Content Analysis on the Trends and Issues of Theses and Dissertations of Mobile-Learning in Taiwan

F. K. Chiang[1], C. C. Lin[2], C. S. Sun[1]

[1]National Kaohsiung Normal University and [2]Meiho Institute of Technology, Taiwan

Abstract—**This manuscript reports the trends and issues of mobile-learning in Taiwan. We selected 43 research papers published in mobile-learning field and analyzed the research content including methodology, applied subjects and utilized information technology instruments. We found that most of research focus on the design and development of mobile learning, and the research methodology mainly focuses on learning systemic development, and the subjects of researches the most are elementary school students. Finally, these researches of m-learning which combined learning system as the most informational technology instruments.**

Index Terms—**Mobile-learning, Content analysis, Educational technology**

I.   INTRODUCTION

With the advance of information technology and multi-media, the use of digital productions for teaching and learning has become more and more widespread. The breakthrough of technology and educational paradigm shift, the field of educational technology has kept renovating and changing. From traditional instruction methods (face-to-face) to distance-learning, a series instructional transfer can be found: distant learning→e-learning→blended-learning→mobile learning. All the innovations are closely linked to information technology. The goal of m-learning is to develop learning content that integrates with mobile applications and provides learning and performance in just-in-time, just-in-place dynamic [1]. Prior studies have proven that mobile learning helps learners to improve their literacy and numeracy skills and to recognize their existing abilities [2]. These productions of mobile technology constantly were innovated and ameliorated to result in benefit on teaching and learning. In spite of the short history for mobile-learning in Taiwan, it gradually becomes to take shape into a field in recent years. At present, more than 43 theses and dissertations in Taiwan reported a variety of research on m-learning. This paper mainly was explored that content analysis on the trends and issues of thesis and dissertation of mobile-learning resea Generally speaking we differentiate five parts on educational technology areas, including analysis, design, development, impletement, and evaluation. Table 1 below shows the frequencies about topics of m-learning researches in Taiwan form 2000-2005. This shows that "Development" (29) topics are the most while "Design" (26), "Implement" (22), and "Analysis" (6) came in second, third, and fourth respectively. "Evaluation" is the least at only one research.

Taiwan. Methodology of this study took content analysis to analyze the trends and issues including the research topics, methodology, applied subjects and utilized information technology instruments. Researchers provided some findings of study and the trends of m-learning researches. Finally, researchers provide results and suggestions for exports of educational technology to do studies in the future.

II.   METHODS

Forty three theses and dissertations published in Taiwan from 2000-2005 were selected form The Electronic Theses and Dissertations System (ETDS, Taiwan) (http://etds.ncl.edu.tw/theabs/index.jsp) by using keyword search with "mobile-learning" . Then researchers took content analysis method to analyze the trends and issues about these researches.

III.   FINDINGS OF STUDY

After searching through ETDS database, 43 studies titled "m-learning" have been found since 2000 in Taiwan. Total are 43 theses and dissertations of mobile-learning in Taiwan form ETDS database. In addition to the figure1 shows frequency of theses papers were published from 2000-2005. We can see the figure1 and understand more and more researches on m-learning in the recent years. Number of paper which focus on m-learning researches are moved up tends. As we can know more and more researchers care this issue and begin to research the areas in Taiwan.
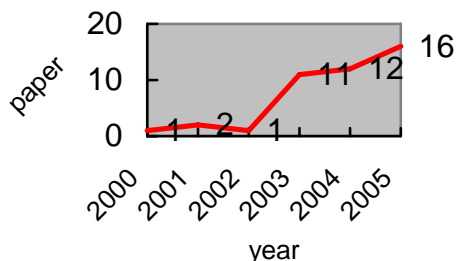

Figure 1. Frequency of theses and dissertations of mobile-learning in Taiwan from 2000-2005. (Source: Researchers)

A. Aout the topics of theses and dissertations on m-learning

Generally speaking we differentiate five parts on educational technology areas, including analysis, design, development, impletement, and evaluation. Table 1 below shows the frequencies about topics of m-learning researches in Taiwan from 2000-2005. This shows that "Development" (29) topics are the most while "Design" (26), "Implement" (22), and "Analysis" (6) came in second, third, and fourth respectively. "Evaluation" is the least at only one research.

TABLE I.
TOPICS OF M-LEARNING RESEARCHES

Topic	Analysis	Design	Development	Implement	Evaluation
Total	6	26	29	22	1

B. About the research approach/methodology of theses and dissertations on m-learning

The research approach/methodology of each thesis and dissertation was classified into one of the following five categories: (1) quantitative research, which took questionnaire survey methods on subjects; (2) qualitative research, which; (3) quantitative & qualitative, which took quantitative and qualitative methods on subjects simultaneously; and (4) system design and development; which develop a m-learning system and apply it on the research (5) empirical research, such as quantitative. Table 2 shows the number of research approach/methodology of these theses and dissertations, and we can clearly find "system design and develop" (23) is used the most methods. Besides experiment method is the least at only three researches of m-learning in Taiwan.

TABLE II.
RESEARCH APPROACH/METHODOLOGY OF M-LEARNING RESEARCHES

Information technology	Instructional platform	PDA	GPS	CELL Phone	Learning system	Tablet PC	Carma
Total	4	11	2	6	12	9	1

C. Aout the research subjects of theses and dissertations on m-learning

Researchers want to explore which subjects were selected in theses and dissertations on m-learning researches in Taiwan, researchers counted the result and finding as below table 3. Subjects of these researches are included as follows: elementary school students, elementary school teachers, junior high school, senior high school students, college students, masses, business person, and defective students. The table 3 shows "elementary school students" as subjects of m-learning researches is the most and "college students" is second-most. In addition to "masses" and "business person" as subjects of m-learning researches is the least.

TABLE III.
SUBJECTS OF M-LEARNING RESEARCHES

Research subjects	Elementary school students	Elementary school teachers	Junior high school students	Senior high school students	College students	Masses	Business person	Defective students
Total	12	3	4	2	8	1	1	2

D. Aout the utilized informational technology instruments of theses and dissertations on m-learning

Researchers utilized informational technology instruments of m-learning researches, including Instructional platform, PDA, GPS, CELL Phone, Learning system, Table PC, and Carma. From table 4, the most researchers took "learning system" as informational technology instruments of m-learning researches in Taiwan. "Carma" was utilized the last as informational technology instruments of m-learning researches.

TABLE IV.
UTILIZING INFORMATIONAL TECHNOLOGY INSTRUMENTS OF M-LEARNING RESEARCHES

Information technology	Instructional platform	PDA	GPS	CELL Phone	Learning system	Tablet PC	Carma
Total	4	11	2	6	12	9	1

IV. CONCLUSION

Based on above finding of researcher, more and more scholars begin to do the fields of m-learning research. From the figure 1, we can know that m-learning have been trending up ceaselessly. Furthermore, most topics of m-learning researches focused on design, development, and impletement. Fewer researchers choose the topics as analysis and evaluation on m-learning during five years. Thesefore, researchers suggest us can invest in m-learning researches as analysis and evaluation topics. About the research approach/methodology of m-learning researches, most researchers develop the m-learning system to help teaching and learning. Table 3 shows subjects of m-learning researches main elementary school students and college students. Researchers think that it is not easy to let elementary school students learn how to use m-learning technology. Elementary school students are so younger that exist many problems to implement the process of study. Finally, the learning system and PDA invested principally in utilizing informational technology instruments of m-learning researches. In the future researchers will keep on focusing on the effects of these 43 researches and provide different a point of view to analyze m-learning on teaching and learning in Taiwan.

REFERENCES

[1] Metcalf, D. S. & Marco, J. M. D. (2006) .mLearning: Mobile Learning and Performance in the Palm of Your Hand. HRD Press, Inc.

[2] Jill Attewell, J. (2005). Mobile technologies and learning: A technology update and m-learning project summary. Published by the Learning and Skills Development Agency.

AUTHORS

F. K. Chiang is a Doctor Student in the Department of Industrial Technology Education at the National Kaohsiung Normal University. No.62, Shenjhong Rd., Yanchao Township, Kaohsiung County 824, Taiwan (R.O.C.) (e-mail: forite@gmail.com).

C. C. Lin, Professor, is with Meiho Institute of Technology, Graduate Institute of Business Management, 23, Pingguang Rd., Neipu, Pingtung, Taiwan, R.O.C (e-mail: gendion.lin@gmail.com).

C. S. Sun, Professor, is with the Department of Industrial Technology Education at the National Kaohsiung Normal University. No.62, Shenjhong Rd., Yanchao Township, Kaohsiung County 824, Taiwan (R.O.C.) (e-mail: x9106@ms21.hinet.net).