

Book Binding Design Based on the Learning Needs of Elderly People in an Aging Society Taking Dongguan University for the Elderly as an Example

Juan Qiu¹

¹ *Guangdong University of Science & Technology, Dongguan, China*

ABSTRACT

With the development of an aging society, the elderly population continues to expand, which requires people to pay attention to the physical and mental health of the elderly and strengthen people's care for them. On this basis, field research was conducted to address the deficiencies in the design of existing forms of elderly books. Starting from students at Dongguan University for the Elderly, a deep understanding was gained of the special physical and mental characteristics of the elderly and the reading barriers they face in their daily lives. The design of fonts and layouts, colors and graphics, format and paper, binding forms and auxiliary materials in the books were addressed one by one. The overall design of elderly book binding can help solve the physical and mental health problems of the elderly and enable them to spend their later years more meaningfully. It can assist in solving the aging problem, enhance social civilization, and contribute to the construction of a learning society.

Keywords: *Aging, Elderly learning needs, Dongguan University for the Elderly, Book binding design.*

1. INTRODUCTION

At present, the book design market is roughly divided into two categories, namely adult books and children's books. Except for specialized designs for children's books, the remaining adult books do not have too many special designs. However, the trend of an aging society is increasing year by year, and the expansion of the elderly population also requires people to pay attention to their physical and mental health and social influence. The scale of elderly people living alone in today's society is constantly expanding, and the trend of empty nest and low birth rate is becoming increasingly serious. The spiritual comfort and social interaction that require time to accompany are the basic needs of the elderly in their daily lives. According to surveys, the lack of emotional support for the elderly's mental health in life leads to severe loneliness, which is also a direct factor affecting their happiness. And with the rapid updating and development of society, the elderly have a great learning need in adapting to society. The design of books for the elderly can promote a learning

atmosphere for the elderly, thereby reducing the risk of developing Alzheimer's disease.

And this design is aimed at investigating and designing students at Dongguan University for the Elderly. According to the investigation, Dongguan University for the Elderly currently has more than 6000 elderly students, which is a huge social group. Dongguan University for the Elderly has become the center of elderly education in the city, and has a good dissemination effect on the concept of elderly book design. The book decoration design for Dongguan University for the Elderly students is helpful for the education of the university for the elderly, and it is also a concrete manifestation of building a socialist harmonious society, allowing elderly students to achieve lifelong education and enrich their later life.

There is also a lot of national policy support for improving the aging society in this study. Among them, in the "Report on Suggestions for the Development Plan of Beijing's Aging Industry during the 14th Five-Year Plan Period", it is pointed out that the overall economic strength, education level, and health status of the elderly,

mainly those born after the 1960s, have improved, their sense of autonomy is higher, their consumption awareness is stronger, and they value the quality of life more, rather than just meeting their survival and basic security needs; The National Medium - and Long Term Plan for Proactively Responding to Population Aging: Implementing this strategy requires addressing three major issues: the introduction of specialized medium - and long-term strategies in response to population aging, the implementation of national strategic education on actively responding to population aging throughout society, and the strengthening and improvement of the organizational system for aging work; The Development Plan for Elderly Education (2016-2020): The Party and the state attach great importance to elderly work and actively promote the development of elderly education. It is necessary to focus on expanding the supply of elderly education, innovate the system and mechanism of elderly education, and improve the quality of life of the elderly, integrate social resources, stimulate social vitality, and enhance the modernization level of elderly education, allowing the elderly to share the fruits of reform and development, further realizing the development of elderly education with Chinese characteristics, and striving to form a new pattern of elderly education development with Chinese characteristics. With the support of national policies, it is particularly important to study and innovate the design of elderly book binding.

Older people often experience reading difficulties due to physical and mental changes when reading books in their daily lives. Firstly, in terms of physiology, the perception system of the elderly has declined, with the most obvious being the decline in vision and hearing; In terms of the musculoskeletal system, muscle atrophy in the elderly leads to a decrease in motor coordination; In terms of cognitive system, there is a decline in cognitive ability, as well as a decline in attention and memory. Secondly, in terms of psychology, elderly people experience a decrease in psychological security, weakened adaptability, feelings of loss, inferiority, loneliness, and emptiness. Their short-term memory and thinking abilities also decline, and their ability to accept recent things is relatively low. The education level of contemporary elderly people has significantly improved, which has led to an increasingly strong pursuit of spiritual civilization. Therefore, it is necessary to analyze the differences in learning

needs of the elderly group, and propose book designs that meet the learning needs of elderly students, senior universities, and relevant government departments to enrich their retirement life.

2. THE PURPOSE AND SIGNIFICANCE OF BOOK DESIGN FOR DONGGUAN UNIVERSITY FOR THE ELDERLY

The book binding design developed for the elderly population based on Dongguan University for the Elderly is not only of great significance to Dongguan University for the Elderly, but also plays an important role at the national and social levels. Firstly, the design of books for the elderly can to some extent alleviate various problems presented by an aging society, such as young people being busy with work and not having enough time to spend with their elders. The rational design of books can to some extent alleviate the lack of companionship in the hearts of the elderly; The targeted design of elderly books can also drive the aging economy industry chain. The design of elderly books can expand new economic development models by adjusting the economic structure of the book design industry, strengthening the real economy, promoting consumer spending, and continuously adapting to the impact of population aging on the national economy. Secondly, the book design for Dongguan University for the Elderly can effectively enhance the level of social civilization. In order to meet the material needs of the elderly, society should pay more attention to their spiritual and psychological needs, enrich the good social atmosphere of the elderly, and enhance their sense of social belonging. There is a must to promote the development of a learning society where all citizens in Dongguan read books, set an example for the elderly to drive lifelong learning among young people, and assist in the construction of a learning society in Dongguan and enhance the level of civilization in the city.

3. PRINCIPLES FOR BOOK DESIGN THAT MEET THE PHYSICAL AND MENTAL LEARNING NEEDS OF ELDERLY LEARNERS

3.1 Principle of Integrity

The most important principle to pay attention to in book design is integrity. Sugiura Yasuhira

proposed the "Five Senses" theory of book design, which considers book design from the dimensions of vision, touch, smell, hearing, and taste in all aspects. In fact, it is a consideration of the material sense of design. When elderly people browse books, it is necessary to design from a comprehensive perspective. For example, the researchers take into account the physical and mental characteristics of elderly people, such as decreased vision and reduced coordination of movements. This is reflected in the design of book binding, where the layout and font size of elderly books cannot be too small, which belongs to the visual considerations of the "five senses"; Reasonably design the paper and format of books, without being too heavy or too large or too small, which are not in line with the physiological habits of elderly reading. Book design is not just about surface fonts and layout, color and graphics design, but also a humanized and three-dimensional design. Overall consideration and design are required.

3.2 Principle of Readability

Readability is the most important aspect of human centered design. Regardless of the age group, readability is also a core principle in book design. Especially for the elderly special group, their vision, comprehension ability, and acceptance ability have all declined. So the size and layout design of text directly affect whether the elderly can read normally. In the design of fonts and graphics, it is necessary to reduce some complex and low recognition font designs to avoid adding unnecessary trouble and difficulties to the reading process of the elderly. Appropriate key annotations, color differentiation, and reading guidance should be used to reduce reading barriers, and the overall layout design should also conform to the reading habits of the elderly.

3.3 Principle of Practicality

The principle of practicality is elaborated from two aspects. The first aspect is the practicality of the book content, and the second aspect is the practicality of the elderly's sense of use during the reading process. The elderly group pays too much attention to whether the content of the book is for their own use when purchasing books, and rarely buys books because of following the author, the novelty of the cover, or the collection value. Elderly students generally choose books that they are interested in or can meet their learning needs for reading. This means that book design should have a

deep understanding of the content of the book from the perspective of elderly readers, and then redesign it accordingly. Book design reflects practicality in terms of reading habits, reading time, and portability for elderly learners. For example, in the process of reading, the elderly often place their fingers on their lips and dip them in saliva before flipping pages due to the light and slippery paper of the books. This bad reading habit can cause illness to enter through the mouth and pose a threat to the health of elderly learners. In response to this pain point of reading, when selecting paper for elderly books, it is necessary to choose paper with slight patterns and textures to increase the friction between the pages, making it easier for elderly students to read.

3.4 Principle of Economy

The elderly student group has always remembered the traditional virtues of diligence, thrift, and frugality of the Chinese nation, so when purchasing books, they will not pay attention to flashy books. In the process of book binding design, there is a must to consider the principle of economy. Expensive paper and difficult binding formats need to be avoided when designing physical books. Starting from economic applicability, it is necessary to comprehensively consider and design for the learning needs of elderly students.

3.5 Principle of Portability

Elderly students at Dongguan University will carry books to and from school, but in order to avoid physical pressure and overwork, the weight and thickness of the books should be carefully designed and not exceed the range that the elderly students' limbs can bear. For example, for classic books that are too heavy, in terms of binding design, separate volumes can be used. When elderly students go to school, they can carry a lightweight separate volume without having to carry heavy books with them every day.

3.6 Principle of Subsidiarity

According to the visual needs and reading difficulties of elderly learners during the reading process, it is very important to add auxiliary materials in book design, which can make the reading process of the elderly easier and more enjoyable, and greatly help the physical and mental health development of elderly learners. For example, incorporating magnifying glasses,

markers, sticky notes, and portable night reading lights into books can enable students without reading glasses to read normally, and adding more user-friendly designs to books.

4. BOOK BINDING DESIGN FOR ELDERLY STUDENTS AT DONGGUAN UNIVERSITY

The books read by students at Dongguan University for the Elderly can be roughly divided into three categories: impromptu and interesting books, technical books, and professional books. Design based on the characteristics of these three types of books and the reading habits of elderly learners. The content and external form of books have corresponding characteristics, so the book design for elderly learners should start from five aspects, namely font and layout design, color and graphic design, format and paper design, binding form design, and the addition of auxiliary materials.

4.1 Type and Layout Design

The overall font design should be simple and elegant, in line with the readability principles mentioned earlier. The layout design improves recognition, the overall design is light and concise, and reduces reading barriers, as shown in "Figure 1". In the design of academic books, it is necessary to ensure academic rigor while arranging a large amount of text in a relaxed visual effect. The font size of adult books is generally between size 10 and 12, with a minimum size of no less than size 6; The font size of books for the elderly should be specified between the size 14 and size 16, and cannot be less than the size 10. People can choose a gentle, rounded, smooth, and simple font form for font selection. The design of the layout is extremely important, and the reading efficiency, reading time, and reading speed of elderly students have their own unique reading rhythm. Elderly people have slower eye movements and are not suitable for excessive layout design. They need to be accompanied by pictures and text to provide sufficient reading space for elderly students, reducing the fatigue experienced by elderly people when reading.



Figure 1 Layout case (Image from the Internet).

4.2 Color and Graphic Design

In terms of color selection and graphic design, it is important to note that the overall visual effect is bright and soft, which can alleviate the visual pressure on elderly students. Graphic design uses simple and interesting design forms to increase reading interest. The courses offered by Dongguan University for the Elderly are mostly interest based books, including photography, calligraphy, Chinese painting, singing, etc. So interest based books are the most popular type. For interest books, it is necessary to increase color saturation. Bright colors can affect the psychological state of elderly students, giving them an optimistic and positive psychological suggestion, indirectly increasing their reading interest and generating a sense of reading pleasure. On the basis of ensuring recognition, graphic design can lean towards youthfulness and retain design sense.

4.3 Format and Paper Design

The design of format and paper should be combined with convenience for reading as a whole. Paper with texture and lightweight should be chosen as much as possible, which can facilitate elderly students to browse and carry. Technical books can help elderly students learn skills they are interested in during their spare time, such as flower arrangement, wood carving, planting, etc. Technical books can adopt a horizontal format, which is easy to explain with text and images, reduces the difficulty of understanding, and selects paper with slight texture and yellowish color to facilitate browsing, alleviate visual fatigue, and reduce reading barriers.

4.4 Design of Binding Form

The selection of binding forms is mainly based on refinement and simplicity, adopting a sturdy and sturdy form, with practicality and economy running through the entire binding design process. The binding form of elderly books should also be designed based on the overall style of the book and the visual aesthetic needs of the elderly. For example, the use of simplified book packaging can bind heavy books into separate volumes, and elderly students can choose the corresponding book according to the course, reducing the burden of carrying.

4.5 Supplementary Materials

Based on the practicality principles of designing elderly books mentioned above, it is necessary to further understand the problems that need to be solved in the reading process of the elderly population. Designers can add auxiliary reading materials such as magnifying glasses, sticky notes, marker pens, memory cards, and night lights without affecting carrying, to help the elderly population read, making book design more user-friendly. ("Figure 2")

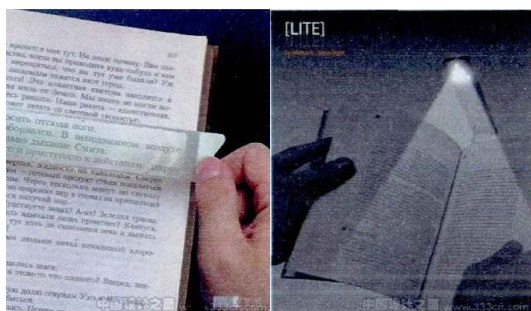


Figure 2 Supplementary material case (image from the internet).

5. CONCLUSION

The aging phenomenon in China is becoming increasingly severe, and with the continuous improvement of living standards in today's society, the spiritual and cultural needs of the elderly population are also increasing. As an important carrier for disseminating knowledge and culture, and meeting the learning needs of the elderly, book design for the elderly has become increasingly important. This design aims to create books that cater to the reading interests and hobbies of students at Dongguan University for the Elderly. The overall design is tailored to the unique physical

and mental characteristics of senior college students, focusing on the overall design of the book's font and layout, color and graphics, format and paper, binding form, and auxiliary reading materials, in order to reduce the reading obstacles encountered by elderly students during the reading process, meet the visual aesthetic needs of the elderly while optimizing the reading experience, and thus improve the quality of spiritual and cultural life of the elderly.

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REFERENCES

- [1] Long Shu, Older People to the Books Design Visual Demand Research [D]. Southwest Jiaotong University, 2012.5.
- [2] Chen Chaoyi, Analysis of the Characteristics of Learning Needs of the Elderly and Its Influencing Factors - Taking Guangzhou Elderly University as an Example [J]. Ji'nan University, 2017.4(10): 123-134.
- [3] Zhao Jian, The Beginning of Chinese Modern Book Design Paradigm (1862-1937) [D]. China Art Research Academy, 2010.
- [4] Gao Peng, A Study of Color Painting and Book Design of Visual Britain (1837-1890) [D]. Central Academy of Fine Arts, 2012.3.
- [5] Xu Haibo, The Application Research of The Design Psychology in Book Design [D]. Central Academy of Fine Arts, 2012.5.
- [6] Zhang Jing, Research on the Relationship between Learning Needs and Subjective Well-being of the Elderly - Taking Shijiazhuang City as an Example [D]. Hebei Normal University, 2017. 3.
- [7] Sun Xingmei, Urban Elderly Based on the Theory of Active Aging [D]. Jiangnan University, 2015, 6.
- [8] Gao Liwu, Research on the Development, Current Situation, and Countermeasures of the Elderly University in Beijing [D]. China Agricultural University, 2005.11.

- [9] Andrew Haslam, Book Design [M]. China Youth Press, 2007, 8.
- [10] Mark Hampshire, Paper Products and Graphic Design [M]. China Youth Press, 2009, 1.
- [11] Jiang Rubo, New Thoughts on the Form of Age-Friendly Books in the Context of an Aging Society [J]. Northeast Electric Power University Research, 2012,5.
- [12] Bradley C.& Marietta P. Assessing the educational needs of undereducated older adults: A case for service provider [J]. Educational Gerontology, 1983.9(3): 205-216.
- [13] Xu Haisheng, Chen Zhongyong, Research on the Characteristics of Learning Needs of the Elderly [J]. College of Education Science.
- [14] Liu Li, Zhou Yalu, Analysis on Teaching Mode of Old-age Education Course of Open University Community at New Age [J]. Journal of Jiangxi Open University, 2019.
- [15] Zong Mingming, Wang Yongzhi, Li Chen, Design of Welfare Services for China's Aging Society [J]. Beijing Institute of Technology, 2010.
- [16] Jiang Xiaohui, Research on the Development Stage of Modern Book Design [J]. Art and Design, 2018,9.