

A Study on the Auto Mechanics Profession of the Vocational High School Incorporated in Mobile Learning

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Abstract: -This study aims at exploring the students' learning procedure and attitude in a department of auto mechanics. The participants are the eight students of a vocational high school in Kaohsiung County, who join the eight-week Internet M-learning and auto learning modes by the Internet Learning Platform designed by the teachers. Then, the researcher uses content analysis to analyze the students' learning procedure and attitude reflected from the platform. This study concludes with: (1) the learning procedure aims at ensuring the themes, establishing the database for senior project, problem-solving, assessment and observational learning; (2) the content of learning procedure and attitude covers: motivation of learning, recognition of curriculum, peer learning, interaction between teacher and students. The result of this study indicates that the Internet M-learning can stimulate the students to actively learn, and they are highly motivated to learn and share any of their achievement from this platform. This will effectively promote students' efficiency of Internet m-learning.

Key-Words: - mobile learning, learning attitude

1 Introduction

In this changing informative society, the economical stimulus is no longer the actual property, but the virtual knowledge and technology—and this concept has significantly changed the socio-economical modes. Now many renowned and ambitious entrepreneurs have been consciously aware of the new informative era, and they have been prepared and armed with the top-notch equipment, such as mobile Internet and mobile commerce, which are permeating around the globe.

Education plays an important role to cultivate and inherit the culture, knowledge and morality. School plays the role of transmitting, researching, and creating the knowledge. The teachers are armed with

knowledge, but they fail to make the best use of the new knowledge in the long run. It is of prime importance that the teachers should bridge the gap between the knowledge content and the information explosion. And this also shows the importance of educational innovation.

The aim of the department of auto mechanics is to train the technicians in the fields of auto mechanics. The automobile repairs workshops mainly come from the vocational high school graduates. The automobile technicians should be versed in the techniques concerning the automobile repairs, and they, except for the specialized instruments, have to understand the comprehensive principles of the automobile and diagnose the problems of the

vehicles with their experiences. The students of the auto mechanics are expected to practice the principles of the vehicles in their daily repairs. However, most of them fail to solve the problems. This will increase their learning difficulty and discouragement and meanwhile, the teachers can hardly see their expectation from their teaching process and efficiency.

In order to foster learning efficiency and efficacy, the students are able to store massive data, Internet, multimedia, interactive learning, and personalized learning process and m-learning at home and outdoors. They can use the data in any time and any place to achieve the “ubiquitous learning.” The learning content can be largely used. The researcher attempts to argue that the teachers can solve the teaching problems for the auto-mechanics majors through mobile-learning (henceforth as m-learning). Due to the lack of literatures at home and abroad, the researcher expects to incorporate the m-learning into vocational education teaching to observe how many influences are made on the students by this project. And this is also the purpose of the study.

2 Literature Review

2.1 M-Learning Prevalence

In 2006, Intel conducted its downstream system integration companies to release UMPC (Ultra-Mobile PC) with full PC functions. The concept of MID (Mobile Internet Device) was also released in 2007, which was expected to be in mass production in the second half year of 2007 [1]. And the ASUS in 2007 initiated the EEE PC of Classmate PC, which is portable and inexpensive, and its suggested price is about US\$ 199. This type of EEE PC is light and thin and inexpensive and will satisfy the needs of Internet and general document processing. It has recently grasped most people’s attention among the students and parents. Rapid

development of the Internet and personalization technology are changing students’ life and learning styles [2].

In most countries around the globe, all places—from school to university, from governmental organization to commercial industry, from café bar to restaurant—offer the service of Internet and Internet entry. The technology of information and m-learning device has apparently become an important trend for globalization. As the price of the m-learning device has gradually become more accessible and acceptable for most people or college students, this will trigger another inevitable trend for the use of m-learning device in campus and, hopefully, the education authorities will pay more attention on the m-learning, and initiate its new page of m-learning.

The teachers should know how to make the students continue and extend their learning from school to outdoors, from day-learning at school to night-learning at home, when the students are generally able to use the Internet and m-learning device. Moreover, the teachers should know how to combine students’ experience with their learning; by the mobile “seamless learning space,” the students’ learning are able to go further and forward in different spaces. “Seamless learning space” suggests that the students can learn once they are curious, and motivated. Only through the m-learning can they learn freely and easily from one situation to another.

“Seamless Learning Space” is a combination of various learning situations built up with the one-to-one technology support. The regular time of learning, which was particularly limited to the traditional classroom, can be extended to irregular time. With the extension of learning space and time, students will be more willing to learn or participate extracurricular learning opportunities out of their own interest, including learning projects in or outside of campuses, interaction of on-line learning

community, or in other places or occasions [3].

From year 2003 to 2007, Taiwan government launched a 5-year-long project of “National Science and Technology Program for e-Learning” [4], which includes a sub-project of “Mobile Learning Devices.” The goal of this project is to create e-learning environment to make learning accessible at any time and any place, to elevate the digital literacy level of the nation, and lead Taiwan to have a key position in global digital learning technology. It is obvious that Taiwan government hopes to adopt policies to achieve lifelong learning of the nation with digital technology, eliminate digital divide, and ultimately enhance overall national competitiveness in the era of knowledge economy. It is true that the application of m-learning device is not to make education status quo controlled by information technology, but to make m-learning device part of traditional teaching in order to make it become an easily accessible resource or assisting learning devices [5].

As for the characteristics of m-learning, Seppala & Alamaki [6] contend that m-learning allows learners to get the access of wireless Internet at the time when they need most or at the most appropriate timing and acquire the information and knowledge they need. It is an extremely flexible learning approach under the learning environment. Moreover, Chen, Kao & Sheu [7] argue that m-learning has the characteristics: meeting the urgency of learning need, initiative of knowledge acquisition, mobility of learning setting, interactivity of learning process, situating of instructional activity, and integration of instructional content, etc. Besides, more and more multimedia forms can be supported by the m-learning device, and the diversity, convenience and liveliness of learning content can attract students more, if compared with the traditional approaches such as the books or illustrated handbooks. Therefore, learning efficiency can be improved.

At the present time, many researches in different countries have started to apply m-learning devices to different ecological teaching situations, and these systems can be applied under both indoor and outdoor learning situations. It provides high mobility, initiation and interactivity, and these characteristics of m-learning are what the traditional courses or teaching in classrooms cannot achieve. Take the research from Cornell University for example [8], teachers store information and images of elaborately categorized campus plants in the database. With the searching interface on m-learning devices, students can search for the information and upload the gathered plant growth statistics that they measure to the database. They can also have an interactive discussion with desktop computers. Therefore, one complete wireless e-learning system was accomplished, and teachers and students can all enjoy teaching and learning with higher efficiency [9].

2.2 Learning Content and Activities Design

The practicum curriculum of the auto mechanics majors significantly concerns a student’s ability. According to the curriculum standard for the auto mechanics majors from the Ministry of Education, the goal of this department shall train the technicians with the ability of automobile assembling, test, and maintenance.

This study aims to propose an m-learning of automotive profession course, the teacher will offer different learning for the students in different stages through computer and informative technology. This includes a teacher’s explanation on the theory and demonstration, which allow the students to practice and simulate the situation of workplace, such as the factory, industry, or other practicum fields. The students are able to interact with one another by the m-learning devices, such as Laptop, PDA, WAP

phone, i-mode phone, and Smart phone. With the realia, they can record the practice process from the teacher as well as the outstanding classmates to allow them to review the process at anytime and anyplace. From this process, the learners are able to reflect on themselves and gradually, they will construct the meaning and core of the automobile knowledge in hope that they can easily fulfill the different learning levels from different stages. Of course, they will get more motivated and interested because they can share their achievements with their classmates and interact with one and another. This will no doubt increase the double effects between teaching and learning.

3 Method

This study will explain by four sections: research objects; methodology; learning procedure and attitude cognition.

3.1 Research objects

The research objects are those of auto mechanics majors of the second grade in a vocational high school in Kaohsiung County. The participants are volunteers. Eight of the male students are selected and are divided into two groups. (No. S1, S2, S3, S4, S5, S6, S7, and S8)

3.2 Methodology

This research developed a Wiki E-learning platform, <http://163.16.223.124/wiki> and established its system development circumstance. The members/students can search for any information, post and discuss in this E-learning platform, which is offered by Wiki.

3.3 Data analysis

The data collection is from the documents posted by the students in this learning platform. Textual analysis and textual citation are used to analyze the data.

3.3.1 The former will collect any information and read and re-read the data, and then pinpoint the themes by codes. The important lines of these data will be underlined and given by a topic for the data. Then, the structure of the data will be further classified, coded, and interpreted.

3.3.2 When the data are demonstrated, it will be cited to explain and verify. In order to give a clear explanation, some will be further explained as follows: (1) the data cited will be illustrated into paragraphs. The font of Chinese characters will be changed to distinguish it from other paragraphs, and the cited characters will follow with its resource explanation, such as (20080308-A1-S1); (2) the character encoding are divided into 12 codes, which will be followed by a parenthesis. The codes (20080308-A1-S1), for example, suggest that the first group student's statement posted on 3/8/2008. Any redundant words will be omitted as the ellipses, [. . .].

3.4 Analysis of reliability and validity

Qualitative research is often challenged by the analysis of reliability and validity because the reliability and validity are the objective quantitative standard of the empiricism. However, the point that the quantitative research investigates is the differences and uniqueness in certain cultural context [10]. Thus, in the qualitative research, multiple approaches are adopted, instead of one. The basic assumption is that any data, approach and researches will have deviations. Only when multiple data,

approaches, and researches are investigated can the research be more objective. Thus, the researcher adopts triangulation [11] to increase the reliability and validity, which will be examined as below:

3.4.1 The triangulation:

(1) Interview: Interview the participants' learning procedure and recognition through the discussion board on the E-learning platform.

(2)Data: Examine and analyze the students' discussion procedure and recognition through the discussion board.

(3) Achievement and assignment: Examine and analyze the assignment in article assignment board.

3.5 Learning procedure and attitude

3.5.1 Motivation of learning

From the knowledge organization of Wiki, which is greatly different from the traditional pedagogy, the learners are more motivated to learn:

“Wow—it looks so fun, since it's quite different from the class of last semester. After our practice and teacher's detailed explanation, all of us like this topic. I think the teaching content will be much more interesting by this way. It's so fun and interesting.” (20080306-A1-S2)

3.5.2 Recognition of curriculum

In the Internet m-learning, the students are required to coordinate the questions after discussion, and then, they are guided to practice. They agree with the way of teaching.

“[. . .] I think learning by Internet is a brilliant idea—hope other teachers can follow up!” (20080316-C1-S1)

3.5.3 Peer learning

This study investigates the students' self-assessment and peer-assessment. They can learn

the strength from their classmates and moreover, they can further see others' process of doing, achievement and other issues. Moreover, this can help an individual to reflect and improve him/herself.

“After surfing so many web pages of this 'practicum profession,' I've seen so many gadgets that I've never seen before. It's such an eye-opener. I believe I can learn and observe from these pages. I'm particularly interested in the new cars and equipment.” (20080317-D4-S1)

3.5.4 Interaction between students and teacher

We can know students' needs of learning and solve their questions in the meantime through the discussion board.

“Teacher asks: Have you guys found out the information you want? You can come up and ask for help if you can't fix the problem. Students reply: I think I don't have any problems. I just wonder if this information is complete or not.” (20080319-D3-S1)

4 Conclusion

Due to its portability and mobility, the m-learning can be particularly used in the curriculum of the auto mechanics practicum at anytime and anyplace. Mobile learning is, however, not a solution for all in teaching and learning. It is only an aid to reinforce the effects of learning. Teachers need to offer proper teaching materials to fit the curriculum content and student's needs to practice teaching strategies and multiple assessments. And meanwhile, they should be attentive to use m-learning, multimedia and informative technology. For this, it can substantially increase the fun of learning. As for the students of the department of auto mechanics, it is a necessity that teachers be attentive to increase the students' motivation on the blend of automobile and technology and the adjustment of the technical innovation of the automobile industry in the future.

The ubiquitous learning environment has strongly come. How to create a better and beneficial learning environment and learning achievement has thus become a main topic that most will pursue. Therefore, this study expects to incorporate the m-learning into the curriculum of the auto mechanics profession, and furthermore, wishes to guide the scaffolding m-learning mode into practice. The actual system of development and practice is incorporated in the students' real situation of their practicum to cultivate their independent learning. The auto mechanics majors of the vocation high school are highly expected to have an independent learning and independently tackle any challenges from their automobile repairs when they devoted themselves into the workplace.

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