M-Learning Innovation for Information System Education

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Abstract: Mobile learning (M-learning) is a new, exciting and promising field. M-learning likely to provide more information rather than knowledge, misses the mark. Information and knowledge are not identical, however the students face some problems and difficulties such as chances to learn, practice and time consuming. This is because experts and media are not enough for them. M-learning is a one thing for creates a variety of ways to deliver and provide electronic resources for learner. It includes many methods such as using system to deliver text, video and animation to learner. Thus, M-learning is professionals cite benefits to learner. The learner benefits from the opportunity to prepare themselves for greater ability increase their competitive in a globalization. This study was designed the interactive M-learning for information system education to visual assistant method for learning and developing ability of students. Researcher used the technique of dynamic computer graphics to establish an animation display system. Therefore, the purposes of this research were to develop the interactive M-learning of Management Information Technology course for information system education based on ADDIE Model and to evaluation the interactive M-learning of Management Information Technology course for information system education. The samples of this study comprised of 30 students from Rajamangala University of Technology Rattanakosin, Thailand. The sample was obtained by using the simple random sampling method and used one-group pre-/post-test evaluation design. The results shown that the satisfaction of the panel experts and information system students on the system, the mean was 3.70 with the standard deviation was 0.63, the satisfaction was in the high agree level. In part of one-group pre-/post-test evaluation has shown that the post-test score higher that pre-test score. This can be concluded that the developed system can be utilized for this course.

Key words: Mobile learning innovation, information system education, instructional media, pre-test score, electronic resources, high agree, Thailand

INTRODUCTION

At present, the technology change can develop the quality of education innovation and technology. Education innovation is important factor in the rapid distribution of information. It has been adapted for work in various fields such as industry, business and education. Mobile-learning is an interesting option to distribute knowledge and support learners with different backgrounds and learning skills. They can select the lesson that they want to learn and there is no limit in place and time. The features of Mobile-learning are application programs that have subjects and details of several lessons. Also has an exercise test to evaluate the efficiency of the student. Mobile-learning is a one thing for creates a variety of ways to deliver and provide electronic resources for learner (Milrad *et al.*, 2002). Thus, Mobile-learning is professionals cite benefits to learner. The learner benefits from the opportunity to prepare themselves for greater ability and increase their competitive in a globalization. However, a big advantage

is that the Mobile-learning also supports the delivery of multimedia elements such as sound, video and interactive hypermedia (Lipman, 1991). In addition, Mobile-learning can provide flexibility and convenience. It can overcome some traditional barriers such as time and place. Learners can access materials independently (Seppala *et al.*, 2002). In addition, Mobile-learning does not require extensive computer skills although, familiarity with smart phones and software does help to reduce the intimidation factor (Baker, 2000).

Information system education and training prepares trainees for jobs that are based on manual or practical activities, traditionally non-academic and totally related to a specific trade, occupation or vocation. It is sometimes referred to as technical education as the trainee directly develops expertise in a particular group of techniques or technology. Information system education may be classified as teaching procedural knowledge. This can be contrasted with declarative knowledge as used in education in a usually broader scientific field which might concentrate on theory and abstract conceptual

knowledge, characteristic of tertiary education. Information system education can be at the secondary or post-secondary level and can interact with the apprenticeship system.

However, it is rarely considered in its own form to fall under the traditional definition of higher education. Thus, information system education and training is an important basis for development in the nation in the long term. Since, there is a necessity to adapt the educational system to the development and labor needs of the country, information system education and training has been given much promotion. Various types of specialized courses and training programs are offered and administered by the Ministry of University Affairs. However, the information system students face some problems and difficulties such as chances to learn, practice and time consuming. This is because experts and media are not enough for them.

At present, the technology change can develop the quality of education innovation and technology. Education innovation and technology are important factor in the rapid distribution of information. It has been adapted for work in various fields such as industry, business and education. Interactive M-learning is an interesting option to distribute knowledge and support learners with different backgrounds and learning skills. They can select the lesson that they want to learn and there is no limit in place and thime. The features of the interactive M-learning are application programs that have subjects and details of several lessons. Also, the interactive M-learning has exercise tests to evaluate the efficiency of the student. Interactive M-learning is a one thing for creates a variety of ways to deliver and provide electronic resources for learner (Chaisanit *et al.*, 2010).

Thus, interactive M-learning is professionals cite benefits to learner. The learner benefits from the opportunity to prepare themselves for greater ability and increase their competitive in a globalization. However, a big advantage is that the interactive M-learning also supports the delivery and use of multimedia elements, such as sound, video and interactive hypermedia (Lipman, 1991). Now-a-day, interactive M-learning can provide flexibility and convenience.

It can overcome some traditional barriers such as time and place. Learners can access materials independently (Chaisanit and Suksakulchai, 2008). For the interactive M-learning does not require extensive computer skills, although familiarity with computers and software does help to reduce the intimidation factor (Baker, 2000). However, interactive M-learning for Information system education is not well developed. Therefore, this research aims at proposing some key concepts in developing such

as the interactive M-learning of Management Information Technology course for information system education. We will describe the utilization and characteristics of an innovative instructional media for information system education. It begins with related study on practice in training system. Then describes the results of a preliminary evaluation made with a group of information system students.

MATERIALS AND METHODS

Literature review

Mobile learning: M-learning is often defined as E-learning through mobile computational devices. In general by mobile device, we mean PDAs and digital cell phone but more generally we might think of any device that is small, autonomous and unobtrusive enough to accompany us in every moment in our every-day life and that can be used for some form of learning. These small tools can be seen as instruments for accessing content, either stored locally on the device or reachable through interconnection. They can also be a tool for interacting with people, via voice and through the exchange of written messages, still and moving images (Davies *et al.*, 2002). There are many properties that differ when comparing a mobile device from a desktop PC (the usual medium to deliver E-learning) and they have impact on what is reasonable, useful and even pleasant to do on such devices. Some of them are the output (i.e., the screen size and resolution capabilities, etc.); input (i.e., keypad, touch-screen, voice input); processing power and memory; supported applications and media types. When we try to transfer services provided by an E-learning platform into services in an M-learning platform, it is said that some of them should change to fulfill the limitations of the small devices, some are impossible to be delivered in a certain context but also new services appear, provoked by the mobility (Ryan, 2001).

Information system education in Thailand: Thailand's educational system is divided into four levels, namely pre-school, primary, secondary and tertiary levels. The provision of pre-school, primary and secondary education including vocational and technical education is under the responsibility of the Ministry of Education while the provision of tertiary education is under the supervision of both the Ministry of Education and the Ministry of University Affairs. According to the 1999 National Education, university education is available to students who have completed the upper secondary level of education. To cope with thousands of upper secondary

school leavers wishing to continue their studies at university level, admission to university is done by a competitive national university entrance examination. Universities are under the responsibility of the Ministry of University Affairs which is also responsible for private higher educational institutions. There are presently 24 state universities in Thailand, 12 of which are in Bangkok while the remainder is located in the provinces. In addition, there are 51 private colleges and universities offer undergraduate courses in such fields as Agriculture, Arts, Architecture, Business Administration, Archaeology, Education, The Humanities, Law, Social Sciences and Political Science. Programs of studies at Master's degree level are offered at about 46 universities and several doctoral degree programs are being conducted at approximately 20 universities.

Bachelor degree programs in Information System and related technology generally contain between 140-150 credits which are normally spread over 8 semesters or 4 academic years. Information system education also specifies a minimum of 30 credits for general studies, including Physical Science, Mathematics, English Language, Social Science and Humanities and 6 credits of free electives. The Career Profession Control Committee which issues practicing licenses for business computer, requires at least 39 credits.

There are three approaches to bachelor degree Information system education. The 1st approach puts all the 1st year students together to take common studies and then separates them into various disciplines from the 2nd year onwards. The second approach separates students into disciplines as soon as they are admitted to their 1st year. The third approach takes vocational students who possess a higher diploma in vocational education which puts them into appropriate disciplines. Appropriate subjects from their education may be accredited.

The approach: The study presents the system of innovative instructional media for information system students. It was developed based on ADDIE Model (Fig. 1).

The ADDIE Model: ADDIE Model is a systematic instructional design model consisting of five phases:

- Analysis
- Design
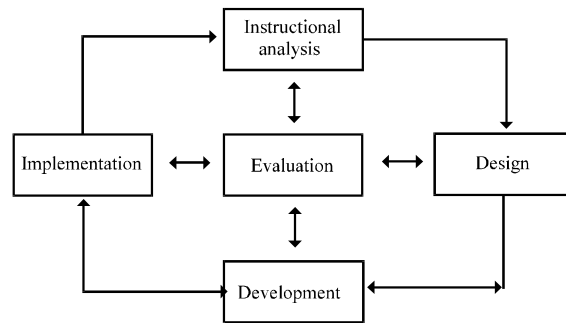- Development
- Implementation
- Evaluation

Fig. 1: The ADDIE Model

Various flavors and versions of the ADDIE Model exist. Each step has an outcome that feeds into the next step in the sequence (Molenda, 2003; Strickland, 2006). The five phases of ADDIE are as follows:

Phase 1 analysis: During analysis phase, the developer identifies the learning problem, the goals and objectives, the audience's needs, existing knowledge and any other relevant characteristics. Analysis also considers the learning environment any constraints, the delivery options and the timeline for the project.

Phase 2 design: A systematic process of specifying learning objectives. Detailed storyboards and prototypes are often made and the look and feel, graphic design, user-interface and content are determined here.

Phase 3 development: The actual creation (production) of the content and learning materials based on the design phase.

Phase 4 implementation: During implementation, the plan is put into action and a procedure for training the learner and teacher is developed. Materials are delivered or distributed to the student group. After delivery, the effectiveness of the training materials is evaluated.

Phase 5 evaluation: This phase consists of formative and summative evaluation. Formative evaluation is present in each stage of the ADDIE process. Summative evaluation consists of tests designed for criterion-related referenced items and providing opportunities for feedback from students (Dick and Carey, 1996). Revisions are made as necessary.

Courseware design: The contents of tutorial M-learning were collected and prepared at details level consists of six main parts: course description how to use, course's content and knowledge resource (Fig. 2).
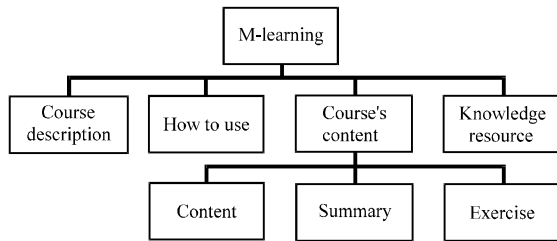
Fig. 2: Courseware flow chart of interactive M-learning

The M-learning innovation: M-learning is often defined as E-learning through mobile computational devices. In general by mobile device, we mean PDAs and digital cell phone but more generally, we might think of any device that is small, autonomous and unobtrusive enough to accompany us in every moment in the every-day life and that can be used for some form of learning. These small tools can be seen as instruments for accessing content either stored locally on the device or reachable through interconnection. They can also be a tool for interacting with people via voice and through the exchange of written messages, still and moving images (Davies *et al.*, 2002).

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This study was designed the interactive M-learning of Management Information Technology course for information system education. To use visual assistant method for learning and developing the student's ability. Researcher used the technique of dynamic computer graphics to establish an animation display system. The system can display the relation among the basic element of the Management Information Technology course in information system education. These make sure that the subject with students can catch the technique. This system was developed based on the ADDIE Model (Strickland, 2006). These make sure that the interactive M-learning of Management Information Technology course for information system education is significant contribution. The M-learning of Management Information

Fig. 3: The M-learning innovation

Technology course for information system education comprises of the following important features, course content, pictures, animation, VDO, course summary of each chapter and exercises to increase the learning progress. The interactive M-learning was designed with the help of teachers and students for learning experience. At the top of the user interface, we put the basic buttons of using the system as shown in Fig. 3. For the audio and animation researcher took into account certain criteria for the quality of audio and animation. Finally, research present the interactive M-learning included features can be seen. The interactive M-learning provides following features that are properly adapted to the users' special requirements:

Course content: Tool of content extraction.

Text: Presents the theoretical chapter of the course content. Animation and picture containing photos, simulations and cartoons.

Knowledge resource: Provides a student with choices on selection lesson sequence.

Pre- and post-test: Exercises to evaluate the effectiveness learning of students by using multiple-choice questions.

Index: A map of the system links and structure.

RESULTS AND DISCUSSION

An initial study was conducted at Rajamangala University of Technology Rattanakosin, Thailand. The objective of this study was defined as following: To develop interactive M-learning of Management Information Technology course based on ADDIE Model and to evaluation interactive M-learning of Management Information Technology course. The samples group of this study was 30 students. The sample was obtained by using the simple random sampling method and used 5 experts for evaluation the system. The sample was obtained by using the simple random sampling method. The result of one-group pre-/post-test evaluation show that score of post-test higher that pre-test.

From Table 1, the analysis of the data find that was significant difference between the pre- and post-test scores in the experimental group shown that the post-test scores were more than the pre-test scores by using t-test statistical method at 0.05 significant level. The satisfaction result of interactive M-learning of Management Information Technology course. The data were collected by using questionnaires about the satisfaction of learning environment of interactive M-learning of Management Information Technology course. Research methods were applied to collect quantitative data using questionnaires. The data were analyzed using basic statistical tools, frequency, mean $(\overline{x})$ and Standard Deviation (SD). The levels of student' satisfaction was determined as:

- Highest agree (4)
- High agree (3)
- Moderate (2)
- Minimal agree (1)

From Table 2, the overall satisfaction of the interactive M-learning of Management Information Technology course was also conducted to identify a way of evaluating the quality of students.

Table 1: One-group pre-/post-test evaluation

Test	N	$\overline{x}$	S	ΣD	T
Pre-test	30	63.67	1.51	-99	-13.70
Post-test	30	80.17	2.40		3

$-T_{0.05,5} = -2.015$

Table 2: The satisfaction of the M-learning of Management Information Technology course

Items	$\overline{x}$	SD
Course content	3.53	0.57
Pictures	3.73	0.71
Font and color	3.93	0.82
Course presentation	3.71	0.70
Practice sets	3.65	0.47
Flexibility	3.67	0.50
Overall satisfaction	3.70	0.63

The level of satisfaction was determined through 6 categories: Course content, pictures, font and color, course presentation, practice sets and flexibility. These showed means of 3.53 (SD = 0.57), 3.73 (SD = 0.71), 3.93 (SD = 0.82), 3.71 (SD = 0.70), 3.65 (SD = 0.47) and 3.67 (SD = 0.50). The overall quality of the system design was estimated as good and the degree of clarity of system was rated higher than target levels.

CONCLUSION

The M-learning of Management Information Technology course is a premium modeling tool. It able to produce high quality and complex system and gave user good practice information. It has also built-in computer based that handles all elements of the constructed scene and contain user database information. As researchers have seen in this study, it has built-in objects and helpers which used to alone or combined with one another, create the necessary perceptions of interactions. Researchers can conclude that M-learning presents an excellent environment for learning which can be produce knowledge to learner.

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