

## Agentic Learning and Post-Print Reconstruction of Library Agentic Spaces

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### Abstract

[Purpose/Significance] University library space reconstruction is currently one of the focal points in both theoretical and practical aspects of the industry. Research on the typological attributes and service orientation of library space reconstruction holds important reference value for the development direction of space reconstruction and space services. [Method/Process] Based on the foundation of active learning capabilities, this paper further analyzes and researches the meaning, characteristics, functions, and roles of active spaces, and proposes service approaches for library active spaces from the perspectives of space service philosophy, resources and practices, and activity methods. [Results/Conclusion] It is concluded that active space is the chosen direction for university library space reconstruction, which aligns with the current and future talent cultivation goals of higher education institutions.

### Full Text

#### Preamble

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#### Abstract

**Purpose/Significance:** University library space reengineering has become a focal point of both theory and practice in the field. Investigating the typological attributes and service orientation of library space reengineering provides important reference value for the developmental direction of space transformation and spatial services.

**Method/Process:** Based on the foundation of active learning capacity, this paper analyzes the meaning, characteristics, functions, and roles of active space,

and proposes service concepts for library active space from the perspectives of spatial service philosophy, resources and practice, and activity modalities.

**Result/Conclusion:** Active space is considered the directional choice for university library space reengineering, aligning with current and future talent cultivation goals in higher education.

**Keywords:** university libraries; spatial reengineering; active type

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University libraries worldwide are undergoing spatial integration while seeking transformative innovations in service form and content. American futurist Alvin Toffler noted: “The illiterate of the future will not be those who cannot read and write, but those who cannot learn” [1]. American university libraries have collaborated with academic departments to provide professional reference consultation, writing centers, career guidance, technical support, and other services [2]. Japanese university education has also witnessed a surge in “active learning,” particularly in upper-level undergraduate and graduate programs where students participate in various forms of seminars dominated by student presentations with faculty providing only commentary [3]. This represents an external manifestation of cognitive processes generated through participation in activities such as thinking, writing, expression, reporting, experimentation, research, and creation—precisely the type of ability that university education urgently needs to cultivate. China convened its first National Undergraduate Education Conference in 40 years of reform and opening up in June 2018, with leaders from 150 universities attending this milestone event. The conference issued the important document “Opinions of the Ministry of Education on Accelerating the Construction of High-level Undergraduate Education and Comprehensively Improving Talent Cultivation Capacity” (referred to as the “Higher Education 40 Articles”) and the important plan “Six Excellence and One Top-notch Plan 2.0,” proposing a series of strategic goals and plans that mark a crucial historical node in building first-class undergraduate education in China [4]. The “Higher Education 40 Articles” explicitly state that the “fundamental task” of education is to cultivate socialist builders and successors with comprehensive development in morality, intelligence, physical fitness, and aesthetics, to deepen teaching reforms around stimulating students’ learning interest and potential, to promote the deep integration of modern information technology with education and teaching, and to build a new collaborative education mechanism with comprehensive and whole-process deep integration [5].

As a subsystem of the university talent cultivation system, libraries bear an unshirkable responsibility for cultivating the autonomous and active learning abilities of socialist builders and successors. The reengineering of active and intelligent spaces naturally becomes an important pathway and means for this cultivation. While numerous studies have addressed university library space reengineering both domestically and internationally, no research has yet ex-

explored the sub-concept of “active space” [2] in space reengineering. This paper attempts to explore the active learning service functions and connotations of space reengineering, providing new perspectives for university library space service innovation and talent cultivation.

## 2. The Meaning and Characteristics of Active Space

### 2.1 The Meaning of Active Learning

When discussing the active role of space reengineering, we must first understand what active learning entails. “Active” refers to making positive, selective responses or reactions to external or internal stimuli or influences. Human agency differs from that of inorganic matter, organic life forms, and higher animals, and is termed subjective agency [6]. Subjective agency, also known as “conscious agency,” refers to the reactive or dynamic capacity of human subjective consciousness and practical activities on the objective world. It has two meanings: first, the ability and activity of people to actively understand the objective world (thinking)—actively and selectively reflecting the objective world, grasping the essence and laws of things while reflecting external phenomena, and being able to replicate the present, trace the past, and predict the future to create an ideal or fantasy world. Second, the activity of actively transforming the objective world under the guidance of understanding (doing)—through practice, turning conceptual things into reality, representing the spiritual state people possess in understanding and transforming the world. Through practice, “thinking” and “doing” are unified, demonstrating the subjective agency that distinguishes “humans” from “things,” namely conscious agency [7]. Therefore, learning types under the 支配 of conscious agency are called “active learning.” This learning approach emphasizes cultivating students’ strong learning motivation and intense interest in learning, enabling them to learn actively, consciously, and voluntarily rather than passively or reluctantly.

Characteristics of active learning include: first, subjective consciousness—through the combination of thinking and practice, learners maintain a subjectively conscious, proactive attitude toward learning objectives, tasks, and methods, with consciousness that actively, purposefully, and planfully reacts to the learning world. Second, positive orientation—maintaining a high spirit during the learning process, with an upward attitude, collaborative teamwork, and creative initiative that inspires progress. Third, diligent inquiry—conducting learning based on problem orientation, fully tapping learning potential, embodying subjectivity, cultivating creativity, and striving for exploration, representing a highly efficient learning model. Learning consciousness cannot arbitrarily exert subjective influence detached from material conditions and objective laws; material conditions and objective environments guide and constrain learning behavior. Therefore, libraries should establish the concept of transforming traditional spaces into flexible, open, diverse, and intelligent modern active spaces during space reengineering, with all renovated spaces possessing the function of shaping students’ autonomous active learning

habits.

## 2.2 The Responsibility of Library Space Reengineering

In 1975, IFLA positioned the “educational function” as the primary function and value orientation of libraries. The 2015 “Higher Education Law of the People’s Republic of China” stipulates that teaching support personnel in higher education institutions should center on teaching and talent cultivation [8]. The 2016 “Regulations on Libraries in Regular Higher Education Institutions” stipulates that the educational function is the primary function of libraries [9]. The 2018 “Opinions of the Ministry of Education on Accelerating the Construction of High-level Undergraduate Education and Comprehensively Improving Talent Cultivation Capacity” defines the principles of undergraduate education and the types of talent to be cultivated. Therefore: first, the educational function is the primary function of libraries. Libraries should become the support for the university talent cultivation system, serving the talent cultivation system [5]. Consequently, the purpose of space reengineering has shifted from “primarily providing information services” to “primarily cultivating multi-element literacy capabilities,” with creating active spaces and enhancing connotative services serving as the resource guarantee for active learning education. Second, cultivating active learning ability is the responsibility of libraries. Libraries must adopt various forms and methods to enhance students’ academic and competency development. The goals of space transformation and resource construction are to better fulfill educational responsibilities. Using new spatial environments to guide students to consolidate knowledge foundations, understand disciplinary frontiers, engage with social realities, receive professional training, develop independent work capabilities, and become advanced specialized talents with innovative spirit and practical abilities. Third, cultivating scientific values is the task of library education. When students enter university, their learning activities advance to higher forms and deeper stages with relatively greater chaos and uncertainty. Libraries must execute the educational tasks of “imparting knowledge, teaching skills, and resolving doubts,” cultivating students’ autonomous and active qualities, guiding values, nurturing willpower, training agency, imparting knowledge and skills, inspiring creativity, and fulfilling the educational responsibilities of guidance, soul-building, and escort.

## 2.3 Characteristics of Active Space

The concept of active space was proposed in 2017 [2], but without a clear definition, and no practice or research has been seen in the industry domestically or internationally. Based on the needs of active learning and the combination of space reengineering types, this paper provides its own understanding. Active space refers to a reengineered space that integrates educational concepts, high-quality resources, advanced technology, and high-quality services during the library transformation and development period, serving as a new learning field for cultivating students’ subjective, conscious, active, and creative abili-

ties. Active space is a space with inherent strength, vitality, and potential, embedded with the connotation of agency and possessing the function and role of cultivating active learning ability. Its meaning 主要包括: first, active space is a derivative concept of space reengineering, adding the qualifier “active” to “space” to modify, limit, and explain the nature or attributes of the space—it is a space reengineered for cultivating students’ active learning ability, not for other purposes. Second, through learning activities in active space, students develop the ability to make positive, selective responses or reactions to external or internal stimuli or influences, and to actively, consciously, purposefully, and planfully react to the external world, proactively conducting their own consciousness adjustment, control, and management of learning behavior. Third, active space construction is the core of library space reengineering service models—a necessary service condition and teaching field for carrying out and sustaining active learning education and ability cultivation, representing the essence of the library space transformation service system. Fourth, active space reengineering should possess abundant literature and digital resources, top-tier technical equipment, high-level service teams, and an elegant environmental atmosphere, requiring systematicity, completeness, and foresight. Active space is more of a concept that requires the functional combination of multiple spaces to be realized.

Active space indicates the typological attributes of the reengineered space system, with the following characteristics: first, innovation—reflecting the characteristics of the era, it is a comprehensive space integrating new exploration, new models, new content, and new methods. Second, diversity—the new space is composed of different types of constituent elements including venues, literature, equipment, technology, and personnel. Third, agency—space usage is a subjective, purposeful, planned, proactive, and conscious activity. Fourth, expandability—space functions can be expanded, suitable not only for lectures, reports, exchanges, seminars, salons, and film viewing, but also for multiple services such as experience, invention, creation, and exhibition. Fifth, openness—open and shared for various majors and readers, carrying multi-level reader groups.

Active space functions like a potential “conscious skill” and an invisible force, continuously guiding, informing, and directing readers to use it for learning and research through its environment and atmosphere, thereby causing changes in readers’ knowledge literacy. It is a service condition that libraries reengineer to sustain active learning education and ability cultivation, an indispensable factor in the generation, transformation, and development of the active learning education system. Active space represents the common attributes possessed on the basis of individual functions of reengineered spaces such as learning commons, information literacy spaces, and maker spaces, with various different spaces all aiming to cultivate “active learning.”

### 3. Service Functions and Roles of Active Space

The fourth part of the Ministry of Education’s “Higher Education 40 Articles” points out “deepening teaching reform around stimulating students’ learning interest and potential,” advocating “expanding students’ learning autonomy and choice, encouraging students to learn across disciplines and majors.” It encourages libraries to strengthen management service education, “actively guide students in self-management and active learning, stimulate curiosity, improve learning efficiency, and enhance autonomous learning ability,” and to “enhance students’ abilities in expression and communication, teamwork, organization and coordination, practical operation, and daring to innovate and create” [4]. Library reengineered spaces align with the guiding ideology of the “Higher Education 40 Articles” and possess these service functions.

#### 3.1 Service Functions of Active Space

The function of active space is the inherent efficacy within the space, determined by the internal element structure—a relatively stable and independent mechanism internal to the space. The combination of active space and high-quality services can achieve the following basic service functions: first, solving thorny problems—cultivating students’ ability to handle difficult, resistant, chaotic, and complex issues, such as postgraduate entrance examinations and academic paper writing, which can be resolved in corresponding reengineered spaces under the guidance of librarian instructors [10]. Second, action-oriented learning—taking action-oriented drive as the main form, fully leveraging students’ principal role and teachers’ guiding role during spatial activities, such as salons and reading clubs planned and executed by student societies, achieving cultivation goals by guiding students to complete certain “tasks” [11]. Third, cultivating autonomous learning—taking students as the learning subjects, allowing them to make their own decisions without external interference or control, such as picture book drama arrangement and performance activities in library picture book spaces, enabling students to achieve their goals through independent reading, listening, research, experience, practice, and creation [12]. Fourth, supporting personalized exploration—supporting and guiding qualified individual readers in creative and self-directed research exploration, which represents the highest expression of students perfecting their learning personality and achieving self-value. Providing quality personalized services creates library excellence. Fifth, cultivating cognitive ability—developing students’ ability to process, store, retrieve, and apply information, referring to cognitive abilities such as learning, research, understanding, summarization, and analysis, ultimately forming special intellectual abilities including verbal information, intellectual skills, and cognitive strategies. Sixth, sharing knowledge and experience—realizing the exchange and sharing of knowledge or skills accumulated by university students from learning or life experiences through multiple practices, including experiences and insights in reading, writing, research, creative entrepreneurship, and community social interaction. Seventh, inspiring invention and creation—using

the conditions of shared space or maker space, guided by scientific theory to combine knowledge with practice, inspiring and guiding students to obtain various cultural and artistic creative products through discussion, exploration, research, creativity, discovery, expression, recording, and information exchange [13]. Eighth, developing leadership ability—relying on spatial resources to develop students’ leadership abilities, such as learning ability, execution ability, affinity, communication ability, coordination ability, decision-making ability, analytical judgment, command ability, and leadership art and style.

### 3.2 Service Roles of Active Space

The service role of active space refers to the external effects produced when the space interacts with reader services and conducts activities—the actual efficacy generated by the combination of spatial functions and reader interaction methods. Generally, complete spatial construction elements determine the diverse functions of the space, and diverse spatial functions are the internal basis and prerequisite for positive roles, with human factors being crucial. The combination of active space and intelligent services produces the most powerful effects, mainly manifested as: first, guiding readers to determine the level of learning objectives—the stronger the readers’ learning agency, the higher the level of their learning objectives; lack of learning agency may result in unclear or low-requirement learning objectives and insufficient learning motivation. Second, stimulating readers’ interest in professional learning—interest is the driving force for exploring knowledge, without stimulation there is no interest, without interest there is no memory, and once learning interest is stimulated, intellectual potential will be developed. Third, forming pressure for research and creation—through a series of stimuli forming pressure sources, generating cognitive motivation and pressure perception, and thus forming creativity with creative efficacy. Fourth, becoming a pathway for knowledge to change destiny—attending university is not the ultimate goal, and higher aspirations must be established, striving for success with amazing perseverance and admirable willpower. Fifth, achieving talent cultivation upgrading in the new era—the “Higher Education 40 Articles” propose cultivating socialist builders and successors with teamwork, organization and coordination, practical operation, and daring to innovate and create abilities. The library’s active learning model is an inevitable choice to promote and achieve educational transformation and upgrading. Learning agency is a special potential, a capability reshaped by changing general tendencies, and this reshaping work is the product of the combination, guidance, motivation, and tempering of library active space and intelligent services.

## 4. Construction Approaches for Library Active Space

### 4.1 Adhering to Student-Centered Reengineering Principles

Article 5 of the Ministry of Education’s “Higher Education 40 Articles” clearly states that promoting students’ comprehensive development as the center, stimulating learning interest and potential, and enhancing students’ sense of social

responsibility, innovative spirit, and practical abilities [5]. University library space reengineering must adhere to this principle. First, student comprehensive development must be the center. Student active learning ability education is formed through long-term rational understanding and practice as ideological concepts, spiritual aspirations, and ideal pursuits—a value-oriented innovative education concept permeated by the library’s educational value orientation. Second, establishing an active learning service concept addresses how libraries carry out competency education and what methods to use, answering the fundamental questions of why, what, and how—constituting the organic composition of the library’s survival reasons, motivation, and hope. Only by establishing the concept of active learning education as the core and purpose of library service transformation, as a long-term service strategy, and promoting its in-depth development and normalization can university libraries achieve an “upgraded version” of services in the new era. Library services should follow the principle of “transmission followed by creation” to reconstruct service concepts, prioritize competency education, and promote the in-depth development of active learning education.

#### **4.2 Enhancing the Support Level of Active Learning Resources**

University library space reengineering should actively align with school development needs, optimize service structures, improve space systems, update service content, and improve guidance methods [5]. Starting from active learning education, it should integrate and provide supportive conditions conducive to inspiring learning, solving problems, and imparting skills: first, transform all traditional resource layouts that hinder reading, integrate high-quality resources, and establish a circulation environment suitable for personalized autonomous active reading. Second, transform traditional physical space structures and reengineer shared learning spaces centered on active learning spaces, providing readers with spaces for writing, expression, reporting, discussion, and commentary. Third, timely update existing database resources, teach open access to online learning resources, and impart skills in virtual resource functions and usage. Fourth, self-build the library’s reader learning platform, closely following the school’s professional classification to provide the most suitable resource platform for active education, achieving standardized management and personalized release of campus resources, and effectively improving university libraries’ resource support level for active learning.

#### **4.3 Achieving the Attainment of Innovative Talent Cultivation Goals**

Library reengineered spaces should adhere to categorized development, distinctive development, and active education goals. Closely cooperating with professional teaching processes, systematically researching reader needs, meticulously planning spatial activities, and conducting activities such as classic guidance, reading reports, research presentations, and debate speeches with careful summary. The activity purpose should neither deviate from professional knowledge

learning nor from solving learning problems and research creation; it should neither lack novelty and appeal nor deviate from the connotation of active learning education. Planning should be the responsibility of specialized departments to ensure continuity, systematicity, and innovation in planning, and to facilitate deep connections between professionalism and agency. Activity planning is an effective behavior for implementing active learning education, providing readers with a good active learning platform for voluntary participation, positive performance, and self-realization, thereby promoting the categorized development of spaces and building distinctive professional spaces to guide various spaces to leverage their strengths, improve the quality of innovative, compound, and applied talent cultivation, and achieve global reform results [5], realizing the attainment of innovative talent cultivation goals.

#### **4.4 Leading Multi-Dimensional Active Learning and Creation**

All activities in reengineered spaces should actively utilize the active learning service model, integrating active learning objectives throughout: first, conduct reader learning career guidance, using personal examples from various role models to impart knowledge and inspire readers to establish correct life views and values, providing enthusiastic encouragement and guidance. Second, persistently carry out three-dimensional promotion activities on specific themes such as reader study groups and teaching interactions, advocating systematic and effective educational content. Third, transform and expand subject librarian services, actively embedding in new spaces to accept reader consultations and participate in solving learning problems, leading and cultivating active learning abilities. Fourth, form reader associations with collaborative awareness, willingness to explore, self-management, proactive initiative, and strong active learning willingness to achieve excellent team performance. Only with creative spatial resources can libraries achieve the imparting of learning methods and skill experiences, motivate students to exert subjective agency, and lead multi-dimensional active learning and creation.

#### **4.5 Evaluating Satisfaction with Active Space Construction Effectiveness**

Library spatial activities require careful planning, clear objectives, process orientation, system construction, and cyclic advancement, with timely summarization and evaluation of the objective results or consequences produced throughout the spatial activities. Target effectiveness should be summarized based on evaluation opinions from teachers, students, and organizers, focusing on both individual reader benefits and library organizational performance. Reader performance should evaluate students' various improvements and gains in the library, assessing progress in learning abilities through various survey data, and whether they have acquired genuine knowledge and skills that "return to common sense," master professional knowledge, face reality, engage in practice, promote action through knowledge, seek knowledge through action, be down-to-earth, and work

diligently. Organizational performance refers to the fulfillment of work tasks and activity effectiveness of library departments or individual librarians, oriented toward talent cultivation goals, adapting to needs, leading learning, maintaining advanced concepts, and providing strong support. The effectiveness of moral education and talent cultivation should be the fundamental standard for testing all library reforms, adhering to the correct political direction of library transformation and development, and forming a high-level library talent cultivation service system [14].

## Conclusion

In his speech at the “National Conference on Undergraduate Education in the New Era,” Minister of Education Chen Baosheng emphasized that universities must be “more determined in changing tracks to overtake” and “more urgent in innovative development” [15], serving as a mobilization order for higher education reform in the new era with important guiding significance for university library transformation and development. University library space reengineering is one of the transformation plans to meet the challenges of the new era and comprehensively elevate talent cultivation. The cultivation of university students’ active learning ability is the core of library space reengineering services—the foundation, process, and guarantee for cultivating innovative, compound, and applied builders and successors in the new era. Through the combination of active space and intelligent services, libraries provide students with learning pressure and motivation, stimulate their enthusiasm for exploration, enhance learning agency, cultivate learning interest and problem-solving abilities, and build a comprehensive, full-staff, and all-round education pattern for library reengineered spaces. In the surging wave of space reengineering, we must not stick to old ways but keep pace with the times, write the “pen of progress,” build high-level libraries, and better fulfill our common mission of cultivating socialist builders and successors [15].

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*Note: Figure translations are in progress. See original paper for figures.*

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