THE EFFECT OF STOP-MOTION LEARNING MEDIA ON SYSTEM THINKING OF NURSING STUDENTS AT BOROMARAJONANI COLLEGE OF NURSING, CHANGWAT NONTHABURI ¹

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ABSTRACT

This research aimed to compare system thinking of nursing students before and after using stop-motion learning media. Participants were nursing students at Boromarajonani College of Nursing, Changwat Nonthaburi. Thirty students were selected using purposive sampling from first year nursing students. The research instruments were a three-module learning media on patient safety: safe sex and social media, a system thinking questionnaire, a satisfaction toward stop motion learning media questionnaire, and a demographic information form. Three content experts rated their opinion on Item – Objective Congruence of content validity on the learning media and questionnaires. Cronbach’s alpha reliability of the system thinking questionnaire and the satisfaction questionnaire were .97 and .87, respectively. Data were collected in May 2016 and analyzed for frequency, percentage, mean, standard deviation, and dependent t-test. Results showed the mean score of satisfaction toward stop motion learning media of nursing students were at the highest level. After participated in stop-motion learning media, the mean score of system thinking of nursing students was significantly higher than before using the learning media (p < .05)

Keywords: stop-motion learning media, system thinking

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Background

Nursing profession intimately involved in taking care of human life and health, focus on humanitarian needs and holistic cares for individuals, families and communities including enhancing clients ability to taking care of themselves in healthy and sick conditions. The nursing curriculum is to produce nurses with 21st-century competency relevant to 1) having multi-skills, high responsibility, ability to work as a team and having a problem-solving skill; 2) looking for new opportunities; and 3) having a language skill as an essential tool of communication. (Kiratikara, 2009).

Boromarajonani College of Nursing, Changwat Nonthaburi, an academic institute under the Praboromarajchanok for Health Workforce Development (PBRI), is responsible for producing qualified nursing graduates to meet the need of national health system and global. Bachelor of Nursing Science Program has been commenced since 2015 with its philosophy in that the graduates’ characteristics involved in nursing profession knowledge and skills, moral and ethics, wisdom skills, numerical analysis skills, communication and interpersonal relationship, use of information technology, and nursing practice skills. It also requires leadership skills to make a systematic decision according to the societal change.

From monitoring nurse graduated from Boromarajonani College of Nursing, Changwat Nonthaburi in 2013 found that the problem about the quality of graduates related to wisdom skill with a low mean score of 3.68. The items with low mean scores included the ability to use innovation for problem-solving ($\bar{X} = 3.30$); to use of research process for problem-solving ($\bar{X} = 3.35$); and to develop problem-solving consistent with health situation and context change with the mean score of 3.65. Moreover, the National Education Act. 1999 revised (2nd issue) in 2002; and (3rd issue) in 2010, chapter 4 and education management section 24 (2) requires learning of practicing skills, thinking process, management, facing to the real situation, and applying knowledge for protection and problem-solving. The section (3) provides activities with real experiences for learners, practicing actions, thoughts and doings; reading flavor, and continuous pursuit of knowledge.

From the National Education Act, it required the development of learning activities for students to create various learnings in concordance with the 21st-century skills and to build humanizing Thai Higher Education System which is a tool of education management through systematic thinking process used in class. These results lead to rational thinking, critical analysis of problem-solving from the real-time situation by improving the mind. Mind development results in wisdom growth focusing on internal improvement.

Furthermore, animation which is a creative drawing, different shapes resulting in movement of thought and imagination Kanjanaasuwan, T. (2009). A part of the technology used for education is stop-motion learning media. The production of stop-motion learning media is involved in photographing a model with gradual movement and creating drawings and shapes non-living and making them alive. The model produced can be used several times and can make in mass, leading to taking a photo many scenes at the same time. With all of above, the researcher aims to examine the effect of using stop-motion learning media on systematic thinking process development among nursing students.

Research aims
To examine the effect of using stop-motion learning media on the development of systematic thinking

Methodology

This research is quasi-experimental research. The sample was a purposive sample of 30 out of 123 first-year nursing students enrolled in the 2015 academic year at the Boromarajonani College of Nursing, Changwat Nonthaburi.

Research tools

1. Stop motion learning media were created as follow:
   1.1 Explore related documents, theories, research and textbooks as a guideline for building stop-motion learning media
   1.2 Determine three skills including a) nursing profession skill “Patient safety;” b) life skill “Safe sex practices;” and c) universal skill “Use of technology media in a current society
   1.3 Build contents by reviewing and gathering documents, theories and research to make a storyboard
   1.4 Design characters according to the content from storyboard
   1.5 Photography and record sound following the content.
   1.6 Edit slide and sound with the program of Windows Movie Make

2. Satisfaction evaluation form of using Stop motion learning media
   The satisfaction evaluation form was developed by the researcher and was evaluated by three experts for content validity for the congruence of nine items.

3. The evaluation form of systematic thinking process has been modified from the 20 items of Systems Thinking Scale (STS) developed by Charoensuk, S., Petchkong, J & Choolert, P. (2015).

   The content validity of all research tools was tested using Index of Item – Objective Congruence )IOC(, 0.91 for the stop-motion learning media, and 0.89 for the satisfaction evaluation form of using stop-motion learning media. The Cronbach’s Alpha Coefficient was also used to analyze the reliability of the two evaluation forms (satisfaction of using stop-motion learning media and systematic thinking scales) which were 0.971 and 0.886 respectively.

Ethics approval

This research was approved by the Ethics Committee for Human Research of Boromarajonani College of Nursing, Changwat Nonthaburi in the meeting 2/2558.

Data collection

The researcher collected data as follow:

1. The Systems Thinking Scale (STS), originated by Charoensuk, S., Petchkong, J &
Choolert, P. (2015), was applied to the sample group before using stop-motion learning media.

2. The stop-motion learning media of life skills, professional skills and universal skills were tried out for three times and two hours per each.

3. System thinking process was practiced in five steps: 1) problem identification; 2) identification of causal factors; 3) analysis of factor relations and building the hypothesis; 4) writing the problem cycles; and 5) sharing learning experiences.

4. The Systems Thinking Scale (STS) was applied to the sample group after using stop-motion learning media.

Data analysis

1. Personal information was analyzed by frequency distribution and percentage.
2. Difference between the mean of STS scores before and after using stop-motion learning media was tested statistically with dependent t-test.

Research findings

1. The development of stop-motion learning media were designed by focusing on a modern style with attraction. This learning media used a cartoon for presentation and applied special techniques for making both animation and music. The stop-motion learning media contained three contents including patient safety, safe sex practices and technology media use in current society. Cartoons were used as a primary presenter to integrate knowledge with pain languages and brief contents. According to the experts, they suggested that the contents, presentation, pictures and words were rated highly in suitability. Production techniques, regarding images and presentation styles, as well as alphabet designs were mostly measured in suitability. Image positioning was placed in balance and suitable.

2. The satisfaction of using stop-motion learning media of the sample group

96.67% of the sample group in this study were female rating very high satisfaction scores for the items of patient safety and exciting learning media. The contents of learning media were suitable, clear and easy to understand. The knowledge obtained from this learning media can be applied to everyday life and self-directed learning.

The results also suggested that the sample group rated in the excellent level of the satisfaction scores in the safe sex practices in the aspects of interesting content, easy understanding, self-directed learning and enhancing people’s systematic thinking.

According to the use of technology media in the current society, it was found that as a whole, the sample group voted for very good level of the satisfaction scores in presentation patterns including the application of technology media for a daily life; interesting media with suitable, easy and clear contents; and the enhancement of self-reflection and self-directed learning.

3. System thinking results

The Systems Thinking Scale (STS) among the sample group before the experiment...
showed that their STS scores were in average $\bar{X} = 3.34$ SD $= 0.35$. When considering the STS scores in each item, the results reported that the meanest score $\bar{X} = 4.00$ SD $= 0.64$, interpreted in the “most” level, was seen in the item “I think a small change can make a big impact” and the least mean score $\bar{X} = 2.53$ SD $= 0.80$, interpreted in a “moderate” level, was presented in the item “I try out a strategy independent on people’s memory.” After the experiment of providing activities for encouraging the systematic thinking process, the sample group made a good score result in the “much” level $\bar{X} = 4.15$ SD $= 0.36$) as a whole. In consideration of each item, the results showed that the item “I think one can be successful and that needs the support from others more than one or two” was most rated $\bar{X} = 4.57$ SD $= 0.56$) with interpretation in the “much” level. The least mean score $\bar{X} = 3.73$ SD $= 0.69$) interpreted in the “much” level, was presented in the item “I consider history and organization cultures.”

When comparing the mean scores between before and after the experiment among the sample group, it was found that the mean score of STS after the experiment was higher than that of STS before the experiment. In other words, the mean scores of STS before and after the experiment were significantly different in the statistic of .05 as shown in Table 1.

Table 1. The comparison of mean scores before and after the experiment among the sample group

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<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>T-test</th>
<th>df</th>
<th>p-value</th>
</tr>
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<tr>
<td>Before</td>
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<td>.35</td>
<td>-8.920</td>
<td>29</td>
<td>.0000</td>
</tr>
<tr>
<td>After</td>
<td>4.15</td>
<td>.36</td>
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<td></td>
<td>p &lt; .05</td>
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Discussion

1. The development of stop-motion learning media by the researchers in this study, focused on attractive and modern patterns. Cartoon drawings, special techniques for making an animation and music were used for presentation. The stop-motion learning media were composed of three primary skills, including a professional skill of the patient safety; a life skill of the safe sex practices; and a universal skill of the technology media use in current society. The researchers applied cartoons as key actors and integrated knowledge through a simple language and brief contents toward the stop-motion learning media. These developed learning media were approved by the researcher’s advisor for accuracy that is consistent with Somtatae, R & Teeausana, R.) 2015). The previous research showed the successful development of three-dimension (3D) cartoon animations with the use of computer graphics program. This computer graphics program, used for education and production of 3D cartoon animations, was approved by the researchers’ advisor to check general components and ensure its accuracy before presenting to the experts of 3D cartoon animations. Besides, the use of computer graphics theories, which can increase interesting, exciting and realism, as well as continuous support from the experts in various computer graphics programs are the key success of producing the 3D cartoon animation “A little turtle with patience.” According to the experts’ consideration, the content consistency of the stop-motion learning media was mostly practical and suitable and this
is concordant with the research done by Santiittikul, P, Piyatomrongphong, R., Boonsangiem, N., & Pitngam, K. (2015). They presented that the quality of a multimedia animation naming “The five precepts” was in the mean score of very good level ($X = 4.69$, S.D. = 0.38) and this affected the sample group’s learning outcome achievement which increased significantly with the statistic of .01.

2. The satisfaction of using stop-motion learning media of the sample group

The current study showed satisfactions on the stop-motion learning media regarding patterns and techniques which were rated at the very good level as a whole. This is possible that using the learning media which are interesting and entertaining can increase clients’ attention to their learning when compared with reading a book with many texts only. It is consistent to the study of using animation media to enhance the framework learning in the subject “A principle of design and program development” among High Vocational Diploma students Kaewkangvan, N., (2013). This study explored the first-year students’ satisfaction on the use of animation media. The first-year High Vocational Diploma students of 55, studying a business computer program in the second semester, 2013 at Lanna Polytechnic Chiang Mai Technological College were targeted as the study population. 30 of them were recruited as the sample group. All items of the satisfaction questionnaires rated as much included contents with suitability and learning motivation, interesting continuity and entertainment. Acquiring knowledge was rated in the highest satisfaction score and the following items: content - objective consistency; the quantity of contents and lessons; the clarification of content descriptions; the modernization of contents; the pattern of reviewed practices and interesting games were rated in subsequent. The current study is also concordant with Samerwong, S., & Phokhee, P. (2014)’s research, entitled “Designing and producing 2D animation media for conservation and propagation of the Mon culture in Prathumthani Province.” All 22 sociology teachers in an elementary school in Sam Khok district, Pathumthani, were recruited by the census. Teachers’ satisfaction examined in this study accounted for 4.12 as in the much level, as a whole.

3. The effect of stop-motion learning media on systematic thinking process

According to the research findings, there was a significant difference in the mean score of systematic thinking between before and after the experiment with the statistic of .05, suggesting that the stop-motion learning media affected the systematic thinking process. Thinking is an internal factor affecting people’s action and expression, therefore, the development of human’s thinking capability is an important goal for education management. Like the Secretary-General of the Education Council’s address, it is about the 21st century education in that building a challenging and fun environment, balancing learning in and out classroom and using learning media for the class can improve students’ systematic thinking process. It can be said that the stop motion is in this case and consistent with Taiprasert, D. (2011), studying the development of systematic thinking skills by using a robot among students in 2011. This study aimed to investigate the effectiveness of learning with robot media and to examine the improvement of systematic thinking skills among 10 students participating in Saturday activities relating to robot. The findings demonstrated that all students taking part in Saturday activities were better in systematic thinking skills, work priority arrangement, expression, discipline, technical and program development, working as a team and creativity leading to work achievement and problem solving ability. According to person’s behavior observation, it showed that all students taking part in Saturday activities had their learning skills
at a good level in general, indicating their abilities or regular behaviors. In terms of responsibility and discipline, they were at an average level, indicating their abilities or often behavior expression. Both work achievement and development skills were at good level as a whole, indicating their abilities or regular behaviors. The overall 5 aspects were at a good level in concordance with Tongprason, P. (2012)’s research, aiming to applying results from the development of systematic thinking process through group discussion together with using comprehensive concepts for knowledge and attitude enhancement. Forty of the second-year students major in a business computer program at Suan Dusit Rajabhat University were recruited as target population in 2011. Its findings stated results as follow: (1) The efficiency of teaching in the subject of data structure and procedure used the development of systematic thinking process through a focus group and a comprehensive concept. The mean score of practicing during class and the final test accounted for 89.50/93.50 which was higher than the normal range (80/80); (2) Knowledge and attitudes relating to the subject “data structure and procedures” before studying through focus group discussion were in the low level. (3) The comparison of learning outcomes before and after studying in data structure and procedures through group discussions together with concept use and the use of statistic package program which aimed to sociology research. The statistic package program was analyzed by paired sample t-test. It was also found that the mean score after class were significantly higher than that before class with the statistic of 0.5. (4) Learners’ attitude can affect learning media through both a focus group and concept use. Data such as teaching sheets, PowerPoint presentation and websites with individual subjects. Students’ attitudes in average had highest level for all items such as content, presentation and learning promotion. This study was consistent with the previous study Pemyinde, P (2009), having objectives to investigate 1) Learning achievement entitled “Nursing Ethical Decision Making; 2) building systematic thinking skills. The findings stated the effect of using integrated learning plan in that 1) students’ learning achievement accounted for 72.88 % in average and 100% of students passed the content criterion; 2) students could build systematic thinking skills that are 2.1) building 4 steps of systematic thinking process – First, identifying problems; Second, identifying causal factors; Third, finding out relationship between factors; and last, synthesis of vicious cycles. 2.2) having perceptions about change of mind including self-awareness, seeing the identity and accepting the others’ rights, linking identity with acting to others; accepting our rights and others’ rights; seeing the value of learning consistent with real situations; and building self-researching. Most students perceived building self-thinking process. Students perceived that new thought is systematic thinking and different types of thought such as linking, analyzing, think carefully, think with data use, believe with the reason use, think considerably and think widely existed.

Conclusion

The stop-motion learning media developed in this research focus on attractive and modern patterns: using cartoons for the presentation, applying special techniques for making both animation and music. Besides, three main contents - patient safety, safe sex and technology media – are included. To compare the mean scores of STS between before and after the experiment, the result showed that the experiment was significantly different in the statistic of .05

Suggestion
The research results in this study should be further developed in the aspect of student reflection through the use of stop-motion learning media.

References


