A Preliminary Study of the Aggregation of Micro-Course Learning Resources for Senior Citizens in Grassroots Communities: From the Perspective of Learning Sciences

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Abstract

In order to effectively cope with the national strategy of population ageing, the relevant plans of the State Council in the 14th Five-Year Plan require the innovative development of education for the elderly, the integration of learning resources, and the narrowing of the "digital divide" between urban and rural areas. The capacity of grass-roots community resource construction is insufficient. Therefore, we should consider how to achieve high-quality convergence of learning resources for the elderly, so as to effectively revitalize the application ecology of learning resources in grass-roots communities, from the perspective of maximizing utilization, avoiding duplicate construction, and integrating optimization and intensive cost. This paper will analyze the current state of micro-course learning materials for the elderly in grassroots communities, as well as the issues that they face. Based on learning scientific theories, this paper believes that the aggregation of micro-course learning resources for the elderly in grassroots communities should be scientifically and effectively realized. Furthermore, when gathering, we should focus on the elderly in the community and accurately locate their characteristics; propose simplified practical standards for high-quality micro-courses to serve as a guide for the gathering of micro-courses in grass-roots communities; use introduction, transformation, self-build and exchange methods to achieve multi-source aggregation of micro-courses for the elderly. Moreover, we should investigate the practical path of the entire process of aggregation and implementation of micro-course resources for the elderly in grass-roots communities, systematize the management of micro-course resources, build a multi-dimensional resource service system, and form a digital learning community for the elderly from the standpoint of learning scientific theory. Empirical procedures that are repeatable and scalable.

Key words: Grassroots; Community elderly education; Micro-course; Resource aggregation

1. THE SIGNIFICANCE OF THE COLLECTION OF MICRO-COURSE LEARNING RESOURCES FOR THE ELDERLY IN LOCAL COMMUNITIES

Due to the rapid advancement of science and technology in contemporary civilization, human knowledge is expanding by magnitudes. The level of self-development is proportional to the degree of active aging. Continual learning can boost the social contacts and sense of accomplishment of the elderly, and the level of self-development is proportionate to the level of active aging. (Jia, et al, 2016). In China, there are around 264 million people aged 60 and older and 190 million people aged 65 and older (National Bureau of Statistics, 2021). Actively responding to the aging of the population has become a national priority. The 14th Five-Year Plan, which is implemented by relevant state departments and local

governments, calls for a vigorous expansion of education for the elderly. Currently, the supply of county-level universities for the elderly is insufficient, and the elderly in grassroots communities are at a learning disadvantage. The "Elderly Education Development Plan (2016-2020)" intends to increase the availability of learning resources for the senior and develop digital resources suitable for elderly remote learning (General Office of the State Council, 2016). That is to be oriented on the needs of the local community, pay emphasis to the development of urban and rural and rural community education for the elderly, integrate and construct learning resources, and promote distant education for the elderly (State council, 2017), share older educational resources, courses, and instructors (General Office of the State Council, 2019), maximize the role of community education and school-based networks, provide home-based education for the elderly (State council, 2021, No.35), and continue to close the "digital divide" between urban and rural areas (State council, 2021, No. 25).

In the era of "Internet ＋," micro-course have the qualities of salient subjects and brief and concise (Hu, 2011), consistent with the notion of ubiquitous learning, which are readily accepted by the elderly of various age groups, cultural levels, and community needs. Micro-courses can alleviate the existing problem of colleges being difficult to find for the elderly and ensuring that the rights and interests of the elderly in the community about learning are more equitable and unrestricted. There is a considerable demand for micro-course learning resources for the elderly, as well as promising future prospects. Creating high-quality micro-courses is not a simple undertaking. It demands the collaboration of technical staff, front-line educators, and expert teams to develop together. It is vital to integrate all resources through negotiation, discussion, and the sharing of experiences. It is difficult for the grassroots to make a proper micro-course construction system, which cannot meet the needs of the elderly in the community for high-quality learning resources, given the existing funding limits and teacher shortage. The application value of the Internet's great micro-courses from various levels and areas has not been investigated. In this scenario, based on local conditions, gathering and aggregating diverse micro-course resources can not only maximize its usage, prevent duplication of construction, integrate and optimize, and increase expenses. Realizing the high-quality aggregation of micro-course learning resources for the elderly in grassroots communities can rejuvenate the application ecology of learning resources in grassroots communities, which is of immense practical importance.

2. THE IMPLICATIONS OF LEARNING SCIENTIFIC THEORY AND ITS ILLUMINATION ON RESOURCE ACCUMULATION

2.1 The Primary Implications of Learning Scientific Theory

Mayer's science of learning theory holds that learning is a change in knowledge, and that this change is caused by the learner's experience. Mayer highlights three fundamental concepts applicable to any successful learning theory, based on the functioning mechanism of the human information processing system: dual channels principle, limited capacity principle, and active processing principle (Mayer, 2010). The essence of learning activities is that aural and visual information enters the dual pathways. After selection and organizing based on the limited capacity of the working memory, it interacts with the previous experience in the long-term memory to generate new information. The knowledge supplied and the learner's prior experience accessible for assimilation determine the learning results.

2.1.1 Dual Channels Principle

Auditory and visual information processing routes are distinct in humans. Humans process and process incoming information using the voice coding system and the graphic coding system (Paivio, 1991). A 4-year longitudinal study demonstrated that the usage of smart devices such as mobile phones can mitigate the cognitive deterioration of the elderly (Jin, Jing, & Ma, 2019), and increase their cognitive processing speed and contextual memory ability to varied degrees (Chan, Haber, et al, 2016). The reason for this is that, according to the dual coding theory, the smart device's learning resources simultaneously provide information from both channels, which can effectively improve cognitive understanding and achieve greater cognitive impacts.

2.1.2 Limited Capacity Principle

Miller confirmed that people can remember around 7 ± 2 blocks of information simultaneously, which is the information processing capacity limit (Miller, 1956). Sweller defines cognitive load as the limiting amount of information stored and processed by working memory (Sweller, 1988). This constraint is where the human information processing system's bottleneck sits. Sweller believes that there are three sources of cognitive load: the unrelated cognitive load results from unrelated cognitive processing, which is caused by irrational teaching design; the basic cognitive load results from basic cognitive processing, which is dependent on the complexity of the learning material and the learner's ability to construct the learning task; and the generated cognitive load results

from generative cognitive processing, which is dependent on the learner's learning motivation (Sweller, 2008).

2.1.3 Active Processing Principle

Learning is an active processing procedure that selects, organizes, and combines these three fundamental cognitive abilities (Wittrock, 1989). After external information is received, actively perceived, and understood by an individual, true learning occurs. Wittrock believes that the rational organization and arrangement of information for the presentation of learning materials can effectively promote the connection with the learner's existing knowledge, thereby stimulating meaningful processing, comprehension, and long-term memory, and enabling the cognitive construction of new knowledge (Wittrock, 1974).

2.2 Illumination on the Accumulation of Grass-Roots Resources

Based on scientific theories of learning, improving the elderly's learning efficiency, identifying and screening high-quality micro-courses, and encouraging the elderly's learning of meaning are the premise and key to the successful convergence of micro-course learning resources for the elderly in grassroots communities. Learning scientific theories from the cognition, teaching, and technology of these three aspects to aid in people's learning. It can be deduced that high-quality micro-courses must adhere to the dual channels principle, limited capacity principle, and active processing principle in their presentation mode, teaching design, and technical support.

The processing ability of the elderly in the community is diminished. Therefore, micro-courses must be presented in a manner that avoids cognitive overload. One is to limit the length of micro-courses to minimize excessive information; the second is to exclude non-essential features such as teacher photos; eye-tracking research demonstrate that learners prioritize the subject matter when viewing micro-courses. However, the image of the teacher influences the attention allocation style and cognitive processing method of the learner, such that the learner allocates more attention to the image of the teacher and less attention to the content (Zhang, 2020).

The optimal instructional design can successfully increase the capacity of working memory. Mayer argues that due to cognitive aging in older persons, this is particularly beneficial for older learners (Mayer, 2005). There are three optimization measures: reducing irrelevant cognitive processing, regulating fundamental cognitive processing, and promoting generative cognitive processing. First, we must ensure that the knowledge points are distinct and the overall information carrying capacity is sufficient, which can effectively reduce the processing of irrelevant cognition; second, the fundamental cognition is influenced by the existing knowledge and is relatively fixed for individuals (Schnotz & Kürschner, 2007). When the selection question is pertinent and the

knowledge point difficulty gradient is reasonable, it is possible to avoid artificially worsening the underlying cognitive load. In addition, according to an empirical guideline for managing fundamental cognitive processing, micro-courses are not required to have subtitles. Due to the fact that subtitles will compete with the content area for visual channels and because subtitles and denotations contain essentially the same information, the information processed on the auditory channel occupies the visual channel for repeated processing. Utilizing associative memory methods and explaining colloquialism, the introduction of knowledge points can boost the learning motivation of the elderly and promote the processing of generative cognitive processes.

The technology utilized in the micro-course should first and foremost serve the learning scenario. Technical details must be taken into consideration. For example, there should be no icons with unclear meanings, pictures and phrases that are irrelevant to the theme, needless special effects, and elaborate animations in great micro-courses. In addition, audio noise reduction technology should be used in the micro-course explanation to ensure the sound effect. Finally, the micro-course output should be in HD format.

In summary, high-quality micro-courses have the following characteristics: visual simplicity, clear hearing, an appropriate selection of information elements, and scientific script design.

3. CURRENT SITUATION AND ISSUES ANALYSIS OF ELDERLY LEARNING RESOURCES IN GRASSROOTS COMMUNITIES

Throughout the "Thirteenth Five-Year Plan," diversified social security was enhanced, and the pension insurance treatment of enterprise retirees as well as the basic pension level of urban and rural inhabitants were improved (State council, 2021). Elderly people in grassroots communities have more economic power than ever before, and smartphone ownership has skyrocketed. According to existing data, netizens aged 60 and up made up 11.2 percent of the population, a rise of 7.3 percentage points in five years (Central Cybersecurity and Informatization Commission, 2021). However, they have long been cut off from modern information technology, and thus face some operational challenges. As a result, the State Council's General Office produced the "Implementation Plan on Effectively Solving the Difficulties of the Elderly in Using Intelligent Technology," which identified the popularization of intelligent technology knowledge and abilities as a major content of elderly education (General Office of the State Council, 2020) . The resources of micro-courses for the elderly have greater teaching advantages

under national attention. The following difficulties must be resolved promptly in order to assure their high-quality development and successful convergence.

3.1 Insufficient Quantity of Available Supply

Currently, micro-courses are utilized extensively in basic education, vocational education, higher education, open education, and other disciplines, but they remain uncommon in the field of education for the elderly. Due to the fact that the Internet has only just begun to reach the older population as a whole, despite the abundance of learning materials, few of them are designed with the elderly in mind. Therefore, the limited number of micro-courses provided for the aged in the grassroots community stands in stark contrast to the expanding educational demands of the elderly and must be improved.

3.2 Dislocation With Actual Needs

The first focus of China's senior education is on enriching the cultural life of retired old cadres through leisure education (Wang, 2009, pp.201-205). Although the present emphasis is on enhancing the scientific quality and social adaptability of the elderly, there is still a place for amusement in the instruction of the elderly in the grassroots community. The micro-courses' material is oriented toward "old age and fun," and the types and topics are insufficiently broad. The aged in the community have special issues, such as current technology, the popularization of life science, and intergenerational education, which result in a misalignment with their actual requirements and require additional adjustment.

3.3 Insufficient Government Investment

The policy object of education for the elderly has steadily evolved from the group dominated by old cadres to the entire urban and rural elderly group as a result of an aging society. However, the county government's investment in senior education is still insufficient, various assurance mechanisms aren't yet completed, and interdepartmental cooperation needs to be improved. Due to a variety of constraints on staff, ideas, funding, facilities, and other factors, grass-roots groups are hesitant to teach the elderly, rely on administrative resources, and lack vitality. To develop a virtuous circle of teaching, it is critical for all parties to work together, solve practical problems, and collect micro-courses for the elderly that are appropriate for grass-roots groups.

3.4 Lack of Application Efficiency

The majority of instructors in the grassroots community work part-time and are exhausted. Teacher management is also not forward-thinking in the classroom, making it simple to have excessive resource aggregation, a low utilization rate, and a bad usage effect. However, the elderly in the community's online learning experience is insufficient, and the necessary teaching equipment is required. According to the situation of the district and the conditions of the elderly under their authority, grass-roots communities should guide the elderly in the community to increase the application efficiency of micro-courses and acquire better learning results.

4. CONVERGENCE OF LEARNING RESOURCES FOR THE ELDERLY IN GRASSROOTS COMMUNITIES: STANDARDS AND STRATEGIES

The convergence of micro-courses should be founded on community elders and adhere to scientific learning theory. Micro-courses should be gathered, extended, and aggregated in a way that is consistent with the features of learning subjects and the realities of the grass-roots level, in order to support the long-term and uniform growth of micro-course resources.

4.1 Precise Positioning: The Elderly's Features in the Community

The desire of the elderly in the community to participate in micro-course learning is growing year after year. In this situation, correct positioning of the learning subject is required to avoid micro-course convergence in the form.

4.1.1 Educative appeal

The elderly in the community are at the grassroots level, and the bulk of them have limited knowledge. They demonstrate a tremendous eagerness to learn since they are aware of their own lack or need. Differentiation, richness, non-utilitarianism, and other features characterize its learning attraction (Chen, Liu, & Xiao, 2021). There are a variety of learning content requirements, which are reflected in: 1. expanding their own horizons and improving their sense of social integration; 2. improving their spiritual taste and expanding the topic of social interaction; 3. maintaining physical and mental health and improving their quality of life. It can be shown that the elderly in the community have a very pure learning motive, and that increasing all kinds of insights is their top objective.

4.1.2 Physical and Psychological Traits

The elderly's learning and cognitive abilities deteriorate over time, and studies have shown that the number of years spent in school is a protective factor for their cognitive function (Yuan, Fu, Li, et al, 2019; Dong, 2020). As a result, poor learning is particularly noticeable among the elderly in communities where literacy is low. Furthermore, the continuous decline in physiological function of the elderly has a negative impact on learning, as evidenced by the following: 1. lens elasticity leads to vision problems, and eyes are easily fatigued; 2. auditory function declines, and speech recognition ability declines as a result; 3. physical fitness declines, making it difficult to concentrate; 4. body movements slow down, and brain thinking speed and comprehension ability both decline.

As a result of the aforementioned situation, the elderly in the community frequently lack self-confidence and have a dread of learning.

4.2 Scientific Adaptation: Based on Micro-Courses' Practical Standards

The convergence of micro-courses should focus on the elderly in the community as the primary learning population, address their diverse and differentiated learning demands, and deliver their brief, comprehensive, and practical learning content. The instructional design of micro-courses should be rational, lowering cognitive burden and fostering comprehension. To give a more practical reference for the convergence of micro-courses in grassroots communities, this paper compresses them into the following practical standards suitable to the reference and implementation of grassroots community workers.

4.2.1 Appropriate Theme

The selection of a topic should not be arbitrary. It must be researched and formulated in conjunction with the local economic and cultural status quo and regional features. In general, we suggest skill-based, popular science, and regional topics. Skills include Putonghua training, English training for tourism, software application training, and mobile phone operation training, among others; popular science includes mental health knowledge, elderly health care knowledge, social morality knowledge, laws and regulations knowledge, investment and financial management knowledge, among others; regional type includes history, humanities, and so on.

4.2.2 Attractive Title

The title's purpose is to entice the elderly to learn the substance of micro-courses, which is not to be overlooked. Using methods such as cutting needs, situation, comparison, suspense, anthropomorphism, etc., to integrate the knowledge points into the title in the form of individual or combination. The title should have a high degree of generalization of the teaching objectives and a profound understanding of the psychology of the elderly. Popular science and skill-based micro-courses frequently employ the WHW nomenclature method to identify the issue: what is appropriate for the teaching of concepts, facts, and the like; how is appropriate for skill-based content containing operational knowledge; and why is used to explain the principle or cause of the class knowledge.

4.2.3 Well-Designed Content

The micro-primary course's element is its content. This is a fantastic assessment of the producer's instructional design skills because it requires teachers to convey the learning material in a concise and engaging manner. An excellent micro-course must be backed by an exceptional script and a thorough and condensed outline of the teaching procedure. The educational progression should be logical and clear, the aim should be apparent, and the elderly's pain spots should be identified so that the information points are simple to learn and easy to retain.

4.2.4 Interesting Presentation

The purpose of presenting micro-courses is to supplement the knowledge points. The idea is to put the elderly in front of the screen so that they can learn the full section's material and meet the learning objectives. Q&A, demonstrations, instances, and other techniques of delivering knowledge points are often employed. For knowledge such as principles/questions/experiences, the Q&A or dialogue method can be used, which means to "talk" about this knowledge point; the demonstration method is suitable for skills and operations, showing clear processing steps and procedures; and the case law method transforms the knowledge point into a specific scene event, which is more targeted and easy to understand.

4.3 Multi-Source Convergence: Starting from the Actual Situation at the Grassroots Level

The convergence of micro-courses must be conducted in accordance with the current scenario, across numerous channels and in multiple formats. The combination of physical convergence and logical convergence, i.e. the "integration of unified and decentralized" approach for multi-source aggregation, is more in accordance with the requirements of the grassroots community's real-world setting. The procedure of aggregation involves introducing a batch, transforming a batch, constructing a batch on your own, and exchanging a batch. According to various sources, some micro-courses are utilized by physical focus, while others are utilized via logical aggregation.

4.3.1 Introduction

"To improve the digital literacy and skills of the entire population by 2022," is vital to boost the availability of high-quality digital resources, broaden access to digital resources, and encourage the equitable popularization of digital public services (The Central Cyberspace Administration and other four departments, 2022). To address the shortage of learning resources for the elderly, the national, provincial, and municipal levels place a high priority on the construction of micro-course learning resources for the elderly, strengthen overall planning, implement multiple measures at once, and produce high-quality construction results. Distribution of national and provincial-level senior education or lifelong learning platforms, as well as screening of related micro-course resources for the physical and mental state and learning needs of the elderly in the community, are examples of specific methods. The method of introduction is based on distinct platform needs, such as physical aggregation into the library or using the platform's interface services to logically aggregate the database.

4.3.2 Reformation

There are numerous unique learning sites on the Internet that are well worth exploring and utilizing. Such resources are not suited for immediate distribution and must be turned into micro-courses that are appropriate for senior learners. The first is a collection of instructional films or

classroom recordings. Because this type of resource time is too long, and there are too many knowledge points for the elderly, individuals should use editing technology to grab a single knowledge point, set a reasonable length, supplemented by the corresponding teaching design, and transformed into a series of micro-courses; the second type is a three-screen courseware. The third type of resource is skill-based resources, which must be transcribed and edited, removing extraneous material and generating a sequence of micro-courses. There are some cases when the material is too complex or the speed of speech and operation is too rapid due to various learning subjects, and it is required to minimize the difficulty of knowledge points and modify the video frame rate to adapt to aging design. Micro-courses that have been retrofitted should be stored using a physical aggregation mechanism.

4.3.3 Self-Building

There are objective variations between China's regions, with each having its own natural circumstances, ecological environment, language, and customs. Although the level of micro-course development in counties and grassroots communities is very low, it should be combined with the local economics, humanities, history, folklore, and so on. We should begin with the actual development of the region and the interest of the elderly in the community, rely on the local open college for the elderly, construct micro-course characteristic resources based on local conditions, and produce micro-course topics such as rural literacy, intangible cultural heritage skills, scientific agricultural technology, dialect culture, etc. in order to revitalize from within and expand the convergence channels. Self-designed micro-courses are physically aggregated for storage.

4.3.4 Exchange

When gathering, it is necessary to consider enriching the special micro-courses in various places to assist the elderly in understanding and learning the folk customs, non-genetic inheritance, and regional culture of various places in order to increase the elderly's insight in the grass-roots community and broaden their horizons. Since the local area contains the same type of self-built micro-courses, exchange is a very suitable cooperation channel for obtaining such micro-courses, which can accelerate mutual circulation between localities, realize the sharing and complementarity of characteristic learning resources, and maximize the value and utility of such micro-courses. Switching micro-courses converge logically into the library as mutual open interface services.

5. BASED ON THE SCIENTIFIC PERSPECTIVE OF THE ELDERLY MICRO-COURSE RESOURCES CONVERGENCE PRACTICE PATH

Under the new circumstances, putting learning scientific theories into practice, exploring feasible paths for the convergence of learning resources for the elderly in grassroots communities, and developing replicable and generalizable experience practices can serve as useful references for community elderly education. To put micro-course resources into the library in the form of multi-source aggregation; to carry out systematic management of resources by unifying video formats and marking micro-course attributes; to establish a multi-dimensional resource service system of 1 library and 4 platforms to improve resource coverage and utilization rate; to form a digital learning community for the elderly and to infuse micro-course learning into everyday life. As seen in Figure 1, the ubiquitous IoT ecology is formed in this manner by the micro-courses of the grassroots community:
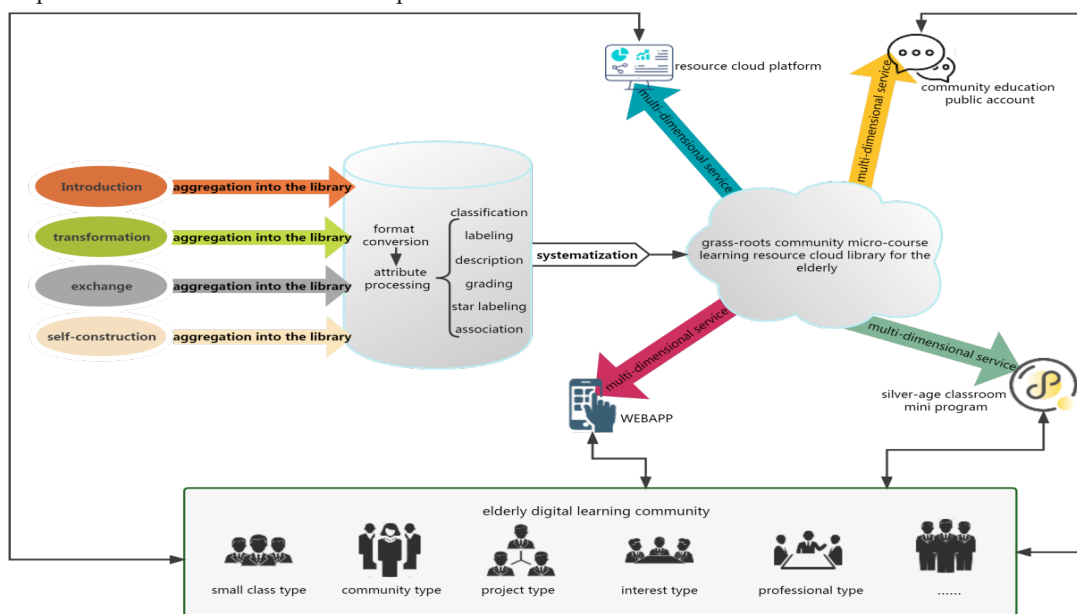

Figure 1
Grassroots community micro-course learning resources for the elderly convergence practice path.

5.1 Independent Investigation: THe Development of Community Micro-Courses for the Elderly

We need to conduct self-designed investigation of micro-courses based on learning scientific ideas, taking into account the learning demands of senior groups in the community and their teaching experience.

The topic of the micro-course can be a mobile phone photography trick, and the production process can be broken down into the following steps: topic selection, scripting, production, and post-production. As a skill class, the H method is used to name it explicitly, such as "How does time-lapse photography capture traffic?" How do clouds and the sky appear in time-lapse photography? "How is sunrise and sunset captured by time-lapse photography?" "How can time-lapse photography capture budding flowers at Thanksgiving?" Using a combination of case studies and demonstrations, we can script and design information migration scenarios for older persons. First, the operation procedures can be displayed at regular speed, followed by a slow-motion replay of the crucial steps. The installation procedure is script-driven. The elderly lack faith in their capacity to touch the bypass when acquiring new information; therefore, the demonstration of operational abilities must be accomplished by the same mold machine. After the video has been completed, the suggested export formats are FLV, MP4, and H.264; the preferred resolution is 1280x720 or greater; and the recommended stream rate is 1200Kbps or greater.

5.2 Thematic Integration: THe Micro-Course Management System

Micro-courses should be organized and prepared methodically, micro-course resources should be specialized and disciplined and micro-course management should be standardized and systematized in order to facilitate the retrieval and use of information in an orderly manner. The inbound micro-course utilizes a single storage structure to achieve the optimal display effect. You can utilize open source tools for the automatic detection and conversion of video formats to boost warehouse productivity. In addition, we must attribute the micro-course processing, with the following specific measures: select categories, labels, and keywords to refine the knowledge categories of the micro-course; according to the introductory, primary, intermediate, and advanced micro-course induction and grading of the same subject; with one to five stars to mark the difficulty coefficient of each micro-course; to add knowledge-related subjects to the series of micro-courses; and to provide the elderly with access to the series of micro-courses.

5.3 Multi-Dimensional Services: THe Network Radiation of the Micro-Course System

Effective aggregation of micro-course resources can suit the "simply and joyfully" acquiring of knowledge needs of the elderly in the grassroots community. In addition, we should strengthen the ability to transmit resources from multiple dimensions, provide resource service support through the Network and mobile means, strengthen the radiation of micro-courses to rural, remote, poor, and ethnic areas, satisfy the "effortless" resource acquisition desire of the elderly in grassroots communities, and improve the equity of education for the elderly.

1 library 4 platform multi-dimensional resource service system, integrated resource cloud platform, community education public account, WEBAPP, silver age classroom mini program and other applications, shared resource cloud library, expand resource service support methods, for the grassroots community elderly to provide micro-course learning services, to meet their "easy to access and use" demands for learning resources.

In the follow-up, we should continue to optimize the service support system based on the use characteristics of each application and the utilization rate among the elderly in the grassroots community, in accordance with their learning preferences, and expand the coverage of micro-course learning resources.

5.4 Normal Integration: Digital Learning Community for the Elderly

"14th Five-Year" national informatization planning requirements, expand the coverage of high-quality resources, expand and optimize lifelong learning services, build a ubiquitous online learning space, and support the normal application of various types of innovative teaching (Central Cybersecurity and Informatization Commission, 2021). The ultimate goal of bringing together micro-course learning resources in grassroots communities is to take advantage of the opportunity to promote the digital transformation of community education for the elderly, move toward in-depth integration and development of technology, build a ubiquitous interconnection system for community education for the elderly, form a digital learning community for the elderly, and create a new ecosystem of lifelong learning.

In the grass-roots community, the elderly voluntarily builds learning groups in a variety of flexible methods based on their learning needs. A digital learning community for the elderly is formed when these communities are combined with inclusive collaboration and guidance. Every senior person in this society can obtain a job, enjoy dignity, and progress. The willingness to engage and the feeling of inquiry have dramatically improved, moving from passive to active learning, and genuinely becoming the master of learning.

6. CONCLUSION

"The Outline of the Action Plan for the Scientific Quality of the Whole People (2021-2035)" calls for improving all elderly people's ability to adapt to social change,

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with a focus on improving information literacy and health literacy, increasing feelings of gain, happiness, and security, and recognizing that the elderly have fun, have learned, and have something to do (State council, 2021, *No. 9*). In the framework, the philosophy of senior social involvement is reflected. The world is changing at a breakneck pace, and it's critical to support the convergence of micro-course learning materials for the elderly in grassroots communities. To inject humanistic care, ensure the quality of learning resources, expand resource service channels, build a convenient and efficient resource service system, narrow the gap between urban and rural areas and regions, and promote fairness and inclusiveness of education, the aggregation process should follow the scientific theory of learning. Grassroots communities should focus on improving teaching aids and tracking and testing learning success so that micro-course learning resources can better converge and iterate to meet the growing individualized and diverse learning needs of the elderly in grassroots communities. The effectiveness of the active aging strategy is determined by the general improvement of the elderly's quality of life in the grass-roots community, which can accelerate the pace of lifelong learning for all individuals and play an active part in realizing the learning society.

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