

Exploring the Application Prospects of Mobile Learning Based on Smartphones in College Teaching

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Abstract: mobile learning is an important application of information technology in the field of education, which has attracted more and more educators' attention in recent years. Compared with traditional teaching methods, mobile learning has higher flexibility and strong characteristics of personalization and autonomy. As a carrier of mobile learning, smart phones have the characteristics of portability, networking and interactivity, and become an indispensable part of the field of mobile learning. In college teaching, teachers can use smart phones to provide students with educational resources anytime and anywhere, and stimulate students' interest and motivation in learning. However, the research on the application prospect of mobile learning in college teaching is still relatively limited, and the application of smart phones in college teaching also needs further research. Therefore, this paper aims to explore the application prospect of mobile learning based on smart phones in college teaching, in order to provide beneficial enlightenment for college teaching reform and the development of mobile learning.

Keywords: College Teaching, Mobile Learning, Application Prospect, Smart Phones

1. Introduction

With the continuous development of mobile Internet technology, people's lifestyle and learning style are also undergoing earth shaking changes. As a new learning method, mobile learning has shown more and more advantages and values. Mobile learning can

take advantage of the convenience and intelligence of mobile devices to learn anytime and anywhere, providing a more convenient way for people to learn. Compared with traditional forms of education, mobile learning can make learning more flexible and diversified, and enhance the pertinence and personalization of learning. At the same time, mobile learning can also stimulate students' interest in learning, make learning more interesting and meaningful, and improve students' learning enthusiasm.

In higher education, mobile learning also has broad application prospects. Mobile learning based on smart phones can enable students to learn in their spare time, make full use of fragmented time and improve learning efficiency. Mobile learning can also provide more diversified and personalized learning content for higher education to meet the learning needs of different students [1] At the same time, mobile learning can also improve students' learning ability in the network learning environment, promote students' autonomous learning and inquiry spirit, and further enhance students' learning effect and practical ability. Therefore, as a new learning method, mobile learning has become an indispensable part in the field of modern education. With the rapid development of mobile communication technology, mobile learning will become more and more convenient, humanized and intelligent, providing people with more efficient and high-quality learning experience. It is believed that in the future, mobile learning will also bring broader opportunities and challenges to education and become one of the most potential innovations in the field of education.

2. An overview of the Connotation of Mobile Learning

Mobile learning refers to the way of learning and knowledge exchange at any time and place with the help of mobile devices (smart phones, tablets, laptops, etc.) and wireless network technology. Mobile learning is not only a change in learning methods and means, but also an innovation in learning concepts and teaching methods. It meets people's learning needs in different scenarios by providing personalized, autonomous and convenient learning methods. Mobile learning includes online learning, social network learning, personalized learning, game learning and other ways, so that students can easily access the required educational resources and communicate with each other anytime and anywhere.

First of all, mobile learning has space-time freedom, which is one of its most significant advantages. Traditional education is limited by time and place, which often requires students to receive education in a certain period of time and place, which limits students' autonomy and flexibility. Mobile learning is not subject to these restrictions. Students can access educational resources and carry out learning activities through mobile devices anytime and anywhere. This freedom enables learners to plan their own learning time and methods more autonomously, and better integrate into the schedule of learning and life.

Secondly, mobile learning has the characteristics of personalized customization. Because the learning resources and learning paths of mobile learning can be adjusted according to the needs and interests of students, students can better obtain their own learning content and methods, and it is easier to achieve good results. This personalized learning can fully consider the students' knowledge background, interests and abilities, so that students can better play their potential and improve the learning effect.

Third, mobile learning has the characteristics of multi-element structure. There are various learning resources in mobile learning, including text, pictures, audio, video, animation and other elements. Such rich content can not only increase the interest and attraction of learning, but also improve the

memory effect and understanding ability of learners.

Fourth, mobile learning is interactive and social. Mobile learning can provide rich interactive educational resources, so that students can better communicate and interact with teachers or other students, and share knowledge and experience. This interactive learning can stimulate students' learning enthusiasm, improve learning effect and learning experience, and is also conducive to students' thinking innovation and self-development.

Finally, mobile learning is efficient and convenient. Through mobile phones, tablets and other mobile devices, we can obtain learning resources and carry out learning activities anytime and anywhere, which has great advantages in saving learning time and cost, and improving the efficiency and convenience of learning. In the fast-paced modern life, this advantage is particularly obvious. People are more and more inclined to use mobile devices for learning.

3. An overview of the Connotation of Mobile Learning

There are many similarities between smart phones and personal computers. Both have independent operating systems. Users can install various software according to their own needs and obtain more convenient characteristic services. The difference is that smart phones have more advantages in mobility and functions. Thanks to the rapid development of 4G and 5g communication technologies, smart phones not only support calls and Internet access, but also provide powerful multimedia functions to support users' various streaming media services, games, entertainment and other activities. The emergence of mobile learning has brought remote education into a new stage of development. However, due to the fact that mobile learning is still in its infancy, its theoretical basis is not yet mature, and there are also some problems in the specific application process. First of all, the number of existing mobile learning resources is small, and the content quality is not high. At present, most of the mobile learning resources appear on the web in the form of pictures and text, or in the form of video. Lack of more targeted and interactive content suitable for learners'

personalized learning. Secondly, the support services of mobile learning platform are insufficient [2]. At present, most mobile learning platforms in China are for personal use, lacking the support of professional teams and management platforms. Finally, there are security problems in mobile learning platform. Due to the complexity of mobile devices and network environment, as well as the particularity of distance education itself, there are certain security risks in mobile learning. In the specific application process, there are still a series of problems in the college mobile learning mode based on smart phones.1.2.

3.1 Poor System Compatibility

Due to the large number of manufacturers of smart phones, there are great differences in their selection of operating systems, which leads to strong incompatibility between the application software of different smart phones. This incompatibility causes a lot of waste of resources, but also makes many application software can not be used reasonably. In order to solve this problem, manufacturers can strengthen the unified standards of mobile phone operating system and software, standardize the production process, ensure software compatibility, and reduce unnecessary waste of resources. At the same time, we should strengthen intra industry cooperation, actively carry out cross manufacturer technical exchanges and standard setting, promote interoperability and compatibility between operating systems and application software, so that users can better enjoy the convenience brought by these applications, and create a broader development space for the whole society [3]. In addition, consumers can also reduce incompatibilities by regularly upgrading the mobile operating system, avoiding excessive application installation and other means, insisting on using genuine software and avoiding the use of pirated applications, which can effectively reduce security risks and resource waste.

3.2 Restricted by Hardware Equipment

In today's society, smart phones have become an indispensable part of people's daily life. However, with the continuous progress of science and technology, the updating speed of smart phones is faster and faster, which has brought many troubles to consumers. Many

smart phone users often feel that there are a series of problems such as insufficient battery capacity, slow response speed and crash during the use of mobile phones. These problems have affected mobile learning and other mobile Internet services. At the same time, there are other factors that make smart phones face many problems. At present, many smart phone manufacturers pay more attention to the upgrading of mobile phone software and hardware, but ignore the problems of smart phones themselves. For example, the battery capacity of smart phones is often insufficient, which brings a lot of inconvenience to users. In addition, some users find that the response speed of smart phones is very slow, and they often crash. In mobile learning, these problems are more serious, because users need to obtain information in time, and these problems will reduce the efficiency of smart phones. In addition, smart phones will consume hardware when surfing the Internet for a long time, leading to the instability of network signals, which is also a common problem. In order to solve these problems, smart phone manufacturers should pay more attention to the problems of mobile phones themselves. For example, we should increase the battery capacity, improve the startup speed of mobile phones, and reduce the probability of crash. In addition, you can also optimize the network settings of smart phones, reduce the hardware consumption of mobile phones when surfing the Internet for a long time, and improve the stability of network signals. Only in this way can smart phones better meet the needs of users in mobile learning [4].

3.3 Lack of Mobile Learning Awareness and Learning Resources

Although the resources of smart phones are very rich, including various games and e-books, the resources that really help students' learning are very limited. More seriously, some resources have problems such as viruses and plagiarism, which is extremely disadvantageous for students' learning. Therefore, mobile learning for smart phones cannot be widely used. Especially because most people lack the awareness of mobile learning, their understanding of mobile phones only stays at the level of communication tools, and they lack a more intuitive understanding of how to use mobile phones for mobile learning.

This cognitive backwardness leads to the fact that mobile learning cannot become the mainstream of learning, which is a huge waste of educational opportunities for the majority of students. Therefore, we need to improve and optimize the mobile learning mode of smart phones and provide more high-quality and professional learning resources. These resources may include some well-known online learning platforms and courses, such as superstar learning link and university online, as well as some online learning tools specially designed for students, such as nailing, ape search questions and litchi micro lessons. These resources can not only make students learn more conveniently, but also provide more professional support and guidance to help them achieve better results in learning [5]. However, what is mentioned above is only a part of high-quality learning resources. For students, it is more important that they can use smart phones correctly. At present, many people's understanding of smart phones is still at the level of communication tools, and they lack a more intuitive understanding of how to use mobile phones for mobile learning. Therefore, we need to enhance students' awareness and ability to use mobile learning through various ways, including carrying out universal education and developing intelligent auxiliary tools.

4. Mobile Learning Mode in Colleges and Universities Based on Smart Phones

4.1 Course Push Learning Mode

In Colleges and universities, the course push mobile learning mode is a common mobile learning mode based on smart phones. In this mode, teachers upload classroom handouts, course videos, ppts and other learning materials to a mobile learning platform, and students can obtain these learning materials in time through smart phones. Teachers can use the mobile learning platform for classroom management and homework assignment, as well as tracking and analyzing students' learning. Students can learn the course content anytime and anywhere through smart phones and submit homework after class. Teachers can view students' homework in real time, and adjust teaching contents and methods according to students' learning situation to improve teaching effect.

In addition, the course push mobile learning mode can also improve students' learning effect through online discussion, interactive question answering and other functions. Students can communicate and discuss with teachers and other students on the mobile learning platform to deepen the understanding and mastery of course knowledge. In order to give full play to the advantages of the course push type mobile learning mode, teachers need to pay attention to the following points. First, release learning content in time [6]: students need to obtain learning materials and complete homework in time, and teachers need to release learning content in time to ensure that students have enough time to study and prepare. Second, release materials should be diversified: teachers need to release diversified learning materials according to students' learning characteristics and needs, including videos, pictures, texts, etc., so that students can better understand and master knowledge points. Third, interaction with students: teachers need to communicate and interact with students in time, answer students' questions and puzzles, and strengthen learning support and guidance for students. Fourth, tracking students' learning: teachers need to track students' learning in time to understand students' learning progress, understanding and mastery, so as to better guide students.

4.2 Online Interactive Learning Mode

Online interactive mobile learning mode is a new teaching method, which combines teachers' online teaching and students' online learning. In this mode, teachers can conduct online teaching through their own smart phones. Using the online video or real-time audio function on smart phones, teachers can directly interact with students, for example, through online question and answer, online communication, online discussion and other ways to help students understand teaching materials in depth. Because smart phones are easy to carry around, teachers can teach anytime and anywhere. Students can also participate in the online interactive mobile learning mode through their smart phones. They can learn by watching online video or listening to real-time audio. At the same time, they can interact with teachers through online Q & A, communication, discussion and other ways to jointly discuss problems and improve

the learning effect [7]. For colleges and universities, online interactive mobile learning mode has many advantages. First of all, it improves the efficiency of teaching. Traditional teaching requires teachers to teach courses face to face, while online teaching can reduce the time and space constraints and improve the efficiency of teaching. Secondly, it enriches the teaching form. Through the online interactive mobile learning mode, teachers can use a variety of teaching methods, such as group discussion, online question and answer, to better stimulate students' interest and improve the learning effect. Finally, it provides students with greater learning freedom. Students can freely choose the time and place of study, better arrange their study life, and improve the learning efficiency. Of course, there are also some challenges in the implementation of online interactive mobile learning mode. First of all, it needs some technical support. Teachers and students need to have certain technical ability to ensure the normal operation of online teaching. Secondly, it also needs targeted curriculum design. The online interactive mobile learning mode needs to pay more attention to the pertinence and effectiveness of the course, and teachers need to flexibly use various teaching methods to fully mobilize the enthusiasm of students. Finally, we need to ensure the quality of teaching. Online teaching requires teachers to have better teaching ability, which makes online teaching not inferior to traditional teaching.

4.3 Resource Sharing Learning Mode

Using resource sharing mobile learning mode can make full use of students' personal learning resources, improve students' learning efficiency and quality, and further promote students' knowledge sharing and collaborative learning. First of all, the resource sharing mobile learning mode can help students make better use of their learning resources. For example, some students will take detailed notes while listening to the class, while others are better at sorting out the key points and difficulties of the course. In this case, students can share their learning resources with other students through smart phones to help them better understand and master knowledge. Secondly, the resource sharing mobile learning mode can enrich students' learning resources.

For example, some students will do some simulated test papers while preparing for the exam, while others will sort out detailed handouts. In this case, students can obtain more abundant and diverse learning resources by downloading resources shared by others to improve their learning effect. Finally, through the resource sharing mobile learning mode, students can establish closer ties. For example, students can cooperate and communicate with other students through online learning groups or course forums on smartphones. This can not only help students better understand and master knowledge, but also promote friendship and mutual assistance between students [8]. In order to give full play to the advantages of the resource sharing mobile learning mode, we need to pay attention to the following points. First, respect others' intellectual property rights: students need to respect others' intellectual property rights and do not infringe others' copyright and intellectual property rights. Second, ensure the legitimacy of resources: students need to ensure that the resources they share and learn are legal and do not infringe the intellectual property rights and copyrights of others. Third, maintain learning order: students need to abide by the regulations and disciplines of the school and learning institutions, and do not release and share information that affects learning order and fairness. Forth, protect your privacy: students need to protect their privacy and do not disclose their personal information and data.

4.4 Game based Learning Mode

The game based learning mode is a highly innovative mobile learning mode. It turns the learning process into an interesting game, allowing students to complete learning tasks in the process of the game, and continuously improve their learning outcomes by obtaining game points, unlocking rewards, etc. For mobile learning in Colleges and universities, the game based learning mode has many advantages and values. First of all, the game based learning mode can greatly improve students' interest and enthusiasm in learning, and stimulate students' curiosity and desire to explore knowledge. Taking probability as an example, the complex theoretical knowledge of probability is presented by means of game, and the process of probability experiment is simulated as a game, so that students can

continue to try and practice by participating in the game, so as to better understand the knowledge and skills of probability and statistics. Secondly, the game learning mode can improve the learning effect of students. The game based learning mode combines learning with games, which not only provides students with a more vivid and interesting learning experience, but also enables students to get feedback, summary and consolidation in the process of completing tasks through games, so as to improve the learning effect. Finally, the game based learning model can improve students' learning participation and interactivity. Compared with traditional classroom learning, game based learning pays more attention to students' participation and interaction, so that students can learn and grow in interaction, so as to better understand the course content and improve their academic level and creativity. For mobile learning in Colleges and universities, the game based learning model has become a new model worthy of promotion. Through the game based learning mode, colleges and universities can better meet the learning needs of students, improve the participation and interaction of courses, and lay the foundation for students' future academic development and innovation dreams.

4.5 Personalized Learning Mode

With the development of information technology, higher education is constantly developing in the direction of "intelligence, personalization and mobility". The University mobile learning mode based on smart phones can make full use of advanced technologies such as mobile devices and the Internet to provide students with more convenient, flexible and personalized learning methods. Personalized learning recommendation system based on AI technology is an important means to realize personalized learning. By analyzing students' learning situation, knowledge background, interests and hobbies and other information, personalized learning programs and resource recommendations are provided for students on smart phones. For example, through students' learning records and behavior analysis, smart phones can recommend learning content suitable for students, and constantly adjust the recommended learning resources according to students' learning

situation. In this way, it can improve students' learning efficiency, reduce students' learning burden, and better meet students' learning needs. In addition, the University mobile learning mode based on smart phones can also realize personalized learning through other means. For example, according to students' learning habits and interests, provide students with personalized curriculum and constraint measures, so that they can better adapt to the learning environment and achieve better learning outcomes. Students can choose their own learning area, learning time and learning content to improve their initiative and participation in learning. At the same time, the University mobile learning mode based on smart phones can also realize personalized learning through social media and group sharing [9]. Through social media and group sharing, students can share learning experience and knowledge with other students, and get appropriate feedback and guidance. Such interaction and exchange can not only enhance the feelings between students, but also better promote students' learning and growth.

5. Application of Mobile Learning based on Smart Phones in College Teaching

5.1 Clear Learning Objectives

Efficient university teaching needs to set goals and focus on cultivating students' ability to analyze and solve practical problems. Only by setting goals can we make better use of mobile devices for learning. Although students are more skilled than teachers in using devices such as smartphones, their understanding of various teaching applications may not be deep enough. Therefore, the main task of teachers is to help students skillfully use different learning software, learn to use learning software to find the content they are interested in and answer their own questions. In addition, students need to actively expand their knowledge system under the guidance of teachers, find ways to make up for their own knowledge, and set clear learning goals for themselves. When using mobile devices for learning, we also need to give full play to the supervision role of teachers and parents to avoid mobile learning becoming superficial "formalism", and prevent some students from using this opportunity to browse content unrelated to learning. Students should always pay attention to the practical

application value of self-study achievements and improve their ability to analyze and solve practical problems. In addition, teachers and students can use the advantages of mobile learning to contact and communicate through various forms of learning, share learning experience and experience, so as to further understand and apply the knowledge they have learned. Mobile learning can help students learn at any time and anywhere, so as to improve learning efficiency and results.

5.2 Innovative Teaching Mode

Higher education has always been carried out around class teaching. The purpose is to use the advantages of collective wisdom and teachers' energy to improve teaching efficiency. But this traditional class teaching still has some shortcomings, such as the restrictions of teachers and teaching content. Now, with the development and popularization of network technology, encouraging students to actively use network resources to interact with teachers has become the trend of higher education reform. On the Internet, students can interact more freely and innovatively with teachers, and obtain richer teaching resources than in the classroom by sharing their views and problems, discussing specific topics. Due to the reliability and timeliness of network resources, students can obtain the latest knowledge at any time, update their knowledge system, and keep up with the development trend of the times. At the same time, with the help of the Internet, students can also have all-round communication with teachers. Through QQ group discussions, private message exchanges, and email exchanges, students can put forward knowledge points they don't understand in class to teachers and get more detailed answers in the next class [10]. For some individual problems, students and teachers can also quickly answer them through the network, which improves the efficiency of knowledge transfer and problem solving. Therefore, higher education should adhere to the principle of "class teaching + network interaction", give full play to its advantages, create a more relaxed and free learning environment, and let students and teachers jointly achieve the educational goals.

5.3 Give Full Play to the Guiding Role of Teachers

With the wide application of mobile learning, we have to admit its many advantages and convenience. At the same time, we should also note that everything is not perfect, and there are also some problems to be solved in the practice of mobile learning. Therefore, as college teachers, we need to pay attention to students' learning dynamics in real time, solve the problems in the process of using smart phones in time, and record them for further feedback and summary. Only in this way can we better guide the students, adjust the teaching plan, and make suitable learning goals for the students with personalized needs. At the end of the learning stage, we need to assess and evaluate the students, and summarize them to make full preparations for the next stage of learning plan. More importantly, we should give full play to students' subjective initiative and creativity, encourage students to show personality and innovation in learning, and formulate personalized learning plans and goals for students. For excellent students, we need to give timely praise and guidance, and encourage other students to learn from their learning methods and ideas. At the same time, we should respect students' individual needs, pay attention to the cultivation of students' mental health and comprehensive quality, and strive to provide every student with a comprehensive and high-quality learning environment.

6. Development Prospect and Application Prospect of Mobile Learning

With the development and popularization of mobile communication technology, mobile learning will be further developed, which is also the trend of the development of education informatization in the future. Although there are still some deficiencies in the current research of mobile learning, with the rapid development and popularization of mobile communication technology, it will bring more convenience to people's learning, and mobile learning will also become an important part of distance education. Of course, mobile learning is not without shortcomings. There are still some problems in the application of mobile learning in teaching, such as less interaction between teachers and students, less interaction between students and students, and imperfect evaluation mechanism. With the rapid development of wireless communication

technology and network technology, there will be more and more research on the teaching mode and learning strategy of mobile learning from the theoretical perspective.

Mobile learning is a learning method based on mobile technology. It not only has no restrictions on the time and place of learners' learning, but also can realize anytime, anywhere, on-demand learning in the learning process. It can meet the needs of different learners and is of great significance to education. At present, the application scope of mobile learning is very wide, but many aspects need to be improved [11]. Therefore, the following aspects should be started in the future research. First of all, we should strengthen the research of theoretical basis. Theory is the guidance and support of practice. Without theoretical guidance, practice will lose its direction and goal. Therefore, we should establish the system framework of mobile learning in theory to better guide practice. Secondly, we should strengthen empirical research. Empirical research is one of the important methods of mobile learning research. Only through empirical research can we conduct in-depth analysis and evaluation of mobile learning from different angles, so as to provide a theoretical basis for future research on mobile learning.

6.1 Construction of Mobile Learning Platform based on Campus Wireless Network

6.1.1 Construction of mobile learning basic platform

A complete mobile learning platform is also a complete database system, which should include three parts: database, database management system (DBMS) and database application system. The database is a collection of related data organized according to a certain structure; Database management system is a software system that provides database establishment, use and management tools; Database application system is established to meet the data processing needs of specific users. It is an application software with database access function, which provides users with a user interface to access and operate a specific database. The available data models are hierarchical data model, mesh data model, relational data model, object-oriented data model and semantic data model.

6.1.1.1 Platform hardware construction

The computer host can be a single machine or a computer network system.

The data input device is used to input various data required by the system into the computer and convert analog data into digital data.

Data storage device mainly refers to the disk, tape, optical disc and corresponding drive device for storing data.

The data output device can display the results of data analysis and processing in different forms such as graphics, images, files, reports, etc., which is convenient for learners to choose. The data communication transmission equipment is equipped with network system connection, network card and other network special facilities to exchange information or share data with servers or other workstations through the network.

6.1.1.2 Platform software construction

Various programs necessary for the operation of mobile learning platform usually include: [12] computer system software is generally provided by computer manufacturers, which provides convenient program system for users to develop and use computers, usually including operating system, assembly system, diagnostic program, as well as various maintenance manuals, program instructions, etc. These are necessary for the normal operation of mobile learning system.

Mobile learning system software and other supporting software can be mobile learning system software packages specially developed through mobile learning system tools to support the input, storage, conversion, output and user interface of various knowledge data.

Application analysis program is a program compiled by system developers or users according to mobile learning for a specific application task, which is the expansion and extension of system functions.

6.1.2 Construction of teaching resources

6.1.2.1 Construction of mobile learning content based on Curriculum

Colleges and universities have developed a variety of online learning resources, mainly including two categories, one is excellent courses, and the other is excellent resource sharing courses, which can use related technologies to realize the interconnection of learning resources. Although the construction of mobile learning content based on curriculum can make use of the existing

network learning resources, it must not only ensure the systematization of curriculum content, but also reflect the modularization of knowledge points.

6.1.2.2 Construction of mobile learning content based on knowledge blocks

The course based learning content is convenient for students to find out and fill vacancies for specific courses after class, which takes a relatively long period of time. However, the demand for mobile learning may only be a few minutes of queuing in the canteen to buy food. The knowledge block based learning content has unique advantages, which is not only convenient for students to find knowledge, but also convenient for students to learn knowledge. The knowledge block here may be just a sentence, a picture or a short video. Although each knowledge block is relatively independent, they all belong to a certain knowledge and ability training system or to multiple relatively independent knowledge and ability training systems.

6.2 Construction of Mobile Learning Mechanism

6.2.1 Relevant system construction

There are too many factors involved in the popularization of mobile learning, which must be guaranteed by a certain system, otherwise the mobile learning will not achieve the real purpose of mobile learning. The system should include the following aspects: first, the development and investment of mobile learning, which mainly involves how to carry out the construction of mobile learning in stages and suddenly, and the guarantee of the source of funds required; The second is the construction and maintenance standards of mobile learning platform, mainly the platform software and hardware standards and platform learning content standards. Such systems affect the construction and application of mobile learning platform; The third is about the behavior requirements of mobile learning participants, mainly to promote and restrict the behavior and inaction of learning participants in the learning process.

6.2.2 Reform of teachers' teaching methods

Mobile learning itself is convenient for all kinds of learners and users. Teachers can introduce mobile learning into classroom teaching to achieve high teaching efficiency. In addition, teachers should not be limited to a

certain textbook content, but should explore all kinds of resources, especially network electronic resources. If a real mobile learning platform is established, there must be the curriculum teaching resources needed by teachers, Build the curriculum into a science teaching system based on social needs [13].

6.2.3 Reform of students' learning methods

Students can learn specific knowledge and skills by using mobile learning after class, which plays a very important role in students' growth. But how to make full use of mobile learning platform and extracurricular learning time requires students to change their learning methods. In mobile learning, students must clarify their learning objectives, know their real needs, mine the knowledge they really need in the mobile learning resource database, and incorporate what they have learned at any stage into their existing knowledge and skills. Carrying out mobile learning in higher vocational colleges is conducive to students' choice of knowledge they are interested in, and can effectively make up for the shortcomings of classroom teaching. The construction of mobile learning platform should be forward-looking to ensure the maximum value of the learning platform.

7. Conclusion

With the growing maturity of mobile Internet technology and the popularity of smart phones, as a new learning method, mobile learning has gradually become an important part of college teaching. Mobile learning based on smart phones has the advantages of flexibility and portability, which can meet the personalized, convenient and efficient learning needs of students. However, there are still some problems to be further solved, such as students' acceptance of mobile learning, technology and teachers' adaptation to its teaching mode. These problems need the joint efforts of university education managers and teachers. In the future teaching practice, we should make full use of the advantages of mobile devices such as smart phones, give full play to the role of mobile learning, realize the diversification of teaching content, improve students' learning enthusiasm and learning effect, so as to promote the development and progress of higher education.

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References

- [1] Chang Wei (2021). Construction of College English mobile learning mode based on smart phones. *Journal of Shanxi University of Finance and economics*, 43 (S2): 171-174.
- [2] Ding Mang (2017). Research on College Students' mobile learning based on smart phones. Nanchang University.
- [3] Feng Jingmei, Kou Liqun (2017). Research on the application of mobile learning based on smart phones in basic mathematics courses. *technology and market*, 24 (2): 153.
- [4] Lu Xue (2016). Research on the application of smart phones in college students' mobile learning. *software guide*, 15 (9): 178-180.
- [5] Liu Yaonan (2016). Research on the application of mobile learning based on smart phones in higher education. *China education informatization*, No. 368 (5): 26-28.
- [6] Jia Hongjun (2017). Analysis of College Students' mobile learning based on smart phones. *Journal of Yellow River Water Conservancy Vocational and technical college*, 29 (02): 83-87.
- [7] Jin Qianyu (2020). Investigation and Research on the application of smart phones in college students' Mobile Learning -- Taking Nanjing Forestry University as an example. no. 250 (10): 90-91.
- [8] Qin Xiaoling (2020). Analysis of the application prospect of mobile learning based on smart phones in college teaching. *education and teaching forum*, No. 456 (10): 340-342.
- [9] Wang Ting, Wang Yang (2019). Research on mobile learning mode of advanced mathematics course based on smartphone. *Journal of Nanyang Normal University*, 18 (1): 64-66.
- [10] Wang Huake (2017). On the application of mobile learning based on smart phones in college teaching. *Journal of College of adult education*, Hebei University, 19 (3): 100-103.
- [11] Wu Xinglian, Wu Ganzhou (2017). Research on College Students' mobile learning based on smart phones. *science and technology horizon*, No. 200 (14): 100+175.
- [12] Yang Xiaodong (2018). Mobile learning based on smartphone app. *electronic technology and software engineering*, No. 134 (12): 61.
- [13] Zhuhui, Tian Rongyu (2019). Mobile learning Dilemma Analysis and coping strategies based on smart phones. *China education technology equipment*, no.464 (14): 40-41+47.