

## Using Mobile Learning Way to Support Learning Of The Deaf

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**Abstract**—With the rapid development of computer technology, network technology and communication technology, mobile learning has becoming the focus of educational technology currently. Today, the scale of China's special education is expanding, our enrollment of deaf students is increasing, the quality of special education is getting more and more important. In this article the author will firstly introduce the mobile learning, and then combining with the status quo of education for deaf students introduce to use mobile learning way to support selective learning, combination of virtual and real learning, both formal and informal learning, collaborative learning of the deaf.

**Keywords**—mobile learning; education for deaf students; support; learning of the deaf

### I. INTRODUCTION

Mobile learning is a digital learning approach which uses constructivist learning theory, draws on and integrates other learning theories and uses equipment and the environment of information and communication technology, combining virtual learning with practical learning, self-learning with collaborative learning, formal learning with informal learning[1]. With the rapid development of computer technology, network technology and communication technology, mobile learning has becoming the focus of educational technology currently. The learning content of this approach has short duration generally and we can watch anytime and anywhere repeat, which meets the learning needs of students anytime and anywhere in fragment time. With the improvement and implementation of the laws and regulations relating to special education, the education for deaf students in China is facing new opportunities, the enrollment rates of basic education is rising, at the end of 2005, the enrollment rate of persons with disabilities attended to compulsory school arrive at 80%, there are 18 million deaf students, accounting for 32.14% the total number of school children with special needs[2]. It is urgent to improve the quality of education for deaf students. Therefore, as we study using educational technology to help the general population, we should also pay attention to the unique advantages of educational technology to support the education for deaf students. Because of the hearing-impaired, the eyes become the most active and most important sense organs for the deaf, they see the world with their eyes basically. We have been exploring how to use the feature with normal vision to enable deaf students to greatest enjoy the classroom knowledge. In this article, the author will

mainly discuss the use of the unique advantages of mobile learning way to support learning of the deaf.

### II. THE INTRODUCTION OF MOBILE LEARNING

Mobile learning a new type of learning way which refers to the use of wireless mobile communication network technology and wireless mobile communication devices (such as mobile phones), personal digital assistants (PDA, Pocket PC) and so on to access educational information, educational resources and educational services. The goal of Mobile Learning is to meet the learners to learn any way and anything at anytime and anywhere[3]. Its knowledge points is relatively independent and short, the learning content which uses graphics, animation and sound to describe easily is suitable to develop for mobile learning resources[4], and can be viewed at anytime and anywhere. Mobile learning is considered an indispensable mode of learning in further[5]. Learners often encounter various problems in learning or work scenarios, addressing these issues and problems which come about in the real-life situation in real-time is critical for the learners to master the knowledge and skills relating to problems, mobile technology and mobile devices provide facilitation for real-time problem-solving [6].

Because of the open and operational characteristics of mobile devices, they have been considered to be the best learning way by the educational technical personnel. Learners can read books anytime and anywhere, browse pictures, listen to MP3, chatting, watch movies, edit office documents, use GPS technology or WAP technology to brows information on the Internet, send and receive e-mails, with global positioning system GPS to navigation and with Bluetooth technology and other smart devices wireless networking, etc., are almost omnipotent[7].

### III. THE STATUS QUO OF EDUCATION FOR DEAF STUDENTS

After we interviewed with partial teachers and students of special education college of Beijing Union University, the third deaf school and the fourth deaf school of Beijing, we found deaf students acquire knowledge and exchange with others mainly through the sign language, lip reading and writing in class. We have discovered that these there ways have some shortcomings more or less, which affect the quality of instruction. Regarding the sign language: (1) sign language is non-uniformity [8], for sign language includes nature sign language and grammar sign language, grammar sign language is determined by the government. However,

nature sign language comes from the habits of the region, as region different it is different. So it is very difficult to keep unified. (2) the irreproducibility of the sign language, deaf students need certain time to understand and digest the knowledge in class. What the teacher teaches using the sign language is transitory, which causes certain difficulty for deaf students, (3) the vocabulary of the sign language are few, especially professional, abstract as well as the emotion glossary is very difficult to express using the sign language, which creates certain barriers for their exchange, (4) the polysemy of the sign language, communicators need to guess according to scene because one kind of hand gesture possibly had many kinds of words and expressions to match, if the communicator is distracted, it is very difficult for him or her to understand the precise meaning of the hand gesture, (5) the sign language can't express foreign language very well, although the teacher uses lip reading and writing to help the sign language to carry on the teaching and exchange sometimes, the request of lip reading to the environment is high, moreover it is not suitable for group teaching, the amount of information through writing is few, and if the teacher is doing something or his hand is busy, it is difficult to use writing to teach. For so many disadvantages may affect the teaching effectiveness. The acquisition of knowledge mainly from the visual and hearing, due to some or all of the hearing loss causes the deaf's cognitive limitations. They often fall short of pre-set teaching goals in the classroom affecting the quality of classroom teaching. Because of communication barriers, the knowledge gained by the deaf in the classroom is not consolidated timely, knowledge that they can't understand and the problems they encounter are not achieved solution timely after-school. In addition, the China's traditional teaching content for deaf students mostly come through the general education which is slightly modified, and even some schools use general educational teaching materials, these teaching content is far from the reality life of the deaf and is not suit for the development and developmental needs for them. Then there is China's current deaf classroom which is mainly teacher-centered, the teacher speaks and students see and hear, the teaching process is completely programmable and classroom atmosphere is mechanical, dull and boring. The deaf learn little or nothing in these classes, which forms a vicious circle over time and causes a false impression to people that the deaf cannot learn well at the end.

At present, China's new curriculum reform of deaf education advocates to be deaf-centered and to follow the characteristics and laws of physical and mental development of the deaf to meet the requirements of the development of socio-economic, scientific and technological, which aims to lay the foundation for the continuous and comprehensive development for the deaf. In view of this, we can use the unique advantages of mobile learning way to support learning of the deaf.

#### IV. THE USE OF MOBILE LEARNING WAY TO SUPPORT LEARNING OF THE DEAF

In the learning situations which is supported by mobile technology, the mobile device is no longer a traditional data

presentation and content delivery tools, and more a tool which assists the learners to construct knowledge meaningful[9], that can help learners to begin selectively learning, combination of virtual and real learning, formal and informal learning and collaborative learning and so on.

##### A. Selective Learning

In the mobile learning environment, students can use mobile learning system to accept their favorite content anytime and anywhere[10], the deaf can select the learning content in accordance with their own actual level and master their own learning speed. A large text and video capabilities fully develop their creativity and imagination, and give students a better learning space so that they can understand the teaching content vivid and deeply to promote their coordinated development of all aspects. And also the deaf can choose their own place and time to learn to avoid the restrictions under certain conditions and time to learn they may be disturbed. Moreover, students can choose their preferred learning partners and teachers to learn and talk freely.

##### B. The Combination of Virtual and Real Learning Way

Constructivists believe: Knowledge is not taught but is constructed in meaningful way by the learner in a certain socio-cultural context, with the help of the teacher and companions and the use of the necessary learning materials [11]. We can fully develop the unique advantages of virtual technology of mobile learning way to simulate creating the real-life scenarios, so that deaf students can deepen their understanding of knowledge through the immersive experience which avoids superficial understanding they just listen to teachers and help them to acquire subject knowledge and life knowledge in deep-seated. For example, through the virtual reality technology to simulate real life scene, in cooperation with the teacher, the specialists and other companions to role-playing such as shopping, borrowing books, go to the bank deposit and withdrawal to deal with emergency events, etc. Deaf students' life skills may be enhanced to a great extent and their cognition acquires development further in the breadth and the depth.

##### C. Formal and Informal Learning

Educator Mr. Tao Xingzhi adheres to "social is school", "Life is education", "unity of teaching, learning and doing" and so on as the core content of living educational theories. Performance and a wide range of interactivity of Mobile device make them contribute to the deaf's formal and informal learning. Through mobile learning way deaf students can not only resolve the difficulties they encounter in learning in the classroom and after school, but also enable them to access to adequate communication among people which facilitates the resolution of their confusion they encounter in life and to promote the development of their cognitive in the depth and breadth that meet the development needs of deaf students. For example, through SMS, mobile MSN, moving logs and E-mail to take part in discussions among the deaf, the discussion and exchanges between the deaf and the health establish and deepen feelings among the

deaf and other people's and give the deaf spirit encouragement

#### D. Collaborative Learning

Since learning is the process of constructing meaning in a certain socio-cultural context, with the help of others through interpersonal collaboration activities to achieve. Through e-learning and query through e-books dictionary, the contents of the knowledge points they still do not understand, the deaf can through instant messaging functionality of mobile phone to ask their teachers and classmates. By setting the learning process in complex and meaningful scenarios, so that learners work together to solve the authenticity problems and form a problem-solving skills. For example, in physics and chemistry classes, teachers can ask questions based on actual conditions and learners can understand the operation of real life, according to the actual needs to deal with large quantities of information. In this environment, learning activities will give the learners learning a huge boost, and also teachers can observe the growth of the students、 understand the student's personality and learning styles, etc. according to theirs records to give guidance in time, at the same time students can raise various problems so that teachers and peers communicate with each others to give solutions. This is a good way for the deaf who have many difficult to communicate face to face, which not only solve their difficulties in learning, more importantly is to allow students to experience happiness to solve the problem with peers and teachers which enhances the feelings among individual、 theirs peers and teachers

#### V. CONCLUSION

Mobile learning is a new type of learning in the information age, based on the optional, a combination of virtual and reality learning, formal and informal learning and collaborative characteristics of mobile learning and combing with advantages of visual and hearing of the deaf,it can make up for the no-integrity of the deaf's hearing to promote the development of theirs cognitive in breadth and depth. However, mobile learning is a kind of learning after all, we must have an objective understanding of its role, it does not replace classroom teaching and only be a supplement to classroom learning. With theoretical research and technology continue to develop and mature, it is bound to have a major impact on learning of the deaf

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