

Research on the Current Status and Improvement Strategies of College Students' Mobile Learning Ability under the Background of AI

Miaomiao Zeng

School of Education Science, Zhaoqing University, Zhaoqing, Guangdong, 526061, China

Keywords: Internet, college students, mobile learning ability, improvement strategy

Abstract: With the continuous popularization of mobile learning, in order to meet the development needs of the Internet and a learning society, it is particularly important to improve college students' mobile learning ability. This article takes college students at Zhaoqing University as the research object and conducts a questionnaire survey on the current status of college students' mobile learning ability under the Internet environment. It is found that college students have problems such as weak awareness of mobile learning, poor resource management ability, low self-monitoring ability, weak awareness of cooperation and exchange, and insufficient information practice ability. Therefore, strategies such as strengthening the promotion and construction of mobile learning, providing effective learning guidance for college students, enhancing their self-monitoring ability, strengthening their awareness of cooperation and exchange, and improving their information practice ability are proposed.

1. Introduction

With the continuous deepening of information technology construction in higher education in China, in this era of rapid information updates, mobile learning, which breaks the boundaries of time and space and is based on mobile devices for anytime and anywhere learning, has emerged as a new learning mode that has become an important learning method for college students today. The Outline of the National Medium and Long Term Education Reform and Development Plan proposes that by 2020, China should basically build a learning society where everyone can learn, can learn at all times, and can learn everywhere. This indicates that society has higher requirements for talent cultivation, which means that people's learning behavior and activities are no longer just periodic, but emphasize the learning behavior and activities that run through a person's life ^[1]. Learning to learn ", as an important indicator used to measure talent in today's society, represents that learning has gradually become a norm and a universal consciousness ^[2]. The mobile learning model supported by wireless internet technology undoubtedly plays an important role in building and developing a learning society. To be able to establish a foothold in a learning society, it emphasizes that learners should learn to learn in a mobile environment. Learning ability is the prerequisite and evaluation standard for learners to learn. Whether learners can learn and have good learning outcomes depends on whether they have strong learning ability ^[3]. Therefore, college students, as the backbone of the future social

development, in the face of fierce and cruel social competition, in order not to be eliminated by the society, they must have the awareness of Lifelong learning, learn how to learn in a mobile environment, have good mobile learning ability, let themselves maintain good core competitiveness, and become the talents needed by the society.

However, due to the characteristics of openness and mobility, mobile learning not only provides convenience for college students' learning, but also brings them some problems: during mobile learning, college students may not be able to identify and process the massive and diverse resources and information in the mobile network; Due to the uncertain environment of mobile learning, college students may lack the ability to self-regulate and motivation for mobile learning during the learning process. Therefore, in the internet environment, in order to adapt to the development of the times, how to enhance the mobile learning ability of college students has become an urgent problem that needs to be solved.

2. The Connotation of Mobile Learning Ability for College Students

2.1. The concept of Learning Ability

There is no consensus on the concept of learning ability both domestically and internationally. The concept of "learning ability" was first proposed by Professor Forrester in the field of management in 1965, and later gradually applied to the field of education. At present, in the education industry, it is widely believed that the general definition of learning ability is: learning ability is composed of the four elements of learners' learning motivation, ability, perseverance, and innovation in the learning process, representing the learners' ability to acquire, apply, share, and innovate knowledge^[4].

Specifically, it is manifested in four aspects of learning flow, total quantity, quality, and increment. Among them, the flow of learning can indicate a person's speed and ability to acquire, learn, and update knowledge; The total amount of learning reflects the vast extent of the sources and scope of knowledge that a person acquires and learns; The quality of learning can indicate a person's learning efficiency and the overall quality of various abilities reflected during learning; Finally, the increment of learning indicates a person's level of innovation in the knowledge and gains they have learned, as well as their contribution to the future^[5].

In summary, learning ability is the decisive ability to determine whether learners will learn, and it is a sustainable development ability that determines whether learners can adapt to the needs of social development and establish themselves in a learning society.

2.2. Concept of Mobile Learning Power

Learning ability is a reinterpretation of the various components of knowledge learning abilities by people in a learning oriented society, providing guidance for the cultivation of college students' talents in today's society and universities^[6]. The important representation of college students' learning is learning ability, which has the following characteristics: first, learning ability is the psychological quality of learners' internal Feature learning, such as motivation, attitude, and will; Secondly, learning ability is a comprehensive manifestation of learners' learning ability characterized by self-planning, learning efficiency, and thinking development during learning^[7]. Compared to traditional learning modes, mobile learning has its unique features: firstly, both mobile learners and mobile learning environments have mobile characteristics; Secondly, mobile learning is a digital autonomous learning process that utilizes mobile portable devices; Finally, mobile learning is a more free and flexible learning mode that combines with other different learning modes^[8].

Therefore, based on the connotation of learning ability, combined with the characteristics of college students' learning ability and mobile learning, this article believes that college students'

mobile learning ability refers to the sum of mobile learning motivation, mobile learning ability, learning self-control ability, mobile interaction ability, and learning creativity ability in a mobile learning environment. It can help college students efficiently apply the acquired knowledge to practice, in order to adapt to the development of a learning society, Becoming a high-quality talent needed by society.

Among them, mobile learning motivation is the prerequisite and foundation for college students to engage in mobile learning; Mobile learning ability refers to the ability of college students to apply and operate mobile devices and internet technology during the mobile learning process, as well as their ability to acquire, process, process, and apply information; Learning self-control is the ability of college students to self regulate and control the process and results of mobile learning, in order to maintain learning and improve learning efficiency; Mobile interaction ability refers to the ability of college students to actively interact and share resources with others during mobile learning; Learning creativity refers to the ability of college students to have a strong problem awareness during mobile learning and apply the knowledge they have learned to innovative practices. These five elements interact and complement each other, forming the sum of college students' mobile learning abilities, continuously helping them become excellent mobile learners and high-quality talents needed by society.

3. A Survey on the Current Situation of Mobile Learning Ability of College Students

With the continuous development of wireless internet technology, mobile learning has become a very important learning mode for college students today, and mobile learning ability is an important criterion for evaluating whether a college student is an excellent mobile learner. This survey is conducted under the Internet environment through a questionnaire survey on the basic information, mobile learning status, mobile learning motivation, mobile learning ability, learning self-control ability, mobile interaction ability and learning creativity of college students in Zhaoqing University. According to the analysis of survey data, the current situation of mobile learning ability of college students is understood.

3.1. Investigation Purpose

Through the survey, we can understand the current situation of mobile learning ability of college students in Zhaoqing University under the Internet environment, and provide practical data basis for analyzing the current problems of mobile learning ability of college students and proposing strategies to improve mobile learning ability.

3.2. Investigation Object and Method

The subjects of this survey are college students of Zhaoqing University. This survey questionnaire was published online through Questionnaire Star, and a total of 233 copies were collected, of which 227 were valid questionnaires, with a questionnaire effectiveness rate of 97.42%.

3.3. Investigation Content

The questionnaire of this survey consists of seven parts, including basic information of college students, mobile learning status, mobile learning motivation, mobile learning ability, learning self-control ability, mobile interaction ability and learning creativity. There are 34 questions in total, and the type of questions is all Multiple choice.

3.4. Analysis of Survey Results

According to the sample data of 227 valid questionnaires collected, among the surveyed college students, the proportion of female students is relatively high, accounting for 66.96% of the total survey population, while the proportion of male students is 33.04%. In terms of educational background, 84.14% of respondents have a bachelor's degree, while the rest have a junior college degree. From this, it can be seen that based on the data analysis of basic information of college students, it can provide reference significance for further analysis of the current situation of mobile learning, mobile learning motivation, mobile learning ability, learning self-control ability, mobile interaction ability, and learning creativity ability of college students in six aspects. The following is the specific data analysis of the six aspects.

3.4.1. Current Situation of Mobile Learning for College Students

In terms of the frequency of mobile learning, 33.04% of college students only engage in mobile learning when needed, while only 22.91% engage in mobile learning every day. It can be seen that the frequency of mobile learning for most college students is uncertain.

In terms of mobile learning experience, 39.21% of college students have one to three years of mobile learning experience, with 22.91% of respondents having less than one year or three to five years of mobile learning experience. Only a small proportion of college students have more than five years of mobile learning experience, indicating that the majority of college students have mobile learning experience within three years, This indicates that the vast majority of college students only begin to be exposed to the new learning mode of mobile learning after entering university, and their experience in mobile learning is still shallow.

In terms of online learning duration for mobile learning, 42.29% of college students have an online learning duration of 30 minutes to one hour each time, and 21.59% of college students only use it when needed. Few college students have an online learning duration of more than two hours, indicating that the majority of college students generally maintain an online learning duration of less than one hour during mobile learning, and the mobile learning time is relatively short.

According to survey data, the majority of college students choose to engage in mobile learning after class when expanding their knowledge or searching for urgent information, accounting for 70.04%. In addition, many college students choose to engage in mobile learning on the eve of exams, during their leisure time and leisure time, while only 29.96% choose to engage in it in the classroom. From this, it can be seen that most college students prefer fragmented learning in informal situations such as leisure and boredom or the need to search for urgently needed information.

3.4.2. Mobile Learning Motivation for College Students

In terms of whether there is a clear learning motivation during mobile learning, 69.17% of college students stated that there is a clear learning motivation during mobile learning, and only a small number of college students do not have a clear learning motivation. Among them, according to data, 30.55% of undergraduate and 11.51% of vocational students do not have clear learning motivation during mobile learning, respectively. From this, it can be concluded that most college students have strong learning motivation when engaging in mobile learning, and the learning motivation of undergraduate students is stronger than that of vocational students.

In terms of Lifelong learning awareness, 66.96% of college students said that they would still choose mobile learning to achieve Lifelong learning after graduation. Among them, 7.85% of undergraduates and 16.67% of junior college students said they would not achieve Lifelong learning through mobile learning. It can be seen that most college students have a strong awareness of Lifelong learning. Undergraduate students have a stronger awareness of Lifelong learning than junior college students. However, a small number of college students lack the awareness of Lifelong learning and do not agree to achieve their own Lifelong learning through mobile learning.

3.4.3. Mobile Learning Ability of College Students

In terms of device operation and usage, according to survey data, 65.64% of college students express proficiency in using internet technology to operate various mobile platforms and devices according to their learning needs, but 22.03% of college students still express uncertainty. From this, it can be seen that most college students are proficient in using mobile devices and have strong abilities in operating and using mobile devices.

In terms of information retrieval and acquisition of learning resources, 61.24% of college students are able to quickly and accurately obtain the information or resources they need through multiple channels. In addition, only 14.1% of college students stated that they are not good at classifying and organizing the learning materials obtained during mobile learning, which indicates that most college students have certain information retrieval abilities when facing the massive and complex learning resources and information online.

At the same time, only 50.22% of college students are able to efficiently utilize the learning resources they have obtained and achieve good learning outcomes. This indicates that the vast majority of college students, despite possessing certain information retrieval capabilities, are still unable to effectively manage and efficiently utilize the learning materials they have obtained during mobile learning.

3.4.4. Learning Self-Control Ability of College Students

In terms of formulating learning plans, according to survey data, only 43.61% of college students stated that they would develop a clear learning plan before engaging in mobile learning. This indicates that most college students have no plan when engaging in mobile learning and have not yet developed the habit of developing a clear learning plan.

In terms of self-control in the process of mobile learning, according to survey data, 42.73% of college students can always focus on completing learning tasks and terminate learning without being influenced by their own or external factors. Only 49.34% of college students say that even if they terminate learning due to their own or external factors, they will overcome difficulties, adjust their state and energy in a timely manner, and continue learning. This indicates that most college students have poor self-control during the process of mobile learning, are more susceptible to external influences, and are unable to adjust their learning mindset in a timely manner, thereby affecting the efficiency of mobile learning.

3.4.5. Mobile Interaction Ability of College Students

In terms of cooperation and communication with others and teams, only 55.94% of college students stated that they would actively participate in team communication and cooperation during the mobile learning process, with 29.52% of college students choosing the option of "uncertainty". In addition, only 41.85% of college students actively express their opinions and opinions in discussion and exchange groups/areas. This indicates that nearly half of college students are less proactive in interacting with others when engaging in mobile learning, and lack initiative and enthusiasm in knowledge exchange and sharing.

3.4.6. The Learning and Creative Ability of College Students

In terms of problem awareness, only 52.42% of college students question the information, viewpoints, resources, etc. obtained during the mobile learning process. In addition, 51.98% of college students excel in utilizing the advantages of the internet to express their unique perspectives and insights on exploratory new problems during mobile learning. This indicates that a large number of college students are still in a passive stage of accepting knowledge due to the influence of traditional teaching models during mobile learning. Their ability to actively explore knowledge is

poor, their problem awareness is not strong enough, and their thinking divergence is weak.

In terms of knowledge transformation and innovation, according to data, 59.47% of college students say they will combine their new knowledge with practical experience. In addition, only 57.70% of college students are proficient in applying the knowledge they have learned to practice and turning it into the ability to solve practical problems. This indicates that a large number of college students are unable to effectively transform and apply the knowledge they acquire during mobile learning, resulting in weaker knowledge transfer and innovation abilities.

4. Problems in Mobile Learning Ability of College Students in the Internet Environment

4.1. Weak Awareness of Mobile Learning among College Students

Through a survey, it was found that only 46.26% of college students stated that they would often choose resources they are interested in for learning, in order to expand their learning, and the majority of college students maintained online mobile learning for less than an hour. In addition, 70.04% of college students express the need to expand their knowledge after class or search for urgently needed information before engaging in mobile learning. From this, it can be seen that the majority of college students only engage in mobile learning unconsciously and spontaneously, and have not yet formed a good awareness of mobile learning. The awareness of mobile learning is relatively weak, and they have not fully recognized the new learning mode of mobile learning.

4.2. Poor Resource Management Abilities of College Students

In this information explosion era of the internet, facing the massive and complex learning resources, in order to efficiently utilize the obtained learning resources, college students need to have strong learning resource management abilities. Through investigation, it was found that the majority of college students have certain abilities in information retrieval and processing, and can accurately and quickly obtain the learning resources they need, as well as classify and organize the obtained resources. However, only 40.22% of college students stated that they can efficiently utilize the learning resources they have obtained to achieve good learning outcomes. From this, it can be seen that most college students, although possessing certain information retrieval and processing abilities during mobile learning, are not yet able to effectively utilize the acquired learning resources for efficient learning, and their ability to manage learning resources is poor.

4.3. Low Self-Monitoring Ability of College Students

To ensure the smooth and efficient completion of mobile learning behaviors and tasks, college students need to have strong self-monitoring abilities. Through a survey, it was found that only 42.73% of college students stated that they can always focus on completing learning activities and tasks without being disturbed by their own or external factors during the mobile learning process. And only 44.93% of college students are able to arrange their mobile learning time reasonably and complete learning activities and tasks on time. From this, it can be seen that in the face of various temptations on the internet, most college students are more susceptible to external interference during the process of mobile learning, do not manage their mobile learning time reasonably, and have poor self-control ability.

4.4. Weak Awareness of Collaborative Communication among College Students

Collaboration "is a communication and exchange activity based on learners' understanding of the knowledge they have learned. It is an important way for learners to construct the meaning of knowledge. It can help learners deepen their understanding of knowledge during the process of transmitting and sharing knowledge and viewpoints, and also promote emotions between learning

collaborators^[9]. Through investigation, it was found that only 55.94% of college students actively participate in team communication and cooperation during mobile learning, and only 41.85% of college students actively express their opinions in discussion groups/areas. It can be seen from this that most college students lack the awareness of team Collaborative learning when conducting mobile learning, and lack initiative and enthusiasm in knowledge exchange and sharing.

4.5. Insufficient Information Practice Ability of College Students

Mobile learning cannot simply learn knowledge, but also needs to unleash innovative thinking, learn how to transform and apply the learned knowledge and skills into practice, and become one's own comprehensive quality^[10]. Through investigation, it was found that only 57.70% of college students have strong practical problem-solving abilities, while only 51.98% of college students are good at utilizing the advantages of the internet to express their unique views and insights on exploratory new problems. From this, it can be concluded that college students lack divergent thinking, poor information practice ability, and are not able to create opportunities to expand their knowledge and skills and apply what they have learned.

5. Strategies for Improving Mobile Learning Ability of College Students in the Internet Environment

5.1. Strengthen the Promotion and Construction of Mobile Learning

A good atmosphere for mobile learning is not only beneficial for college students to actively engage in mobile learning, but also to enhance their understanding of mobile learning and enhance their awareness of mobile learning. As the main learning place for college students, universities need to attach importance to and strengthen the construction of mobile learning environments and platforms. While covering wireless networks throughout the school, they should purify the online learning environment and provide a clean mobile learning environment for college students. In addition, schools should advocate for teachers to actively integrate mobile learning into their curriculum teaching, and actively carry out relevant propaganda lectures and activities to make college students aware of the new requirements of a learning society for talent cultivation and the significant impact of mobile learning on their future, thereby stimulating their sense of learning crisis and helping them correct their attitude towards mobile learning, Stimulate their enthusiasm to actively participate in mobile learning and awareness of Lifelong learning.

5.2. Provide Effective Learning Guidance for College Students

As the main learning place for college students, schools should strengthen the construction of campus mobile learning resources, optimize mobile learning resources, and combine the characteristics of mobile learning, the learning characteristics and needs of college students to create more specialized and targeted learning resources, and build a campus mobile electronic resource library. In addition, schools should strengthen professional training on teachers' information literacy. Teachers should improve their information literacy, guide college students to fully understand the functions of the school's mobile electronic resource library, provide more effective guidance on learning resource management, help them build their own knowledge structure system, learn how to effectively use the learning resources they have acquired, and overcome knowledge anxiety.

5.3. Enhancing College Students' Self-monitoring Ability

When college students engage in mobile learning, they should enhance their willpower and focus, maintain rational thinking, and develop a clear learning plan based on their own learning needs. They should learn to arrange and manage their learning time reasonably, analyze, summarize, reflect, and

evaluate their learning process, adjust their learning mindset, and appropriately reward themselves, Stimulate learning interest and motivation, continuously adjust one's learning methods and strategies, and thus strengthen one's self-monitoring ability. In addition, in order to promote the effectiveness of mobile learning for college students, teachers can incorporate mobile learning into teaching assessments and teach them some methods and strategies for autonomous learning and management of mobile learning in teaching ^[11]. Teachers should establish reward mechanisms when combining professional courses with mobile learning in teaching, continuously stimulate their motivation for mobile learning needs, guide them to develop scientific learning plans that meet their learning needs, and effectively supervise their mobile learning behavior, activities, and results to exercise their learning perseverance.

5.4. Strengthen the Collaborative Communication Awareness of College Students

Team Collaborative learning can enable college students to actively explore knowledge and find ways to solve problems in communication with each other to exercise their creative thinking. Compared with individual learning, it has the characteristics of wider capacity and faster speed to promote college students' knowledge acquisition ^[12]. In the process of mobile learning, college students should actively speak in discussion and communication groups/areas, collaborate and communicate with others, cultivate their awareness of resource sharing, dare to express their ideas, and learn to listen to others' opinions. Through team thinking collisions and resource sharing, they should discover more innovative problem-solving methods. In addition, in the process of mobile learning, teachers can assign some collaborative learning tasks to college students, allowing them to communicate and discuss through mobile social platforms such as WeChat and QQ, and jointly complete the learning tasks. The participation and performance of college students in communication and discussion are also included in the performance evaluation to strengthen their awareness of collaborative communication and resource sharing.

5.5. Improving the Information Practice Ability of College Students

The key path for college students to achieve their subjective initiative is through practice. In the process of mobile learning, college students should break the original mindset, strengthen their problem awareness, dare to question the information, viewpoints, resources, etc. they have obtained, and be able to actively transfer, transform, and apply the knowledge they have learned to practical problem-solving, so as to apply what they have learned and constantly try to innovate. In addition, teachers should update their teaching concepts, strengthen their own level of information technology teaching practice, emphasize student-centered teaching, and use innovative teaching models that combine traditional teaching and mobile learning,

Create various new situations to guide college students to proactively identify problems, assign more practical learning tasks after class, stimulate their subjective initiative, encourage them to cultivate independent problem-solving and practical innovation abilities, and improve the evaluation system for college students' mobile learning, emphasizing the evaluation of knowledge and information practice and innovation in the process of mobile learning, in order to enhance their information practice ability.

6. Conclusion

The continuous deepening development of mobile learning in the internet environment and the higher requirements of society for talent cultivation have made exploring how to improve the mobile learning ability of college students have certain research and practical significance. This paper takes college students of Zhaoqing University as the research object, and conducts a questionnaire survey on the current situation of college students' mobile learning ability under the Internet environment.

Based on the analysis of survey data, it finds that college students have weak mobile learning awareness, poor resource management ability, low self-monitoring ability, weak awareness of collaboration and communication, and insufficient information practice ability. Based on the psychological and learning characteristics of college students, the reasons for their existence are analyzed: low understanding of mobile learning, lack of effective learning guidance, weak motivation for learning needs, weak awareness of resource sharing, and low subjective initiative. Finally, based on the identified problems and analyzed reasons, five corresponding strategies for improving the mobile learning ability of college students were proposed: strengthening the promotion and construction of mobile learning, providing effective learning guidance for college students, enhancing their self-monitoring ability, strengthening their collaborative communication awareness, and enhancing their information practice ability.

Acknowledgement

This paper is a phased achievement of the "Recommendation research on Adaptive Path of Online Learning based on Knowledge Graph" of the higher education reform project of Guangdong Province in 2020 (NO.612).

References

- [1] Zhou Yanping. *Research on Improving Learning Ability of Secondary Vocational School Students in the Smart Age*. Jiangsu Normal University, 2018
- [2] Zhang Youmei, Liu Wenjuan, Ling Zhihua, Wu Bangkun. *Research on the current situation of learning ability of vocational students in the context of Big data*. *Journal of Tonghua Normal University*, 2016 (3): 137-142
- [3] Li Runzhou. *A Epistemology perspective on improving students' learning ability*. *Educational Science Research*, 2015 (11): 5-11
- [4] Teng Da. *Construction of cloud mutual aid education model based on "Internet plus" college learning ability value*. *Coal Higher Education*, 2017, 35(3): 72-77
- [5] Chen Kun, Liang Xingxing, Shen Xiaobei. *On the Connotation, Formation, and Cultivation of Student Learning Ability*. *Contemporary Education Science*, 2018 (3):41-46
- [6] Scuntuya. *Cultivation and improvement of college students' learning ability in the era of "Internet plus"*. *Journal of Chifeng University*, 2017, 33(1): 222-223
- [7] Zhang Xiangyun. *Research on the Characteristics of Learning Ability of College Students in China*. *Journal of Educational Science of Hunan Normal University*, 2016 (2): 95-102
- [8] Bao Hongmei, Zuo Guangming. *Research on Mobile Learning Ability of College Students in the Context of "Internet plus"*. *Science and Technology Innovation Guide*, 2017(32): 192-196
- [9] Ji Yongbing. *Research on the Interactive Improvement Mode of Online Learning Ability of College Students*. Lanzhou University, 2018
- [10] Ding Yayuan, Xie Xiaoshan. *Research on the Construction of Online Learning Ability for Open Education Learners*. *Journal of Anhui Radio and Television University*, 2015 (2): 63-67
- [11] Xue Fang, Hao Xiaoxiao, Liu Nianlin. *Research on the Current Situation of Mobile Learning for Vocational College Students*. *Science and Technology Information*, 2014, 06 (17): 219-220
- [12] Ren Jianfeng. *Computer Supported Collaborative learning: Strategies and Tools*. Beijing: Capital Normal University Press, 2014