



Research on the Lifelong Learning Mode of College Students Based on Technical Support: Motivation, Demand and Transmutation

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Abstract. With the rapid development of technologies such as big data, cloud computing, and machine learning, artificial intelligence has permeated every sector, bringing about profound changes to people's lives. The integration of new technologies and ideas has resulted in a more superior learning environment for society at large, enriched learning resources, and ushered in an era characterized by diverse learning formats and pluralistic knowledge. This paper delves into the motivations and needs underlying technology-enabled lifelong learning among college students, and from four aspects, it systematically proposes and elaborates on the transformation of lifelong learning approaches among college students. Furthermore, it explores effective ways and methods to enhance the outcomes of lifelong learning.

Keywords: Technical support; college students; lifelong learning model.

1 Introduction

In the 21st century today, human society is advancing at an unprecedented pace towards the era of artificial intelligence. In recent years, there has been exponential growth globally in online learning platforms powered by AI technologies. A variety of media technologies, leveraging their unique advantages, are significantly impacting people's learning and daily lives. The widespread application of technology has garnered broad attention from the educational sector, raising questions such as how to learn effectively and how to appropriately manage the relationship between learning and technology, which have become focal points of intense discussion among scholars. The new generation of internet technologies addresses the issues of closed-off and non-transparent nature inherent in traditional media, ushering in novel learning models and elevating education to new heights. These technologies embody openness, interactivity, diversity, and personalization, fundamentally transforming the conventional "teacher-centered" learning model and advocating for a "learner-centered" approach. The technical support underpinning lifelong learning for college students aligns with constructivist learning theories. This not only places teachers and students on an equal footing where students are the central actors in the learning process while teachers play

a facilitating role, but also emphasizes the importance of self-directed inquiry-based learning, the learning experience throughout the process, interdisciplinary collaborative learning, and the enhancement of individuals' comprehensive abilities.

2 The Motivation of Technical Support for Lifelong Learning for College Students

With the continuous development of Internet technology, researching the transformation of lifelong learning models supported by technological advancements in the era of artificial intelligence for college students not only carries significant theoretical value, but also has profound practical implications. From a theoretical perspective, research on lifelong learning among college students has already drawn the attention of domestic scholars. In recent years, 46 related academic papers have been published, out of which 33 focus on the study of lifelong learning abilities, 6 discuss the awareness and concept of lifelong learning, 2 explore methods and approaches to learning, another 2 delve into paths and strategies, and 3 cover other categories of research. This indicates that the majority of studies, accounting for 71.7%, concentrate on the aspect of lifelong learning abilities. However, research focusing on learning methods and approaches makes up only 4.3% of the total. If we narrow down the scope to those studies that specifically address research under the support of technology within these 46 papers, the number is significantly smaller. Therefore, conducting research on lifelong learning models for college students supported by technology holds strong theoretical significance.

From a practical standpoint, referring to the 53rd China Internet Development Statistics Report released by the China Internet Network Information Center (CNNIC)^[1], it reveals that China's internet user base has reached 10.92 billion people with an internet penetration rate of 77.5%. Within this context, young netizens, particularly those aged 20 to 29, demonstrate the highest proficiency in digital literacy and skills, with a staggering 81.4% achieving at least a basic level of digital literacy and skill, far exceeding the national average of 27.8% across all internet users. These data compellingly demonstrate that the college student population undeniably constitutes the main force in the AI and artificial intelligence era. Consequently, engaging in research focused on developing open, flexible, and diverse learning approaches holds extremely high practical value. By exploring such learning methodologies, educational institutions can effectively cater to the evolving needs and capabilities of today's digitally-savvy students, preparing them optimally for a lifetime of continuous learning and adaptability in the fast-paced and technologically advanced landscape of the AI age^[2].

3 Analysis of the Needs of college Students' Lifelong Learning

In recent years, however, a widening gap between higher education and societal needs has emerged, with universities struggling to keep pace with society's swift changes. The

National Mid- to Long-term Plan for Education Reform and Development (2010-2020), promulgated by the state in 2010, highlighted the necessity to comprehensively enhance the quality of higher education and improve the caliber of talent cultivation. It firmly established the central position of talent development within university work and emphasized the need to cultivate dedicated, morally upright, knowledgeable, skillful, and highly qualified professionals, as well as outstanding talents with innovative capabilities^[3].

According to relevant research, an individual acquires only about 10% of the total knowledge they need during their time in school, with the remaining 90% obtained through experiences in society and work-related events. The provision of a relaxed learning environment and open learning resources by universities is crucial^[4]. College students must proactively engage in effective lifelong learning to enrich their storehouse of knowledge, enhance their professional skills, and boost their core competitiveness^[5]. This is not only an imperative mission bestowed by the times but also a fundamental requirement for personal growth^[6].

4 Technology supports the Evolution of the lifelong Learning Mode for College Students

4.1 From Passive Acceptance to Autonomous Learning

In the report titled "Learning to Be" by UNESCO, it was pointed out that "the illiterate of the future will be those who have not learned how to learn." ^[7] As a result, learning transcends the confines of the classroom, allowing students to engage in self-directed learning anytime and anywhere — whether at home, in dormitories, in study rooms, or on-the-go. Currently, various colleges and universities are actively working to establish their own quality courses, while at the national level, platforms such as premium course websites have been developed to provide college students with a diverse array of new media learning resources. These include high-quality teaching materials, electronic lesson plans, case studies, reference documents, experimental practices, instructional designs, teaching examples, test papers, teaching videos, among others. ^[8] Furthermore, new technologies significantly broaden college students' knowledge horizons, increase learning channels, cultivate their interest in learning, and compensate for the limitations of traditional learning methods. They encourage college students to conduct self-directed, exploratory lifelong learning based on their specific majors, interests, hobbies, and unique learning needs at any given time ^[9].

4.2 From Individual Learning to Cooperative Learning

Collaborative learning is a learning method that aims to achieve common learning objectives by organically integrating multiple learners into a cooperative and mutually supportive learning environment. Since its inception, collaborative learning has consistently been highly regarded within the educational community. The development of new media technology has rendered collaborative learning even more meaningful. In

the realm of education, an increasing number of college students are turning their attention to the vast and rapidly disseminating new media network platforms that host abundant learning resources. Leveraging the advantages of online new media, they engage in collaborative learning, either in real life or virtual networks, forming learning communities according to shared interests and learning needs. Students are no longer confined by their majors or industries; instead, they freely group together based on common learning goals to cooperate, discuss, share, and carry out investigative learning in a mutually supportive manner. A range of emerging technologies, characterized by their immediacy, vivid combinations of text and graphics, and intelligent features, simplify and facilitate communication among learners. These technologies have propelled interpersonal and human-computer interactions to unprecedented heights, arousing the learning enthusiasm of college students. They have thus become a favored learning format among today's undergraduates. These advancements offer favorable conditions for promoting lifelong learning among college students^[10].

4.3 From memory learning to problem learning

"Rote learning" is a prevalent method in traditional education, where knowledge from textbooks is often swallowed wholesale by college students. Those with strong comprehension skills may engage in further processing of this information, but the majority resort to this simplistic form of mechanical memorization. While it may yield short-term benefits for exams, from the perspective of knowledge retention, such acquired knowledge is the least reliable and most easily forgotten. Consequently, it does not bode well for the long-term personal development of university students.

The emergence of new technologies has facilitated lifelong learning for college students, presenting learning materials in diverse multimedia formats such as images, text, audio, video, and animations. These engaging resources motivate students to actively seek knowledge, identify problems, and devise solutions, thereby supplanting rote learning with a question-based approach. The learning journey becomes a chain of inquiries, where understanding is achieved through resolving these questions. Higher education places great emphasis on nurturing critical thinking and creativity among students. Cultivating the abilities to think critically, pose questions, conduct investigations, and innovate, while maintaining a questioning mindset, fosters sharp problem sensitivity. Persistent analytical exploration paves the way for the development of an individual's independent knowledge framework, igniting passion for learning, facilitating academic breakthroughs, and better preparing students to adapt to the demands of today's learning-oriented society. In essence, this shift encourages students to be active learners, moving beyond passive absorption of facts to become skilled navigators of information, equipped to thrive in an era defined by continuous learning and adaptability.

4.4 Pursue diversified and Personalized Learning

"The National Medium- and Long-term Plan for Education Reform and Development (2010-2020) states that it is necessary to establish a concept of diversified talent

development, respect individual choices, encourage personalized growth, and nurture talents in unconventional ways^[3]. The Ten-Year Development Plan for Educational Informationization (2011-2020) also explicitly points out the need to promote deep integration of information technology with higher education, innovate talent cultivation models, and comprehensively enhance the quality of education^[11]. It is evident that personalized learning has become a focal point of attention within the education sector."

The concept of personalized learning can be traced back to the educational philosophy of "teaching according to aptitude" proposed by the ancient Chinese educator Confucius. Despite its roots, this learning approach was not widely or effectively implemented due to various influencing factors throughout history. However, with the extensive adoption of new media technology in modern education, personalized learning has become ubiquitous and easily accessible. It offers an extraordinary experience, tailoring learning based on individual learners' characteristics and potential, using diversified, open, and flexible methods to cater to the unique learning needs of different learners. College students are at a golden stage of life for learning, characterized by their active thinking, strong practical abilities, and ample discretionary time. They possess a high adaptability to new ideas, phenomena, and technologies. Driven by their interests and cognitive needs, they can quickly master new technologies and adeptly apply them to their studies. Under the support of technology, personalized learning can provide college students with relevant learning resources tailored to their individual differences. Students can also proactively select learning content based on their specific academic requirements, existing knowledge base, and personality traits. Compared to traditional classroom learning, personalized learning is akin to bespoke education designed specifically for college students, emphasizing their individual differences and respecting their unique developmental paths. It serves as a supportive foundation for lifelong learning among college students. The diverse and individualized learning approaches have now become one of the favored learning methodologies among college students^[12].

5 Conclusions

In the context of a learning-oriented society, technology-based learning models feature openness, multimedia capabilities, convenience, and intelligence, providing strong support for lifelong learning among college students. These models revolutionize traditional learning methods, imbuing technology-supported lifelong learning practices for college students with robust vitality. However, technology is a double-edged sword that can both support and enhance the learning process, outcomes, and potential of college students by tapping into their learning abilities. Concurrently, it also poses risks and challenges to lifelong learning among college students. Ensuring fairness and accessibility of technology, as well as protecting privacy, are indeed critical issues worthy of in-depth research. These are problems that call for ongoing exploration and resolution in our practical endeavors.

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