Research on Mobile Learning Model

Li-na Zhang[1, a], Bo Yang[2, b, *]

[1]Jilin Agricultural University, Changchun, Jilin, 130118, China

[2]Changchun University of Finance and Economics, Changchun, Jilin, 130122, China

[a]mail_zhangln@163.com, [b]mail_yangbo@163.com

Keywords: mobile learning, model, Internet technology, instructional design, biochemistry.

Abstract. This paper analyzes the feasibility of the application of mobile learning in the course of basic biochemistry from three dimensions of mobile learning identity, mobile learning hardware and mobile learning resources. On this basis, the paper constructs a mobile learning mode which is in accordance with the characteristics of the course and the characteristics of the students. The model consists of four parts: teaching analysis, teaching design, the development of mobile learning APP, and the evaluation of the effect of mobile learning.

1. Feasibility analysis of the application of mobile learning in basic biochemistry

Basic biochemistry is a course of biological chemical composition and chemical changes, is an important professional basic course in agricultural colleges and universities the biology related such as animal science, animal medicine, aquatic products, livestock and poultry, special economic animal education, agriculture, food science and other professional. The curriculum is divided into two parts: the basic theory and the experimental skills. Each part is divided into the knowledge module according to the content, the course chapters are more, the knowledge points are rich, the biology theory is complex, the students are difficult to grasp and so on. In the course of teaching activities, to ensure the learning effect of students, establish the dominant position of students, improve students' learning interest and initiative to enable students to learn and to improve the application of mobile learning in basic biochemistry teaching, make mobile learning become the official school teaching is the effective supplement of learning development needs.

In order to ensure the feasibility of the application of mobile learning in basic biochemistry teaching, this study early in the Jilin Agricultural University carried out a questionnaire and interview survey, questionnaire on college students in animal science, animal medicine, aquatic products, special economic animal and other professional as main research object, using random sampling method, 500 questionnaires, effective recovery the questionnaire of 468 points, the efficiency is 93.60%, the questionnaire includes "mobile learning identity" and "mobile learning hardware", "mobile learning resources" three dimensions and 18 questions; in the interview survey, interviews in addition to students including teachers.

2. Identity with mobile learning

In 468 questionnaires recovered, 74.79% of the students understand the meaning of mobile learning and learning in the past used in mobile learning mode, the other 25.21% students only understand the implications of mobile learning, and has not been exposed to mobile learning, no students on mobile learning meaning that don't understand; 92.73% of the students to use the mobile based on biochemistry teaching learning model agrees, 6.41% of the students do not matter, 0.86% of the students expressed their disapproval. The data shows that students' identity of mobile learning and acceptance is very high, and the main reason for mobile learning are the following: the use of mobile intelligent terminal learning more convenient and more free; learning new forms can improve the students' interest and efficiency; mobile learning is an effective complement to classroom learning, improve learning achievement [1].

3. Resources of mobile learning

In contact with students involved in mobile learning, resources are most concerned with their part, number of learning resources from the mobile point of view is very rich, but the effective organization of resources is not enough, showing a state of discipline, the pertinence is not strong, students search time-consuming, accuracy and quality cannot guarantee that these problems are to the students, the use of mobile learning resources have brought obstacles. 98.29% of the students hope to build a special course of mobile learning platform, rich professional resources, improve the learning effect, the resource type, 38.03% of the students receive more resources in the form of text, because the file is small, the network data flow; 25.64% of the students hope to increase teachers' multimedia courseware resources, the reason is to refine the main points of knowledge through the courseware; 21.37% of the students hope to form the integration of resources online exercises, the reason is interactive and participatory, is conducive to the consolidation of knowledge points; 13.89% of the students think that the video or audio form is good, the reason is that this kind of is more intuitive, contribute to the understanding of knowledge points.

4. Construction of mobile learning model

Mobile learning is not a loose process, it should be a scientific teaching design and organization of the teaching process, which not only to fully reflect the dominant position of students, but also give full play to the leading role of teachers [2]. In order to achieve this goal, this study integrates the basic elements such as students, teachers, mobile learning resources, mobile learning technology, and learning situation and so on. The model consists of the following four parts: teaching analysis; teaching design; mobile learning APP development; evaluation of mobile learning effect.

1. Teaching analysis

The analysis of teaching in mobile learning involves the whole teaching activities, including the analysis of learners and learning environment. Analysis of learners basic biochemistry: This course was generally opened in the second grade college, after a year of time, most of the students have to learn in college life, gradually find their own learning and try to think independently and complete the task of learning, has a certain theoretical basis for professional knowledge and cognitive ability, professional basic course of learning is high enthusiasm, but because of professional courses with great difficulty, teaching progress, review is not timely, some students emotional weariness and frustration. Therefore, in the design and development of mobile learning, we should select the appropriate learning resources according to the learners' learning characteristics and cognitive level. The analysis of learning environment: The intelligent mobile terminal operating system Android and iOS are the mainstream, in 2016 in the China market share reached 99.3%, Html5 intelligent terminal technology development application has the characteristics of short response time and start faster, for video on demand, and mobile semantic marking functions it has, compared to the traditional technology such as Flash, can be better the application on Android and iOS operating system, iBook Author is an application used to create interactive multimedia library for iPhone and iPad, the development of these innovative technologies and tools of resource construction provides the necessary technical support for mobile learning [3].

2. Instructional design

Learning goal design: The goal of learning is the direction of teaching activities and the expected result of teaching activities. Mobile learning is a relatively independent way of learning, so it is necessary for learners to clear the learning objectives [4]. The learning objectives and requirements should refine the knowledge in learning basic biochemistry movement, for example in protein chemistry in this chapter clearly students grasp the life of the most basic material, protein structure, function and physicochemical properties of amino acids, the classification, structure and nature of gender, the methods of separation and purification of protein and preliminary material. Learning resource content and type design: The learners through mobile learning can understand the course learning objectives, prepare the new knowledge, to review the old knowledge, and students study and

receive teachers' guidance and self-testing exercises, and these processes are relevant to the needs of learning resources and support system. Learning resources shall ensure that the contents of a brief, compact structure, prominent theme, different knowledge points to show different types of expression effect is different, such as cellulose acetate film electrophoresis of serum protein experiments using the most intuitive video type. Self-test can make the students to test their knowledge in time.

5. Design of mobile learning applications

Through the analysis and design phase, based on the mobile learning in the form of APP will integrate learning resources and related functions of basic biochemistry, mainly includes the registration, login module, learning module, self-testing module, seminar module, communication module five parts, as shown in Figure 1.
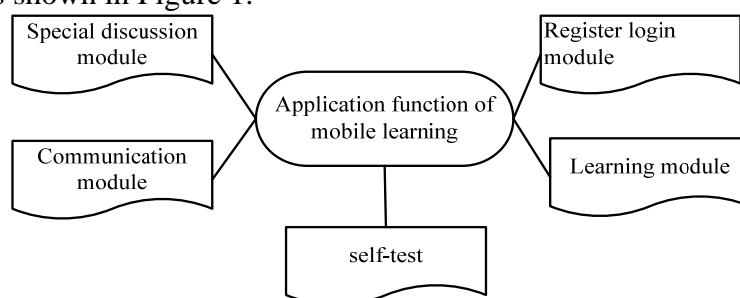
Figure 1. Function module of mobile learning APP

➢ Register login module. The realization of various types of user registration, login, and the right to verify the function, to provide learners with access to mobile learning APP learning, self-test, discussion, exchange of the entrance.

➢ Learning module. The mobile learning module is the core part of APP, various types of resources, such as courseware, video, audio, text, electronic books, Web links and other effective organized by chapter and knowledge point, and the regular updating and maintenance, to provide resources for mobile learning.

➢ Self-test module. The biochemical basis for self-testing module of mobile APP parts need a lot of test questions based on support, teaching and research related to the teachers and the members of the project group after 2 years of time to set up objective questions, questions of subjective questions by. This module can realize the stage of self-testing by chapter and knowledge point, make learners understand their learning situation, so as to arrange the learning time and adjust the learning plan, improve the learning efficiency; can also simulate the exam, make learners understand their mastery of the course.

➢ Special discussion. Set up a special discussion on the common problems in the course of basic biochemistry, encourage teachers to participate in the relevant explanations, and introduce the research hotspots and the latest research results. Learners can also ask questions in the discussion module according to their own needs, waiting for the teacher and other students to answer and leave a message.

➢ Communication module. The functionality of the module is similar to WeChat's and QQ's instant messaging capabilities and learners and teachers do not need to add friends to communicate freely.

➢ Collaborative learning system and intelligent clustering system: is the core function of collaborative learning platform based on cloud services. In the process of learning and completing the task, the method of artificial intelligence is used to adjust and organize the learners according to the learners' learning and selection.

6. Summary

With the development of wireless network era, the popularity of intelligent mobile phone and other mobile terminal, mobile learning and higher education integration, mobile learning model conforms to the features of the course and characteristics of students will stimulate students' interest in learning, improve teaching effect. Based on the practice and application of mobile learning model in basic biochemistry, it is found that the analysis of students' cognitive level and learning situation should be strengthened.

Acknowledgments

References

[1] Liu Minna, Zhang Qianwei.T Review and Prospect of mobile learning in international higher education [J]. Open education research, 2016, (06): 81-92.

[2] Yang Bo, Zhang Li-na. Research and application of collaborative learning based on cloud services [J]. Heilongjiang Journal of animal husbandry and veterinary medicine, 2016, (16): 276-278.

[3] Zhang Linying, Jin Xinquan, Yang Man, Wang Yunwu. Research on Optimization Design of micro course resources based on mobile APP [J]. Journal of Jiangsu Open University, 2015, (03): 32-38.

[4] Yang Bo, Zhang Li-na. Research and Practice on the practice teaching of dynamic web site development course [J]. Heilongjiang Journal of animal husbandry and veterinary medicine, 2015,(24):196-198.