COMPARISONS OF M-LEARNING BETWEEN U.S. AND CHINA COLLEGE EDUCATION

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Abstract

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With the development of technology and science, 3G (third generation) network communication technology has progressed in the new era. What's more, the network communication contributes to the rapid development of wireless communication. After E-learning (electronic learning) mode, M-learning (mobile learning) becomes a new mode of learning in college. Students can get the useful information and resources with the wireless communication devices. As a Chinese educator who is studying in the U.S, the author reviews some literature and compares m-learning in U.S college education and China college education, with the hope of offering more research to Chinese educators and promoting Chinese m-learning in college education.

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Chapter 1 Introduction

In a digital and modern society, internet and science is changing people's life. With various amount of resources available, efficient learning is a matter worth studying. Efficient learning is not only about picking up the valuable resources among the millions of resources, but also about taking the advantage of internet and technology to get the useful information. For example, people can get information through internet, computers and many electronic media. This is beneficial for people's learning and helps people to save time to get information they want. As the largest mobile subscriber base in the world, as well as the development of mobile telephony, mobile learning is gradually getting popular in all over the world.

U.S and China is two important countries in the world. U.S is a representative developed country which is playing a significant role and a leading character, from politics to economy, from science to education. China is a typical Asian developing country which is playing an important role in politics, economy, science and education too. Different backgrounds decide the various educational circles in these two countries. As a typical example of developed country and a classical developing country, U.S and China could stand for two types of educational circles with differences and similarities in education and m-learning.

M-learning becomes popular in college education, both in the U.S and in China. Obviously, there are some similarities in M-learning among U.S colleges and China Colleges. However, the differences are more evident.

Many researchers are studying on m-learning in different aspects. The author, as a China college educator, who is studying in the U.S College, is curious about this phenomenon. This paper reviews some related literature, which does show m-learning, college education

background, m-learning in China college education and m-learning in U.S college education. He wants to find out the advantages and disadvantages of m-learning in college education. What's more, based on the comparison of m-learning between U.S College and China College, he hopes to figure out the distance between m-learning in U.S college education and China college education, with the purpose to offering as a tribute to China educators and m-learning research.

<div align="center">**Statement of the Problem**</div>

This paper addresses two problems, "what is m-learning? "And "what are the differences and similarities of m-learning in U.S and China college education?" and " What should be done to further develop the application of m-learning in vocational education in China?"

<div align="center">**Definition of Terms**</div>

D-learning (Distance learning): The technologies – especially communications and transport - developed during the industrial revolution in the late nineteenth and early twentieth centuries, paved the way for d-learning. D-learning stands for distance learning, and it means offering tutorial services at a distance. (2002, Desmond Keegan)

Desmond Keegan (2002) characteristics distance education by:

1. The separation of the teacher and the learner;

2. The separation of the learner from the learning group;

3. Technology being used as a media to communicate with the tutor or educational institution.

M-learning (Mobile learning): Quinn (2000) arrived at the definition: "Mobile learning is through the IA (Intelligent Apparatus, smart devices) device for digital learning, and these IA devices, including Palms, Windows CE devices and digital cellular phones". Chabra and Flguelredo (2002) combined with the idea of distance education for mobile learning to make a

broader definition: "Mobile learning is the ability to use any mobile device, anywhere at any time for the purpose of study". Harris (2001) defined: "Mobile learning is an intersection point with the mobile computer technology and e-learning in the intersection, it can bring experience at anytime and anywhere learning for the learner."

Acronyms and terms used in the paper

WAP-wireless application protocol

GPRS-general packet radio system

UMTS-universal mobile telecommunication system

3G-third generation

D-learning-distance learning

E-learning-electronic learning

M-learning-mobile learning

Delimitations of Research

In order to making the research clearly, this paper uses literature review as the main research method. According to the related literature, I will find out what he wants to get in the research topic.

The search tools utilized are *the library of Yiwu Industrial and Commercial College*, *Karrmann Library of University of Wisconsin-Platteville*, *China National Knowledge Internet*, *EBSCOHOST*, *Google*. Key words for the searches are *culture*, *language*, *Chinese cultural aphasia*, *culture education*.

Method of Approach

A brief review of literature on the studies of research and strategies of m-learning in

higher vocational college will be reported. The research plan and implementation includes research questions, subjects, data collection and data processing. And a library research of former or published research on m-learning in China College will be conducted. By analysis the data of the former research, some new strategies would be put forward on how to develop the application on the m-learning in higher vocational college.

Chapter 2 Literature Review

M-Learning

With the successful development of Bluetooth, WAP, GPRS and UMTS, the technology structures for wireless telephony and wireless computing are now firmly in place. According to Desmond (2005), 3G wireless service is breathtaking, with applications already developed for refrigerators, business and the home. The move to winglessness in telephony and computing is irreversible.

M-Learning is shorthand of Mobile Learning. In 2005, Keegan's research gave m-Learning a simply definition, which described as the provision of education and training on palmtops, smart phones and mobile phones. As the development of the internet, the study of Trifonova and Ronchetti (2003) added more information to m-Learning. They agreed with what Keegan said and also mentioned that m-Learning should be defined as e-Learning carried out by means of mobile computational devices and point out that this refers mainly to personal data assistance and digital cell phones. M-learning could "employ any device that is small, autonomous and unobtrusive enough to accompany us in every moment of our everyday life" (p. 32). What's more, Kukulska-Hulme and Traxler(2005) focused more on the significant attributes of mobile technologies as the ability to support learning that is more situated, experiential and contextualized within specific domains and to support the creation and use of more up-to-date and authentic content.

This paper preferred Koole's (2005) frame model. According to Koole (2005), m-Learning is described as a process resulting from the convergence of mobile technologies, human learning capacities, and social interaction, which is divided into three portions: learner,

device usability, and social aspects.

This means m-learning process cannot happen without the mobile, human and interaction. Mobile technology and human learning capacities are the first two factors to make m-learning happens. Without interacting, mobile and human is just two isolated units, so these three factors are important and make m-learning comes true. Device usability means the mobile technology could provide the condition for m-learning process. Learners relate to the human has the learning capacities. Social aspects involve the interaction between mobile technology and human learning capacities, which means human use mobile technology to learn. All the three portions are relate to each other and lead the process of m-learning.

Driscoll's (2005) research notes that Learner does not only mean the single person, but also includes more meanings. First, learner refers to the individual learner's faction, which is about the person's memory, abilities, and knowledge. Second, learner encompasses the wide range of theories of how learners learn. Third, learner explains the physical and social environments of learners and how to interact with the extended environment which is offered by the mobile learning (p. 34).

Device Usability portion stresses two aspects. The device designs the hardware and software which impacts the physical and psychological comfort levels of the users. At the meantime, the learners interact with the medium which includes the technical, physical, and functional components of mobile devices.

As well as the device usability, the social aspect emphasizes two points. Driscoll's (2005) research notes that the social aspect introduces the process of social interaction and cooperation. The process of social interaction and cooperation involves different devices use in the social aspect. For example, the mobile phone itself, the software used in the mobile, the wireless, etc. In

the social aspect, wireless and 3G is the first step, learners use the software to study is the second step, and all this happen on the base of mobile phone. On the other hand, the social aspect reflects the individuals exchange information affects how groups of people develop knowledge and sustain cultural practices. Because of the internet development, people could get any information on the search engines and various website, which helps people to develop knowledge. At the same time, because the world is becoming one family based on the world-wide internet base, cultural practices could sustain in the social interaction and cooperation.

According to Desmond (2005), the college education has two forms: conventional education and distance education. Conventional education is usually considered as face to face education, which means the instructor leads the education. Desmond (2005) lists three fundamental characteristics of conventional education. First, the teacher and the learning group are assembled at a fixed time in a fixed place for the purpose of learning. Second, the learner forms part of the learning group. Finally, interpersonal communication is the means by which the process of education and training takes place. Conventional education is the main educational form in college (p. 123).

As the development of science and technology, college education experiences evolution. Distance education is becoming important in college education. Distance education comprises of three portions: distance learning (d-learning); electronic learning (e-learning) and mobile learning (m-learning). Compared to conventional education, distance education are different in three points. First, it separates the teacher and the learner. Second, it separates the learner from the learning group. Finally, it uses a form of communication mediated by technology (Desmond, 2005, p. 56).

Compared to other learning modes, m-learning is provided at any time, occurred at anywhere with the wireless environment. It is easy and convenient for students to select information they need. M-learning will absolutely and greatly promote the development of education in all over the world. It brings great benefits to college students and teachers. For students, they could study at any time and in any place whey want. For teachers, student's' m-learning relieves their job burden.

Comparisons of M-learning between U.S and China College Education

U.S is a developed country which is leading the world's science and technology development. As the first group to involve M-learning in college education, U.S College M-learning has developed very well. What's more, iPhone which is produced by Apple Company is an excellent example of smart phone, enables smart phone designed and promotes M-learning in college education. Students have one more mode to get resources they want. Wireless's popularization promotes college students' m-learning too. Compared to U.S, China is a developing country, which is focusing on m-learning in college education too. There are some advantages and disadvantages in college m-learning. For example, at the advantage point, China has the world's largest mobile subscriber base. However, at the disadvantage point, wireless cannot popularize in China, especially in the college because the limited fund support, huge population and restricted wireless basement.

China is becoming a country of mobile learners, as well as it has the potentials to incorporate m-learning into mainstream education in the future. Just as what describes in Carvalho, Dias, Keegan, Kismihok, Mileva, Nix and Rekkedal's (2008) research, in China, the mobile telecommunication sector is rapidly growing, just like the rate of internet access within the population. The coastal and the special administration areas are very well developed, but the

great inland territories still need a tremendous amount of infrastructural investment. They also

lists some data to show China's telecommunications characteristics. China has the world's

largest mobile subscriber base, passing 450 million in early 2007. In addition to this there were

more than 90 million "little smart" limited mobility services. The country's largest mobile

operator, China Mobile, is the world's largest in terms of subscribers, which having passed 300

million in December 2006, it was still growing at more than 20% coming into 2007. While

overall broadband internet penetration low (4%), the number of broadband customers passed the

55 million mark in early 2007. China is ranked number two in the world behind the U.S in the

number of broadband subscribers and is on track to become the world's largest broadband

market. China already has the highest number of DSL subscribers in the world (37.1 million

subscribers by end-2006, followed by the U.S with 25.7 million).China has the largest number of

fixed-line subscribers in the world and the largest cable TV network in the world. What; smore,

China's terrestrial TV services reach approximately 95% of its 380 million households. Finally,

in its push for digital TV, the Chinese government intends to end analogue TV broadcasts by

2010. (Carvalho, Dias, Keegan, Kismihok, Mileva, Nix and Rekkedal, 2008, p. 23)

From the research and data, China offers powerful foundation of m-learning with the

development of telecommunications. There is no doubting that m-learning has substantial growth

momentum and potential in China.

China uses m-Learning in college education as the internet develops. M-Learning is

organized as collaborative learning focusing on sharing knowledge and social knowledge

building. Often, based on Bignell(2008) research, mobile devices often are applied in learning

situations taking place at a place directly related to the object of learning.

Compared to other forefront Asian countries, for example, Japan and Korea, China

adopts the new technology for learning a little slower. Introducing broadband access in homes is very common, but the wireless cannot be covered in most areas and colleges.

At present times, The China government has actively tried to influence the development of China into a ubiquitous learning society. The Ministry of Education has including mobile learning as one section of the nation-wide educational software contest. China colleges encourage the development of internet learning that uses mobile technology in teaching.

However, the wireless internet for the educational content is little available. Even the users of the wireless internet' satisfaction rate is very low, because the wireless charges are high and the speed is slow.

Based on these negative aspects, Gaskel (2007) lists some factors that will promote mobile services for mobile learning in the future.

First, mobile users are constantly increasing. China has a huge population with the largest mobile subscriber base in the world. Second, school students use the wireless internet more than graduates. School students use the mobile devices and the wireless internet to assist their study. Third, connected wired & wireless internet services are popularized by the internet portal sites. Finally, new type of wireless communication services will soon be widely available.

M-Learning has a long history in the U.S.; it has increased in recent years. Especially in the universities, a variety of devices are used and solutions are offered. According to Agnes Kukulska-Hulme (2005), Mobile technology's development promotes the companies operating in the field of m-learning. Companies' rise drives the m-learning in the college. More and more corporations product devices and technologies, develop new software and new forms of availability of contents, especially multimedia learning contents which are available on cell phones or smart phones.

Using portable computing devices, such as laptops, smart phones, with wireless networks enables mobility and mobile learning. Mobility allows teaching and learning to extend to spaces beyond the traditional classroom. Within the classroom, mobile learning gives instructors and learners increased flexibility and new opportunities for interaction. Mobile technologies support learning experiences that are collaborative, accessible, and integrated with the world beyond the classroom (Carvalho, Dias, Keegan, Kismihok, Mileva, Nix and Rekkedal, 2008).

Compared to China, m-learning in the US college is more convenient and popular. First, wireless is very common in the US; it covers almost all the universities and colleges. This helps students to use the wireless frequently on the campus. Second, it is obviously that IPhone is the most popular cell phone in the world, especially, the U. S. , the birthplace of IPhone, is guiding the cell phone technology. With this advantage, new software and devices are applied in the M-learning for the college students. According to Raban & Litchfield, "In a number of US universities web portals are now able to send administrative messages to their students, using new channels of communication based on mobile devices. There are an increasing number of Pod-casts and many teachers pod-cast their classes."(p.35). Third, in the US universities, the development of the m-learning is gradually growing based on the availability of devices and wireless for students free of charge. In a recent study, David(2006) describes the situation:

"Universities are issuing Apple iPods to all incoming students with preloaded university registration forms, policies, maps, campus organizations, class schedules and library hours. Many institutions are using MP3 technology to provide students with access to course information and lecture recordings. Examples include Duke University's 'Duke on iTunes' which includes music, lectures and tips on life at Duke; University of California at Berkeley; Stanford

University's 'Stanford on iTunes'; UCLA 'BruinCast'; and Purdue University 'BoilerCast' with an extensive list of classroom audio recordings for students."(p.38)

At this point, China College cannot achieve this level in recent years.

Kramsch(2000) research notes that The United States already has a very good mobile telecommunication infrastructure, which is under continuous development due to the strong commitment of the government. The latest technology finds its way into education as well. Schools, universities are picking up mobile educational services based on the highly developed telecommunication infrastructure. With its strong focus on the role of technology, and telecommunications in particular, throughout its economy, it is not surprising that U.S. has one of the most advanced telecommunications networks in the world. With excellent telecommunications infrastructure in place and the innovative use of breakthrough information technologies, the country continues to be well placed do drive both mobile and data communications services. There has been a real and continuing boom in telecommunications development. Annual telecommunications service revenues were running at around US$ 68.9 billion in 2006 and of that around US$ 45.6 billion was coming from the mobile sector. There is also a hefty ongoing investment in telecoms infrastructure. The mobile sector was given fresh direction in 2002 with the launch of 3G services by the three major operators. The next generation of mobile services has certainly been presenting a healthy challenge to the market. In fact, the 3G subscriber bases has been expanding at an annual rate of around 100%; by 2002, 3G services already comprised 9.3% of the total mobile market.

Based on Mayers & De Freitas (2004) research, they did a statistics comparison research of m-learning in the United States college and china college. In 2010, in China, 97% of the college students have mobile phones, 25.7% of college students learn how to use the internet

with mobile. Chinese college students use mobile phone alarm clock function mostly, accounting

for 71.9% of the total, the calendar function is also more common, accounting for 40.7%. In

addition to the basic function such as calls, send and receive text messages, browse the internet,

most Chinese college students take the advantage of cell phone's function of existing alternative

clocks, notepad tool for work and life. In the contrast, 100% of the United States college students

have mobile phones and 89% of the college students learn about m-learning. From this related

statistics, it is easy to see that China students lack the understanding of m-learning software, and

cannot connect learning life skills to the m-learning devices management.

Due to the internet rich resources, both American college students and Chinese college

students use internet and 3G to combine with their college studies. However the destination for

students to browse the internet is different. In China, 87.4% students browsing the

communication websites, such as face book and so on, 44.3% students read related study

website, and only 19.1% students download materials to study. In the United States, except

browsing the internet to communicate with friends, 78.9% college students' purpose is to assess

data and information which is useful for their study.

Mobile learning as an emerging field, but the application in education teaching is little in

China. 41.3% of the students have heard of the concept of m-learning, 58.7% of the students

don't know the concept. In fact, even students have experienced the m-learning, because of the

lack of the consciousness, they do not consider m-learning as a kind of study way, so that their

m-learning plan and strategy is aimless. What's more, 41.9% of the students think mobile

learning can be considered, 35.9% of the students think m-learning is an auxiliary mean of

learning, only 22.2% of the students think mobile learning has a very big development space. But

most students mention that they even they have the intention to get information on the mobile

and internet, the relevant useful information is lacked. And some world website is limited for students to open in China. However, in the United States, 89% college students learn about the concept and 78.9% college students believe m-learning is a useful learning style and has a big development space. At this point, obviously, Chinese college students do not pursuit m-learning fanatically. It is a big gap to US college students on the m-learning effect.

The teacher should infiltrate the related management strategy and autonomous learning strategies in the usual classroom teaching, increase m-learning propaganda and let students learn about m-learning deeply. Most of Chinese college students have the hope of using the m-learning, but it is hard to find relevant learning resources on the internet. The mobile version of site construction is an important factor to develop mobile learning too. The abundant learning resources are the students concerns, the resources' authenticity, systematic, and accuracy is particularly important. So the simple, easy, short text, multiple links are not only conducive to the development of mobile learning, but also solve students' learning frustration caused by spending too much time and energy to find out useful information.

Chapter 3 Conclusions

Compared to China, m-learning in U.S College is a matured teaching and studying method, and is accepted by most college students. In China, the sense of m-learning is not strong and the situation is limited for students to use this advanced technologic method to study. However, as a big country with mobile subscriber base, and the rapid development of internet and wireless client, China has a big potential to incorporate m-learning in college study and m-learning will become a more convenient and acceptable method for students studying. Both in the U.S and China College, there are still some similarities of m-learning, which is about the disadvantages of m-learning. First, mobiles' screens are smaller than computers, so the amount and type of information displayed is limited. Second, it is hard to store information in mobile. Third, batteries require normal charging, and data can be lost on some devices if it is not done correctly. Fourth, it is more easily to be lost and stolen than desktops, because it is more attractive to thieves. This result in the information's lost. Fifth, it is not convenient to print unless connect to a network. However, the author insists the advantages of m-learning are much more than the disadvantages, and believes m-learning will become more suitable and better in the college study in the future.

M-learning relates the knowledge to mobile devices, which has developed fast and become a world-wide learning method. Especially in the college, almost every college student has a mobile phone, this promotes m-learning becomes a popular and easy way to get knowledge. The used researches mainly focus on the introduction and explanation of m-learning; rarely discuss the limitations and suggestions for m-learning development. This paper compares m-learning in China and U.S. Colleges and lists the disadvantages of m-learning. Hopefully,

future research will pay more attention to the limitations of m-learning and suggestions to

promote the development of m-learning, which is helpful for m-learning development utility.   .

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