visual design for hearing-impaired children and sign languages is influenced not only by technical aspects, but also by sociocultural factors. Recognizing cultural differences in sign language use and understanding society's perceptions and attitudes toward hearing-impaired children are critical to developing design strategies that truly resonate.



Policy and regulatory considerations: Familiarity with relevant policies and regulations helps guide our design process. Several districts have developed specific policies and guidelines for special education that provide valuable insights and criteria for our design decisions.

In conclusion, through a comprehensive analysis of theoretical frameworks, practical cases, technical approaches, and sociocultural insights, we can gain a deeper understanding of the needs and barriers of hearing-impaired children in visual design of sign language. This comprehensive approach allows us to provide strong support and guidance for our design work.

### Research

The education of hearing-impaired children is always an important aspect in the field of special education. Sign language plays a unique and important role as the primary means of communication for these children. In recent years, with the rapid development of visual design, there has been a growing interest in exploring how sign language and visual design can be combined to enhance the communication and learning experience of hearing-impaired children.

Because hearing impaired children have limited hearing abilities, they rely heavily on sign language for everyday interactions. Sign language is not only a means of communication, but also embodies a unique culture of emotion and expression. For these children, sign language is an important link to the outside world and a key tool for expressing and understanding themselves.

By combining sign language with visual design, a more intuitive and engaging communication and learning environment can be created for hearing-impaired children. This integration can be achieved in a number of ways, including:

- Sign Language animation design: Use animation technology to depict sign language movements and create dynamic and engaging sign language animation. These animations not only help to enhance the understanding of sign language meaning, but also cultivate the curiosity and creativity of hearing-impaired children in learning.

- Sign language symbol design: Develop a set of sign language symbols

that are easy to understand and remember for daily necessities, public facilities, etc. These symbols can be widely integrated into the daily life and educational activities of hearing-impaired children to promote their adaptation to the surrounding environment.

- Sign language picture book creation: Create a series of picture books based on sign language themes that meet the cognitive interests of hearing-impaired children. Through the combination of images and text, these picture books effectively explain the meaning and application of sign language, providing a variety of reading materials for hearing-impaired children.

Research on visual design combining hearing impaired children with sign language will not only help promote innovation and development in the field of special education, but also create a more friendly and inclusive social environment for hearing impaired children. In the future, we can further explore the combination of sign language with artificial intelligence, virtual reality and other technologies to provide more convenient and efficient communication and learning methods for hearing-impaired children. At the same time, we also need to pay attention to the social and psychological needs of hearing-impaired children, and provide them with more comprehensive and detailed support and care.

### Positioning Of The Selected topic

Hearing-impaired children face particularly severe challenges in communication and communication. They are difficult to capture sound information due to hearing limitation, which also directly leads to difficulties in language learning and expression. This not only affects their communication with others, but also may cause estrangement and trouble in social life and daily life, thus causing serious psychological problems. As the main way of communication for hearing-impaired children, sign language lies in that it provides a bridge for these children to communicate with the world. By using sign language, deaf children can communicate their desires, emotions and requirements, and also understand the speech of others, enabling them to integrate more effectively into society. Sign language not only helps to establish

communication channels for deaf children, but also helps to promote their social and mental health.

There is great potential for combining sign language with design to help deaf children understand and express information more effectively. Visual communication is an instinctive, non-verbal method. Through carefully crafted visual elements, such as colors, graphics, symbols, etc., complex ideas and emotions can be conveyed and directly linked to the inner world of deaf children, enabling them to understand and process information more easily. At the same time, intuitive and clear graphics can speed up learning and understanding by the public, improve communication with deaf children, and alleviate their anxiety and feelings of inferiority. In this project, we will specialize in creating posters, illustrations and symbols to help deaf children strengthen their communication and expression with others. First of all, I will simplify the information, make the sign language graphical, evolve the real sign language state into visual elements such as cartoon graphics, images and symbols that are more accessible to children, and simplify the complex information into a visual form that is easy to understand, so as to help hearing-impaired children grasp and understand more quickly. Then combine sign language movements with

color, graphics and other visual elements to attract children with powerful pictures, which is easier to arouse their interest in learning. Then I will enhance my memory, and combining sign language and visual communication design is the most important research of this graduation design. Making some commonly used sign language words into cards and extracting cute visual elements is often more attractive and memorable than words. By combining sign language with visual communication design, making sign language into some cultural and creative works can subtly increase the memory of hearing-impaired children and the public.

The expression form of this design will be concise and easy to understand and receive, avoiding the use of complex graphics and text and bright colors to represent the information. More fun on the series of posters, to attract the

attention of the hearing-impaired children by increasing the interest, and to use cartoon images, game elements, classic role-playing and other ways to increase the interest of the works. Finally, the aesthetic and cognitive characteristics of healthy auditory children should also be taken into account to make the work universal.

In terms of design strategy, first of all, I will deeply study sign language to collect 100 sign language words to understand the basic grammar, vocabulary and expression methods of sign language, so as to transform their cartoon images and integrate them into my popular science posters, so that hearing-impaired children can understand and receive information more intuitively.

Then I will learn from the excellent popular science poster design cases at home and abroad to understand how they skillfully use graphics, text and colors to convey information. Draw inspiration from it, combine with the actual situation of hearing impaired children, and meet the needs and interests of different hearing impaired children through diversified expressions.

There will be some obstacles in promoting sign language and visual design, which is a challenging endeavor for the public. The limited penetration of sign language means that many people cannot master it, making it more

difficult for hearing-impaired children to integrate into society. Nevertheless, there are ample opportunities to strengthen social outreach efforts, raise public awareness and improve understanding of disability.

## **Conclusion to Chapter 2**

1.By studying the psychological, behavioral, and educational needs of children with hearing impairment, we can enhance our understanding of the developmental environment and developmental needs of this particular population.

2.By conducting research and putting our findings into action, we can raise awareness about children with hearing impairment, promote their

acceptance in society, and ultimately provide them with more social support and inclusion.

3.By understanding the unique characteristics and requirements of children with hearing impairment, we can provide them with more precise and effective support. Tailored educational programs, communication AIDS, rehabilitation services, and other resources can enhance their ability to succeed academically and thrive in everyday activities.

4.The topic of strengthening visual communication design to better meet the needs of hearing-impaired children and incorporating sign language elements has become a relevant discussion point in the field.

5.Easy-to-understand symbols: Design sign language symbols that are easy to understand and remember for identifying everyday objects, public facilities, etc. These symbols should be concise, clear, and able to intuitively express the meaning of the representation.

## **CHAPTER III**

### **DESIGN PROCESS AND RESULTS**

#### **3.1 Design Plan**

- (1) Collect 100 common everyday words in sign language.
- (2) Create an overall mind map to define ideas.
- (3) Design IPs, headlines and illustrations in the basic section.
- (4) Design a series of posters and cultural products in the application design section.
- (5) Finally make minor adjustments to the overall design.

#### **3.2 Design Process**

##### **(1) Foundation design**

The basic design part mainly includes three parts: designing IP image, title design and illustration design for hearing-impaired children.

In the selection of IP images, children who are the same age as the hearing-impaired children should be selected as the main body to design their images through cartoon patterns, bright colors, simple lines and other forms that are easy for them to accept, including clothing and expression. Make it have affinity, recognition and interaction, and coordinate the relationship between the three can quickly narrow the distance between the hearing impaired children, so that they feel close and trust.

In the design of the title, first of all to determine the name, it contains the core meaning of the entire design, emphasize the theme of the design, must be simple and easy to remember, rich emotion, using your voice as the main title, you can intuitively highlight the theme of the graduation design, highlight the purpose and significance of the design, in the design style to also combine with the target audience.

In terms of the selection of illustrations, firstly, through investigation, it is found that the way to recover children's psychology and emotions is to carry out treatment through role playing, parent-child interaction, emotion recognition, etc. Six illustrations are detailed in these categories, for example, children play some classic roles or occupations to increase their emotional fluctuations, so as to better understand and learn sign language. Restore self-confidence and anxiety, etc., and popularize popular science in the form of illustration for the public to the effective treatment of hearing-impaired children. In the form of expression, each illustration adopts a theme, and the elements corresponding to the theme will be selected to add. On the color, some healing warm tones and complementary tones are used to show. The whole thing has to be intuitive, concise and story-telling.

## (2) IP design

First of all, my first selection in IP image selection is a man and a woman as the theme, the two images use the proportion of three head body design, in the color to choose bright, warm and easy to identify the color collocation,

The boys' dress is mainly blue, with a blue striped top and dark blue jeans, while the girls' dress is mainly pink. These colors can attract the attention of hearing-impaired children, and convey a positive and friendly atmosphere.

In the expression is a happy expression, want to convey power through the smile. The overall style is simple, lively and lovely, designing a vibrant image of hearing-impaired children. After designing the two basic images, different costumes and facial expressions will be designed according to different themes in the series of posters.

In addition, a corresponding set of emojis is designed to increase the overall interest, and the content of the emojis is the corresponding sign language meaning.

## (3) Title design

The font design of the title combined with sign language in visual design for hearing-impaired children is a process that requires comprehensive consideration of multiple factors to ensure that its effect not only conforms to

the cognitive characteristics of hearing-impaired children, but also can effectively convey sign language information. The following is a detailed analysis of this design process from several aspects:

understand the visual cognitive characteristics of hearing impaired children

Visual dependence is significant for hearing-impaired children because they are more dependent on vision due to hearing difficulties. Therefore, when designing fonts, it is crucial to fully consider the visibility and clarity of visual elements. Children with hearing loss are often attracted to vibrant and dynamic features, so the design of a title font can benefit from introducing striking colors and obvious contrast. It is important to explore the characteristics and expressions of sign language. Sign language is dynamic and gesture-based, conveying a sense of movement and rhythm that can be embodied in font design through the use of lines, shapes and typography. Brevity is key, because sign language gestures are known for their brevity; Similarly, fonts should aim for simplicity and clarity, avoiding overly complex or intricate designs. When choosing a font for a title, choosing an easy-to-read font with clear lines, such as sans serif or simple serif, can help replicate the simplicity of sign language. Taking into account the visual abilities of hearing-impaired children, title fonts should be medium to large in size and medium in thickness to enhance readability and effectively convey the rhythm and vitality of sign language.

**Color matching:** Use bright, contrasting colors to attract the attention of hearing-impaired children while ensuring that they align with the themes and emotions conveyed by sign language. Designs should be tailored to the unique characteristics of hearing impaired children and sign languages.

**Incorporate dynamic elements:** Enhance font design with dynamic elements such as fluid lines or shapes that mimic the fluency of sign language. This approach not only helps hearing impaired children understand, but also stimulates their interest in learning.



Simple layout: Choose simple and clear layout, avoid too much decoration and complex layout. This ensures that the title font stands out visually and is easy to read.

In conclusion, combining sign language to create title font designs for hearing-impaired children requires a holistic approach. By understanding the visual cognitive aspects of these children, exploring the characteristics of sign language, and mastering the elements of font design, works can be developed to meet the cognitive needs of hearing-impaired children, while effectively conveying sign language information.

I take "hear your voice" as the topic of the whole graduation project, is to convey a deep emotion —— desire to be heard and understood. One of the biggest challenges for hearing-impaired children is their inability to express their feelings and needs through language communication as easily as their peers. Then there are two voices in the topic, first, "hear your voice" is the children to hear all the voices of the outside world, the voice of the public, second, for the public, "hear your voice" is to want to care for you, want to care for you, want to listen to and understand your inner voice. Therefore, through this theme, we can call on the society to pay more attention to the inner world of hearing-impaired children, listen to their voices, and understand their needs.

When designing a font, the initial steps involve building a simplified basic model that manipulates the text by twisting and tilting to create a representation of the intended subject through the basic form. Dotted lines surround the entire font, creating a visual effect reminiscent of protection and hugging. The lines wrap around the font like a comforting embrace, providing a sense of care and security to the central elements, evoking feelings of protection and reassurance. Stars symbolize dreams and aspirations, and transforming them into romantic design elements can evoke strong emotions and convey a positive message.

#### (4) Illustration design

Designing illustrations that incorporate sign language into visual elements for hearing-impaired children is a multifaceted process that requires full

consideration of various factors. The design process involved several key aspects: First, an in-depth understanding of the unique psychological and cognitive characteristics of hearing-impaired children. Cognitive development plays a crucial role, as these children may rely heavily on vision and touch to perceive and understand their surroundings. Therefore, in illustration design, their cognitive characteristics must be taken into account, and visual elements and expressions that meet their cognitive abilities must be carefully selected.

It is also important to address their psychological needs, as hearing-impaired children may exhibit increased sensitivity and vulnerability and require additional care and support. The design should strive to convey warmth, positivity and encouragement to help boost their confidence and foster curiosity for learning.

Second, it becomes crucial to delve into the complexity of sign language features and expressions. Sign language is a visual and gesture language with unique expressions and cultural differences. The illustration design should be good at capturing the dynamic gestures of sign language and depicting the richness and beauty of its culture through imagery. Understanding the vocabulary and grammatical rules of sign language is essential for an illustrator to accurately convey its meaning in a design.

### 3. Elements and principles of illustration design

**Color application:** Color is one of the most important elements in illustration design. In the illustration design for hearing-impaired children, we can choose bright, full colors to attract their attention and stimulate their interest. At the same time, the color collocation also needs to consider the visual characteristics of hearing-impaired children, and avoid too harsh or monotonous colors.

**Lines and shapes:** Lines and shapes are the basic elements of illustration design. In the expression of sign language movements, we can present the gestures and gestures of sign language through clear and concise lines and shapes. At the same time, the thickness, curvature and direction of the lines can also convey the emotion and rhythm of the sign language.

**Composition and layout:** In illustration design, composition and layout are essential to convey information and emotion. We need to arrange the various elements of the illustration properly, so that the picture has a sense of hierarchy and focus. At the same time, considering the visual characteristics of hearing-impaired children, we can use larger fonts and clear images to highlight key information.

**Color application:** Color plays a crucial role in illustration design. For illustrations aimed at hearing-impaired children, vibrant and rich tones can be used to attract their attention and stimulate their curiosity. It is important to pay attention to the visual preferences of these children and avoid overly rough or monotonous color schemes.

**Lines and shapes:** Lines and shapes form the basic elements of illustration design. When depicting sign language movements, conveying gestures and expressions through clear and concise lines and shapes is key. The thickness, curvature and direction of these lines can effectively convey the emotion and rhythm of sign language.

**Composition and layout:** In illustration design, correct composition and layout are key to effectively communicating information and emotions. Carefully arrange the elements to create a sense of hierarchy and focus in the artwork. Given the unique visual needs of hearing-impaired children, the use of larger text and different images can highlight important content.

**Scene selection:** Choosing scenes or topics related to sign language, such as daily activities or school scenes, can help hearing impaired children understand the practical application of sign language in real life.

**Character design:** Creating characters with affinity and appeal, such as cute cartoon characters or friendly animals, can help bridge the gap with hearing-impaired children and foster their willingness to learn and use sign language.

**Emotional engagement:** Illustrations should convey warmth, positivity, and encouragement. By portraying characters with expressive movements, facial expressions, and the right color palette, artwork can create a welcoming

environment that inspires curiosity and enhances the self-esteem of hearing-impaired children.

### Summary

When creating illustration designs incorporating sign language for hearing-impaired children, it is essential to have a deep understanding of the psychological and cognitive characteristics of these children, as well as the characteristics and communication methods of sign language. In addition, expertise in the elements and principles of illustration design is essential for designing according to the unique characteristics of hearing-impaired children and sign languages. By effectively combining these aspects, we can produce illustrations that match the cognitive abilities of hearing-impaired children, accurately convey the message of sign language, and thus enhance their learning experience. In addition, it is important to ensure that each illustration has a clear theme and tells a compelling story. This design is mainly a series of 8 illustrations, and the content of each illustration is selected from a number of therapeutic methods for children's rehabilitation, such as parent-child games, role swapping, and classic occupations playing, etc. The overall style is healing-oriented. The overall style is healing-oriented. Since hearing impaired children may have certain

difficulties in learning and cognition, the color and form of the design should be as simple and clear as possible, avoiding overly complex or confusing elements. At the same time, adding in elements with warm hues and simple graphics in line with current trends will also help to attract their attention.

Finally, these elements are combined into a complete illustration to ensure the effectiveness and attractiveness of the design.

To enhance the appeal and educational aspect of the illustration, my designs will incorporate story elements into the design. Designing a series of illustrations depicting daily life scenarios such as children coming to play the role of a mother or father to take care of pets and other daily scenarios as a way to increase their empathy and sense of responsibility.

### (5) Application section design

The application design part mainly includes three sections: sign language science map, design series posters for hearing impaired children and cultural and creative design.

In the sign language science map, first of all, the daily words encouraging children are collected and sorted out, and 100 commonly used words are designed as the main body of the poster, in which many sentences encouraging children can be formed.

In the series of posters, I first made clear the psychology and treatment methods of hearing-impaired children through research. In selecting specific themes, I will divide them into three sections, namely emotion recognition, sports and social interaction, and subdivide each theme in these three categories. Control the layout of the poster, focus on the elements you want to convey, and be unified in tone.

In the cultural and creative design, I will design according to the combination of sign language and hearing-impaired children, and mainly consider the practicability, promotion and popularization of the overall cultural and creative products. Based on these elements, the design is roughly divided into ten categories of cultural and creative products. It is also necessary to combine the group of hearing-impaired children, select a suitable style and a harmonious tone for design.

#### (6) Sign language science poster

First of all, the main body of the poster should be clearly defined. In the early stage of drawing, data should be investigated, some words to encourage children in daily life should be collected and sorted out, and the words in each paragraph should be separated and arranged.

The layout should have a hierarchical relationship. The sign language should be simple and clear in graphic drawing and placed in the center of the poster, so that everyone can learn quickly and clearly. The density of the layout can be opened to better highlight the main body and express the meaning of sign language.

In terms of color, five colors are used, and 20 photos are distributed in a group. The selected colors are pink, orange, green, blue and purple. Pink symbolizes health and has the effect of relaxing and calming emotions. Orange symbolizes vitality, warmth and optimism, can stimulate children's positive emotions, improve their self-confidence and creativity; Green is the color of nature, symbolizing life, helping to ease and balance the role of children's tension; Blue is a peaceful color, can help children reduce psychological pressure; Purple is a combination of red and blue, which has both the passion of red and the calm of blue, which can soothe the mind and bring calm and healing effects.

#### (7)Poster design

In terms of the topic selection of the poster, first of all, according to the investigation of children's psychological and emotional changes, and found ways to restore their emotions. From these treatment methods, three categories were divided, namely emotion recognition, sports, social interaction, and sports, of which each category was subdivided into specific themes, and a total of 12 posters were designed. Maintain a consistent visual style and design elements in the series of posters to enhance the overall unity and coherence.

After defining the theme, start the design of the layout, the layout should be clear, to ensure that the transmission of information is intuitive. IP images: I put them in the center of the poster, and behind the characters are the scene elements related to the theme, creating layers by blocking the title and the characters.

Emphasize the close connection between deaf children and sign language, each poster will science a corresponding theme sign language words, IP image hand make the words sign language posture, for example, "wood people" belongs to one of the social article, this piece of sign language is "stop" the word, usually wood the game will have 321 words, so adopted the word "stop", under the title of the definition.

Choose warm orange as the tone to attract the attention of the audience and convey a positive, optimistic and cheerful atmosphere.

"Hide and Seek" is one of the social chapters, and the corresponding sign language is the word "start". Usually, the game of hide and seek has a countdown time to start hiding, so the word "start" is adopted, and the title is defined below. In color, choose warm green color as the tone to attract the attention of the audience and convey a positive, optimistic and cheerful atmosphere.

Spider-Man is one of the emotion recognition parts, so based on the character of Spider-Man having running movements, the sign language is the word "sprint", so the word "sprint" is used, with the title below. In the color, choose warm yellow as the tone to attract the attention of the audience and convey a positive, optimistic and cheerful atmosphere.

Snow White is one of the emotion recognition sections, where children feel shy when playing this role. The corresponding sign language is the word "thank you", and usually Snow White is praised by others, so the word "thank you" is used, with the title definition below. Choose warm pink as the tone to attract the attention of the audience and convey a positive, optimistic and cheerful atmosphere.

"Basketball Boy" belongs to one of the sports games, the corresponding sign language is the word "refueling", according to the role of playing basketball will have the words to encourage refueling, so the word "refueling" is adopted, and the following title is defined. Choose blue as the fundamental tone in the color, to attract the attention of the audience, and to convey a positive, optimistic and cheerful atmosphere.

"Bodybuilding girl" belongs to one of the sports, this one corresponding sign language is the word "insist" this word, according to the role of aerobics will continue to do some actions, so the use of the word "insist", in the following title of the definition. Choose purple as the color of the tone to attract the attention of the audience, and convey a positive, optimistic and cheerful atmosphere.

This creative design will focus on handbags, mobile phone cases, fans, key chains, pillows, badges, puzzles, cards, calendars, bookmarks and so on. In the design of cultural and creative products, the most important thing is to promote and popularize sign language, select some commonly used sign language movements, such as "hello", "thank you", "I love you", etc., convert them into graphics or symbols, and cleverly integrate into the appearance or packaging design of the product. This will not only convey the message of sign language, but also give people a deeper understanding of sign language culture while appreciating the product.

The overall style is mainly for hearing-impaired children, and the design is simple and cute, which can better attract their interest. In addition to beautiful and cute, the product also needs to have certain practicability. This can not only increase the use value of the product, but also make people more frequently exposed to sign language and hearing-impaired children in their daily lives.

## Problems and solutions in the creative process

Problems and solutions in visual design of hearing impaired children combined with sign language

### Introduction

With the development of special education and the increasing attention of society to hearing-impaired children, sign language, as an important tool for hearing-impaired children to communicate with the outside world, has been increasingly paid attention to its application in visual design. Still, challenges remain in the field of visual design tailored to hearing-impaired children who use sign language. Drawing on existing research and practice insights, this paper will explore these challenges in depth and propose solutions accordingly.

Challenges in visual design of sign language for hearing-impaired children include the complexity of sign language expression. Sign language is a unique form of language characterized by subtle meanings that are often more complex than those conveyed by spoken language. In visual design, the key challenge is to accurately and vividly represent sign language movements to ensure that they are easily understood by hearing-impaired children. In addition, differences in



sign language expression across regions pose an additional barrier to effective design.

Another challenge stems from the limitations of visual design. Despite its ability to visually depict sign language movements, limitations in screen size, resolution, and other factors often prevent a complete and accurate depiction of sign language complexity. Expressing abstract concepts and emotions through visual design is also challenging and cannot meet the different learning requirements of hearing-impaired children.

In addition, in the current sign language visual design products, there are widespread problems of insufficient interactivity and accessibility. This lack of user engagement and ease of access weakens the overall user experience for hearing-impaired children. For example, some sign language learning software ignores the specific characteristics and needs of hearing-impaired children in terms of interface design and operational functions, resulting in poor learning results.

Cultural and regional differences also affect the effectiveness of visual design in sign language for hearing-impaired children.

Sign language, as a unique language form, its complexity of expression can not be ignored. The following will elaborate on the complexity of sign language expression from the aspects of its historical development, lexical system, grammatical structure and cultural transmission.

First of all, sign language has experienced a historical development process from simple to complex, from elementary to gradually enhanced. In ancient times, gestures were the main form of communication. However, with the progress of society and the development of culture, sign language gradually includes a more comprehensive vocabulary system and grammatical structure. For example, Chinese Sign Language was officially published in the 1950s and expanded to about 5,000 words when it was officially published in 2003, showing the richness of the vocabulary system of sign language.

In addition, the vocabulary system of sign languages is complex. Each gesture represents a specific word, and variations of the gesture can convey different meanings. The combination and modification of gestures can generate a

large number of words and phrases, making sign language highly adaptable and expressive. This complexity helps to accurately convey a variety of messages and emotions through sign language.

In addition, the grammatical structure of sign languages is complex. Although sign language is different from spoken language, it maintains strict rules and logical mechanisms. For example, time representation in sign language employs unique gestures and movements to represent past, present, and future events. This grammatical structure improves the accuracy and vividness of sign language expression.

Finally, sign language is culturally transferable, with specific cultural connotations, and conveys cultural information through gestures and movements. The differences and adaptations of sign languages in different countries and regions reflect local cultural characteristics, making sign languages a tool for cross-language and cross-cultural communication.

In short, the complexity of sign language expression is reflected in its historical evolution, lexical system, grammatical framework and cultural transmission. This complexity makes sign language a unique and diverse form of communication and an important means of interaction for the hearing impaired and voiceless.

Third, the solution

In-depth study of sign language expression characteristics

In order to better present sign language movements, designers need to deeply study the characteristics and rules of sign language expression. Through the understanding of sign language vocabulary, grammar, expression and other aspects, we can grasp the essence of sign language expression more accurately, so as to better reflect the characteristics and advantages of sign language in the design.

Improving visual design performance requires the use of more advanced technical tools, such as 3D modeling and animation effects, to highlight the complexity and dynamics of sign language movements. Designers should also consider the cognitive characteristics and educational requirements of deaf children, integrate intuitive visual elements, enhance information transmission,

and improve the readability and attractiveness of the design. Enhancing the interactivity and accessibility of sign language visual design requires designers to incorporate more user-centered design principles and features. This includes considering the specific characteristics and needs of deaf children in interface design, choosing simple layouts and user-friendly controls. Interaction design should include features such as voice prompts and gesture recognition to make it easier for deaf children to use. Acceptance of cultural and regional differences is crucial in visual design, which drives designers to adopt a more diverse and inclusive approach. By integrating the sign language expressions and cultural aspects of different regions, the design can embody a richer meaning and wider appeal, ensuring the universality and inclusiveness of the design. In addition, designers can incorporate the cultural background and growth of deaf children into the design content, providing practical and easy-to-understand materials for the audience.

#### Iv. Conclusion

The integration of hearing impaired children and sign language in visual design presents some challenges, but implementing solutions such as in-depth study of sign language expression characteristics, improving visual design performance, improving interactivity and accessibility, and respecting cultural and regional differences can effectively address these issues. This approach could lead to the creation of higher quality, more efficient visual design products and services for hearing-impaired children. In addition, the adoption of these solutions can promote the development of special education and promote greater support and compassion for hearing-impaired children in society. In recent decades, society has increased awareness and positive decision-making in education, medicine and psychology to better support the recovery of children with hearing impairment. However, there is still less in the field of art, and certain guidance and stimulation are also needed for children with hearing impairment in the visual aspect. Therefore, this graduation project will be a combination of sign language and vision, aiming to attract some works of children with hearing impairment, but also to promote some daily sign language vocabulary to the public, so as to promote better communication and integration

between the two sides. With the theme "Visual Communication Design for Children with Sign Language Hearing Loss", this graduation project aims to build a more tolerant, understanding and supportive social environment for children with hearing loss through the power of visual communication design. The whole design process is not only a test of professional skills, but also a profound life experience.

In the early stages of the design process, we gained a deep understanding of the difficulties and challenges that children with hearing impairments face in communication. Understand their psychological emotions and so on, find out the importance of sign language to them, although they can not use language to express themselves, but sign language is a bridge between them and the outside world. However, the innovation of integrating sign language into visual design is a challenge. While thinking about how to express sign language intuitively, it also needs to be combined with the audience group, and there are strict requirements on typography and color. How to unify them to make sign language more visually intuitive and easy to understand is the issue that this research needs to pay attention to.

In the design of "Listening to your voice", I tried various design methods and techniques that can reflect the effect. After studying the daily use of the logo I experimented with many visual elements, such as color, graphics and typography, and completed a complete set of sign language posters, a series of thematic posters, a series of illustrations, ip and cultural creations. Through simple graphics, impactful colors, and comfortable typography, sign language is better expressed so that more people can recognize and learn sign language. In the design of "Listening to your voice", I can deeply feel the energy that design brings to me. Design is not only a simple art form, but also an artistic way to show oneself and communicate with the outside world, and art can transcend complex language, so that the public can feel the charm and value of design, I also realize that design can show the value of sign language. I also realize that design can also show a certain social responsibility, as a designer, we should not only make the whole work innovative and beautiful, but also consider how to make the work better reflect the practicality and social value of design, "hear

your voice" is my design and the existing problems in today's society, through the graphic language of design to help the hearing impaired children. "Listen to Your Voice" combines my design with the problems of today's society, and gives hearing impaired children a voice through the graphic language of design, hoping that they can integrate into the society, so I cherish my design work this time. After finishing the whole design, I have a lot of feelings about the whole design.

After completing the whole design, I have a lot of feelings about the whole design, I not only improve my artistic creativity and aesthetics, understand how to design works with heart, but also learn how to show some social issues through works. This time, through the design of "Listen to Your Voice", it has laid a good foundation for my future design path, and I will continue to adhere to my own philosophy, design for the community, and create my own power.

### **Conclusion to Chapter 3**

1. When selecting IP images, children of the same age as the hearing impaired child should be chosen as the subject, through cartoon patterns, bright colors, simple lines and other easily accepted forms, including clothing and expression. Making it approachable, cognitive, and interactive, and coordinating the relationship between the three, can quickly narrow the distance between children with hearing loss and make them feel close and trusted.

2. In the design of the title, we must first determine the name, which contains the core meaning of the whole design, emphasize the theme of the design, must be simple and easy to remember, rich emotions, and so on.

3. For example, children take on some classic roles or occupations to increase their mood swings in order to better understand and learn sign language. For example, children take on some classic roles or occupations to increase their mood swings in order to better understand and learn sign language.

4. In the expression is an expression of happiness, trying to convey strength through a smile. The overall style is simple, lively and lovely, and it designs a dynamic image of a hearing-impaired child.

5. This creative design will focus on handbags, phone cases, fans, key chains, pillows, badges, puzzles, cards, calendars, bookmarks and more. In the design of cultural and creative products, the most important thing is to promote sign language, select some commonly used sign language movements, such as "hello", "thank you", "I love you", etc., convert them into graphics or symbols, and cleverly integrate them into the appearance or packaging design of the product.

## GENERAL CONCLUSIONS

1. More and more attention has been paid to the application of visual design in the education of children with hearing impairment. Visual design conveys information through visual elements such as images, colors, and shapes, providing an intuitive and vivid way for hearing impaired children to learn.

2. Children with hearing loss face serious communication difficulties in daily life and learning due to limited hearing. They cannot hear and understand language like ordinary children, so sign language becomes their main means of communication with the outside world.

3. Easy-to-understand symbols: Design sign language symbols that are easy to understand and remember for identifying everyday objects, public facilities, etc. These symbols should be concise, clear, and able to intuitively express the meaning of the representation.

4. In the design of the title, we must first determine the name, which contains the core meaning of the whole design, emphasize the theme of the design, must be simple and easy to remember, rich emotions, and so on.

5. In the expression is an expression of happiness, trying to convey strength through a smile. The overall style is simple, lively and lovely, and it designs a dynamic image of a hearing-impaired child.

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## APPENDICES

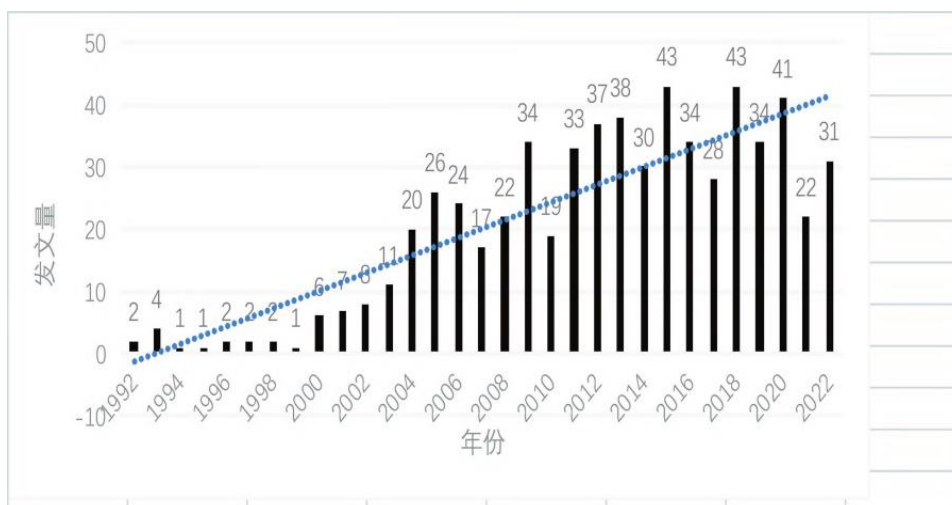


Figure 1

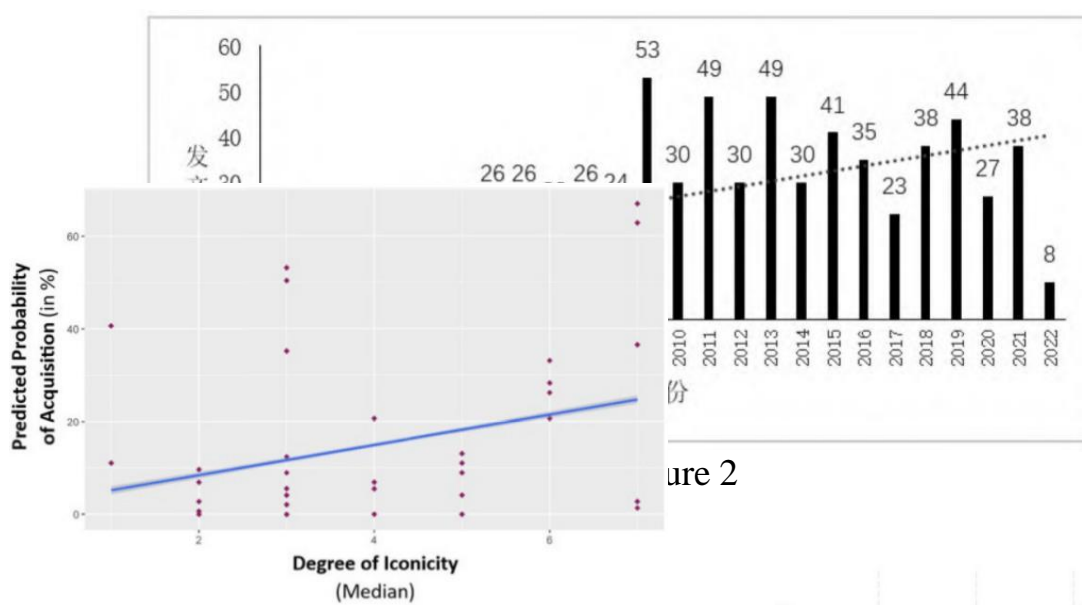


Figure 2

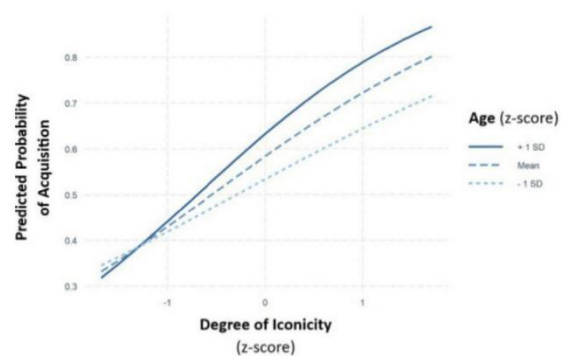


Figure 3

Figure 4



Figure 5



Figure 8

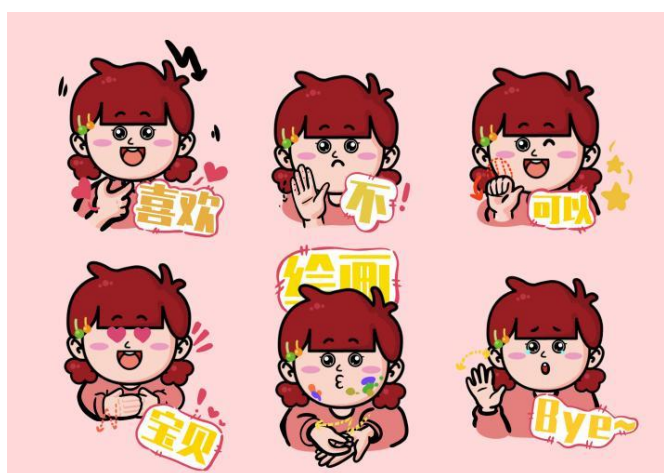


Figure 7



Figure 9



Figure 10



Figure 11



Figure 12



Figure 13



Figure 14





Figure 15



Figure 16



Figure 17



Figure 18



Figure 19



Figure 20



Figure 21



Figure 22



Figure 23



Figure 24



Figure 25



Figure 26



Figure 27



Figure 28



Figure 29



Figure 30





Figure 31