The Development of the Animation "How to Dispose of the Louse?"
for the Students with Hearing Impair

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Abstract— **The study aims at 1) to assess the quality of the developed animation media, 2) to compare learning outcomes of pre-learning to post-learning of animation media, and 3) to study student satisfaction with animation media. The samples group are primary school grade 1 students at Thungmahamek School for the Deaf in Bangkok, purposively sampling for 16 students. Research instruments are as follows. 1) Developed Animation Media, 2) Animation media quality assessment, 3) Evaluation form for pre-learning and post-learning of animation media content, and 4) Satisfaction evaluation form. The confidence assessment uses the Cronbach's Alpha coefficient analysis. The statistics used to analyze the data are percentage, average, standard deviation, and t-test.**

The study showed the following. 1) The overall assessment of animation media by experts at a highly appreciated, averaged mean equal to 4.16. 2) The learning achievements have a higher average post-learning than the average pre-learning score, significantly at .05. 3) Assessment of student satisfaction with animation media at a highly appreciated, averaged mean equal to 4.17.

Keywords: Animation media, Louse, Animation media for students with hearing impair

I. INTRODUCTION

Teaching and learning for children with hearing impairments in school for the deaf. Communication patterns including Sign language, fingerspelling, Lip reading, etc. Children at the school will learn Thai sign language as the first language and learn Thai as a second language. To be able to communicate with the family and society. Schools for the deaf use the basic education core curriculum of 2008, as public schools, with the state requiring core curriculum as 70 per cent and 30 per cent as curriculum improvements.

Teaching and learning in public schools and schools for the deaf, learning materials that improve children's daily life skills are taught to benefit themselves. The researchers are interested in producing media for the benefit of children in school for the deaf as a starting point.

Therefore, the exploration of data found that there are a few media for children with hearing impairment. Besides, the issue of healthcare content for children is also essential. Reports of health problems with lice in children are also found presently, including children in School for the Deaf. Lice are a global public health problem. At the same time, lice may be found on the head in children aged 3-12 years old. Lice are external parasites that live on the head of humans, feed on the host's blood. Itching of the head and complications found such as redundant bacterial infections and pustules on the head area. [2] In addition, lice directly affects the health of children and has indirect consequences: problems with children's learning achievement and interaction in societies, resulting in stress.

A problem arises from the lack of media for children with hearing impairment and lice health problems. The researchers then asked Thungmahamek School for the deaf for an in-depth interview with the school's health supervisor to analyze media needs, health care issues in children from lice. The teacher wanted to collect information to design and produce animation materials for children with hearing impairments. It is used as a supplementary medium to educate children to take care of their health to prevent lice and self-healing from lice. Experts suggest that animated media should also have sign language interpreter clips because the movement of the cartoon character's mouth in the animation is not as apparent as the human speaking. As a result, children may not be able to read their lips to translate speech.

Therefore, this animation media is designed and developed, and it aims to have a valuable medium for children with hearing impairments to exploit.

Scope of the study

The population is primary school students at Thungmahamek School for the Deaf, Bangkok, in Academic Year 2019.

The samples group are primary school grade 1 students at Thungmahamek School for the Deaf, Bangkok; 16 students were purposively sampling.

The independent variable is animation media. The dependent variable is learning outcomes after a study using animation media and student satisfaction with animation media.

Objectives of the study:

1) To assess the quality of developed animation media for hard of hearing children, 2) to compare learning outcomes before and after a study using animation media for hard of hearing children, and 3) to study student satisfaction with animation media for hard of hearing children.

II. LITERATURE REVIEWS

The relevant theory and research studies are as follows:

Sketchblog (1990) Character design for animation is very important to make the audience follow the animation content, the character design of the face, personality, posture, dress that correspond to the animation content . The character design guidelines are as follows : 1) Designed by creating character background stories. to be used to define behavior, 2) Study more details from other work samples Then bring to sketch many types of characters to be used as a suitable alternative , characteristics of memorized personality traits Dress design in accordance with the role in the story, 3) Choose the best fit by considering the character's according to the role, create a memory and 4) Develop characters to be more detailed, such as the use of appropriate colors in accordance with the mood of the content. [3]

Suchada Prabhachai and Somsorn Ruangvoraboon [4] study on "Effects of animation media on the knowledge and self-care behaviours of school-aged children with Thalassemia". Study the effects of animation media on the knowledge and self-care behaviours of school-aged children with Thalassemia. It compares knowledge and self-care behaviours between experimental and control groups. The samples group were school-aged children with Thalassemia.   Sample by a purposive sampling method. Research instruments are a questionnaire for collect personal data, interviews for collective knowledge and self-care behaviours, and animation media. The results showed that the experimental group had average knowledge and self-care behaviours scores higher than a control group, statistically significant at .01. When analysing repetitive variance, it found that the average score of knowledge and self-care behaviour between the experimental and control groups was a statistically significant difference by .01. The findings show that animation media can convey stories about Thalassemia and self-care practices accurately, easy to understand and good content recognition.

Natcha Thanawaranon, Panpenchai Preecha, and Chaiyaporn Panichrutiwong [5] study on design of 2D animation to reflect the impacts of parenting using technology media. The objectives of the study are as follows. 1) design 2D animation to reflect the impacts of parenting using technology media, 2) evaluate the results of viewing 2D animation, both in content and technical design. The samples group were 45 parents, relatives with adopted children aged 18 years and over. The research instrument is a questionnaire. The results showed that the samples group understanding of the content at highly appropriate. Reflect the impacts of adopted children with technology media at mostly appropriated. They were gaining thoughts and raising awareness about adopted children with technology media at mostly appropriated, beneficial to society at mostly appropriated. In the issue of technology and design, the characters are interesting at highly appropriated. The aesthetics of the design of the characters and scenes at highly appropriated, the soundtrack at highly appropriated.

According to a study of research practices in the production of animation media for the application, [6] it can convey content to the target audience appropriately. At the same time, it must be aligned analytical design in the animation production process with the target audience to communicate. Besides, the production of the animation media collaborative works with the person who wants to use it.

III. METHODOLOGY

The methodology of the study is as follows:

Step 1: Develop a data collection instrument as follows:

1. Create research instruments including 1) quality of Animation media assessment form for experts, 2) satisfaction of Animation media assessment form for samples group, and 3) assessment form for knowledge on self-health care from lice.

2. Present the assessment forms to three experts to assess the Item-Objective Congruence Index (IOC) and select the +1 items which the experts assess as consistent for application. All sets of assessment forms had questions with IOC between 0.7 to 1.00.

3. Bring a satisfaction assessment form to 30 samples. The result of the confidence assessment uses the Cronbach Alpha coefficient analysis equals 0.74.

Step 2: Create animation media as follows:

1. Send a letter from the Faculty of Science and Technology, Rajamangala University of Technology Krungthep, to ask for permission from Thungmahamek School for the Deaf, Bangkok, to interview Mr Chaiwat Tungsen, who is a health supervisor. To collect information on the guidelines for educating healthcare in children from lice of primary school grade 1 students who are experiencing health problems.

2. Use the information to create the script as a short film to communicate the story that interested the children. Then design the relevant characters to present to the experts in the animation production, namely Mr Saran Chuakrung, to assess the appropriate character.

Figure 1 Design of lice character

From Figure 1, the character represents lice. Take the concept from the illustration of lice from an enlarged camera.

The character, therefore, has a fat torso. Sharp fangs are used to suck blood on the head.
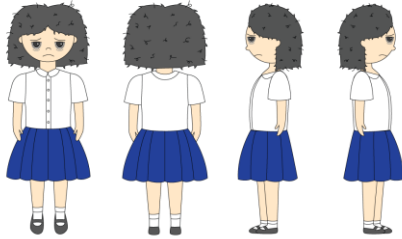

Figure 2 Design of child character

From figure 2, the character represents a child with lice. The personality is busy, stressed, not cheerful because of itching the head from lice.
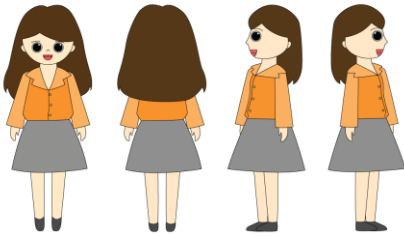

Figure 3 Design of the mother character

From figure 3, the character represents a mother with a kind personality.

3. Bring the plot to the storyboard for the order of the subjects. Then assess the suitability by the experts and teachers.

Figure 4 Animation Storyboard

4. Select the voice of the voiceover to suit the character's personality and record each scene. Next, split into audio files.

5. Use the packaged software to draw slides, paint. Then create animations in each scene. Split each scene into the video file.

Figure 5 Sign Language Interpreter in Animation Media

According to Figure 5, produced the video according to the chapter on the separation file. Courtesy of teachers at Thungmahamek School for the Deaf, Mr Kantip Prapiboonkij recorded a picture of a sign language interpreter.

6. Use the packaged software, follow sequences in a storyboard, import animation files, video files, sign language interpreters, voiceover files, and audio effects files, combining them into a full-length animation file, as shown in Figure 6 and Figure 7.
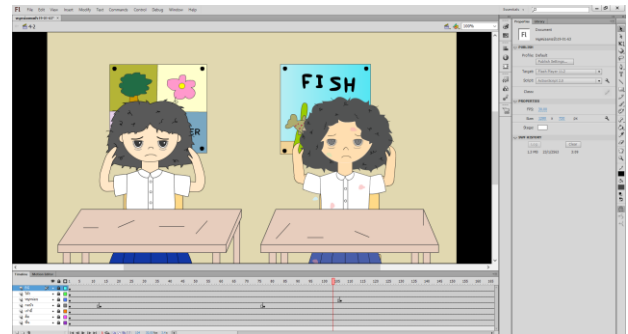

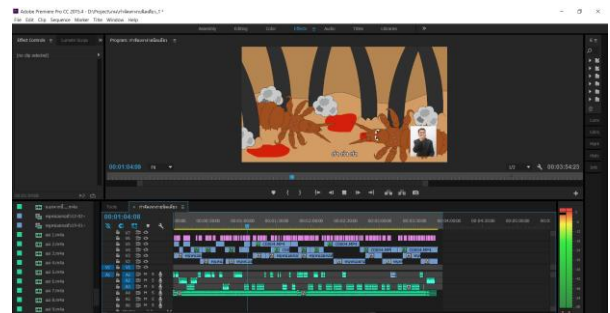**Figure 6** Using packaged software to create animations.

Figure 7 Audiovisual sequences in the packaged software.

Figure 7, it is a process of bringing images, soundtracks, voiceovers, and sign language interpreter videos, combining together follow the storyboard.

7. Test the usage of animation media with non-sample group students for revise.

Step 3: Assessment of the quality of animation media by experts.

Step 4: Experiment the animation media as follows:

1. Coordinate with teachers at Thungmahamek School for the Deaf to provide 16 students in primary school grade 1 who attended the class as the samples group to evaluate the media. The teacher explains the procedures to the students.

2. Do pre-test before watching animation media.

3. Watching the animation media.

4. Do post-test after watching animation media.

5. Assessment of the satisfaction of the samples group to analyse the results.

IV. SUMMARY AND DISCUSSION OF RESULTS

Assessment results of animation media by an expert can be summarised as follows:

TABLE 1 ASSESSMENT RESULTS OF CONTENT PRESENTATION TECHNIC

Issues	$(\bar{X})$	(S.D)	Interpretation
1. Design of the Storytelling presentation is attractive.	3.67	0.58	High
2. Content sequences technique is easy to understand and suitable for children.	4.33	0.58	High
3. Language usage is suitable for communicating with children.	4.67	0.58	Highest
4. After watching, the audience will learn about self-care and the prevention of lice.	3.67	0.58	High
Average	4.08	0.58	High

From Table 1, an overall assessment of content presentation technic is highly appropriate, with an average of 4.08.

TABLE 2 ASSESSMENT RESULTS OF ANIMATION DESIGN

Issues	$(\bar{X})$	(S.D)	Interpretation
1. The creative design of the character is appropriate.	3.81	0.73	High
2. The creative design of the scene is appropriate.	3.94	0.66	High
3. Voiceovers are consistent with the characters.	4.25	0.43	High
4. Presentation of sign language interpreters can promote awareness for hearing impaired children.	4.63	0.48	Highest
5. The overall colour scheme design is suitable for present media to children.	4.56	0.50	Highest
Average	4.24	0.56	High

According to Table 2, the overall animation design assessment results are highly appropriate, with an average of 4.24.

TABLE 3 OVERALL ASSESSMENT RESULTS OF ANIMATION MEDIA BY EXPERTS

Issues	$(\bar{X})$	(S.D)	Interpretation
1. Content Presentation	4.08	0.58	High
2. Animation Design	4.24	0.56	High
Average	4.16	0.57	High

According to Table 3, experts' overall assessment results of animation media is highly appropriate, with an average of 4.16.

The assessment results of animation media by samples group are summarised as follows.

TABLE 4 THE ASSESSMENT RESULTS OF ANIMATION MEDIA BY SAMPLES GROUP

Issues	$(\bar{X})$	(S.D)	Interpretation
1. The plot makes the content easy to understand.	3.94	0.66	High
2. Overall, characters and scenes use beautiful colours.	4.00	0.61	High
3. Sign language interpreters assist in understanding the content better.	4.63	0.48	Highest
4. After watching the animation, gain more knowledge about self-care and prevention of lice.	4.13	0.78	High
Average	4.17	0.63	High

According to Table 4, the animation media assessment results by samples group is highly appropriate, with an average of 4.17.

TABLE 5 COMPARISON OF PRE-LEARNING AND POST-LEARNING SCORES WITH THE ANIMATION MEDIA "HOW TO DISPOSE OF THE LOUSE?"

Animation media	n	$\bar{X}$	S.D.	T	P
Pre-learning	16	2.50	1.02	20.006*	.000
Post-learning	16	7.63	.97		

* $p < .05$

From Table 5, Learning achievements average test scores after watching animation with an average of

7.63 is higher than the average test score before watching animation with an average of 2.50, significantly at .05.

V. DISCUSSION

The assessment results of the children's satisfaction with animation for hard hearing children were highly appropriated, in line with the design of animation media for ADHD, focusing on colour. The study found that the use of colour technique to create scenes and characters. It reveals that ADHD has been found to concentrate, perceive and learn through animation from pastel tones better than flashy tone animation. [6]. Character designed must be define behavior characteristics of memorized personality traits dress design in accordance with the role in the story.[5] The study defined the tone of the non-flashy animation. Besides, designing sign language interpreter videos in the animation media. As a result, learning achievements that recognise content after watching animated media affect a higher average score after watching animation media. Next step for research will test the animation media to assess learning achievement with the children.

REFERENCES

[1] Chitsanukarn Khamdet, Siriphan Sriwanyong (2017). "A study of vocabulary comprehension of children with hearing impairment at the primary level with mild cognitive impairment at primary school grade 1-3 from teaching in line Discrete Trial Training and Sign Language Picture Book". Journal of Special Education Research and Development, Vol. 6, Issue 2 July – December, 2017.

[2] Jetsadaporn Saenwang, Chananya Jirapornkul, and Naowarat Maninil. (2021). "Factors associated with recurrence of head lice in female students primary school Maha Sarakham Province". Journal of Public Health Research Khon Kaen University, Year 14, Issue 1, January-March.

[3] Sunisa Charensiri. (2017). 3D Animation Cartoon Promoting Behavioral Diligence for preschool children, Ant and Grasshopper. Information Technology. Faculty of Science. Buriram Rajabhat University, Buriram.

[4] Suchada Prabmechai and Somsorn Ruangvorabun. "Effect of animation media on knowledge and self-care behaviour of school-age children with Thalassemia". Journal of Nursing, Ministry of Public Health, Year 27, No. 2 (May-August 2017), Pages 96-109.

[5] Natcha Thanavaranon, Phanpen Chaipreecha, and Chaiyaporn Panichruttiwong. Designing 2D animations to reflect the impact of raising children using technology. Proceedings of the 5th National and International Conference on Science and Technology, Social Sciences and Humanities 2020. May 1, 2020.

[6] Tasaneeporn Sawannakhet, Phitpraphai Sarasalin, and Chaiyaporn Panichruttiwong. Animation media design for ADHD children by focusing on colour. Proceedings of the 2014 National Academic Conference. April 3, 2014, Rangsit University.