

# *Research on the Path of Bridging the Digital Divide in Education for Aging under the Concept of Active Aging*

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**Abstract:** Educational aging is a necessary path under the background of active aging, which is an essential strategy of population in China, and an indispensable key to harmonious social development. The aging of China's population is becoming more and more serious, so how to improve the happiness index of the aging population is an urgent problem to be solved in the current society. Based on the analysis of the basic situation of education pension in China and the current situation of the digital divide of the aging population, we propose that activating the aging industry with the cooperation of government and enterprises, constructing a digital pension ecosystem, promoting education pension by relying on diversified resources to reduce the digital divide. And the last optimizing measures is to meet the needs of rural education pension according to local conditions. Forming a schooling coverage network led by the government and effectively linked by social entities, and guaranteeing the aging population to enjoy digital dividends equally and promote the harmonious development of society.

## 1. Introduction

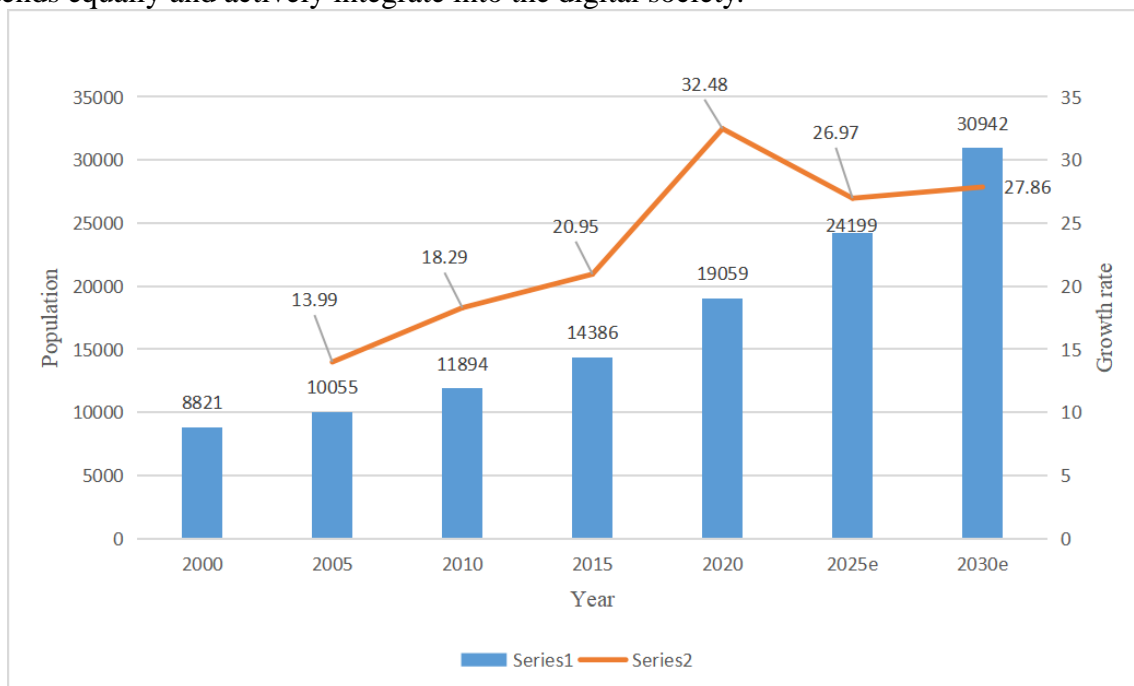
With the acceleration of modernization, the issue of population aging has become a global problem [1]. As early as 2018, the number of people over 65 years old exceeded the number of children under 5 years old globally for the first time, and the peak of the aging population may bring consequences such as labor shortage, capacity decline and economic downturn. While developed economies are overwhelmed with the problem of old age, emerging economies like China are facing a more severe situation due to the fact that people are old before they are rich. National census data of 2022 show that China has 209 million people over the age of 65, accounting for 14.9% of the population. As shown in Figure 1 below, the number of elderly people is increasing year by year, and may climb to 300 million in 2030. As we can see, China is experiencing a serious process of population aging.

Together with aging, the rapid development of digital information technology, digital and intelligent technology has changed people's lifestyles [2], but the "digital divide" in the aging population is also becoming more acute [3]. The digital divide refers to the gap between the information-rich and the information-poor, which is further exacerbated during the new epidemic. The elderly population often faces the dilemma of "difficulty in walking" due to the lack of

adaptability to electronic information devices and modern technologies, and becomes a passive digital disadvantaged group, making it difficult to integrate into the digital society. The digital divide is preventing the aging population from enjoying the digital dividend, constantly cutting them off from society and leaving them in information silos. Along with the accelerated digitalization process, narrowing the digital divide and reducing information asymmetry are inevitable for the balanced development of the population. The key to transforming the economic pressure brought by aging into a driving force for social development and bridging the digital divide of the aging population lies in education for aging under the concept of active aging.

The first time the term "active aging" was proposed was at the Denver Conference of Seven Western Countries in 1997, and its connotation is to improve the health, participation and security of the elderly as much as possible. The Government Work Report of 2019 mentions that "if we let the elderly have a happy old age, people will have a promising future", so to focus on the issue of aging is to focus on social stability and social confidence [4]. Education is an important element of active aging, which not only bridges the digital divide and improves the quality of life of the elderly, but also enhances social vitality.

Therefore, in the process of aging, it is urgent to consider how the government can link up with society to improve the quality of aging, bridge the "digital divide", and let the elderly enjoy digital dividends equally and actively integrate into the digital society.



Data Source: The 8th National Census in 2022

Figure 1: Number and growth rate of China's elderly population over 65 years old of 2000-2025

In the following paper, we firstly explain the digital divide of China's aging population and the current situation of education and retirement. The study then analyze the shortcomings of China's education and retirement construction under the "digital divide", and finally put forward corresponding suggestions.

## 2. The Digital Divide of China's Aging Population and the Current Situation of Education and Retirement

As the level of education is an important criterion for judging the quality of population, the

digital divide not only hinders the educational opportunities of the aging population and the improvement of population quality, but also causes them to be unable to enjoy the digital dividend equally and affects social stability. Therefore, through educational aging under the concept of positive aging, the digital divide can be bridged to a certain extent, eliminating digital exclusion of the elderly and contributing to the construction of a harmonious society. S. Ni also points out that the key to cope with the aging population is aging education. [5] In the following paper, we try to find the path to bridge the digital divide and the current situation of education and old-age care for the aging population in China.

## 2.1. The Current Situation of Digital Divide of the Aging Population

The digital divide originally refers to the difference in information caused by different countries, regions, industries and so on. In the global digitalization process, such as the difference in innovation ability and technology possession, thus forming a digital divide situation. In the process of population aging in China, the digital divide among the elderly comes from three major aspects: the access gap, the usage gap and the knowledge gap.

First, in terms of the access gap, according to the CNNIC report, in June 2022, the size of China's internet users was 1.051 billion, and the Internet penetration rate was 74.4%, while the number of internet users aged 60 and above was 119 million, and the penetration rate was 42.5%. This indicates that more than half of the country's elderly population has not yet accessed the internet and is in an internet island, which may be due to insufficient willingness to access or insufficient access conditions. Lee B indicated a negative relationship between age and Internet use. [6] Second, in terms of access, due to the rapid changes in information technology, the operation of smart mobile terminals has become more and more complex, such as face recognition, fingerprint unlocking, and verification codes, which exclude the elderly population from the digital society. For example, during the 2020 epidemic, the elderly were rejected by drivers due to the lack of health codes. Although some devices have built-in senior mode, most of them are simple functions such as enlarging fonts and handwriting input, which do not fully take into account the learning endowment and objective needs of the aging population. Finally, in terms of knowledge gaps, the elderly have asymmetrical access to information, and the information sources for this group are mainly newspapers, books, radio, etc. In the context of such a prosperous new media, the elderly are unable to update their knowledge reserve in time due to their low education level, which causes internet fraud and internet rumors to prevail among them. The phenomenon of digital divide among the aging population affects the level of social governance in China and is not conducive to deepening reforms [7].

## 2.2. The Current Situation of Education and Pension for the Elderly Population

The National Aging Development Bulletin of 2021 released by China in 2022 shows that education for the elderly in China is steadily advancing. As of 2021, there are 28 provincial-level community education guidance centers, 280 experimental demonstration zones for education at local and municipal levels, and 1,457 county-level community education colleges. Senior education learning points are on the ground in 26,689 communities.

The current curriculum of senior education mainly covers photography, dance, instrumental music, culture and art, cooking, etc. The types of courses offered are related to the degree of local economic development and audience groups. China's education elderly education model is still in the exploratory stage, and the current schooling model is roughly divided into community elderly education, university alliance elderly education, distance elderly education, and private elderly education institutions, whose characteristics and limitations are shown in Table 1 below.

Table 1: China's education senior education model

School Mode	Characteristics	Limitation	Cases
Community-based senior education	Relying on communities to run educational activities for the aging population, high penetration rate at the grassroots level, efficient and convenient	Limited coverage, insufficient variety of courses	Community-based senior university in Jilin Province
University-allied senior education Government-led	relying on existing universities and colleges and other university resources to run senior universities, with strong professionalism and low fees	Strong geographic location and insufficient coverage	Nanjing University Senior Education
Distance senior education	Based on Internet and radio and TV, low cost of operation, rich curriculum	Weak sense of experience and socialization, not very interactive	"Golden Academy" and "Silver Age Academy"
Private senior education institutions	Mostly appear in first and second-tier cities, founded by private basic, richer forms	Higher fees, limited scale	Huaxia Senior University

### 3. The Shortcomings of China's Educational Pension Construction under the Digital Divide

The digital divide problem is the existing shortcomings of aging in China, which is still the problem of old age support and old age use in the final analysis. As a key element of positive aging, education can establish a long-term mechanism to bridge the digital divide, but China's education aging model has not been developed for a long time, and there are still some immature areas, which are manifested in the following aspects.

#### 3.1. Insufficient Supply of Education Pension Services

According to public data, by the end of 2022, there were more than 80,000 schools for the elderly in China, with more than 14 million registered students, which is only 5% of the overall aging population, and at present, the main body of education for the elderly mainly relies on the government to take the lead, relying on financial allocations to build educational institutions for the elderly "a drop in the bucket". And due to the sudden increase of the aging population, this model is unsustainable. However, the aging population is highly motivated to educate the elderly due to socialization and self-actualization needs, and there is a large supply and demand gap. Since education for the elderly is a new industry with high investment and long return cycle, it leads to relatively few private universities for the elderly, which intensifies the phenomenon of insufficient supply.

#### 3.2. Uneven Regional Development

China has a large population base and a high proportion of elderly people, but the proportion of those who enjoy senior education services is very low, especially those in remote areas. Since most of the senior schooling is subsidized by the government, it is influenced by the local economy, and the state of senior college operation in coastal and eastern regions of China is more optimistic, among which East China is the best, with more than 5.8 million senior students as of March 2022, accounting for more than half of the total. And some less developed regions have a shortage of resources for elderly education, and in some areas even the nine-year compulsory teaching service is still not popular. Therefore, there is a strong regional nature of China's elderly resources.

### **3.3. The Curriculum has Structural Shortcomings**

Because of the short cycle of education for the elderly implementation, the problems such as lack of professionals and asymmetric demand for the opening of courses are more prominent. At present, many educational senior care service institutions, in the process of curriculum construction, mostly focus on art, vocal music and dance-based leisure and entertainment, and lack access to information technology, such as financial management, travel and medical care, which causes the elderly to still have difficulty adapting to digital life and hinders them from actively integrating into the digital society. The values of elderly education are more practical [8], but few educational elderly institutions are currently able to build their curriculum from the need to bridge the digital divide, forming a structural shortcoming. In addition, the faculty is not mature enough, the formation of teachers is weak, and some teachers even have a digital divide themselves, thus making it difficult to better communicate digital concepts. Therefore, to promote the promotion of China's positive aging process, education for the elderly and crossing the digital divide is imperative.

### **3.4. Serious Digital Divide among Rural Elderly**

CNNIC data show that as of June 2022, the national rural Internet penetration rate of 58.8%, broadband users accounted for only 29.9%, and the gap with the cities and towns is still large. The rural elderly population is not only a solid force in building China's new countryside, but also an inheritor of traditional culture. With the young population moving to the city, the rural population structure is fractured, with the majority of left-behind children and empty-nest elderly, especially in areas with backward regional economy. The digital divide is widening among them, and these elderly people are at a loss in medical care and travel, and eventually have to stay in "isolation". However, rural elderly people also have needs at the spiritual and cultural level, and they are eager to connect with the digital age, but the lack of media education, digital anxiety, and insufficient "age-appropriateness" of products have hindered the bridging of the digital divide, which is related to the revitalization of the countryside and the realization of the goal of common prosperity.

## **4. Optimization Strategies for Bridging the Digital Divide in China's Education for the Elderly**

The problem of aging not only lies in nurturing "mouth and body", but also in nurturing "body and mind". The aging population has accumulated rich knowledge reserves, which are valuable assets for building society. The key to transform aging into a positive driving force for social development lies in bridging the digital divide that exists in the elderly population through education for the elderly, so that the elderly can first effectively integrate into society and then realize their self-worth, and also pave the way for employment at an older age to alleviate the huge economic and structural pressure that aging brings to society. This paper elaborates on education for aging to bridge the digital divide from the perspectives of supply and demand balance and digitalization.

### **4.1. Cooperation between Government and Enterprises to Activate the Aging Industry**

Considering the special role of education for the elderly in enhancing social confidence and social stability, the government should spare no efforts to continuously promote the development of education for the elderly population. The government can include education for the aging population into the general public budget according to the standard of fixed investment per capita to guarantee their right to continue education. Facing the increasing aging population in China, it is

difficult to meet the demand of the social side by relying solely on the government's financial strength, and excellent social capital must be introduced into it. However, education for the elderly is a new industry with high risk, large initial investment and slow return, which is difficult to stimulate the confidence of the capital market. Therefore, in addition to good top-level design, the government needs to plan the education and pension system in collaboration with enterprises and release positive signals: encouraging high-quality social capital to enter the education and pension field by means of tax incentives, government subsidies, and inclined policies, and fully initiating the dynamics of enterprises to achieve the leap from single government supply to joint coverage by government and enterprises. In addition, teachers and volunteers can also be encouraged to provide information technology support services in private education and pension institutions, and multiple measures can be taken to enrich the prosperity of education and pension institutions in China.

#### **4.2. Constructing Digital Pension Ecosystem**

Facing the dilemma of unbalanced supply and uneven regional development of education for the elderly, we should make use of the "Internet+" concept to integrate cloud classes and new media into senior education, so that the elderly population can enjoy digital dividends equally. Rely on digital technology, make good use of the "Internet+", develop a smart platform, and promote the process of education for the elderly. Break the barriers of traditional education for the elderly, break through the restrictions of time and space, make education for the elderly popular to different levels of the elderly population, and strive to reduce the digital divide. For example, "Weifang University for the Aged" relies on online APP to hold classes nationwide, with more than 140,000 online students and excellent radiation effect. It can not only improve the utilization rate of offline classes, but also effectively alleviate the shortage of supply for the region.

#### **4.3. Relying on Diversified Resources to Promote Education Pension and Reduce the Digital Divide**

Rely on the existing online teaching resources of colleges and universities to open senior citizen universities. Especially vocational colleges and universities, relying on their professional advantages, open online courses such as cooking, art and music to promote the diversified development of education for the elderly. In the process of preparing teaching materials and curriculum, starting from user needs, under the premise of full research, the curriculum will be set according to local characteristics, focusing on practicality and ease of learning to stimulate the desire of the aging population to learn. In terms of learning terminals, we can start from community senior activity centers and commercial nursing home institutions, so that education resources can be effectively sunk. The curriculum should be transformed from "supply" to "demand" oriented, and integrate the digital trend to provide digital courses and knowledge and skills courses, such as the use of terminal devices, daily shopping and search engine use.

In response to the shortage of talents, government departments should improve the treatment and recognition of relevant practitioners, build a pool of master teachers, conduct teacher training, and strengthen the teaching force. In addition, encourage self-edited teaching materials to fully integrate local characteristics and reveal the local nature.

#### **4.4. Tailor-made to Meet the Needs of Rural Education for the Elderly**

The village collective will make reasonable planning and renovation of the elderly activity center and vacant public rooms, and build them into "education and retirement homes", with daily operating costs shared by the children of the elderly and the local government. The courses mainly

include the use of intelligent electronic devices, travel ticketing, online shopping and other aspects, so that the "old people have use", and the teachers are mainly composed of local volunteers, such as students returning home during the holidays, retired teachers with a high level of education. Appropriately encourage rural elderly to support each other in their old age and strengthen and improve family support [9]. In addition, the government should pay more attention to the construction of rural network infrastructure.

## 5. Conclusion

The digital divide is inevitable with the development of technology, and crossing the digital divide is the progress of human society. Building digital bridges for the aging population and guaranteeing the aging population to enjoy digital dividends equally is the necessary way for the development of a harmonious society. Under the concept of positive aging, building a perfect education and pension system to promote the bridging of the digital divide is of great significance to promote the integrity of individual life and the harmonious development of society. In this period, In this period, it is necessary for the government to take the lead and social entities to effectively link up, form a four-level schooling coverage network at city, county, town and township levels, and reach a new pattern of education for the elderly. Enhancing the digital skills of the nation's aging population, and thus improve their spiritual retirement, improve the multi-level social security system, and promote the harmonious development of society.

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