

The Development Trend of Ubiquitous Learning in Age of New Media

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Abstract: The development of new media, which has changed people's lives significantly in China, has promoted ubiquitous learning. The research attempts to explore the possibilities of developing ubiquitous learning steadily in the new media age and find out the developmental potentials and further hindrances, to realize the integration of ubiquitous learning and new media properly. Meanwhile, this study seeks to find an effective way to integrate fragmented learning resources in the new media environment and personalize people's services. Based on the Modern Pragmatic Theory and Comprehensive Ability Practice and Integration Theory, the realistic interview, big data information collection, and analytical and comparative methods have been used to investigate 100 people and 30 domain experts to figure out the existing advantages, disadvantages, and the further developmental potentials and hindrances.

Keywords: Development Trend; New Media; Ubiquitous Learning; New Era.

1. Introduction

By conducting an experiment and an investigation with its 100 general people and 30 domain experts, those actions are willing to find out the current situation and problems. Today, the government white paper in 2022 has presented China's determination to facilitate cyber-relevant matters. It has contributed its efforts such as continuously pushing forward the cooperation of the digital economy, constantly deepening the collaboration of cyber security, and actively joining the cyberspace governance. At present, with the boom of the digital economy and technologies, more abundant online content, clearer and brighter cyber environment, and standardized internet platforms, the development trend of ubiquitous learning can spur its competitive force towards the traditional learning style. Despite all the optimistic factors, cyber security issues do exist. Network market monopoly, personal information disclosure, and internet fraud have become the dominant threats to the development of ubiquitous learning.

Through the investigation, it is hoped to explore the possibilities of developing ubiquitous learning steadily in the new media age, finding out the developmental potentials and further hindrances, so as to realize the integration of ubiquitous learning and new media properly. To find an effective way to integrate fragmented learning resources in the new media environment. And to personalize people's services. To adapt to the current domestic development environment, combined with the existing technologies, policies, and various levels of the situation, the initial forecast of development potential and trend. Actively respond to negative feedback, combined with the demands of the audience, adjusting the development elements of ubiquitous learning. Ubiquitous learning provides consumers with independent choices, diversified services, and a way to learn at any time, and the operating platform will push personalized courses suitable for users after collecting customer information. Users can pause at any time during the learning process, double-speed playback, video message, and so on. Users who opt for in-depth services will also be able to work

one-on-one with the video instructors. At the same time, ubiquitous learning also combines traditional learning methods, and lecturers teach students live. This model makes up for the problem of interaction between students and teachers to a certain extent, narrowing the geographical and spatial restrictions to a large extent, which will become conducive to alleviating the problem of educational imbalance.

2. Literature Review

2.1. Overview of the Concept of Ubiquitous Learning

Ubiquitous learning is a way of learning in which anyone, anywhere, at any moment, can access any information needed for learning with the help of information technology devices at hand (digital learning machines, smartphones, personal digital assistants (PDAs), ultra-compact laptops, MP3s, MP4s, etc.). Under the guidance of psychological behaviorism, computer-assisted instruction has been widely used, and then under the guidance of cognitive learning theory and constructive learning theory, e-learning has developed rapidly. With the promotion of "triple-network integration" and the construction of the Internet of Things at the national level, ubiquitous education and ubiquitous learning have become intelligent learning scenarios applied by many educators and educated people under the guidance of constructive learning theory, situational cognitive theory, and informal learning theory.

2.2. Characteristics of Ubiquitous Learning

Continuity (persistence) means that learners can maintain their learning status without canceling the learning requirements, and the learning process is continuous and seamless. Accessibility (usability) means that learners can access learning materials in any form, including text, images, video, audio, etc. Immediacy (timeliness) means that learners can access information directly from a server or peer-to-peer network no matter where they are, and these accesses are often timely, for example, clicking on a learning online video

that can be played immediately. Interactivity means that learners can discuss and communicate with other learners synchronously or asynchronously to achieve information interaction and learning interaction. Proactivity means that when the server locates that a user has entered the area to which it belongs, it will actively send service content for the user to choose and actively provide services. The scenario of teaching behavior means that learning can be integrated into the daily life of learners, and the learning resources and knowledge needed by learners can be presented naturally and effectively, which will help learners pay better attention to the characteristics of the problem situation.

2.3. Theoretical Foundations of Ubiquitous Learning

The earliest description of ubiquitous learning in domestic history can be traced back to the Southern Song Dynasty. Zhu Xi, a famous rationalist, once said, "There is no matter without learning, no time without learning, and no place without learning, the way to success." Here he pointed out the importance of learning in any way, at any time, in any place. Academics are divided on who first coined the term ubiquitous learning. However, in international history, most scholars have reached a consensus on the origin of the concept of ubiquitous learning: ubiquitous learning is a concept proposed by Mark Weiser in the U.S. after he re-examined computer and network applications, and is derived from "ubiquitous computing"; in 1988, a study was conducted by the U.S.-based company Xerox in Palo Alto. The concept of ubiquitous computing was first introduced in 1988 by Mark Weiser of the Computer Science Laboratory at the Xerox Research Center in Palo Alto, USA. After years of research, by 2006, developed countries had made the Ubiquitous Era an important item in their national science and technology development strategies. Since then, the Japanese government carried out the "U-Japan" program, the United States put forward the "Vision2020", and Europe also put forward the LEONIE project one after. In China, the first "China Ubiquitous Network Forum" hosted by China Electronic Information Industry Development Research Institute (CIEIDI) was held in Beijing on 2 December 2004, and the vice president of the Chinese Academy of Engineering (CAE) put forward the concept of Ubiquitous Network (Ubiquitous Net-work) when he looked forward to the development trend of network communication in the next 5 to 10 years. In 2005, the vice president of the Chinese Academy of Engineering put forward the concept of Ubiquitous Networking when looking at the development trend of network communication in the next five to ten years. The "Three Networks Convergence" and "Internet of Things" have become an important part of economic life in China's scientific and technological strategic development. The concept of ubiquitous learning includes the following theoretical foundations in addition to the application of practical theoretical foundations.

2.3.1. Constructive Learning Theory

Constructive learning theory is a theory about knowledge and learning that emphasizes the learner's initiative and considers learning as a process of generating meaning and constructing understanding based on the learner's original knowledge and experience, which is often accomplished in social and cultural interactions. Professor He Kexiang pointed out in 1997 that the teaching mode under the guidance of constructivist learning theory is student-centered, and during the teaching process, teachers make use of context,

collaboration, conversation, and other elements of the learning environment to give full play to students' initiative, enthusiasm, and creativity. The learning context created by the ubiquitous learning model can effectively stimulate students' initiative and adhere to the "human-centered" approach.

2.4. Related Studies on Development Trend of Ubiquitous Learning in China

In recent years, the research on ubiquitous learning at home and abroad has been deepening, mainly focusing on the discussion of ubiquitous learning theory, the construction of ubiquitous learning environment, the architecture of ubiquitous learning platforms, the construction of ubiquitous learning resources, the solution of key technologies of ubiquitous learning, and the development of ubiquitous learning applications. Applied research focuses on science, language arts, and social sciences.

Domestic ubiquitous learning applied research is limited by factors such as technical level, urban-rural gap, educational concept, and research design ability, etc., and more discussion of the application mode and activity strategy of ubiquitous learning from the theoretical level, and less scientific teaching experiments are carried out to verify the effect. Generally speaking, the number of practical applied research on ubiquitous learning by domestic experts and scholars is insufficient, which does not make the theory of ubiquitous learning really play a role in practice, and does not form scientific guidance for learning practice. However, with the advancement of the internationalization of education, the change of educational concepts, and the improvement of computer Internet technology, some fields in China have gradually carried out teaching reform practices related to ubiquitous learning in the teaching of specific subjects, among which English education is one of the fields of ubiquitous learning research earlier.

With the advent of the information age, the rapid development of science and technology has made network technology and modern information technology constantly push forward, which in turn has led to the continuous updating of media technology. Under the information technology environment, the learning mode transitions from digital learning to mobile learning to ubiquitous learning. From the point of view of the number of articles, the research on ubiquitous learning is generally on the rise, and in recent years, the research fever has increased dramatically, and the content of the research has become broader and deeper. In terms of research content, research on technology and design is the most popular, followed by research on basic theories, research on resource construction, and applied research. At present, the heat of research on technology and design is unabated, while the research on ubiquitous learning standards is relatively small. From the domestic research results in recent years, China's research on ubiquitous learning is still in the embryonic stage, the research on basic theory is in a stage of smooth development, its focus is more specific, and theoretical and philosophical thinking is gradually improved. Research on technical support and design, model and resource construction, and related applications are all developing rapidly, becoming the mainstream of ubiquitous learning research.

2.5. Related Studies on Development Trend of Ubiquitous Learning Abroad

Most of the applied research on foreign ubiquitous learning is based on existing learning theories or learning strategies, combined with the advantages of ubiquitous learning to design relevant environments, tools, and activities, carry out standardized teaching experiments, verify the effectiveness of ubiquitous learning, and put forward targeted teaching improvement suggestions. Harvard University launched the Handheld Devices for Ubiquitous Learning (HDUL) project in 2003-2005 and the reliving revolution of Schrier at MIT Reliving the Revolution. RtR), two studies focused on supporting learning with wireless handheld devices, namely "portable research assistants" and "travel channels for online learning."

In addition, according to Ofcom, by the end of the first quarter of 2010, 1 in 3 Internet users in the UK had consumed TV replay services, an increase of 23% over the same period last year. The BBC's I-Player is the most popular service for online replay of these TV shows in the UK, with Player requests nearly doubling from April 2009 to April 2010, from 53 million to 93 million. According to April 2010, only 8% of the total number of views is live, and the remaining 92% are rebroadcast. The growth in Player usage was primarily due to D-layer's Internet-based service, which saw a 97% year-over-year increase in online requests. At the same time, the number of I-Player requests based on Virgin Media's cable platform also increased, with an annual growth rate of 28%. As a well-known radio and television transmission country, the UK plays a non-negligible role in English education. The English education model of the Internet is based on the transformation of modern English education under traditional British education.

At the same time, foreign ubiquitous learning applied research is also facing the problem of unbalanced technical level and development. According to the well-known US weekly "The Economist", many recent studies have pointed out that India's digital resources are not only seriously backward but also extremely unevenly distributed. The Global System for Mobile Communications Association (GSMA), a telecommunications trade body, estimates that half of the Indian adult men owned a smartphone in 2021, compared to just a quarter of Indian women. There is also a gap between the level of digitalization in urban and rural areas in India. Internet penetration is 103 percent in urban areas (because individuals may have multiple network interfaces), but only 38 percent in rural areas. In addition, three-quarters of those with a college degree have some type of mobile phone, while three-quarters of those with only a primary school degree do not have a mobile phone, which poses a great technical problem for the development of ubiquitous education.

With the concept of "ubiquitous computing", overseas research on ubiquitous learning has been deepening. The Japanese government has set up U-Japan, which aims to "build a ubiquitous network society using ICT to connect all people, all objects, and all people at any time and any place", where the "U" stands for "ubiquitous" and "universal". --U" stands for "Ubiquitous"-connecting all people and things, "Universal"-contact between people, "User-oriented"-integrating user perspectives, and "Original"-integrating user ideas and creativity. Integration of the user's point of view, and Unique-stimulation of individuality and vigor.

Meanwhile, the University of Tokushima in Japan has developed JAMIOLAS, a context-aware language learning support system that can be used on personal computers, and the Korean government has established the U-Korea Master Policy Plan since 2004, which aims at building infrastructure, applying technology, establishing a U-enabled social system, and diffusing services. Overall policy planning. The U-Language Learning System developed by the University of Barcelona, Spain, and the e-Guidebook of the San Francisco Museum, Mexico, is characterized as "a typical museum of non-formal learning spaces where the mind thinks and the body experiences" through the process of preparing for a visit, interactive museum experience, and searching for information on the museum's webpage. The Ubiquitous Learning Campus project of Virginia Tech in South Africa aims to "maximize 24-hour learning in the campus space" and design a futuristic (Ubiquitous) campus for all students. The Ambient Wood Project in the United Kingdom provides learners with a "strange but joyful" learning experience by placing mobile devices in the forest and providing a technological environment where people can experience things they cannot see with their eyes. Harvard University's "Wireless Handheld Devices for Ubiquitous Learning" project and the MIT Hand-held Augmented Reality Simulations (MIT Hand-held Augmented Reality Simulations) project aim to develop future learning environments in which learners learn as if they were playing a game. The MIT Hand-held Augmented Reality Simulations project aims to develop future learning environments in which learners can play games.

2.6. Summary of Previous Researches on Development Trend of Ubiquitous Learning

In general, the study of ubiquitous learning at home and abroad is a combination of theory and practice. Domestic emphasis on the study of theoretical methods; Foreign countries attach importance to practical application. In China, a large number of theoretical studies provide theoretical support for practical development in the future, while the experience accumulated in the early years of foreign countries can provide measures for improvement. Exchanges and cooperation between the two sides can enhance the influence of ubiquitous learning, expand the audience, and enrich the internal capacity.

3. Results and Discussions

3.1. The Trend of Continuous and Effective Integration of Ubiquitous Learning Resources

The first trend is that all kinds of resources in ubiquitous learning will move from presupposition to generation, from solidification to evolution (Chen, 2023). This also means that resources will become more and more open, and can be built, edited, and shared by everyone in the ubiquitous learning environment. However, this openness is not equivalent to the open video lessons offered by many of today's educational resources. The degree of openness of this kind of open video class can cross national boundaries, for example, as long as the medium is connected to the Internet of Things, teachers and students all over the world can participate in the open class. Of course, this is only a low level of sharing and

opening. The openness of resources in ubiquitous learning is at another higher level. The overall resource of ubiquitous learning is borrowed from the design concepts of products such as the Baidu Encyclopedia and China Knowledge, which will open up and share the rights to various contents. For example, the ability of a teacher teaching an English course to involve every student in the construction of the online course is a step beyond mere knowledge sharing and openness. Regarding the various resources in ubiquitous learning, apart from the fact that anyone can create and edit them, in terms of learning tools, learners can not only use the tools developed within the platform but also many widgets (Huang, 2023), such as plug-ins from Google and Microsoft. In a nutshell, they can be used as long as they are helpful for learning. Therefore, the overall environment of ubiquitous learning will extend the use of tools from internal websites to external system resources, continuously improving the openness and utilization rate of tools. Therefore, once a learner uses these tools, all their information can be kept intact, and all information generated by any learner during all learning processes can be recorded and saved.

3.2. The Trend of Continuous Optimization of The Overall Instructional Design of Ubiquitous Learning

Secondly, the overall design of ubiquitous learning platforms will continue to be optimized from single content to learning processes. This trend is the same as the development trend of learning standards mentioned earlier. Through the survey, it is found that most of the shared learning resources in the current educational environment are only taught through a single content (Lei, 2023). Learners want to learn through such single content, while instructors want to facilitate more convenient learning through this sharing approach. However, for learners with poor independent tutoring and learning abilities- especially primary and secondary school the efficiency and quality of the learning process cannot be guaranteed in a relatively stable manner. Based on this phenomenon, when designing the overall educational resources and programs, ubiquitous learning should not only consider the rationality and effectiveness of the resources themselves but also give special consideration to the differences in the needs and abilities of different learners. Therefore, the design of this kind of education should not only focus on the artistic expression of the resources, for example, how to present an aesthetically pleasing layout as a way to conform to the habits, cognitive modes, and learning personalities of the learners. More attention should be paid to the organic integration of curriculum resources with the dynamic learning process.

3.3. The Trend of Continuous Construction of Social Cognitive Networks of Ubiquitous Learning

Thirdly, ubiquitous learning will break the traditional sharing of learning resources and learning content and continuously improve the sharing of social cognitive networks. The cognitive network of ubiquitous learning consists of two parts, i.e. sharing and constructing individual cognitive network and social cognitive network. In today's fast-changing economic and technological era, the theory of connected learning gives learning multiple personal and social values. Learning makes new connections,

reorganizations, and connections again between individual micro-societies continuously (Li, 2022). This is a dynamic and multidimensional process. The ubiquitous learning environment allows each learner to meet every expert and every teacher they need. It also allows learners to find a like-minded learning partner. Reflecting on the popularity of various social networking sites and education and learning platforms, both domestic and foreign. This is precisely because "human beings" play a crucial role in facilitating the development and construction of social-cognitive networks. Without human interaction and participation there is no communication, let alone learning and human progress. Therefore, the future development of ubiquitous learning will put more emphasis on the active interaction and communication between learners and those experts, teachers, and peers hidden behind the knowledge network, to promote the construction of the entire social cognitive network.

4. Conclusion

With the rapid development of information technology and the era of globalization, ubiquitous education has gradually attracted attention as an emerging education model. Ubiquitous education combines information technology with learning theories to provide educational resources and opportunities through a variety of channels and modes, thus achieving full accessibility and individuation of education (Xue, 2023). The development of ubiquitous education can be traced back to the 1990s. Initially, ubiquitous education evolved from distance learning technologies in the military and was gradually applied to the field of education. ubiquitous education was further developed at the beginning of the 21st century as a new model of education based on information technology. With the popularity of mobile devices and the Internet, ubiquitous education is developing rapidly and is widely used at all educational levels. The theoretical sources of ubiquitous education are mainly the integration of information technology development and learning theories. Through the support of information technology, ubiquitous education achieves individuation and autonomy of learning (Jiang, 2023); the development of learning theories makes ubiquitous education pay more attention to students' active participation and interactive communication. In the future, with the further development of technology and the transformation of educational concepts, ubiquitous education will be further improved and expanded to provide more opportunities and resources for learners.

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