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Current status and future prospects of Braille product design

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Abstract

With the rapid economic development of modern society and the continuous improvement of the social security system, the blind people's purchasing power and awareness of life. With the increasing pursuit of quality of life, products for the blind with superior product performance, functional diversity, and high technological content will surely form. Huge market value and future development trends, and then there will be very few blind products for blind people. This article Conduct research and research on the necessities needed for blind people's lives and obtain relevant information and references during fieldwork. Analysis, through user interviews, we can obtain the needs and demands of blind people more truly and directly, and look for existing and existing products on the market. Braille products that have been mass-produced and meet these elements, and conduct case studies on these products to provide a basis for subsequent analysis and. The research provides reference. After reading a large amount of literature and conducting public questionnaires, combined with relevant clue research and analysis, it reflects the demand for Braille products in society and whether society can allow people with disabilities to integrate as much as possible. The embodiment of social value that enters normal people's lives; For blind people, due to visual impairment, Life has its many inconveniences. Multi-sensory packaging integrates vision, hearing, touch, smell, taste and other senses, Seize the most perceptible part of product packaging, Increase the functionality

and practicality of the product, providing the possibility for the visually impaired to purchase and use the product without any information barriers; can it also allow the visually impaired to purchase and use the product without any barriers? The fact that people with disabilities can integrate into the lives of normal people as much as possible also reflects the degree of tolerance of a society and a city and the quality of its society. A beautiful embodiment of humanistic atmosphere.

Keywords: blind ,product ,society ,tolerate

1. Preface

1.1 Research background

With the rapid economic development of today's modern society and the continuous improvement of the social security system , the purchasing power of blind people and their increasing pursuit of quality of life, blind products with superior product performance, functional diversity, and high technological content will surely form Huge market value and future development trends. Take China as an example. Among the approximately 85 million disabled people in our country , Have an appointment 17 million visually impaired people, at 21 Age-30 Approximately 50% are between the ages of And every year, the number of these special groups continues to increase year by year. In recent years, people's living standards have become better and better, and the country's social security has also been continuously improved. Especially in today's rapid development of the information age, the construction of information accessibility has also received great attention from many countries and people from all walks of life . In 2019 The theme for the International Day of Persons with Disabilities is "An Accessible Future" ", Intended for visually impaired people Equal opportunities to participate in society.

1.2 Research purpose

With the rapid economic development of modern society and the continuous improvement of the social security system, the blind people's purchasing power and awareness of life With the increasing pursuit of quality of life, products for the blind with superior product performance, functional diversity, and high technological content will surely form. Huge market value and future development trends, and then there will be very few blind products for blind people, and

the visually impaired Due to the majority of social attitudes and the inconvenience of going out, people often close themselves off and go out less often, so I In addition to paying attention to the basic life aspects of the visually impaired, we also need to deeply understand the inner needs of the visually impaired and help the blind as much as possible. Can be integrated into normal people's lives.

2. literature discussion

2.1 Development status of Braille products

2.1.1 Domestic current situation analysis

Nowadays, most products designed for the visually impaired group are designed to meet their physiological needs and safety needs. auxiliary tool design, such as wheelchair , turn stick , glasses and other products, Can satisfy the needs of visually impaired people There are very few products that are in demand . It is difficult for the visually impaired group to buy products suitable for them products of our dreams. Some developed countries and regions pay more attention to it than our country and do better. by adjusting You can check the data out, Our country has nearly 2000 Many businesses specialize in serving disadvantaged groups body manufacturing products, in 99% production auxiliary equipment, However in the United States More than 40% of machines These organizations are R&D companies that design, manufacture and produce special products for disadvantaged groups.

Some products are specifically designed for the visually impaired: blind man's globe, Make each big The continent is designed as a raised plate , All big The continental plates are divided through gaps, and the same continent Different countries in the continent are raised by , to differentiate between depressions, Boards for each country.

The block is equipped with The name of the country is written in Braille to help the visually impaired use it; there are many types of blind canes. Many, including ordinary walking sticks, Wearable guide products , electronic blind cane , handheld guide products and Mobile guide products, etc. The principles are all the same, That is, visually impaired users use a blind cane to tap Hit the ground or sense ultrasonic and electronic equipment to inform the user of the surrounding environment conditions. and Assist users to walk; vision aid, There are two common types of visual aids—optical visual aids and non-optical vision aids, Optical vision aids convex lens , telescope , prism, etc. . non-optical Vision aids refer to large print , CCTV

etc. . Vision aid passes For volume, distance , Angle, projection, etc. are used to enlarge the object so that the user can see the object clearly. In the above example, the product is only full Visually impaired group usage needs, The user experience of visually impaired groups is ignored.

2.1.2 Relatively low attention to vulnerable groups

Currently, there are few products for the blind on the market. We should give special groups a better life through humanistic design. In order to improve the living environment, many blind people are now using more and more high technology, and their demand for many things is also becoming greater and greater. when When they have great difficulty in shopping and other aspects, they need some barrier-free products to facilitate disadvantaged groups and make the shopping process easier and more enjoyable. Yue, Make the product more practical.

2.1.3 Analysis of foreign status quo

Accessible design first appeared in the 20s At the beginning of the century, it was a new design proposition proposed by the United Nations Organization. It was adopted in Australia, Germany, Netherlands ,UK , Japan and other countries can see that both the government and society provide assistance to people with disabilities in all aspects. It is not difficult to find research on visually impaired people reflected in packaging.

2.1.4 Reflection of humanistic care in products

Foreign skin care product packaging attaches great importance to cultivating consumer brand loyalty, and the product packaging design is beautiful and has many functions. variety, Worth learning and learning from . For example, Australia's Julie and L'Occitane, JURLIQUE brand and logo All It conveys the vitality of plants and the brand's infinite care for the earth. Convey its brand concept and humanistic care to consumers and give Consumers demonstrate the natural and pure brand concept.

2.1.5 Relatively high attention is paid to vulnerable groups

Foreign skin care product packaging has a wide variety of packaging materials and diversified packaging forms, and additional help is added to the packaging. Braille bumps for groups. For example, the L'Occitane brand has Braille bumps printed on its packaging to better facilitate the visually impaired. People choose products. In order to allow more visually impaired people to perceive the beauty of the world, all the products launched by L'Occitane are available. braille

bumps, To help visually impaired people better understand and choose products, It also enables greater promotion of the L'Occitane brand.

2.2 Characteristics of visually impaired users

Due to lack of understanding of visually impaired people, People think that the status of visually impaired people is cannot be independent , need social assistance and medical assistance, People's attitudes toward the visually impaired Most of them are indifference or sympathy, This marginalizes the visually impaired, will Visually impaired groups and Ordinary people distinguish. Not only does this prevent visually impaired people from working and studying normally, it even Also for the visually impaired survival poses a test . People's attitudes towards the visually impaired can easily lead to Visually impaired people suffer from low self-esteem, loneliness, sensitivity, conflicts, Self-doubt and habitual help-seeking Waiting mentality . People's understanding of the surrounding environment begins with feeling, through their own sensory system (depending on ,hear , touch , sniff ,taste) and a series of complex reactions to external stimuli by comprehensive factors such as memory and experience. Should . [1] Due to visual impairment, visually impaired people only through its Four ways of perception to know and understand the world . scientific research discover, human sensory organ When there is a defect in sense organs such as hearing or vision, Other sensory systems will be more acute.

2.3 Analysis of needs of visually impaired groups

Maslow's need theory tells us that physiological needs, safety needs, belonging and the need for love, the need for respect, The need for self-actualization is one of the five human needs Level composition . People gradually upgrade these five needs . When the bottom layer needs seek satisfaction High-level needs then develop and desire to be satisfied.

2.3.1 Physiological needs and safety needs of the visually impaired

Due to the lack of perception and communication of external information by the visually impaired group, physiological needs and safety needs for the visually impaired The most basic needs, sensory compensation products first It is necessary to meet the functional needs of the visually impaired group and strengthen the functionalization of visual compensation products. So as to satisfy Meet the physiological needs and safety needs of the visually impaired group.

2.3.2 The need for belonging and love among visually impaired people

Visually impaired people long to be like ordinary people. integrate into society, with everyone start life ,learn ,Work, he We also long for friendship , love . The need for belonging and love is when the physiological needs and safety needs are met. Postpartum and gradually strengthen. Maslow believes that belonging and love needs, physiological needs, safety needs Need not at all same, Users' needs for belonging and love are emotional needs. is desire Emotional needs are met.

2.3.3 The need for respect

According to statistics from the "China Child Welfare Policy Report", Every year in our country , about 100,000 Children abandoned on Abandoned Baby Island For example, the children in 99% of abandoned babies are disabled sick children . Regardless of whether the physiological functions are sound or not, everyone should enjoy life power of life, All have rights be treated equally . Every human body deserves freedom , You deserve your privacy and secrets To respect. The respect needs of the visually impaired require the joint efforts of normal people to achieve them.

2.3.4 self-actualization needs

The need for self-actualization refers to the upward development of individuals and the full use of their talents , quality , the need for aptitude . Horse Slo needs the highest level in the hierarchy, of growth need, Appears after basic needs are met . [2]Sensory compensation products and service through Personalized customization can help visually impaired people realize their self-actualization needs . This brings a higher level of user experience require.

2.4 Significance of Braille product development

Design is to creatively solve the problems in our lives. Multi-sensory design refers to breaking through the single visual tradition . Limitations, stimulating consumers' sensory functions at multiple levels through diverse experience methods such as sight, hearing, taste, smell, and touch of the human body . Visually impaired people are also part of the social group. While we pay attention to their survival and health, we also need to pay attention to their hearts and minds. management needs. Therefore, multi-sensory design applications have a strong positive effect on visually impaired people, allowing consumers to experience various experiences through diverse experiences. way to meet psychological needs.

Table 1 Compilation of Braille product design research literature

Research By	time	research topic	Discussion focus/research methods	Source
Wu Leng	2011	On Several Issues in Product Design for Blind People —— Product design of blood pressure monitor for blind people	This article introduces blind people and the products used by blind people. Shao analysis, appeal to society , companies and designers are designing products Consider the needs of blind people when designing, and explore how designs that care for the blind should It is a kind of human being that truly reflects respect and concern for blind people. The embodiment of cultural spirit is the perfect and harmonious combination of people and products. It is necessary for social development, human progress and highly developed civilization.	<journal> ·Philosophy and Humanities; ·work Cheng Technology II ·work Industry common technology and equipment prepared; ·Engineering Technology Series II ·Instrumentation
Zhang Yuan 2	2016	Product design for people with post-cognitive blindness Preliminary exploration	Compared with people who are born blind before cognition, trauma or Inferiority and other psychology of people with post -cognitive blindness caused by disease The characteristics are more obvious, which can be seen when designing products for it. More complexity, more uniqueness. This article is based on the understanding of Visiting research on blind people and analyzing their physiology , psychological characteristics Starting from the needs of product design, we explore the Precautions in product design for people with post-awareness blindness. Research methods:	<journal> ·Engineering Department Technical Series II ·Industrial Communication technology and equipment prepared; ·Philosophy and people liberal arts; ·"set Plan》,2016.07 Expect [Page Number] Page (page Pages 116-117)

Jia Liangwen	2018	<p>Products published by China Braille Press are now available</p> <p>Current situation and future prospects</p>	<p>This article first analyzes the role of non-visible consumer groups in business market</p> <p>role in the consumption process, and the obstacles encountered in the consumption process Analyze the obstacles and explain the application of Braille in modern commercial packaging necessity. Secondly, the form of the Braille dot matrix itself Combining commercial packaging with features of visibility and tactility Analyze the current situation so that Braille can be used without affecting the originality of commercial packaging. Apply it on the premise of aesthetics and functionality, so that it can be used commercially It plays its own functional and decorative role in industrial packaging.</p> <p>Research methods:</p>	<p><journal> Information Department technology ·Published; ·" Media Forum", 2018 Year.02 issue [Number of pages] 2 page (No. 107 page+page 109 pages)</p>
Gao Yanbin	2017	<p>Braille functionality in commercial packaging and decorative studies</p>	<p>This article first analyzes the role of non-visible consumer groups in business market</p> <p>role in the consumption process, and the obstacles encountered in the consumption process Analyze the obstacles and explain the application of Braille in modern commercial packaging necessity. Secondly, the form of the Braille dot matrix itself Combining commercial packaging with features of visibility and tactility Analyze the current situation so that Braille can be used without affecting the originality of commercial packaging. Apply it on the premise of aesthetics and functionality, so that it can be used commercially It plays its own functional and decorative role in industrial packaging.</p> <p>Research methods:</p>	<p>"Art Department" Technology》, 2017.01 Issue [page Number] 2 pages (pp. 290-291 page)</p>

Zhao Yingjie	2021	Accessibility based on skin care products for the visually impaired Hinder design application	<p>With the rapid development of my country's economy and the improvement of social security system, Continuous improvement, blind people's purchasing power and quality of life Pursuing increasing improvement and superior performance , diverse functions ,science and technology Products for the blind with high content will definitely form a huge market. right For the visually impaired, Because vision is obstructed, life is difficult There is inconvenience. Multi-sensory packaging integrates vision, hearing, touch, sense of smell , taste and other senses, it is easiest to grasp the product packaging The perceptual part increases the functionality of the product , practicality, for Information for visually impaired people to purchase and use products that are accessible possibility, Therefore it has strong practical significance.</p> <p>Research methods:</p>	<p><journal> ·Engineering Department Technical Series I ·generalization Study industry; ·《Green Color Packaging》,2021 Year.05 issue</p> <p>【Number of pages】 5 Pages (pp. 87-91)</p>
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Han Kailu	2015	Tactile graphics presentation for the visually impaired and its design applications	<p>Visual impairment is one of the serious social and public health problems in the world. Visually impaired people lack awareness of their surroundings due to visual impairment Cognition of the image of things, Braille is important for obtaining information way, but Braille reading cannot meet the needs of perceiving graphics.</p> <p>beg . Based on the research on tactile characteristics, this paper focuses on the current If there are product deficiencies, explore how to draw them systematically to facilitate Touch perception for the visually impaired , identify , tactile graphics of memory, Based on tactile interaction technology, a visual-oriented products based on tactile graphics for the visually impaired, enabling the visually impaired</p> <p>The goal of reading pictures.</p> <p>Research methods:</p>	<p><journal> ·Engineering Department Technical Series II ·Industrial Communication technology and equipment prepared; ·Philosophy and people liberal arts; ·"set Planning》, 2015.04 Issue [page Number] 2 pages (pages 20-21)</p>
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Source: This research is compiled.

3. Research methods

3.1 Literature research method

The literature research method is a method of obtaining information by investigating literature according to a certain research purpose or topic, so as to comprehensively and correctly understand the research problem to be studied. Document research method is widely used in various subject research. Its function is Understanding the history and current situation of relevant issues helps to determine research topics; it can form a general impression about the research object, which is helpful for observation and interviews; it can obtain comparative information of real data; it is helpful to understand the whole picture of things. This article searched through literature research method Collect a large number of domestic and foreign developments on Braille products and conduct analysis and research on the needs of this disadvantaged group for future products; Identify domestic and international concerns about this vulnerable group , tolerance and gap,

3.2 Questionnaire survey method

This article analyzes the main consumer groups, consumption structure and development prospects of this type of products in the current visually impaired market.

After analysis, a question containing 8 related questions was created and sent on social media, and a total of 132 valid questionnaires were collected, as shown in Table 2.

Table 2. Questionnaire survey on related products for visually impaired people

What is your gender?	quantity
male	47
female	85
What age group are you in?	quantity
Under 18 years old	9
18-25 years old	56
25-35 years old	34

35-45 years old	7
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45 years and over	26
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Are you satisfied with the level of care given to the visually impaired in today's society?
quantity

Do you like it?

Satisfied	48
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Needs improvement	84
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Do you still pay attention to the experience of the product, or do you still feel that it is a good experience?
quantity

Just go?

yes	75
-----	----

no	19
----	----

It doesn't matter	38
-------------------	----

Do you use products for the visually impaired many times?
quantity

yes	75
-----	----

no	57
----	----

Are you paying more attention to future product designs for the visually impaired?
quantity

What is important about the product?

Practicality	89
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Cost-effectiveness	37
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It doesn't matter	6
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Do you think if society targets the visually

impaired in the future?	
Will product design have a qualitative impact on quantity your future life?	
Leap and increase the power of contribution to society	
Can	106
will not	6
It doesn't matter	20

Source: This research is compiled.

3.3 Case study method:

After reading a lot of literature and conducting public questionnaire surveys, look for existing products on the market that meet this requirement. Relevant products that have been mass-produced with these elements and case analysis of these products can provide a basis for the in-depth exploration of this article.

Provide a certain basis for reality.

3.2 Investigation method

The survey method is one of the most commonly used methods in scientific research. It is a purposeful, planned and systematic collection of relevant research objects. Materials and methods of actual or historical situations. Investigation method is a basic research method commonly used in scientific research, and it is comprehensively applied. Methods such as historical method, observation method, and conversation, questionnaires, case studies, tests and other scientific methods to conduct systematic research on social phenomena. Through thorough and systematic understanding, and analyze a large amount of information collected during the investigation, comprehensive, compare, summarize, and thus become a human being. They provide regular knowledge.

4. research results and discussion

Of all the services provided to blind people, the most influential is Braille . This kind of development based on touch point perception The text comes, Opening the door to the world for blind people through cooperative compensation between the five senses . now, Various braille printing A dazzling array of products, Braille packaging also abounds . In today's world where product innovation increasingly emphasizes segmented groups and humanized design,sky, The various consumer needs of blind people have become one The film urgently needs to be taken seriously , satisfied blue ocean market . And make the blind accessible hinder reading , perception and use of packaging, Become a ship sailing into this blue ocean .

A barrier-free environment is a basic condition for disabled people to get out of their homes and participate in social life. It is also a convenient environment for the elderly, women and children. important measures in the lives of children and other members of society. At the same time, it also directly affects our country's urban and international image. Enhance accessibility

Impeding environmental construction is a concentrated expression of material civilization and spiritual civilization, and an important symbol of social progress. To improve people's quality and cultivate the public moral consciousness of the whole people, Promoting the construction of spiritual civilization is of great social significance . Premier Wen Jiabao once pointed out: Building barrier-free facilities is an important measure to provide convenience for disabled people, the elderly and other members of society. It is an indispensable part of modern urban construction . It is an important symbol of social progress . Party committees and governments at all levels must attach great importance to this work, Put it on the agenda as a "people's support project" and "civilization project" that implements the important thought of "Three Represents", Really achieve results.

4.1 Case analysis

		
<p>Mexico launches a " Coca-</p>	<p>Indian tea brand Aromica</p>	<p>National standards implemented in my country</p>

<p>Cola Braille Can (Coca-Cola Braille) " Image source https://www.foodaily.com/articles/259_31</p>	<p>Tea also launched Innovative braille tea packaging Image source https://www.foodaily.com/articles/25_931</p>	<p>in 2019 "Braille on Packaged Drug Packaging" focuses on the text position of Braille , spacing regulations , Dian Gao and others have made strict regulations Image source https://www.foodaily.com/articles/25_931</p>
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modern society, Vision plays a vital role in all aspects of life and at every stage of life . it Not only the most important sense organ, It is also an integral part of interpersonal communication and social interaction . But not everyone has it this ability . According to The 2018 "Insight Report on Mobile Information Behavior of Visually Impaired People" shows that There are approximately 4,500 worldwide Thousands of blind people, The visually disabled people in China have 12.63 million people, visually impaired More than 130 million; with the serious aging of people, This group has a tendency to expand further .

The difficulties that visually impaired people encounter in life are unimaginable to ordinary people . In order to ensure that they enjoy equal rights, Countries are Relevant policies and regulations have been introduced . In April 2008, the Law on the Protection of Persons with Disabilities was reviewed and revised at the second session of the Eleventh National People's Congress. Braille reading materials will be published , provide blind people with information exchange services, etc. and clearly fulfill their social responsibilities. . In order to facilitate the travel of blind people, the "Regulations on the Construction of Barrier-free Environments" formulated in 2012 specifically added provisions that allow guide dogs to enter public places.

2015, The British Guide Dog Association also requires bus companies to install audio-visual systems on buses. Convenient for blind people to get on and off the bus . blind alley , Barrier-

free access and toilets, etc. We can see society's special care for the visually impaired everywhere around us.

4.2 Section

A study published in 2017 by the world-famous medical journal "The Lancet" stated: By 2050, worldwide The number of blind people will triple expected to reach 100 million 15 million people, Affected people are mostly in Asia and Africa less developed areas. An increase in the number of people means a bigger market, As a livelihood industry, food Not only to promote social equity Do your best, We also need to think about how to meet the increasingly surging consumer demand in the future. . 2021 October The 15th is No. 37" international day of the blind ". A variety of science and technology activities are used to assist blind people across the country. " understand, respect, shut Heart, help **the disabled** "**The strong atmosphere**. smart home, blind tourism, obstacle movie ...Modern technology allows blind people to communicate with Seamless connection of the world becomes possible. Compared with overseas markets, China's packaged food market for the visually impaired has just begun. step. Overseas innovation cases let us see: There are so many forces devoted to product development and innovation for the visually impaired, also Domestic food companies are reminded: Don't ignore those people hiding in hidden corners.

5. conclusion

Scientific and technological progress is the fundamental driving force for the forward development of society. Throughout the development process of human history, every technological update They have brought huge changes to people's production and life, and also brought unlimited development possibilities to the design of industrial products, promoting the optimization and update of product design. The development of science and technology has led to the continuous optimization of product design in terms of materials, shapes, and processing techniques, and has brought unlimited room for improvement in the field of tactile and perceptual design of blind products. Since the beginning of the new century, with the continuous development of science and technology, people are increasingly perceiving and understanding the world through tactile organs, which are unmatched by other sense organs. . Therefore, when designing products for the blind, more consideration should be given to tactile characteristics to increase the user experience and comfort of the product. Establish a close connection between the function, shape, materials, usage methods and other factors of the

product and its use to achieve barrier-free communication. In the future, when designing products for the blind, more attention should be paid to aspects such as hearing and smell, so as to fundamentally improve the blindness. quality of human life. Today, as healthy people, we are gradually moving towards a better life with the progress of society and the times. live, But based on the principle of a community with a shared future for mankind, Visually impaired people and even other disadvantaged groups also have the right to move towards a better life. Across today's society, we have indeed neglected the care of vulnerable groups, the tolerance and tolerance of a city to a country. The ethos of society is also reflected in whether he can pay attention to the weaknesses of society; in recent years, the arrival of the metaverse has also given people Give the visually impaired a different kind of "light" ", Feedback to the retina through VR glasses, Even if you can't watch it again to the world, You can also see a different new world.

The arrival of a community with a shared future for mankind means that the fate of mankind is only in the hands of mankind itself, no matter what the differences are different skin colors, different classes and different social people, let us return our attention to the soft underbelly of society, maybe they We have also been and will be the elite of society, but others have given them a stereotype; let Braille product design change Their understanding of society should be integrated into normal people's lives as much as possible to jointly create a community with a shared future for mankind and build a community with a shared future for mankind. Build a beautiful home.

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