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RESEARCH ARTICLE

DEVELOPING ONLINE LEARNING COMMUNITIES FOR OLDER ADULTS: A CASE STUDY

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ABSTRACT

This study investigated the status of digital empowerment for elderly education in Online Learning communities of Guangdong University for the Elderly. Through data collection from the communities, it analyzed the pain points and challenges of digital empowerment for elderly education. The study placed the learning needs of the elderly at the forefront and conducts extensive interviews with the elderly to identify their requirements for digital empowerment in elderly education. It also revealed the shortcomings and issues that exist in the digital empowerment of elderly education in Guangdong and provide recommendations for improving Online Learning communities of Guangdong University for the Elderly to enhance its digital empowerment for elderly education.

INTRODUCTION

In the 21st century, the process of aging in China has accelerated. It is expected that the proportion of aging population will exceed 30% in 2035. Entering severe aging will bring a series of socioeconomic problems. Effectivity should be of great significance to the overall population in China, the overall situation of the country, the well-being of the people, the harmony and stability of the society, and the socialist modern country. At the same time, a new round of scientific and technological revolution and industrial change has developed in-depth, and digital technology has become more and more driving the leading force of human social thinking, organizational structure and operating models, and comprehensive reinvention. Plastic forms and promoting development have provided new major opportunities and also brought new challenges.

Background of the study: "What is the elderly education and where should the elderly education go" has become a proposition for the common thinking of countries around the world. The digital empowerment of elderly education not only enables the results of digital education to benefit the people of all countries, but also promotes the high-quality development of digital education and the comprehensive development of people and advances social civilization. Important measures are also an inevitable requirement to meet the diverse learning needs of the elderly, improve the quality of life of the elderly, and promote social harmony. Therefore, the task of developing digital technology and the integration of elderly education is becoming increasingly urgent.

The educational system for serving life-long learning of the whole people is an important measure for providing solid talents and intellectual support for the high-quality development of the economy and society. In this context, Guangdong Open University adheres to the in-depth implementation of the party and the country to actively respond to the aging strategy of the population, promotes the digitalization of the elderly education around high quality, actively conforms to the new trend of digital transformation, and firmly grasps the national education digital strategy new opportunities for action based on physical construction such as Guangdong University for the Elderly, Guangdong Lifetime Education Credit Bank, build a strong Guangdong Center of National Digital Resource Center, Guangdong Lifetime Education Digital Resource Library, and Guangdong Lifetime Learning Network. Meeting the needs of the people's diversification and personalized learning and using the advantages of the integration of universities, vocational education, and elderly university lead to the use of information technology to fully integrate various high-quality resources at all levels of "government, university, industry association, enterprise, society", and is committed to organizing high-quality elderly education, and building an online school of Guangdong University for the Elderly. The elderly education needs of the elderly at home and abroad have created the "Guangdong Elderly Education Aircraft Carrier," which provides a promotion and demonstration of Guangdong plan for promoting the high-quality development of elderly education.

Statement of the problem

This study sought to answer this important question: Based on the current design of the online learning communities of Guangdong

University for the Elderly, what are the difficulties of the elderly learners in using it?. To answer this research question, the researchers collected relevant data from in-depth interviews with elderly learners, and the findings were used as the basis for this study to understand the design options, implementation difficulties, and use of the online learning communities of Guangdong University for the Elderly, and to further understand the impact of the online learning communities of Guangdong University for the Elderly on elderly learners.

Significance of the study

This study is most significant to elderly learners. A sthepopulation ages, more people over the age of 65 will continue their careers beyond retirement age. The future mission of geriatric education is not only to prepare older adults to acquire work-related knowledge and skills, but also to enhance their quality of life through continued intellectual growth. Ultimately, for elderly learners, this process of self-enrichment will lead to a deeper understanding and appreciation of life.

Scope and delimitatio: Thisstudy focused on older adults in the online communities of Guangdong University for the Elderly. They were sampled randomly and subjected to in-depth one-on-one interviews for the data collection. As such, there is a specific demographic for the population of the study, and the respondents may or may not be representative of the larger whole of the elderly population. That is one major limitation of this study, as is time constraints.

METHODOLOGY

Research locale: The study explored the issue of how digitalization empowers elderly education, and it covered seniors at the online communities of Guangdong University for the Elderly.

Sampling and sampling technique: The target population of this study was older adults in the online communities of Guangdong University for the Elderly. Elderly learners with positive and excellent online learning performance and elderly learners with low attendance were selected for in-depth interviews. In essence, respondents were chosen randomly with the overriding being as follows: must be part of the online communities of Guangdong University for the Elderly.

Data gathering procedure: The qualitative research approach was appropriated for this study to explore the issue of the digital empowerment of education for older adults. Chen & Xiangming. (2006) explains that qualitative research uses the researcher themselves as a research tool to conduct an in-depth and holistic inquiry into the study phenomenon in a natural setting using a variety of data collection methods, form conclusions and theories from primary sources, and gain an interpretive understanding of the respondents' behavior. In the study, in particular, the researchers used a case study design to discuss the digital empowerment of education for older adults. Firstly, the researchers identified the phenomenon about the digital empowerment of education for older adults, focusing on the three questions of the study. They then used a case study from the online learning community of Guangdong University for the Elderly as an example.

Secondly, they conducted literature review and reflected on their self-experience through a review of domestic and international studies related to the digital empowerment of education for older adults. Thirdly came the selection of research subjects, where the researchers selected elderly learners as respondents. Fourth, the researchers xplored research relationships and focused on the digital empowerment of education for older adults. Fifth, the researchers conducted in-depth interviews and inputted the learning needs of older adult in the first place. Sixth, the researchers compiled the interview transcripts before analyzing them one by one to construct theories and formulate conclusions.

Statistical analysis: In this study, interviews, documents, and artifacts were examined to understand how digitization empowers elderly education as described in Empowerment Theory. Content analysis would be used to examine the data collected to facilitate the identification of themes. Content analysis was a research tool used to determined if certain words, themes, or concepts were presented in certain specific qualitative data (i.e., text). Using content analysis, researchers could quantified and analyzed the presence, meaning, and relationship of these particular words, themes, or concepts (Columbia Public Health, 2022). Patterns emerged throughout the process. Thus, digital, empowerment, elderly education, online learning communities, and older adults, were identified as the initial groups. After a thorough examination of these categories, the researcher analyzed how they align with the themes set by Empowerment Theory. The processing of the data collected during the qualitative phase included the audio recording of the participants' responses while the researchertook notes of the interviews for later data analysis and research discussions. Creswell and Clark (2007) suggested the following steps for data analysis in a mixed methods research design, which would be the procedure for the qualitative phase of the study. The following table lists the general procedures for data analysis.

General Procedure In Data Analysis	Qualitative Phase
1. Preparing the data for analysis	1. Transcribing interview data in verbatim
2. Exploring the data	2. Coding data according to evident information as regards the intents of the study.

RESULTS

Identification of pain points and challenges in digital empowerment of older adults: China's senior education business started late and has a weak foundation, so it is relatively backward in the digitalization of senior education management. At present, Chinese senior universities are still in the preliminary exploration and application stage in digital business management, and there are phenomena such as the management communities function is not perfect and management efficiency is not high. The management functions of the information business communities developed by Guangdong University for the Elderly are too simple to realize the whole process management of enrollment, registration management, teaching records, graduation and completion, refund of fees, and class adjustment due to poor business connection between the school and banks. Especially in the face of elderly learners enrolling themselves without the assistance of their children, even in the face of the digitalization of education management in Guangdong University for the Elderly, elderly learners still follow the traditional information reporting system to manage the education status, learning process, registration information, and course resources of elderly learners, and some content even rely on manual completion, resulting in inefficient management and insufficient staff. In recent years, many institutions around the world have relied on ordinary colleges and universities, open university systems, and communities to open senior citizen universities. In turn, the scale of students has increased significantly, and senior citizen universities are facing more complex challenges in registration and payment, student management, class scheduling, certificate management, and registration management. Their management difficulty and complexity have increased significantly as well. In light of this new situation, there is an urgent need to cultivate the mutual integration of senior learners and digital management of senior education, to achieve efficient management of the whole process, and to improve the digital ability of senior learners to participate in education management. For example: How to use WeChat to browse relevant senior college enrollment notices, how to bundle WeChat payment with bank cards and coin purses, how to use WeChat to sweep code to enroll and realize independent and secure tuition payment for senior learners, and more.

Elderly learners' digital literacy skills are not high: Due to the rapid changes in information technology and the influence of age and hardware equipment, some elderly learners are not skilled in the operation of cell phones, network and learning software, and often cannot search for the required learning resources or have incomplete results, and the foundation of information technology application is weak. Especially the online learning communities and online learning as a new thing is more of a physical and psychological transformation for the elderly. Due to the lack of systematic learning training and their own cognitive level, teacher-student interaction and restricted network environment, Elderly learners are not willing and motivated to learn online. It is easy to see that the uneven digital literacy of senior learners directly hinders the effectiveness of digitally empowered senior education, and how to improve the digital literacy of senior learners is the key to the effectiveness of digitally empowered senior education.

The design of online learning communities for senior citizen education does not take into account the characteristics of senior citizen groups: Guangdong University for the Elderly Citizens initially built an online learning community for our senior learners, which has to a certain extent alleviated the problem of insufficient online learning resources for senior education. However, from the perspective of senior learners, this study found that there are no clear navigation and learning guidelines about the online learning communities, relatively small fonts and dull fonts, scattered learning resources, lacking unified classification standards and learning knowledge, no online service system set up, and undeveloped online teaching and offline teaching. Mixed teaching functions of online and offline teaching have yet been realized, and the current system has failed to give full play to the effectiveness of digital empowerment of senior education, resulting in poor user experience. This not only restricts the advantages of online resources for senior education across time and space, but also hinders the sharing of online learning resources among senior education institutions.

The traditional face-to-face teaching mode is difficult to adapt to the needs of teaching in the post-new era of senior education: In recent years, universities at home and abroad have been exploring diversified teaching modes such as micro-classes and webcasts, and various new concepts and teaching methods have sprung up and achieved remarkable results. However, for senior education, the teaching is still mainly face-to-face teaching mode, supplemented by online teaching. Through interviews, the researchers found that most elderly learners prefer offline face-to-face classes due to their lack of familiarity with smart terminal devices and traditional teaching concepts. However, the new coronary pneumonia epidemic and the new era of senior education have posed great challenges to the traditional face-to-face teaching mode. In response to the need for reform and innovation in the new era of senior education and the development of the new situation, Guangdong University for the Elderly has initially carried out online teaching attempts such as cloud classroom and webcast, and has achieved certain results. In the post-epidemic era, it is necessary to further explore diversified online teaching modes by combining information technology means to meet the needs of elderly education teaching in the new situation.

Analysis of learning needs and preferences of older adults

Elderly learners hope to have a ubiquitous learning environment where "everyone can learn, everywhere can learn, and all the time can learn: Elderly learners want to be able to select courses and pay for them through their cellphones without leaving home; to be able to handle online refunds and class adjustments remotely if there is a class enrollment error or insufficient enrollment; to receive various important notifications from the school in a timely manner; and to download and print course completion certificates after completing the courses. In order to complete or achieve the above operations independently, elderly learners want to continuously improve their digital literacy level and participate in digital literacy training and upgrading classes, including the operation and use of new devices such as computers, smartphones, and iPads, and teachers can guide

learners to use learning software, webcasts, and other information exchange tools. Elderly learners want to combine their personal learning needs and interests. They hope to combine their personal learning needs and interests, choose appropriate terminal devices to enhance independent learning, and gradually master the application skills of relevant learning software.

Elderly learners hope to optimize the online learning communities of Guangdong University for the Aged and provide personalized learning resources: Through the analysis of the interview data, the elderly learners suggest that the online learning communities of Guangdong University for the Elderly has not set clear navigation and learning guidelines about the online learning communities; the font is relatively small and the font color is dull; the learning resources are scattered and lack unified classification standards; the learning knowledge has not yet formed a system; the online service system has not been set such that the elderly learners can contact the online service staff for help when they encounter difficulties; and the online teaching system has not been developed and realized. The online service system has not been set up so that senior learners can contact the online service staff for help when they encounter difficulties; it has not yet developed and realized the functions of mixed teaching between online and offline teaching; it has not given full play to the effectiveness of digital empowerment of senior education, resulting in poor user experience; the online staff tailor-made personalized "menu" learning services according to the characteristics and needs of senior learners. In addition, senior learners receive education mainly to meet their hobbies and health knowledge needs, but rarely to obtain academic qualifications; in terms of learning content, personalized needs are obvious, with the most popular being arts and entertainment courses, such as dancing and singing; followed by healthcare courses, such as healthcare and tai chi; and information technology courses, such as mobile photography.

Elderly learners want to get diversified teaching modes: Senior learners are willing to accept online teaching mode. In terms of teaching modes, senior learners want to be able to choose senior education teaching modes according to their personal time and preference, such as pure online, traditional offline, online/offline hybrid, and other teaching modes. At the same time, older people want to learn the use and operation of new media tools such as pegging, WeChat, and Jitterbug. In order to meet the demand of some elderly learners to be able to provide senior education online for other elderly learners after learning to acquire a certain skill, and also a kind of senior university to train a new generation of senior educators.

Recommendations for designing effective online learning communities for older adults

Digitally empowering senior education and improving the digital literacy level of senior learners: In order to improve the efficiency of information management in senior education and overcome various drawbacks caused by traditional manual offline management and services, Guangdong University for the Elderly launched systematic training on the use of WeChat for senior learners in 2019 and started the "WeChat-based teaching management communities for senior university." The construction project was successfully put into use in the autumn semester of 2019. The WeChat public number has realized a series of functions such as online registration, course selection, and online payment for students, as well as information release, tuition discount management, student information management, fee statistics, class management, course scheduling, classroom management, and completion certificate generation for the management side. After the WeChat public number is put into use, senior learners can conveniently select courses and pay for them through their cell phones without leaving home; using the information push function of WeChat public number, senior learners can receive various important notifications from the school in time, download and print the course completion certificate after completing the course. WeChat public number management communities functions, added alumni learner registration screening management, teaching resource management, teacher resource management, and various report statistics functions,

these functions greatly facilitate senior learners while effectively improving the management efficiency of the university. The digital era is developing rapidly and the learning terminals are becoming more and more diversified, including not only traditional media such as books, newspapers, radio and TV, but also new devices such as computers, smartphones, and iPads. Faced with the "new and unfamiliar" products of the digital era, the senior learners of Guangdong University for the Elderly have to keep pace with the times and improve their digital literacy. The university has carried out targeted digital literacy education for senior learners, while senior learners have carried out timely information-based teaching training in the daily teaching process, guiding learners to use learning software, webcasts, and other information exchange tools.

Optimize the Guangdong online learning communities: Optimize the online learning communities in Guangdong and create "suitable, suitable and integrated" online learning resources for senior education. The most popular courses are arts and entertainment courses, such as dancing and singing, followed by healthcare courses, such as healthcare and tai chi, and information technology courses, such as cellphone photography. In response to these needs, Guangdong University for the Elderly established a portal and focused on building online learning communities for senior education in 2019. Relying on the library of Guangdong Open University, we introduced various micro courses, videos, audios and e-books resources, covering such subject areas as philosophy, literature, law, agriculture, medicine, education, and management, which provide valuable network resources for online independent learning of Guangdong University of Senior Citizens. During the prevention and control period of the new epidemic, Guangdong University of Senior Citizens stopped classes and learning and actively played advantages of online learning resources, relying on the website and the WeChat public number to provide more than 300 vivid and practical courses in six categories, including music, instrumental music, sports, dance and body, art and calligraphy, humanities and cultivation, for the public to learn at home.

The learning resources of the online learning communities of Guangdong University for the Elderly are open to the public free of charge, which effectively extends the coverage of high-quality senior learning resources and provides a way for the elderly in rural and remote areas to learn without the limitation of time and space, fully reflecting the mission of Guangdong University for the Aged of "increasing knowledge, enriching life, cultivating sentiment, improving quality, promoting health and serving the society." This initiative has been widely praised by all walks of life. This initiative has been widely praised by all walks of life and has attracted the attention and reports of media such as "South+" clients. But there is a need to optimize the portal of Guangdong University for the Elderly to create a "suitable, suitable and integrated" online learning resource communities for elderly education.

Promote the integration of online and offline teaching and develop diversified online teaching modes: Due to the influence of the epidemic and the deepening understanding of information technology, teachers and students gradually realize the necessity of online teaching. Through interviews, we know that more and more senior students are willing to accept online teaching mode. Guangdong University for the Elderly has increased its investment in senior citizen education, purchased live online teaching equipment, and renovated multimedia classrooms, which now provide good hardware facilities for online teaching. At the same time, the "14th Five-Year Plan" education strengthening project "Guangdong Open University's Smart Aging Talent Training Industry-Education Integration Training Base" project was set up in 2022, with an investment of 112 million yuan. It is scheduled to be completed and put into use in 2025. In the teaching mode, according to the digital reform and innovation of senior education in the new era and the development of the situation, the university has flexibly carried out the practical exploration of various teaching modes such as pure online and online/offline hybrid. Among them, in 2020, the result "Exploration and Practice of 'Mixed Diversity, Learning, and Raising' Senior Education Model" won the

first prize of Provincial Education Teaching Achievement Award. In the same year, the result "Exploration and Practice of the Elderly Education Model of 'Mixing Diversity, Learning, and Raising'" was selected as a national excellent case of continuing education. Also in 2022, the result "Innovative Practice of the Elderly Education Model of 'Mixing Diversity, Learning and Raising'" was selected as a UNESCO excellent case. In 2022, the innovative practice of "mixed and diversified learning and raising combined with wisdom to help the elderly" was selected as a UNESCO excellent case. Especially during the period when face-to-face teaching was not appropriate due to the severe epidemic, Guangdong University of the Elderly chose courses that were easy for students to accept for purely online teaching, and teachers taught online through communities such as Nail, Tencent Classroom, and Shake, while answering questions through WeChat class groups to meet the learning needs of students as much as possible. When the epidemic subsided, in response to the learning needs of some returning students and some home-bound students, Guangdong University of the Elderly flexibly adopted the dual teaching mode of offline face-to-face instruction and online live broadcast. At the same time, the teachers simultaneously output the lecture contents through the live broadcast software while conducting offline face-to-face instruction. The combination of offline face-to-face teaching and online live streaming, which has the intimacy of traditional classroom teaching and makes full use of the advantages of live streaming on the online communities, effectively solves the teaching problems of the university during the epidemic prevention and control period, and meets the learning needs of returning students and home-based students, which is widely praised by teachers and students.

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