The Construction of Interactive Computer Multimedia Instruction on "Basic Japanese Vocabulary"

Kongrit Jittangthammagul, Sakesun Yampinij, Thapanee Endoo and Nattapong Kramwong

Abstract—The study entitled "The Construction of Interactive Computer Multimedia Instruction on Basic Japanese Vocabulary" was aimed: 1) To construct the interactive computer multimedia instruction on Basic Japanese Vocabulary, 2) To find out multimedia's quality, 3) To examine the student's satisfaction and 4) To study the learning achievement in Basic Japanese vocabulary. The sampling group used in this study was composed of 40 1st year student in Educational Communications and Technology Department, Faculty of Industrial Education and Technology, King Mongkut's University of Technology Thonburi, in the academic year 2553 B.E. (2010). According to research results, we found that 1). The quality assessment by 3 mass media experts was at 4.72 on average or at high level. 2) In terms of contents, the evaluation by 3 experts was at 4.81 on average or at high level. 3) In terms of achievement, there was a statistical significance between before and after the treatment at the .05 level. 4) The satisfaction of students towards the interactive computer multimedia Instruction on "Basic Japanese Vocabulary" was 4.35 on average, or at high level.

Keywords—Interactive Computer Multimedia on Basic Japanese Vocabulary, Learning Achievement, Quality

I. INTRODUCTION

THE world nowadays has expanded widely in terms of economics. Japan is one of the countries which have an important role in Thailand in terms of economics and culture. Languages are a tool which can be used by people from different cultures to communicate especially Japanese language for Thai people who need to communicate with Japanese people. Although there is an increasing demand in learning Japanese language, there is a shortage of instructors and books to meet such needs. Hence, this study was aimed to construct an interactive computer multimedia instruction on basic Japanese vocabulary, which will prove useful for Japanese learners.

Multimedia is a kind of mixed media in one format. This may include pictures, sounds, texts or animations to provide knowledge or information for learners. Due to advances in computer technology nowadays, computer multimedia designers can apply various types of media to integrate into computer system. Technology in computer has progressed quickly and has become one part of human life. Therefore, application of computer technology in classroom can take place to meet the demands in computer users who can make use of it in various manners both directly and indirectly [1] - [4]. According to such reasons, the researchers decided to construct an interactive computer multimedia instruction on basic Japanese vocabulary so that learners can learn by themselves at any time. Moreover, this can reduce the individual differences, resulting in freedom for learning. Such interactive computer multimedia instruction can gain attention and stimulate learners to keep tracks with the lessons. The researchers realize the importance of such learner-based instruction and their participation in instructional activities to meet the objectives as described below.

II. RESEARCH OBJECTIVES

The research objectives were as follows:
1) To construct an interactive online multimedia instruction on basic Japanese vocabulary
2) To find out the quality of the developed interactive online multimedia instruction
3) To examine the student's satisfaction towards the interactive online multimedia instruction
4) To study the student's learning achievement in Basic Japanese vocabulary

III. POPULATION AND SAMPLING GROUP

A. Population

The population in this research was 57 first-year students in Educational Communications and Technology Department, Faculty of Industrial Education and Technology, King Mongkut's University of Technology Thonburi, in the academic year 2553 B.E. (2010).

B. Sampling Group

The sampling group in this study was composed of 40 first-year students in Educational Communications and Technology Department, Faculty of Industrial Education and Technology, King Mongkut's University of Technology Thonburi, in the academic year 2553 B.E. (2010). They were chosen through simple random sampling method.

Kongrit Jittangthammagul, Department of Educational Communications and Technology, King Mongkut's University of Technology Thonburi, Bangkok,Thailand,(e-mail: Kongrit .jit@ kmutt.ac.th).

Dr.sakesun Yampinij, Department of Educational Communications and Technology, King Mongkut's University of Technology Thonburi, Bangkok, Thailand,(e-mail: saksun.yam@ kmutt.ac.th).

Thapanee Endoo and Nattapong Kramwong Department of Educational Communications and Technology, King Mongkut's University of Technology Thonburi, Bangkok,Thailand,(e-mail: Thapanee.end@ kmutt.ac.th) ,(e-mail: Nattapong.kra@ kmutt.ac.th).

IV. Tools Used in This Study

The tools used in this study were as follows:

1) The interactive online multimedia instruction on basic Japanese vocabulary
2) A quality assessment form for the interactive online multimedia instruction on basic Japanese vocabulary
3) Two learning achievement tests which are a) pretest containing 20 questions with 4 multiple choices for each question and b) posttest containing 20 questions with 4 multiple choices for each question
4) A satisfaction evaluation form for learners who use the interactive online multimedia instruction on basic Japanese vocabulary

V. Research Methodology

This research methodology follows one-group pretest-posttest design. The research steps were as follows:

1) An introductory lesson was given to the learners. This included steps and how to process with the interactive online multimedia instruction on basic Japanese vocabulary.
2) Learners took a pretest. After finishing the introductory lesson, students did a pretest containing 20 questions with 4 multiple choices for each question to know the level of students. Then the pretest score was calculated for each person in order to analyze their learning achievement in the future.
3) The sampling group learned from the interactive online multimedia instruction on basic Japanese vocabulary.
4) After finishing the interactive online multimedia instruction on basic Japanese vocabulary, students did a posttest containing 20 questions with 4 multiple choices for each question
5) The sampling group filled out the satisfaction evaluation form about the interactive online multimedia instruction on basic Japanese vocabulary.
6) The data were collected from the experts in contents and experts in mass media. The data from the learning achievement test as well as the data from the satisfaction evaluation form would be analyzed to find out the mean score.

VI. Data Analysis

The data analysis was as follows:

1) The quality of the interactive online multimedia instruction was analyzed using the following statistical techniques: percentage, mean and standard deviation from the data given by the experts in contents and the experts in mass media.
2) The learning achievement of learners was analyzed using dependent samples t-test from the pretest and posttest scores.
3) The satisfaction of students towards the interactive online multimedia instruction was analyzed using percentage as a statistical technique from the data in the satisfaction evaluation form.

VII. Research Results

The research results from the construction of interactive online multimedia instruction on basic Japanese vocabulary was that the multimedia instruction followed 3 important learning steps as in

1) Pretest
2) Contents
3) Posttest

Learners can learn by themselves and they can use this interactive online multimedia instruction on basic Japanese vocabulary as a supplementary material for their course in Japanese language. There were 4 units as follows:

1) Meat
2) Vegetables and fruits
3) Bakery
4) Fast food restaurants

Besides the interactive online multimedia instruction on basic Japanese vocabulary, there were tools to evaluate the quality in terms of contents and mass media production: the quality assessment form for the interactive online multimedia instruction on basic Japanese vocabulary and the satisfaction evaluation form for the sampling group.
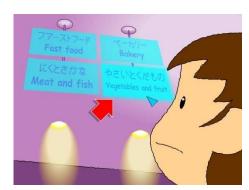

Fig. 1 Introduction page

Fig. 2 Main menu

Fig. 3 Interactive element in the lesson

Fig. 4 Learning vocabulary from fruits in the basket

Fig. 5 Vocabulary test

A. Mass Media Quality of the Interactive Online Multimedia Instruction on Basic Japanese Vocabulary

According to the experts in mass media, the quality assessment in terms of mass media for the interactive online multimedia instruction on basic Japanese vocabulary was 4.72 on average with standard deviation of 0.44. Compared to the criteria, it was at very good level.

TABLE I
QUALITY ASSESSMENT BY MASS MEDIA EXPERTS

Assessed Items	Assessment Results		
	$\bar{x}$	S.D.	Meaning
1. Still images	4.74	0.46	Very good
2. Animations	4.53	0.58	Very good
3. Texts	4.80	0.35	Very good
4. Sounds	4.74	0.46	Very good
5. Interactions	4.80	0.35	Very good
Mean	**4.72**	**0.44**	**Very good**

B. Content Quality of the Interactive Online Multimedia Instruction on Basic Japanese Vocabulary

According to the experts in contents, the quality assessment in terms of contents for the interactive online multimedia instruction on basic Japanese vocabulary was 4.81 on average with standard deviation of 0.29. Compared to the criteria, it was at very good level.

TABLE II
QUALITY ASSESSMENT BY CONTENT EXPERTS

Assessed Items	Assessment Results		
	$\bar{x}$	S.D.	Meaning
1. Content accuracy	4.79	0.29	Very good
2. Graphic and sound accuracy	4.92	0.58	Very good
3. Video accuracy	4.96	0.07	Very good
4. Game accuracy	4.58	0.22	Very good
Mean	**4.81**	**0.29**	**Very good**

C. Learning Achievement of the Sampling Group

The learning achievement was analyzed using the difference between pretest and posttest scores with t-test. It was found that the calculated t-test value was 21.39, higher than the t-test from the table (1.32) with statistical significance at the .05 level. This means that students showed an increase in their learning achievement with statistical significance at the .05 level. The interactive online multimedia instruction on basic Japanese vocabulary could help students understand and know Japanese vocabulary. The sampling group showed real learning achievement in compliance with the hypothesis.

D. Student's Satisfaction towards the Interactive Online Multimedia Instruction on Basic Japanese Vocabulary

According to the sampling group who used the interactive online multimedia instruction on basic Japanese vocabulary, their satisfaction towards the instruction was 4.35 on average with standard deviation of 0.64. Compared to the criteria, it was at high level.

TABLE III
STUDENT'S SATISFACTION TOWARDS THE INSTRUCTION

Assessed Items	Assessment Results		
	x̄	S.D.	Meaning
1. Lesson images	4.33	0.65	Very good
2. Lesson animations	4.40	0.66	Very good
3. Lesson texts	4.35	4.60	
4. Lesson sounds	4.30	4.71	
5. Lesson video clips	4.36	0.61	Very good
6. Program and interactions	4.35	0.62	Very good
Mean	**4.35**	**0.64**	**Very good**

VIII. RESEARCH DISCUSSION

It could be found that the developed interactive online multimedia instruction on basic Japanese vocabulary was assessed by the experts and that it could meet the research objectives in terms of contents and mass media at a good level. The learning achievement of students who used the interactive online multimedia instruction on basic Japanese vocabulary was analyzed by pretest and posttest scores showed that their posttest score was higher than pretest score with statistical significance at the .05 level. This was similar to the research into the computer multimedia instruction on "The Development of Computer Multimedia Game-Based Instruction on English Idioms for the 2nd Educational Range at Bannakhao School" [5]. It was found that the students showed higher posttest score than pretest score with statistical significance at the .05 level.

As for the student's satisfaction towards the interactive online multimedia instruction on basic Japanese vocabulary, it was found that students showed a high level of satisfaction towards the interactive online multimedia instruction on basic Japanese vocabulary. This is similar to research into the construction of computer multimedia instruction on "The Construction of Computer Instruction Package Entitled Multimedia Design and Development" which showed that their population satisfaction was 4.35 on average, or at high level [6].

IX. SUGGESTIONS

A. Suggestions for Application of Research Results

Here are suggestions for application of results from the research into the interactive online multimedia instruction on basic Japanese vocabulary.

1) The research showed that the quality of the instruction was at very good level due to a systematic manner of design for the computer lesson. Therefore, teachers should apply these 5 steps in their construction of other lessons: analysis, design, development, application, and revision including assessment.

2) In terms of contents and presentations, the research results showed that a well presented lesson is due to its interactions with learners and content relevancy.

B. Suggestions for Further Research

Here are suggestions for further research.

1) There could be a comparative study into Computer Multimedia Instruction to compare between conventional and online classroom students.

2) There could be research into the construction of Computer Multimedia Instruction on other subject contents.

REFERENCES

[1] Priroj Teeranatanakul, Paiboon Kiattikomol, Sakesun Yampinij, "Design and Producing Computer Instruction Package for e-Learning," Sueserm Center Bangkok, 2010, pp. 13-14.

[2] Priroj Teeranatanakul, Paiboon Kiattikomol, Sakesun Yampinij, "Technique, in the Development of Self-study Lessons for Distance-Based Online Learning," Sueserm Center Bangkok, 2010, Pages 11-14.

[3] Taksina Sawananont, "Computer-Assisted Instruction, Computer," 1986, pp. 56-57.

[4] Sopon Meejarleurn, Sakesun Yampinij, Komol Tehopakarn, "The Development of Multimedia Computer Lesson through Problem-Based Learning Approach Entitled "Using Word Processor for Career Works"," " in *Conf. World Academy of Science Engineering and Technology (WASET 2010) Vol.64, April 2010,* pp.563-566.

[5] Sakesun Yampinij, Supamas Kongkachuay, Sophon Meejaleurn, "The Development of Computer Multimedia Game-Based Instruction on English Idioms for the 2nd Educational Range at Bannakhao Schoo,l" in *Conf. Rec. 2010 IEEE Int. Conf. Computer Technology and Development (ICCTD 2010)* pp.568 – 572.

[6] Haruchai Yingpratanpon, "The Construction of Computer Instruction Package Entitled Multimedia Design and Development," Thesis in Educational Technology, Graduate School, King Mongkut's University of Technology Thonburi. 2006.