The Development of Multimedia on Dressing Skill Practice for Children with Moderate Mental Retardation

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Abstract

The objectives of this study were 1) to develop the multimedia on dressing skill for the children with moderate mental retardation; and 2) to study the result learning of the multimedia used for improving dressing skills in children with moderate mental retardation. The sample group consisted of ten children with moderate mental retardation selected by simple sampling technique. Tools of this study were 1) the multimedia on dressing skill practice for the children with moderate mental retardation which had been designed and developed by the researcher; 2) an evaluation form on the quality of the multimedia implementation, and 3) a behavioral observation form on the children's learning through the multimedia. Statistical techniques included percentage, means ($\bar{x}$), and standard deviation (S.D.).

The outcomes suggested that;

1. The development of the multimedia on dressing skill practice for the children with moderate mental retardation designed and developed by the researcher was verified for its quality at a very high level ($\bar{x}$= 4.95, S.D.= 0.12).

2. In term of features required the multimedia for the children with moderate mental retardation, it was found that 1) the introduction should be designed and presented with the pictures looking familiar to the children in order to gain their attention and encourage them to learn;

2) The activities should be clearly explained following the certain steps and the objectives in order to empower the children to demonstrate the constant learning; 3) Screen should be presented with thick and clear font and it should be colorful and neat in order to encourage the children's perception; the pictures should also be clear and understandable, and look familiar representing the children's daily life so that they can learn easily; the bottom should be easy for use and the multi media should not contain more than 3 bottoms; 4) In term of the function, the clear instruction should be provided and interact with the user as well as that the information should be well linked in a good sequence and easy for use.

3. The children's learning outcome was increased after learning through the multi media. Overall, the multimedia was used to promote the children with moderate mental retardation to be more skillful in dressing and they showed an acceptable leaning behavior (= 3.52, S.D. = 0.12). Most of the children became more accurate in placing the dressing item on the right position of the cartoon character ranked from 1) Pant or Skirt, 2) Shirt, 3) Shoes, 4) Socks, and 5) Hat or Hair ban. In this regard, it was affirmed that these 10 children demonstrate a good progress in their dressing skill after learning through the multimedia.

Additionally, the quality of the multimedia was very high and it improve the children's dressing skill in putting things at proper positions and more correct dressing after the children had learn constantly through the multimedia. Besides, the multimedia was proved to be applicable for the children with mental retardation because it is easy to be used, attractive, and colorful. The cartoon characters were designed and adapted from the children's characteristics so they looked more attractive to the sample group and they were encouraged and concentrated to learn. The subjects liked the multimedia, wanted to repeat using it, felt encourageous, and were willing to finish without sign of boredom.

Keywords: multimedia, media quality, children with moderate mental retardation, design and development.

Introduction

Children with intellectual disabilities or "mental retardation" have been found broadly in Thailand for many years, but many people still lack knowledge and misunderstand some fact about this syndrome. That is, some people are afraid of and avoid getting in touch with these special children since they believe that this syndrome is contagious. In fact, mental retardation is a kind of non-contagious disease in which small number of parents could accept their children with this retardation since it seems difficult for them to understand it. In this regard,"Mental Retardation" is a state that the children's growth has been stopped, defected, or incomplete, in which the children have trouble with their intellectual and social skills. The mental retardation consists of 3 levels as follows; 1) the retarded children capable for learning or mild mental retardation with an IQ between 50 – 55 to 70; 2) retarded children capable for training or moderate mental retardation with an IQ between 35 – 55 to 50-55; and 3) children with severe and profound mental retardation (Limtasiri. n.d.) these children normally have problem with at least 2 out of 10 of their social skills i.e. communicative skill, self-care, living at home, social skills, public services using, self-control, hygiene and safety, academic learning for daily life, free time spending, and working. Based on a number of research papers previously conducted, it was indicated that the learning process of the children with mental retardation, especially those with slight retardation, are almost similar to normal children; the children with mental retardation may show a slower learning. According to the fact about the children with mental retardation, intelligence is a significant and predominant element of human learning process. Naturally, a child will demonstrate an appropriate development in movement, language, concept, emotion, and social skill when he is a normal condition. Differently, a mentally retarded child will show a slower progress in all skills differing from other children at the same age (Benja Chonthanon, 1993), which becomes a burden to the family to take care of a child who grows slowly, and is weak and unable to do things by himself. However, if a retarded child was raised with good care, learning support, and well understanding, he could be able to grow normally. Similarly, the multimedia can be used as an instruction

media to properly enhance the skills of the children with mental retardation in order that they can learn well and be able to live their life normally and equally as other children in the society.

Family members who have to take care of the retarded children, who are growing slowly, weak, and unable to help themselves, need to be well-trained and educated in promoting appropriate learning for these children and also have well-understanding toward the characters of the retarded children. In fact, these children can improve their skills when treated with suitable training. Particularly, to develop their capability, the children need to be well cared and instructional technology should be applied in the teaching procedure so that they could improve well and are able to adjust themselves to live happily in the society.

Normally, the children with disabilities will learn slowly, and those with mental retardation experience the Attention Deficit Hyperactivity Disorders (ADHD), forgetfulness, and are unable to classify colors, sizes, shapes, comparison, dissimilarity, and ordering, which are the basic qualifications for normal children to learn mathematics and languages. In fact, classroom management should integrate and connect teaching method to suit the children's levels in which they could apply what they learned in class into their daily life. Yordkamplang (1999 : 104) stated that the children with mental retardation are special and apparently different from normal children. They are easily convincible because of their friendliness to people, ADHD, poor memorization, short-term memory, and poor language use. At the same age, these children have difficulty learning and are unable to develop their abilities as normally as normal children. Thus, to promote the better abilities for these children requires more knowledge and understanding since they need a greater care than the normal ones. In this regard, multimedia is a useful option to help these children with mental retardation to learn better and activities should be created to be suitable for their age so that they can apply into their daily life.

Therefore, the media to be implemented on the children with mental retardation should perfectly suit their developmental process so that they can practically apply knowledge into their daily life. Presently, there

are a few research papers conducted on the use of multimedia to teach the retarded children. Most of the papers were conducted on the use of multimedia to help normal children. Suphak Bhumijit, an expert teacher who has been working on special education over 10 years, said that an electronic media is mostly used with the children with speech and hearing impairment such as the speech practicing software, etc., which mostly are regular instructional media. Unfortunately, these normal materials are also used to teach the retarded children due to the lack of specific media for these special children. This is resulted as an incomplete learning (Suphak Bhumijit (interview), October 8th, 2010). Significantly, instructional media is important for an interpersonal communication between teacher and student. It can promote effective teaching method to achieve the teaching objectives. Every type of the instructional media is completely useful to classroom management, especially in terms of visual perception that uses colors and shapes in the content of teaching. In term of media production for the children with mental retardation, it should be realistic at a level that the children can understand the content and should presented along with pictures in order to encourage them to learn more than normal children, otherwise they may be easily distracted. Typically, the children with mental retardation have short-term concentration. At this point, there is a variety of useful instructional media and multimedia is one of them that have been popularly applied in a field of education. It is to use a computer software to assist the classroom management in which the programmer or manufacturer have combined various features e.g. stop motion, animation, sounds, video, and texts to communicate and offer new experiences to the children so that they can lean effectively. Edger Dale (1950 : 53) suggested that visual-audio aids promote a long-term memory, better understanding, and time-saving, in which the students have more motivation to learn and create their own creative thinking. For these reasons, to improve the development of brain of the children with mental retardation, they needs to learn more since their perceptions seems poor when compare to normal children. Nowadays, many researchers are focusing more on the problems encountered by the children with mental retardation.

According to the abovementioned, the researcher aim to design and develop the multimedia on dressing skill practice for the children with moderate mental retardation in order to improve their daily dressing skill through the content of dressing. This will teach them how to basically assist themselves which is prior issue to be taught. The content of teaching is also a basic skill for self-care, living at home, etc, that the children can apply to develop more skills.

Objectives

The objectives of this study are:

1. To develop the multimedia on dressing skill practice for the children with moderate mental retardation.

2. To study the result learning of the multimedia used for improving dressing skills in children with moderate mental retardation.

Materials and Methods

1. Research Guestions

1.1 What are the required features and quality level required for creating the multimedia on dressing skill practice for children with moderate mental retardation?

1.2 Will the children with moderate mental retardation be able to develop a better learning and dressing skill after learning through the multimedia?

2. Research Assumption

The multimedia developed by the researcher can promote a better dressing skill for the children with moderate mental retardation.

3. Scope of the Study

3.1 The content of the multimedia designed and developed by the researcher covers self-assistance skill in dressing as a part of an individual's routine which the children with mental retardation should be able to do it by themselves. The multimedia consists of texts, picture, animation and sounds that constantly motivate the children's learning. The children were assigned to put the dressing items on five different position of the cartoon

character. 5 points would be given for each correct position, so the total score would be 25 points. The content includes the following issues.

3.1.1 Putting a picture of a hat or hair band on the right position, the children would gain 5 points.

3.1.2 Putting a picture of socks on the right position, the children would gain 5 points.

3.1.3 Putting a picture of shoes on the right position, the children would gain 5 points.

3.1.4 Putting a picture of shirt on the right position, the children would gain 5 points.

3.1.5 Putting a picture of pants or skirt on the right position, the children would gain 5 points.

This study was conducted as a semi-experimental research aiming to develop the multimedia on dressing skill practice for the children with moderate mental retardation. The sample group consisted of 2 children with moderate mental retardation, the children without complex disabilities. These children are able to use basic computer skill. They had been selected by simple sampling technique.

3.2 Variables in this study include;

3.2.1 Independent variable which is the multimedia on dressing skill practice for the children with moderate mental retardation.

3.2.2 Dependent variables which is the improvement of dressing skill performed by the children with moderate mental retardation.

3.2.2.1 The quality and features of the multimedia on dressing skill practice for the children with moderate mental retardation.

3.2.2.2 The children's learning outcome after learning through the multimedia on dressing skill practice so that children with moderate mental retardation are able to put the dressing items on the correct positions.

4. Research Tools

Tool of this study is two kinds of questionnaire forms covering the following issues

4.1 The multimedia on dressing skill practice for the children

with moderate mental retardation which had been designed and developed by the researchers.

4.2 The evaluation form on features and quality of the multimedia for the dressing skill for the children with moderate retardation was designed as a 5-level rating scale questioning 4 dimensions as follows: 1) Introduction; 2) Learning Activities; 3) Screen appearance; and 4) Function. This form contained several open-ended questions inquiring the multimedia features and should be completed by 7 experts.

4.3 The observation form on the children's learning behavior was designed as a 5-level rating scale. The children were allowed to select 5 dressing items on the multimedia and place each of them on the right position on the cartoon characters including 1) Hat or Hair Ban on the head; 2) Shirt on the body; 3) Plant or Skirt on the waist or thigh; 4) Socks on the spine or the end of feet; and 5) Shoes on the feet. Each position gave the children with scores ranking from 1 - 5 points. Repetition would decrease their scores and time was limited to 20 minute since these children can endure their concentration only for approximately 15 - 20 minutes. While the children were doing the activity, they were observed by 10 observers including 2 researchers and 8 assistants who have been qualified with well understanding in this study. The data collection lasted from July 15th - 19th, 2011. Each day, the observation was performed from 10.00-11.00 a.m. which was a period that the teacher was normally teaching these special children.

The scoring criteria for the observation on the children's learning behavior in placing the dressing items on each right position and the interpretatin was shown below.

1-2 times before the right position = 5 points
average score 4.51-5.00 = Very good

3-4 times before the right position = 4 points
average score 3.51-4.50 = Good

5-6 times before the right position = 3 points
average score 2.51-3.50 = Moderate

7-8 times before the right position = 2 points
average score 1.51-2.50 = Not good
9-10 (and more) times before the right position = 1 points
average score 1.00-1.50 = Not really good

The research tools were designed by the researcher and verified by the academics to affirm its accuracy of the content and appropriateness of language use before being used for the data collection. Besides, the Cronbach's Alpha Coefficient was used to test and ensure the reliability of the evaluation form (1.00) and the behavior observation from (1.00). Thus, these tools could be used to collect the data from the participants (Cronbach, 1990).

Research Methodology

1. The researchers studied the useful information on the children with moderate mental retardation and their learning behaviors.

2. The researchers studied the information about designing, art elements, principles of designing and the development of multimedia.

3. The researchers determined the goal, analyzed and created an appropriate content, defined the scope of content and expected learning behaviors, and created the final flowchart of the study.

4. The researchers designed and created the multimedia as planned.

5. The researchers tried out and developed the multimedia before it was practically used with the sample group.

Statistical Analysis

This study was presented as descriptive statistical data which were frequency, percentage, mean, and standard deviation; meanwhile, the data analysis was completed by using SPSS (ver. 17.0) and MS Excel (Phusi-Orn. 2008).

Results

Research Outcome

Section 1: The data analysis of the features required for the multimedia to promote the dressing skill practice for the children with moderate mental retardation verified by 7 experts in 4 dimensions as follows.

1. Introduction: it was found that using the picture that look familiar to the children as well as designing the character from their personal characteristics could perfectly draw the children's attention into the content of the multimedia and encourage them to learn more.

2. Learning activity: it was found that the activities on the multimedia were well designed specifically for the retarded children that follow the objectives of the study aiming to promote the mutual interaction between the children and media. The multimedia could motivate the children to learn constantly since they typically require constant motivation. Moreover, these activities could be repeated so that the children could gain more certain skill in dressing.

3. The screen and appearance: it was found that the font and the color used on the media were thick, clean, and clear. The font size matched the screen. The pictures were clear and understandable which draw in the children's attention since they presented the scenes in the children's daily life. The picture size matched the screen. Music and sound were clean and correct that motivated the children to learn better. Each page was installed with only 3 control buttons which were easy for use.

4. Function: it was found that the multimedia was presented with a clear and understandable instruction so the children could use it easily. Thus, the media was affirmed to be suitable and well interacted with the user. The information presented on the media was linked to each other following a good sequence so it was convenient to be used.

Figure 1 : The Design of the Multimedia Promoting Dressing Skill Practice for the Children with Moderate Mental Retardation

Table 1 Mean and standard deviation affirming the quality of the multimedia on dressing skill practice for the children with moderate mental retardation designed and developed by the researcher.

Items		N=7 $\bar{X}$	S.D.	Interpretation
1.	**Introduction of the multimedia**			
	1.1 Motivating introduction to learning activities	5.00	0.00	Very high
	1.2 Appropriate time period for introducing learning activities	4.86	0.35	Very high
	1.3 Providing useful information for the children	4.86	0.35	Very high
	Total	**4.91**	**0.23**	**Very high**
2.	**Learning Activity Design**			
	2.1 Activities match the objective	5.00	0.00	Very high
	2.2 Activities match the children's ability	4.86	0.35	Very high
	2.3 Activities promote the children's dressing skill	5.00	0.00	Very high
	2.4 Children interact and receive the feedback	5.00	0.00	Very high
	2.5 Empowering the children to learn happily	5.00	0.00	Very high
	2.6 Activities can be done repeatedly	5.00	0.00	Very high
	2.7 Activities are presented interestingly	4.86	0.35	Very high
	Total	**4.96**	**0.10**	**Very high**

Table 1 (continued)

Items		N=7 $\overline{X}$	S.D.	Interpretation
3.	**Display Appearance**			
	3.1 Font size suitable for the children's level	5.00	0.00	Very high
	3.2 Font thickness	5.00	0.00	Very high
	3.3 Font's and background's color	5.00	0.00	Very high
	3.4 Font's size suitable for the display	5.00	0.00	Very high
	3.5 Clear and understandable pictures	5.00	0.00	Very high
	3.6 Pictures suitable for the children's level	5.00	0.00	Very high
	3.7 Interesting pictures	4.86	0.35	Very high
	3.8 Clearly meaningful pictures	5.00	0.00	Very high
	3.9 Beautiful pictures	5.00	0.00	Very high
	3.10 Size of picture suitable for the display	4.86	0.35	Very high
	3.11 Colorful multimedia suitable for the children's level	5.00	0.00	Very high
	3.12 Clear and correct sound	4.86	0.35	Very high
	3.13 Sound matches the content of teaching	5.00	0.00	Very high
	3.14 Appropriate music sound	4.86	0.35	Very high
	3.15 Menu is convenient for the children	5.00	0.00	Very high
	3.16 Control button on display suitable for completing the activities	5.00	0.00	Very high
	Total	**4.97**	**0.09**	**Very high**
4.	**Implementation**			
	4.1 Convenience in use	5.00	0.00	Very high
	4.2 Easy and understandable Instruction	4.86	0.35	Very high
	4.3 The multimedia can be used repeatedly	5.00	0.00	Very high
	4.4 Content is easy and understandable for the children	5.00	0.00	Very high
	4.5 Content suitable for the children's level	5.00	0.00	Very high
	4.6 The contents are connected smoothly	5.00	0.00	Very high
	4.7 Appropriate interaction	5.00	0.00	Very high
	Total	**4.98**	**0.05**	**Very high**
	Total score of the design and development covering 4 dimensions	**4.95**	**0.12**	**Very high**

The data in Table 1 indicated that the multimedia on the dressing skill practice had a very high quality ($\overline{X}$ = 4.95, S.D. = 0. 12). In term of each item, it was found that there were nine items that gained mean score lower than 5.00 including 1.2) Appropriate time period for introducing learning activities; 1.3) Providing useful information for the children; 2.2) Activities match the children's ability; 2.7) Activities are presented interestingly; 3.10) Size of picture suitable for the display; 3.7) Interesting pictures; 3.12) Clear and correct sound; 3.14) Appropriate music sound; 4.2) Easy and understandable Instruction. These nine items were rated with the same mean score ($\overline{X}$ = 4.86, S.D. = 0.35).

Based on the expert's opinions, it was suggested that the tone of voice used to call the children's names should be voice of a man. Additionally, the experts agreed on that the multimedia that the researcher had designed and developed was applicable to be implemented with the children with moderate mental retardation, in terms of ease of use, attractive appearance, and lively appearance, that effectively encourage the children to learn more. Use of colors attracted the children's attention so that they were happy and motivated to learn and completed the activities without feeling bored.

Section 2: the behavioral analysis was conducted on the ten children with moderate mental retardation, the children without complex disabilities. These children were assigned to complete the learning activities through the multimedia designed and developed by the researcher 5 times and 20 minutes per each. These activities occurred every other day and the children would be observed for their improvement, as presented in Table 2.

Table 2: Presents the scores of frequency, mean, and standard deviation of the behaviors performed by ten children with moderate mental retardation toward the multimedia on dressing skill practice.

Children	Round	Children's learning behavior score on dressing skill					Total score of 25 points		Interpretation
		A=5	B=5	C=5	D=5	E=5			
1	1	3	2	3	4	4	16		
	2	3	3	4	4	4	18		
	3	4	3	4	4	4	19		
	4	5	4	5	5	5	24		
	5	4	4	5	5	5	23		
Total $\bar{x}$		**3.8**	**3.2**	**4.2**	**4.4**	**4.4**	**20**	**4**	**Good**
S.D.		**0.84**	**0.84**	**0.84**	**0.55**	**0.55**		**0.16**	
2	1	3	3	4	4	3	17		
	2	3	4	4	4	4	19		
	3	4	3	4	5	5	21		
	4	3	3	4	4	5	19		
	5	3	4	4	5	5	21		
Total $\bar{x}$		**3.2**	**3.4**	**4**	**4.4**	**4.4**	**19.4**	**3.88**	**Good**
S.D.		**0.45**	**0.55**	**0**	**0.55**	**0.89**		**0.32**	
3	1	2	3	3	3	3	14		
	2	2	3	4	4	4	17		
	3	3	4	4	4	4	19		
	4	3	4	5	4	5	21		
	5	4	5	5	5	5	24		
Total $\bar{x}$		**2.8**	**3.8**	**4.2**	**4**	**4.2**	**19**	**3.8**	**Good**
S.D.		**0.84**	**0.84**	**0.84**	**0.71**	**0.84**		**0.06**	
4	1	2	3	3	3	3	14		
	2	2	3	3	3	4	15		
	3	2	3	3	4	5	17		
	4	3	3	4	4	5	19		
	5	3	4	4	5	5	21		
Total $\bar{x}$		**2.4**	**3.2**	**4**	**3.2**	**4.2**	**17.2**	**3.44**	**Moderate**
S.D.		**0.89**	**1.3**	**1**	**0.45**	**0.45**		**0.37**	

Table 2: (Continued)

Children	Round	Children's learning behavior score on dressing skill					Total score of 25 points		Interpretation
		A=5	B=5	C=5	D=5	E=5			
5	1	2	2	3	3	4	14		
	2	2	3	3	4	5	17		
	3	2	3	3	4	5	17		
	4	3	3	4	4	5	19		
	5	3	4	4	5	5	21		
Total $\bar{x}$		**2.4**	**3**	**3.4**	**4**	**4.8**	**17.6**	**3.52**	**Good**
S.D.		**0.55**	**0.71**	**0.55**	**0.71**	**0.45**		**0.11**	
6	1	2	2	3	3	4	14		
	2	2	2	3	3	4	14		
	3	2	3	4	3	4	16		
	4	3	4	5	3	4	19		
	5	4	5	5	4	5	23		
Total $\bar{x}$		**2.6**	**3.2**	**4**	**3.2**	**4.2**	**17.2**	**3.44**	**Moderate**
S.D.		**0.89**	**1.3**	**1**	**0.45**	**0.45**		**0.37**	
7	1	2	2	3	3	4	14		
	2	2	2	3	3	4	14		
	3	2	3	3	4	4	16		
	4	3	3	4	4	5	19		
	5	3	3	4	5	5	20		
Total $\bar{x}$		**2.4**	**2.6**	**3.4**	**3.8**	**4.4**	**16.6**	**3.32**	**Moderate**
S.D.		**0.55**	**0.55**	**0.55**	**0.84**	**0.55**		**0.13**	
8	1	2	2	2	3	4	9		
	2	2	2	3	4	4	14		
	3	3	3	4	4	4	16		
	4	3	3	4	5	5	18		
	5	3	4	4	5	5	21		
Total $\bar{x}$		**2.6**	**2.8**	**3.4**	**4.2**	**4.4**	**15.6**	**3.48**	**Moderate**
S.D.		**0.55**	**0.84**	**0.89**	**0.84**	**0.55**		**0.17**	

Table 2: (Continued)

Children	Round	Children's learning behavior score on dressing skill					Total score of 25 points		Interpretation
		A=5	B=5	C=5	D=5	E=5			
9	1	2	3	2	3	4	14		
	2	2	3	2	3	3	13		
	3	2	3	3	3	4	15		
	4	2	3	3	4	4	16		
	5	3	4	3	4	5	19		
Total $\bar{x}$		**2.2**	**3.2**	**2.6**	**3.4**	**4**	**15.4**	**3.08**	**Moderate**
S.D.		**0.45**	**0.45**	**0.55**	**0.55**	**0.71**		**0.11**	
10	1	1	2	2	3	3	11		
	2	2	2	2	3	3	12		
	3	2	2	2	3	4	13		
	4	3	3	3	4	4	17		
	5	4	4	4	5	5	22		
Total $\bar{x}$		**2.4**	**2.6**	**2.6**	**3.6**	**3.8**	**15**	**3**	**Moderate**
S.D.		**1.14**	**0.89**	**0.89**	**0.89**	**0.84**		**0.12**	
Total score	**$\bar{x}$**	**2.76**	**3.14**	**3.54**	**3.88**	**4.28**	**17.42**	**3.52**	**Good**
N=10									
S.D.		**0.5**	**0.4**	**0.59**	**0.4**	**0.27**		**0.12**	

A= Able to select a picture of a hat or hair band and put it on the right position of the cartoon character

B= Able to select a picture of socks and put it on the right position of a cartoon character

C= Able to select a picture of shoes and put in on the right position of a cartoon character

D = Able to select a picture of a shirt and put it on the right position of a cartoon character

E = Able to select a picture of trouser or skirt and put it on the right position of a cartoon character

Table 2 presents the scores of frequency, mean, and standard deviation of the behaviors performed by the children with moderate mental retardation toward the multimedia on dressing skill practice. These children completed the activity five times and their total score of the skill accuracy was at a good level ($\overline{X}$ = 3.52, S.D.= 0.12). Based on the score obtained from each dressing item ranking from the highest to the lowest, it was found that most of the children performed more accurate skill in putting the dressing items on the right position of the cartoon character as follows: 1 - pants or skirt ($\overline{X}$ =3.88, S.D.=0.40), 2 - shirt, 3 - shoes ($\overline{X}$ =3.88, S.D.=0.40), 4 - socks ($\overline{X}$ =3.14, S.D.= 0.40), and 5 - cap or hair ban ($\overline{X}$ =2.76, S.D.=0.50). Significantly the children and gradually improved their accurate dressing skill after practicing through the multimedia.

Discussion

Based on the study, features of the multimedia for the children with moderate mental retardation should contain the pictures that look familiar to the children presented as cartoon in order to encourage them to learn more. These pictures will be a good introduction that draws the children into the content. Also, the content should be clear and easily understandable following the objectives of the study. It should be presented step by step. The activities offered on the media should well promote a mutual interaction between the children and media so that they could learn at any time and place and repeat their learning to gain a more accurate skill. Font and pictures should be thick and clear. Specially, the children are more interested in the 3D than 2D media and are easily encouraged by colorful and clear pictures. Pictures on media should clear and reflect what the children usually see in their daily life that is meaningful for their learning. Besides, music and sound should be clean and correct to encourage the children to learn better; meanwhile, each page on the media should not contain more than 3 control buttons. More importantly, the multimedia should contain all features that well interact and encourage the children to learn more.

Based on a study on the multimedia on dressing skill practice for the

children with moderate mental retardation and the evaluation by 7 experts, it was affirmed that the multimedia has a very high quality, since it was designed by the researcher who have studies a variety of research papers on the multimedia production and related information about the behaviors of the children with mental retardation, as well as additional suggestions provided by the teachers who have experience in teaching these children. These useful information and suggestions were analyzed. The first step of developing the multimedia is constructing the concept and matching it with the final goal i.e. thinking, planning, and determining a clear framework, methods, and the target group. The content and display were thoughtfully designed to be as appropriate as determined by Department of Curriculum and Instruction Development (2001) that the key indicator and standard should be made accurate and relevant for good evaluation on the multimedia. The issues, components, and topics of the evaluation should be designed covering the three main areas as follows; 1) the curriculum design, 2) display design, and 3) implementation. After constructing the concept and framework, the next step is the production and development of the multimedia which adapts the content of teaching to create the multimedia consisting of texts, pictures, animation, sounds, VCD, and interactive features. Particularly, the steps of planning and testing are very important for the multimedia production which test and verify that the multimedia has a high quality that meets the standard criteria before it will be implemented practically (Hongsa. 2010 : 35-37).

The sample group paid more attention on warm colors which looks livelier, and animation. The multimedia needs to be equipped with sounds and each page should not contain more than two control buttons. The contents of teaching need to be smoothly connected in order to maintain the children's attention. With these techniques and design, the introduction to the multimedia will be more attractive which includes the leading to the learning activities, providing the useful information to the children. Besides, the learning activities must be harmonized with the objectives of the dressing skill practice. Similarly, the activities should suit the children's knowledge and ability. Moreover, learning through this multimedia, the

children will have a chance to interact with the multimedia and receive the feedback. After the children have completed the activities repeatedly, they will gradually improve more accurate dressing skill. The size and thickness of the font are suitable to be presented on the display. The pictures are clear, understandable, colorful, which are good features to be on the multimedia's display. Using texts and colorful pictures makes the multimedia more attractive which encourage the children to catch up with the contents. The sounds are very clear. The control buttons are easy to be used by the children, while the multimedia is ready to be used repeatedly. The children can easily learn and understand the contents. The contents are smoothly connected and suitably interact with the target group who are the children with moderate mental retardation. According to the abovementioned, the researcher needs to carefully think about an appropriate composition of pictures and texts to make them look nice and easily readable, as well as to create the neat display. These features harmonize with a study of Pasana Tanthaluck (1983 : 245-292) suggesting that the unique design is made when all of the elements are perfectly combined. Unity is an essential issue of designing that connects and harmonizes with shapes, lines, textures, and colors. Moreover, the experts suggest that the tone of voice to call the children's name should be voice of a man. As a whole, the experts agree that the multimedia that the researcher have designed and developed is applicable for the children with the children with moderate mental retardation because it is easy to be use, attractive, and looks lively, which perfectly support the children's learning process. The colors on the multimedia are used properly and beautiful. The children are satisfied with motivating introduction and encouraged to complete the activities.

After completing the learning activities on the multimedia on dressing skill practice, the children with moderate mental retardation have totally improved their skill at a good level. According to the score obtained from each item ranging from the highest to the lowest, it was found that most of the children performed more accurate skill in putting the dressing items on the right position of the cartoon character as follows: 1 - pants or skirt, 2 - shirt, 3 - shoes, 4 - socks, and 5 - cap or hair ban. After practicing

through the multimedia, the children gradually improved their accurate dressing skill. The children want to do the activities on the multimedia again and again since they are designed with beautiful and lively colors, correct and clear sounds, the easily usable menus, and the convenient control buttons for the leaning activities on the display. The multimedia is affirmed to be easy for practical use and ready to be used repeatedly. The contents on the multimedia are also understandable and the children can do the activities again and again so that they can gradually improve their skill to be more fluent and accurate and to better remember the right positions of things. This is similar to Yoakam and Simpson (1954) who stated that skill is involved with the physical development of an individual leaner and the practical skill can be developed by practicing and after being well-practiced, that skill will be more accurate, fluent, proficient, and finally constant. The effectiveness of behaviors or action can be observed from rapidity, accuracy, and smoothness of an individual's performance. At this point, Suchart Sirisookpaiboon (Sirisookpaiboon. 1983 : 9) stated that skill means personal ability or muscle experience which is called practical skill or muscle skill. This muscle skill is a behavioral characteristic resulted from learning e.g. sharpening, gauging, sawing, using mechanical tools, welding, fixing an engine, etc. These activities are muscle skill representing accuracy, proficiency, and skillfulness that need to be practiced properly.

Conclusion

Based on the data analysis, it suggested the following outcomes. In term of introduction: using the picture that look familiar to the children as well as designing the character from their personal characteristics could perfectly draw the children's attention into the content of the multimedia and encourage them to learn more. In term of learning activity: the activities on the multimedia were well designed specifically for the retarded children that follow the objectives of the study aiming to promote the mutual interaction between the children and media. The multimedia could motivate the children to learn constantly since they typically require constant motivation. Moreover, these activities could be repeated so that

the children could gain more certain skill in dressing. In terms of the screen and appearance: the font and the color used on the media were thick, clean, and clear. The font size matched the screen. The pictures were clear and understandable which draw in the children's attention since they presented the scenes in the children's daily life. The picture size matched the screen. In term of music and sound were clean and correct that motivated the children to learn better. Each page was installed with only 3 control buttons which were easy for use. In term of function: the multimedia was presented with a clear and understandable instruction so the children could use it easily. Therefore, the media was affirmed to be suitable and well interacted with the user. The information presented on the media was linked to each other following a good sequence so it was convenient to be used.

The multimedia that had been designed and developed by the researcher was affirmed for its high quality covering 4 dimensions and all items. In term of single dimensions, it was found that 3 items were rated with low scores i.e. item 1.2, item 2.2, and item 3.12. Based on the expert's opinions, it was suggested that the tone of voice used to call the children's names should be voice of a man. Additionally, the experts agreed on that the multimedia that the researcher had designed and developed was applicable to be implemented with the children with moderate mental retardation, in terms of ease of use, attractive appearance, and lively appearance, that effectively encourage the children to learn more. Use of colors attracted the children's attention so that they were happy and motivated to learn and completed the activities without feeling bored.

The behaviors performed by ten children with moderate mental retardation toward the multimedia on dressing skill practice were totally at a good level. Based on the score obtained for each dressing item ranking from the highest to the lowest, it was found that most of the children performed more accurate skill in putting the dressing items on the right position of the cartoon character as follows: 1 - pants or skirt, 2 - shirt, 3 - shoes, 4 - socks, and 5 - cap or hair ban. Significantly the children and gradually improved their accurate dressing skill after practicing through the multimedia.

Suggestions

1. General suggestions

1.1 The learning activities presented on media should definitely match the objectives of skill practice for these special children.

1.2 The fonts and graphical pictures should be designed to suit the content of teaching and connect to the children's specific interests.

2. Suggestions for further study

2.1 More multimedia or games should be designed and developed to promote more skills for the children with mental retardation.

2.2 A comparative study should be conducted the children's learning skill through multimedia on tablet and personal computer.

2.3 A study on the concentration of the children with moderate mental retardation toward learning through multimedia.

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