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Original Article

Innovative Lessons Stimulate Kindergarteners' Desire to Learn with Online Video Media

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Abstract *- Learning motivation can be boosted with excellent and effective learning media. Therefore, this research has three research objectives: the first objective is to analyze and design multimedia animated cartoons of 12 species of animals in three animal groups, the second objective is to develop multimedia cartoon animations for learning for kindergarten children, and the last objective is to study satisfaction with the use of the learning media that has been created. The population and sample were three experts, seven teachers, and 30 kindergarten students from Baibun Pa Sang School, Pa Sang Subdistrict, Pa Sang District, Lamphun Province, Thailand. The sample selection was purposive sampling, and the learning activities and testing of the tools were organized in group discussions. The research tools are three parts: multimedia cartoon animations, pre-tests and post-tests, and questionnaires. The results showed that the developed learning materials had the highest level of satisfaction from all three groups. In addition, there are suggestions for researchers to continue creating lessons in other content to promote the quality of kindergarten education further.*

Keywords *- Educational Innovation, Educational Technology, Kindergarteners' Desire, Learning Innovation, Lifelong Learning.*

1. Introduction

Presently, educational technology and learning media have been developed in various formats to meet the needs of users and children aged 3–5 years [1], [2]. Children in this age group imagine the environment regarding animals with different characteristics and properties [2]. This causes them to ask questions or doubts, which is the starting point for learning about the nature around them. Multimedia and cartoons are designed and created systematically. It can display different content and is a popular medium with audiences of all genders and ages. Using multimedia media will help children learn to be more successful by solving problems and creating children's awareness more effectively [3], [4]. Moreover, communicating knowledge is significant to make it easy to understand and enjoyable for children.

In addition, it can increase understanding and correct memory of the characteristics and properties of animals. From the origin and importance of the above, researchers have the idea of developing animated learning materials to provide knowledge about the characteristics and properties of 12 types of animals. This is an important reason to clarify children's imagination and to promote children's correct knowledge and understanding through entertaining animations. Moreover, this research aims to create an understanding of each type of animal and how it has different characteristics, composition, and properties. Therefore, this research aims to develop multimedia animations. There are the main objectives: 1) to analyse and design multimedia animated cartoons of 12 species of animals in three animal groups, 2) to develop multimedia cartoon animations for learning for kindergarten children, and 3) to study satisfaction with the use of the learning media that has been developed. This research is the group discussion research that organizes an integrated learning process through actual learning activities in the classroom. What is gained from this learning is a prototype of inventions and learning innovations that create motivation and interest in kindergarten students in Thailand.

2. Materials and Methods

2.1. Population and Samples

The population and sample were three experts, seven teachers and 30 kindergarten students from Baibun Pa Sang School, Pa Sang Subdistrict, Pa Sang District, Lamphun Province, Thailand. The sample selection was purposive sampling, and the learning activities and testing of the tools were organized in group discussions.

In organizing the activity, the researchers received approval from the School of Information and Communication

Technology, University of Phayao, and Baibun Pa Sang School to manage the activity. Moreover, parents encourage all kindergarten students to participate in activities to enhance students' knowledge.

2.2. Research Tools

The content of the lesson is an adaptation of knowledge for kindergarten students. The content of the multimedia learning media is divided into 12 animals from three types of animals. The research instrument, therefore, consisted of three parts: 1) multimedia cartoon animations for learning for kindergarten children, 2) pre-tests and post-tests to assess knowledge and understanding from learning via multimedia, and 3) the questionnaires to study the satisfaction assessment with multimedia learning materials.

2.2.1. Multimedia Cartoon Animations

The innovation and consequence of learning media have been developed according to the ADDIE MODEL learning model [5], [6]. There are five stages of development as follows:

Analysis Stage

It consists of three phases

a) Problem Analysis

The Baibun Pa Sang School needs learning media to develop students' skills.

b) Students' Analysis

Kindergarten students lack skills in classifying animals.

c) Content Analysis

Research from learning materials, books, and research to determine the relationship between knowledge and content for students.

Design Stage

It consists of two phases

a) Lesson Design

The presentation of the lesson content is designed to inspire and arouse the learners' interest by using images, lights, colours, and sounds by media related to the content. In addition, the lesson content has been designed to be easy to understand, not complicated, and hit to the point. The lesson consists of 3 main sections: a content section, a pre-test section, and a post-test section.

b) Design of Learning Media

The media has been designed to suit the content and learning objectives. The content is concise and easy to understand, divided into chapters for order, and the graphics are used following the content.

Development Stage

It consists of two phases

The researchers created the designed learning materials using Adobe Animate, with lesson content created from text, images, and animations. After that, the improved learning materials are presented to experts for review and evaluation of the effectiveness of the learning materials. The experimental stage: to find out the effectiveness of the learning media by assigning two experimental groups to test twice each to check the appropriateness of the content, colours, font sizes, and interactions and to push for defects.

Implementation Stage

In this phase, the researchers apply the learning media to the sample and designated target groups with the following steps.

- Teachers and researchers recommend learning materials and methods for kindergarten students.
- Evaluate students individually before learning by having them take an achievement test before learning.
- Pairing students of mixed gender and learning abilities and recommend that group members help each other. Organize learning activities with the help of teachers and researchers.
- During learning, group learners take care of and help each other. If they have problems or questions, they should consult or ask their partner first. Teachers share responsibility for group work according to assigned activities for the student's success in the group.
- After completing the lesson, students take a test at the end of the lesson.
- Learners evaluate the effectiveness of teaching materials to assess problem-solving thinking.

Evaluation Stage

It consists of two phases

Evaluate the effectiveness of learning materials and students based on pre-test and post-test scores. Efficiency is considered according to the established criteria of 80/80, and teachers and researchers assess problem-solving thinking during activities. The researcher summarizes the results of the activities, analyses scores, and writes a research report.

2.2.2. Pre-test Exam and Post-test Exam

The pre-test and post-test exams are the same, but the questions are randomly assigned to students. The exam activity allows students to watch VIDEO media and answer questions correctly or incorrectly through the computer system.

The exam has 30 questions, divided into ten questions on aquatic animals, ten questions on land animals, and ten questions on poultry.

2.2.3. The Questionnaires

The questionnaire's objective is to study satisfaction and measure the effectiveness of the media. It is divided into two questionnaires: the questionnaire for teachers and experts and the questionnaire for kindergarten students, as presented in Tables 1 and 2.

Table 1. A Questionnaire for teachers and experts

Stage	Questions
Content Section	
T01	The ordering of content presentation is appropriate and easy to understand.
T02	The content is explicit, accurate, and reliable.
T03	The content is appropriate for the level of the learners.
T04	The content meets the needs of the students.
Language Section	
T05	The language is explicit, accurate, and reliable.
T06	The language is fitting for the level of the learners.
T07	The language used and content are consistent.
Design Section	
T08	The use of images and sounds is consistent with the learning objectives.
T09	The visual design and sound are exciting and engaging to the learner.
T10	The pictures and letters are clear and easy to read and understand.
T11	The visual design serves the learners' level.
T12	The use of sound in lessons is appropriate and clear.
Objective and Effective Section	
T13	Learning media stimulates students' interest in learning.
T14	Learning media are convenient and easy to use in teaching and learning.
T15	The learning media is modern and new.
T16	Overall satisfaction with multimedia learning media regarding learning management for students.

Table 2. A Questionnaire for kindergarten students

Stage	Questions
S1	Learners have fun and are impressed with multimedia learning materials.
S2	The characters are colorful and beautiful.
S3	The content of the lesson allows students to learn more about various animals.
S4	Learners have a desire to learn more after learning through multimedia.

Table 1 offers questions to teachers regarding the quality of the learning materials that have been developed. It consists of four sections with sixteen question points.

Table 2 is used to inquire and study satisfaction with media from kindergarten students, most of whom are between 4 – 6 years old. Both questionnaires were used after kindergarten teachers and students had completed all the designed activities.

2.3. Designing and Developing Learning Media

The lesson designs were divided into three groups: land animals, aquatic animals, and poultry, which the researchers developed through a multimedia development process called "Storyboard". The researchers designed a total of 108 media scenes.

The examples of the designed scenes are shown in Figures 1 to 3. At the same time, testing activities to evaluate students' learning achievement are presented in Figures 4 to 6, which are classified by animal type.

Figures 1 to 3 present examples of storyboards of land animals, aquatic animals, and birds. The researchers have published the complete learning materials on YouTube at the following link: https://youtu.be/OXH_QntnchE.

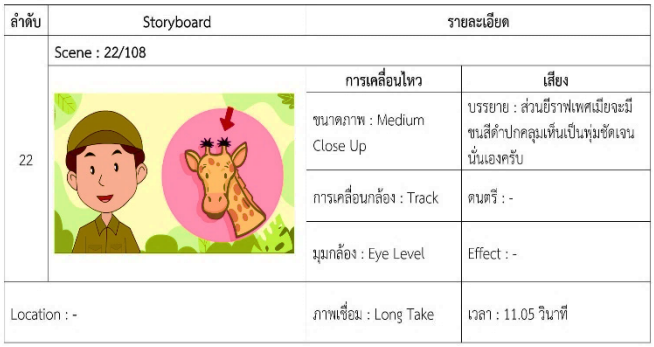

Fig. 1 Example of storyboard (Scenario 1)

Fig. 2 Example of storyboard (Scenario 2)

ลำดับ	Storyboard	รายละเอียด	
79	Scene : 79/108		
		การเคลื่อนไหว	เสียง
		ขนาดภาพ : Medium Shot	บรรยาย : ว้าว ดูนั่น ทางนู้นมีโลมาด้วย พวกเรายากไปดูโลมาใกล้ๆ ครับ อยากไปดูใกล้ๆ ค่ะ
		การเคลื่อนกล้อง : -	ดนตรี : -
		มุมกล้อง : Eye Level	Effect : เสียงเอฟเฟค "วิ้ง"
Location : ด้านในอควาเรี่ยม		ภาพเชื่อม : Cut	เวลา : 10.02 วินาที

Fig. 3 Example of storyboard (Scenario 3)

Figures 4 to 6 show examples of testing activities that researchers have classified by animal type and have published at the following links.

- Testing activities for land animals: https://youtu.be/F0wvPEcuZVY
- Testing activities for aquatic animals: https://youtu.be/EkimaELkNEc

Testing activities for poultry: https://youtu.be/h_VsH_oP_p8

Fig. 4 Example of testing activity (Scenario 1)

Fig. 5 Example of testing activity (Scenario 2)

Fig. 6 Example of testing activity (Scenario 3)

2.4. Data Analysis and Interpretation

Data analysis and interpretation are summarized to study the research development analysis results using five criteria levels: level 5 is the most satisfied, level 4 is very satisfied, level 3 is satisfied, level 2 is not satisfied, and level 1 is very dissatisfied.

Interpretation of the research results uses the calculation of class intervals, which are divided into five levels as follows: level 5 between 4.21 - 5.00 means the most effective and acceptable, level 4 between 3.41 - 4.20 means highly effective and acceptable, level 3 between 2.61 - 3.40 means moderately effective and acceptable, level 2 between 1.80 - 2.60 means low efficiency and acceptance, and level 1 between 1.00 - 1.80 means the lowest efficiency and acceptance, which is the summary and interpretation of the research results are shown in Tables 3 to 5.

3. Results and Discussion

3.1. Research Results

In this research, the researchers conducted the study according to the research process. The research results were divided into two parts: analysing efficiency and satisfaction with the learning media and activity report.

3.1.1. Efficiency and Satisfaction with Learning Media

Table 3 presents the results of the evaluation of the efficiency and satisfaction with the learning media by seven teachers. It was found that teachers were most satisfied with the content of the lessons, with an average of 4.58.

Table 4 presents the results of the evaluation of the efficiency and satisfaction with the learning media by three experts. It was found that experts were most satisfied with the content of the lessons, with an average of 4.29. Table 5 presents the results of the evaluation of the efficiency and satisfaction with the learning media by 30 students. It was found that students were most satisfied with the content of the lessons, with an average of 4.29.

Table 3. Efficiency and Satisfaction with Teachers

	Stage	Efficiency and Satisfaction		
		Means	**S.D.**	**Interpretation**
Content Section	T01	4.66	0.47	The most effective and acceptable
	T02	4.33	0.97	Highly effective and acceptable
	T03	4.66	0.47	The most effective and acceptable
	T04	4.66	0.47	The most effective and acceptable
	Avg.	4.58	0.59	The most effective and acceptable
Language Section	T05	3.99	0.97	Highly effective and acceptable
	T06	4.00	0.47	Highly effective and acceptable
	T07	4.33	0.47	The most effective and acceptable
	Avg.	4.11	0.64	Highly effective and acceptable
Design Section	T08	4.58	0.59	The most effective and acceptable
	T09	4.33	0.47	The most effective and acceptable
	T10	4.33	0.47	The most effective and acceptable
	T11	4.33	0.47	The most effective and acceptable
	T12	3.00	0.82	Moderately effective and acceptable
	Avg.	4.11	0.56	Highly effective and acceptable
Objective and Effective Section	T13	4.66	0.47	The most effective and acceptable
	T14	4.33	0.47	The most effective and acceptable
	T15	4.00	0.82	Highly effective and acceptable
	T16	4.33	0.47	The most effective and acceptable
	Avg.	4.33	0.56	The most effective and acceptable
	Total Avg.	4.28	0.59	The most effective and acceptable

Table 4. Efficiency and satisfaction with experts

	Stage	Efficiency and Satisfaction		
		Means	**S.D.**	**Interpretation**
Content Section	T01	4.57	0.53	The most effective and acceptable
	T02	4.00	0.82	Highly effective and acceptable
	T03	4.14	0.38	Highly effective and acceptable
	T04	4.43	0.53	The most effective and acceptable
	Avg.	4.29	0.57	The most effective and acceptable
Language Section	T05	4.43	0.79	The most effective and acceptable
	T06	4.29	0.76	The most effective and acceptable
	T07	3.86	0.90	Highly effective and acceptable
	Avg.	4.19	0.82	Highly effective and acceptable
Design Section	T08	3.71	0.49	Highly effective and acceptable
	T09	4.43	0.79	The most effective and acceptable
	T10	4.14	0.69	Highly effective and acceptable
	T11	4.57	0.79	The most effective and acceptable
	T12	4.00	0.58	Highly effective and acceptable
	Avg.	4.17	0.67	Highly effective and acceptable
Objective and Effective Section	T13	4.29	0.95	The most effective and acceptable
	T14	4.14	0.90	Highly effective and acceptable
	T15	4.43	0.98	The most effective and acceptable
	T16	3.71	0.95	Highly effective and acceptable
	Avg.	4.14	0.95	Highly effective and acceptable
	Total Avg.	4.20	0.75	The most effective and acceptable

Fig. 7 Atmosphere and activities in providing knowledge (Scenario 1)

Fig. 8 Atmosphere and Activities in Providing Knowledge (Scenario 2)

Fig. 9 Atmosphere and activities in providing knowledge (Scenario 3)

Table 5. Efficiency and satisfaction with students

Stage	Efficiency and Satisfaction		
	Means	S.D.	Interpretation
S1	4.43	0.79	The most effective and acceptable
S2	4.14	0.90	Highly effective and acceptable
S3	4.00	0.58	Highly effective and acceptable
S4	4.57	0.53	The most effective and acceptable
Avg.	4.29	0.70	The most effective and acceptable

3.1.2. Activity Report

The researchers organized learning activities for kindergarten students, as shown in Figures 7 to 9. Figures 7 to 9 display examples of the atmosphere and activities that provide knowledge with learning media, and there is an assessment of satisfaction with the activities. The overall atmosphere of the students was very satisfactory. The students were happy and requested to organize activities like this again.

3.2. Research Discussion

This research was very successful, with the researchers receiving support from various agencies involved, and the researchers were able to summarize the issues for discussion based on the research objectives with the following points.

The first success is that researchers have developed learning materials classified according to three animal types: land animals, aquatic animals, and poultry, as published on YouTube at link: https://youtu.be/OXH_QntnchE. The second success is that the developed media has gained the attention and acceptance of the three target groups of three experts, seven teachers, and 30 students, as detailed in Tables 3 to 5.

Efficiency evaluation results and satisfaction with learning media showed that experts had the highest level of acceptance and satisfaction with the learning materials, with a total average of 4.20 and an S.D. of 0.75. At the same time, teachers and students also have the highest level of acceptance of the learning materials, with a total average of 4.28 and S.D. of 0.59 and a total average of 4.29 and S.D. of 0.7, respectively. From these results, the researchers concluded that this research was successful according to all its set objectives.

4. Research Limitations and Suggestions

A limitation of this research is that this research is part of a student project at the bachelor's level, which is a teaching and learning program that integrates knowledge into practice. The issue is, therefore, budget and supporting technology, which, in the future, researchers will try to build on and develop further.

5. Conclusion

This research achieved all objectives, which included 1) to analyse and design multimedia animated cartoons of 12 species of animals in three animal groups, 2) to develop multimedia cartoon animations for learning for kindergarten children, and 3) to study satisfaction with the use of the learning media that has been developed. The researchers published all their work on YouTube, where they received feedback from both general users and the target audience.

The researchers found the results to be the most satisfactory and effective, including the experts who had the highest level of acceptance and satisfaction with the learning materials, with a total average of 4.20 (S.D. = 0.75).

The teachers have the highest level of acceptance of the learning materials, with a total average of 4.28 (S.D. = 0.59), and the students also have the highest level of acceptance and a total average of 4.29 (S.D. = 0.7), respectively.

All achievements reflect the need to develop age-appropriate learning materials. Researchers expect to receive support and learning promotion to develop their research further.

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