The development Computer Assisted Instruction on introduction to programming subject

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Abstract: - The purposes of the research were to 1) analyze design and development computer assisted instruction on introduction to programming subject 2) to evaluate the efficiency of package. 3) to evaluate learning effectiveness from education computer instructional package and 4) to determine learners satisfaction towards the package. The research tools were 1) the computer assisted instruction on introduction to programming subject 2) the achievement tests, and 3) the questionnaire of learners satisfaction. The research sampling group was 30 students. The research results revealed that the efficiency was higher than a criteria set 84.33/86.92, which was higher the criteria of 80/80. After analyzing the pre-test and post-test scores for the effectiveness, the computer instructional package could increase the learning effectiveness with 64.33 which is as the provided value not less than 60. And the mean value of learner’s satisfaction was rather high at 4.39. It can be conclude that the Computer Instruction Package was good enough to be used as self study package.

Key-Words: - Computer Instructional Package / Introduction to Computer Programming

1 Introduction

Current growth in computer technology are advanced quickly which is a catalyst for change in all professionals industry. As a result, bringing the computer to participate in work and it become efficiently than more ever. Academic learning has brought the computer to use in teaching and learning as well. Currently in many countries deemed to have knowledge of computers is essential as well as literacy. They allow student to bring computer to use as a medium of instruction in schools important. It allow students to learn depend on their own ability and the speed they need such as smart student learn faster and takes less time while average students learn more slowly and take more time.

Learning and teaching today is necessary to develop and apply advanced technologies used in conjunction with the teaching and learning in order to optimize the learner. It is Including the use of video teaching materials are part of the teaching and learning, but the perception of each learners are vary. Offering one way to learn might not be able to make the students understand. Currently, we have to take computer technology to aid the teaching and learning whether it is in the application of computer assisted instruction or even the main course with a computer. There is a research about teaching and learning using Computer Assisted Instruction: CAI, which found that achievement and perform better than students taught by traditional instruction. In conjunction, computer prices were down enough to be able to buy, as a result educators turned their attention to the use of computers in education field whether in education administration and as a tool in the study which is evident from the various research.

The field of education started to be widely used computers when they are made up microcomputer use. Because the machines are small and inexpensive, the various educational institutions purchase these microcomputer which is considered one of the innovations in the field of education. It used in teaching and learning called Computer - Base Instruction: CBT which is use the computer as a primary device for teaching so that interaction between students and program lessons. It can be divided into two categories, first, teaching computer management (CMI) and second is Computer - Assisted Instruction: CAI. Computer as a medium of instruction is high technology. Whenever a computer is used as a medium of teaching will make learning the correspondence between the students and the computer. As well as teaching between teachers and students in regular class rooms. Also a computer have the ability to respond with information that students enter immediate. This is help to reinforce the students. So now there is a widely use computer-assisted instruction. Students can learn lessons from the program in various forms, each lesson will have text, graphics,
Results of the study showed that effectiveness of the lesson was at 84.33/86.92 higher than the criteria set at 80/80. The performance after learning E2 is equal to 86.92, compared with performance in the before learning E1, which is equal to 84.33 show that the performance during the study is better. The performance after learning in each unit of study found efficiency in the process of Eli was 85.33 less than the performance after the learning process E2, which is equal to 86.92. Units two revealed processes Eli was 83.00 less than the performance after the learning process E2 which is equal to 86.92. Units three of study revealed processes Eli was 84.67 less than the performance after the learning process E2, which is equal to 86.92. Based on the research found that the development of computer assisted teaching theory using Instruction Design Model, KMUTT IMMCI of the Board of Industrial Education and Technology, King Mongkut's University of Technology is effective [3].

4 Details of development

A computer instructional package for introduction to computer programing class created by the process of developing lessons IMMCI: Interactive Multimedia Compute Instruction, which is in accordance with the guidelines of the Faculty of Industrial Education and Technology, King Mongkut's University of Technology [3], which are detailed below.

4.1 Basic content analysis (Analysis Content) used as a guideline to develop a computer instructional package for introduction to computer programing class. In order to develop the package for student who want to learn on their own, it needs brainstorming chart (Brain Storm) based on three technical knowledge experts in programming. The corresponding subheading based on the relationship of the content of each is determined. Created concept chart based on the accuracy of the content as a way to cut or raise topics rational logic of the content. Used to create charts, network content (Content Network Chart) by bringing the subject headings from a chart to write a relationship network. Then analyzed the relationship of the content by means of network analysis (Network Analysis) to complete.

4.2 Design Stage. Develop presentation of the strategies, objectives of the content and then create a chart presented on each page of the lesson.

2 The source and motivation of the Problem

Learning and teaching in introduction to computer programming class are managed according to the principles mentioned above. The development of information technology helps improve the system of teaching and learning, which currently method that become popular and widely used is Computer Assisted Instruction, or CAI. The computer assisted instruction is a model of the new approach of learning Effective. It helps students learn by themselves and reduce the burden of teaching. The weak learner can learn to improve the skills and knowledge to improve their own learning in order to catch others. Because of computer assisted instruction respond fast both figures show the characters stills, sound and motion graphics make students enjoy learning, be able to understand the lesson and remember the content of learning more.

Teaching and learning introduction to computer programing by using the computer instructional package as a medium of teaching will make learning the correspondence between the students and the computer. This is help reinforce to the students and make students enjoy learning not feel tired of learning. Therefore, researchers proposed thesis about developing a computer instructional package with several components of the teaching. It can learn by themselves with a sequence of steps which lead to effective and beneficial way up.

3 Works and related theories

Surapon Gaikhan has developed a computer assisted instruction for Website Programing II class of the study revealed that the package was developed more effectively as 84.03 / 83.56, which perform better than the criteria set 80/80. The criteria of the effectiveness of learning are assess from performance before learning (Epre) was 19.61 and efficient post-learning (Epost) was 83.56, so computer instruction developed allows the students effectively increase learning 63.94, which met the criteria set is 60. The satisfaction of samples are an average 4.37 per lesson, which is high satisfaction[2] Duangnapa Pitathanang has developed computer assisted instruction for computer instruction class. Animated graphics, the slide includes audio. The students can enjoy learning not feel tired of learning. Create a program to teach in computer help them concept from the theory through a link between stimulus and response. By design, the program will start from the stimulus to students and then estimate the response of the students so the computer can give a feedback for reinforcement which students select response.
4.3 Learning process. Determine framework which detailing the contents of the lessons in each frame, the priority content and then writing the details in order of the presentation as specified. In this step, the frame content is printed then check the accuracy of all content by experts.

4.4 Presentation stage. (Implementation) is a development stage of the lesson. Researchers used multimedia presentations in the form of letters, pictures, sounds, music and narration. for lesson presentation.

4.5 Evaluation by submission to the experts to assess the quality of multimedia technology, and then assess the user satisfaction with the sample group. The tested for effectiveness and efficiency of learning used the following test: the end of the lesson test in order to find efficiency E1/E2, and Pre-tests and post-test to find effectiveness of learning Epose-Epre = 60. Data collection methods are one by given exercise tests, Pre-Test and Post-Test to student who using the package. Then, given the questionnaire to student to collect the the satisfaction data. Data analysis. in this study, the researcher tools is quality analysis tests [4] The statistics used to analyze the quality of the tests were the statistics used for determining the difficulty (p) the discrimination (D), the reliability of the test The analysis of the effectiveness of the computer instructional package calculated by the formula E1 / E2 refers to the efficiency of retention of learning and the criteria set at 80/80.

5 Overview of the system
The computer instructional package study was developed according to the theory of the design process IMMCAI (Interactive Multimedia Computer Assisted Instruction). It make the data accurate and complete. Moreover, the learning unit was developed with multimedia presentation not only number, but also presented with a description and the music. The students are not bored and interest in learning.[1]

6 Conclusion
This research was to develop the Computer-Assisted Instruction on the Structure of Computer System for higher vocational degree students majoring in Computer Business. The research result was that the effectiveness of the lesson was 84.33/86.92, higher than the criteria set at 80/80. When the effectiveness after the treatment E2 was considered and found to be 86.92 and then it was compared with the effectiveness during the treatment E1 which was 84.33, it was found that the test during the treatment was higher than the test after the treatment. When the effectiveness during and after the study in each learning unit was considered, it was found that in Learning Unit 1, the effectiveness during the treatment E1 was 85.33, lower than the effectiveness after the treatment E2 which was 86.92. In Learning Unit 2, the effectiveness during the treatment E1 was 83.00, lower than the effectiveness after the treatment E2 which was 86.92. In Learning Unit 3, the effectiveness during the treatment E1 was 84.67, lower than the effectiveness after the treatment E2 which was 86.92. This was probably because the contents in all 3 learning units were complicated. The subject was about the operation and the structure of computer system. When learners took the post-test, they got lower score points on average. However, the score was acceptable. Another reason was because the test after the treatment consisted of randomly selected questions which the learners understood well, resulting in learners doing better than during the treatment. Perhaps the students understood the lesson in average because it was due to the retention of the contents, resulting in good memory and higher score for the post-test than test during the study. When the Standard Deviation (SD) was considered, it was found that the SD of the test before the study was 2.01 and the SD of the test after the study was 2.56. This means that the SD of the test before and after the test was different. It could be concluded from the average score that the average score before the study was different from the average score after the study. The developed lesson was effective, increasing the learning achievement by 64.33. Therefore, the Computer-Assisted Instruction on the Structure of Computer System for higher vocational degree students majoring in Computer Business could be used for instruction.

Reference: