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**Development Of Computer-Aided Courseware To Teach Programming In
Python Technology Secondary School Grade 2, Sichomphusuksa School
Khon Kaen Provincial Administrative Organization**



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Abstract

Objective of this research is 1) to develop computer-assisted lessons on programming with Python. Technology Grade 2 with an effective 80/80 criterion 2) to compare students' learning achievement before and after class with computer-assisted lessons on programming with Python. Technology Mathayomsuksa 2 and 3) to study students' satisfaction with computer-assisted learning about programming in Python. Technology Secondary school year 2 developed by the researcher The sample used in this research was Mathayom Suksa 2/10 students at Sichomphusuksa School. Khon Kaen Provincial Administrative Organization In the first semester of the academic year 2020, 32 students were obtained using Cluster Random Sampling. The research tools were 1) Computer-aided lessons on programming with Python 2). There were 30 4-choice choices for the achievement test, which had a classification power ranging from 0.22 to 0.78, and the confidence in the whole version was 0.85. Computer teaching aids It was a 5-level estimation scale model with a discriminant power ranging from 0.34 to 0.75 with a total confidence value of 0.84. The statistics used for data analysis were percentage, mean, standard deviation. And the Dependent Sample t-test. The results were as follows.

1. Computer-Aided Lessons Teach Programming in Python Technology Secondary school year 2 had the efficiency 87.03 / 84.90 meeting the set criteria.
2. The students had significantly higher post-study achievement at the .01 level, which was based on the hypothesis.
3. The students who studied with computer-assisted lessons were satisfied with the overall computer-assisted instruction at the most satisfactory level. Higher than the hypothesis set

In conclusion, the computer-assisted lesson on programming with Python. Technology The second grade of secondary education was developed with efficiency and effectiveness. Can be used for teaching and learning So that students can achieve their goals

Keywords: Computer-Aided Courseware, Development, Innovation

1. Introduction

Advances in various fields of science Of the world affects social and economic changes of all countries, including Thailand Therefore, it is imperative to improve the national education curriculum, which is an important mechanism for the development of the country's educational quality in order to build Thai people to be good, intellectual, happy, capable, ready to compete and collaborate creatively in World stage From the National Education Act B.E. 2542, amended (No. 2) B.E. 2545, amended (No. 3), B.E. 2553 and the amendment (No. 4), B.E. 2562 together with Related Ministerial Regulations and the Compulsory Education Act, Chapter 4 Educational Management Guidelines, Section 42 states that the education management must be based on the principle that all learners have the ability to learn and develop themselves. And considered the students to be most important The educational process must encourage learners to develop naturally. And full potential, Section 24 (5) said that encouraging teachers Able to organize the atmosphere, environment, learning media and facilitate the learners to learn. And have knowledge You can also use research as part of the learning process. However, teachers and students may learn along the way. From various types of teaching and learning media, Section 66 states that learners have the right to develop their ability to use technology for educational media in the pursuit of knowledge on their own. Continuously throughout life (Ministry of Education, 2010: 9-15)

From the third round of quality assessment report (2011-2015), basic education level Pink school education Khon Kaen Provincial Administrative Organization concluded that the Sichomphusuksa School The study results were at a fair level. 1 indicator was indicator 5, the learning achievement of the learners. By suggesting that the learners have a serious and continuous development of academic achievement By analyzing the results of post-teaching recordings and conducting remedial teaching to improve learners' learning Bring innovative learning materials and modern information technology of all forms to participate in teaching and learning management. Including conducting research in the classroom to develop learners in all subject groups Especially the subject matter learning Thai language, mathematics, arts, foreign languages And the subject of science learning (Office for Educational Standards and Quality Assessment, 2015: 3-6)

Nowadays, computer-assisted teaching lessons have been widespread in the education industry. Teachers have applied computer-assisted lessons to be used in teaching and learning. This can be considered as one of the educational materials that generate interest for the learners because of the colors, pictures and sounds, the students can interact with the computer. It is also useful for lessons that are difficult to understand. Make learners understand the lessons more clearly and clearly In addition, learners are able to study by themselves both during and outside school hours. Learners who are able to learn slowly can also review their knowledge and build their own understanding. Using computer-assisted lessons in the lessons will enable learners to learn from various, modern and interesting media, which are beneficial for learning in that subject (Sukon Sinthapanon, 2015: 71).

From the aforementioned problematic conditions Therefore, the researcher has an idea to develop computer-assisted lessons. By the researcher expected that Computer-assisted lessons Which is a multimedia lesson Contain picture Animation, sound, quiz, complete content. Will be able to build knowledge Understanding to learners This will bring about the student achievement in programming

with Python. Technology Secondary school Pink school education Khon Kaen Provincial Administrative Organization rise

2. Methods

This research It is a quasi-experimental research. (Quasi-experimental Research) to develop and find efficiency computer-assisted lessons on programming with Python. Technology Mathayom Suksa 2, the researcher organizes teaching by allowing learners to take a test before studying. And study with computer-assisted lessons During the study, students were able to complete the worksheet and then take a post-test for each of the 14 computer-assisted lessons for each subject, totaling 150 points, and then use the scores to find the performance value. And asked students to measure student satisfaction with computer-assisted learning lessons.

Statistics used in data analysis

The data analysis is divided into 4 parts, with data analysis method and statistical methods as follows.

1. Statistics used to find the quality of the tool.

1.1 Academic achievement test Determination of content fidelity using IOC (Index of Item Objective Congruence) formula (Phachoen Kitrakarn, 2011: 119-120) Criterion-based analysis of the study achievement test. Individual exam using criterion-based analysis method. Of Brennan (Boonchom Srisa-at, 2015: 87) and the confidence (Reliability) Using the method of Loveth (Boonchom Srisa-at, 2015: 93)

1.2 Statistics used to analyze the quality of the study satisfaction survey The accuracy of the measurement model was determined by using the IC (Item of Congruence) formula Phachoen Kitrakarn 2011: 119-120). Calculated using Pearson's simple correlation formula (Sombat Tairueakam, 2012: 93) and the confidence in a study satisfaction scale. Which is an approximate scale using Cronbach's Alpha Coefficient (Aft Properties, 2012: 95).

2. Basic statistics to find percentages (Boonchom Srisa-at, 2015: 101), mean (Boonchomsri Sa-san, 2015: 103) and standard deviation (Boonchom Srisa-at, 2015: 103).

3. Finding the effectiveness of computer assisted instruction By finding the efficiency E1 / E2 (Phachoen Kitrakarn, 2011: 44-45)

4. Comparison of academic scores before and after study Using statistics for independent testing (Dependent Sample t-test, Leng Saiyot and Angkhana Saiyot, 2010: 119-120).

3. Results and Discussion

Computer-Aided Lessons Teach Programming in Python Technology Grade 2 has an efficiency of 87.03 / 84.90, which means The computer-assisted courseware resulted in an average of 87.02% of learners' learning during learning and an average efficiency of 84.90% of the learner's performance change, indicating that the developed computer-assisted courseware had higher results than the 80/80 (Face Business, 2011: 44–45) This is because the computer-assisted instruction that the researcher has created through Process of Curriculum Analysis, Basic Education Core, BE 2551, School Curriculum Analysis. Analyze course descriptions Metrics to define test content and have been peer reviewed by experts to determine the content quality and suitability of educational technology measurement. In addition, it relied on the principles of computer-assisted lesson design according to the correct methods and procedures (Chaiyos Ruengsuwan, 2011: 161-166), divided into 5 steps: analysis, design, lesson development. Implementation / experiment And evaluation and improvement There is a building process that has been validated. Both in terms of language usage Structured formats for each type of media from content experts. Learning media And the measure of results was improved before being used with non-sample students in the experiment. And the samples used in the actual

experiment. And because the computer-assisted lessons are designed for ease of use can be run from a CD-ROM or an icon on the screen. Where students can learn and set activities by themselves. Students can learn according to their abilities and get immediate feedback. And can repeat lessons often Anchalee Srimuang (2016: 636-646) developed the learning achievement of Mathayomsuksa 1 students studying with computer-assisted lessons. Hardware matters The research results were found that The computer assisted instruction has an efficiency of 82.00/81.67 according to the set criteria 80/80 in line with Nuttachon Napho-on (2017: 58-60). Mobile device for creating applications on the Android operating system. The research results were found that The computer-assisted lessons were effective as 81.20/81.81, which is higher than the established criteria. It is also in line with Benjamas Nantasukon (2018: 49-52) has developed a computer-assisted lesson on how to use a program to propose the maintenance method of computer equipment. For the third grade students, the results of the research were The computer-assisted instruction has an efficiency of 81.67/83.91, which meets the criteria set 80/80. In addition, it is consistent with Pornthip Tongtidram (2018: 38-40) has developed computer-assisted lessons on the use of scrambled programs. Ach For Mathayomsuksa 1 students, the results of the research were Computer-assisted instruction has an efficiency of 84.81/80.15 based on the above research results, it is believed that the computer-assisted courseware affects learners' learning in a way that has been developed so they can be used in learning management. Know effectively Computer-assisted teaching on how to use the scratch program. For Mathayomsuksa 1 students, the results of the research were Computer-assisted instruction has an efficiency of 84.81/80.15 based on the above research results, it is believed that computer-assisted courseware affects learners' learning in a way that has been developed and can be used in learning management.

Students had a statistically significant increase in post-study achievement from pre-study at the .01 level, in line with the assumptions established. This is because computer-assisted teaching lessons Can present both slides and movies to convey. Content or knowledge contained in the lesson. And complete step-by-step teaching and learning activities are organized taking into account individual differences. Learners can learn according to their needs. And have the opportunity to practice various skills Or studying in a subject that they do not understand repeatedly without hindering their classmates, especially when used in the teaching of computer courses, which require practice and practice Apply in daily life and study at a higher level. In addition, the students learn in a sequence of steps from easy to difficult. Which can study according to their interests, aptitudes and abilities Which is in line with Anchalee Srimuang (2016: 636-646), developed the learning achievement of Mathayomsuksa 1 students studying with computer-assisted instruction. Hardware matters The research results were found that The learning achievement of the learner who took the computer-assisted instruction was significantly higher than before studying at the .01 level and in line with Pornthip Tongtidram (2018: 38-40). On the use of scratch programs For Mathayomsuksa 1 students, the results of the research were The achievement of the students after class was significantly higher than before studying at the .01 level. For this reason, the learning achievement of the computer-assisted learner learners was higher, which was in line with the objective of the study.

The students who studied with the computer-assisted lessons were the most satisfied with the overall computer-assisted instruction, indicating that the students were satisfied with the computer-assisted lessons. Because the computer-assisted lessons are responsive and interesting. There are interactions between students and computers. (Interactive) resulting in an interesting lesson while students can repeat more often. As needed, learning progress is shown periodically It stimulates knowledge, memory and attention and makes students a fun and enjoyable learning experience. Which is in line with Thunrada Sukruam (2018: 94-95) has developed a computer-assisted lesson on poetry and poetry in the Thai language course. For Mathayomsuksa 1 students, the results of the research were The students were at the highest level of satisfaction with computer-assisted learning. And in accordance with Siriwan Kaewcharan (2561: 42-43) has developed computer-assisted lessons Thai

language learning subjects about words for grade 4 students. The students were at the highest level of satisfaction with computer-assisted learning.

4. Conclusions

1. Computer-Aided Lessons Teach Programming in Python Technology Secondary school year 2 had the efficiency 87.03/84.90 meeting the set criteria.

2. The students had significantly higher post-study achievement at the .01 level, which was based on the hypothesis.

3. The students who studied with computer-assisted lessons were satisfied with the overall computer-assisted instruction at the most satisfactory level. Higher than the hypothesis set

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