

# Creative Media Design Using M-learning “7 Steps of Washing Your Hands to Prevent Catching Diseases”

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## ABSTRACT

Handwashing is a daily routine for everyone but only a few, both children and adults, wash their hands properly. This results in getting diseases like influenza and diarrhea from germs, e.g. viruses and bacteria. This research was aimed to study the creative media designed through M-learning to teach viewers how to correctly wash their hands in 7 steps to prevent catching diseases. Motion graphics were used to create this digital media, encouraging lifelong learning. The designed media was tested with a target group of 31 participants aged 18 to 22. On visual and audio evaluation, the average scores given by the target group were equal, 4.41 with S.D. = 0.62 (satisfactory level), on 2 aspects: 1) the proper use of graphics and 2) the proper use of color tones. The average score on the content aspect was the highest, 4.45 with S.D. = 0.62 (satisfactory level) as the target group thought the media made them understand more of the benefits of proper handwashing. The average score on the aspect of the proper style of the media presentation, making them understand how to be more hygienic to prevent catching diseases, was 4.54 with S.D. = 0.62 (satisfactory level). In summary, the designed media received the average score on presentation style, design and content of 4.22, S.D. = 0.65. Therefore, the Creative Media Design Using M-learning “7 Steps of Washing Your Hands to Prevent Catching Diseases” is a proper digital creative media for making viewers understand of the 7 steps of handwashing.

**Keywords:** m-learning, creative media design, washing your hands, viruses

## 1 INTRODUCTION

Handwashing is an easy and time-saving cleaning routine which helps prevent catching many kinds of diseases. With proper handwashing, both children and in adults can protect themselves from certain bacteria and viruses from disease-causing germs. This results in getting germs, e.g. viruses and bacteria, into their bodies. These germs are transmitted by hand to cause diseases like influenza through respiratory system, diarrhea through eating and digestive system, and conjunctivitis through touching. According to a report by the Bureau of Epidemiology, Department of Disease Control, Ministry of Public Health, on June 6, 2018 (online). Many 0-4 year-old children (85.86%) suffered from with Hand, Foot and Mouth Disease (HFMD). In 2017, 60,729 children (85.4%) were infected from this disease, increasing by 0.46% with 3 deaths [1]. Currently, there is no vaccine to protect against the viruses that cause HFMD. The only one way to keep hands clean when having exposure to patients or their discharge. In addition, the Ministry of Public Health in 2014 reported in 9 months, there were 1.3 million patients suffering from infectious diseases through contaminated hands such as diarrhea, influenza, conjunctivitis and

chickenpox, with 65 deaths. This agrees with the announcement from UNICEF that 3.5 million children died from diarrhea [3].

All these diseases can be preventable if the 7 steps of handwashing are applied correctly. However, the handwashing steps that are most incorrectly done are rubbing the palms together and rubbing all parts of the hands, respectively. People usually pay little attention to these steps and thus become careless since these infectious germs, though invisible to the naked eye, can cause many diseases. Besides avoiding poking nose and rubbing eyes, to wash hands very often is very important to prevent catching diseases.

### **1.1 The objective of the study**

To create Creative Media Design Using M-learning “7 Steps of Washing Your Hands to Prevent Catching Diseases”

### **1.2 Population**

The 160 students of Media Art and Medical and Science Media Departments of King Mongkut’s University of Technology Thonburi.

### **1.3 Sample**

The sample of this study is 31 first year students of Media Art and Medical and Science Media Departments of King Mongkut’s University of Technology Thonburi who are interested in the research topic, selected by using purposive sampling, due to the objective of the study.

## **2 LITERATURE REVIEW**

Microorganisms living on the hands of people generally can be divided into two types. The first is dozens found in normal conditions, causing no diseases. The second is the temporary type that stays temporarily and loosely on hands, caused by exposure, and can be washed easily. These microorganisms can cause diseases, some of which are fatal.

Various infectious diseases can be contacted through contact. The first is respiratory system diseases such as flu, tuberculosis, influenza, measles and rubella. In addition to contact the germs through breathing, when hands are exposed to contaminated body parts on self, others, objects or even public facilities e.g. door knobs, bus stairs, railing and then pick up the nose, germs will enter the body through the nasal cavity and cause diseases. The second is gastrointestinal infectious diseases such as diarrhea, hepatitis A, dysentery, cholera, various parasitic diseases, which can be transmitted from eating food directly from contaminated hands.

The third is infectious diseases transmitted by direct contact such as conjunctivitis, fungal infections, skin infection and herpes. The last is infectious diseases transmitted by multiple modes of transmission such as chickenpox which can be spread through breathing and touching.

As the Ministry of Public Health states that ‘hands’ are the most important and contaminated organs that transmit diseases through direct contact. The United Nations General Assembly (UN) has designated October 15 as the ‘Global Hand Washing Day’ to

encourage children and adults around the world to wash their hands properly. For Thailand, the Department of Health Service Support revealed its survey in 2014 that Thai people aged 15 years and older (88%) did not wash their hands with soap after using toilets, thereby easily catching diseases. The results of the study show that 1 gram of human excretion contains 1 million bacteria and 10 million viruses [3][4].

As a result, handwashing is necessary to reduce the amount of germs on hands after doing any activities that contaminate the hands. There are seven steps together. 1. Rubbing the palms together. 2. Rubbing the back of each hand and skin between fingers 3. Another rubbing the back of each hand and skin between fingers. 4. Rubbing the backs of hand to the palms. 5. Rubbing the thumbs in a rotating manner with the palms 6. Rubbing fingers across the palms 7. Rubbing around the wrists. All steps are done 5 times with both hands alternately for 15-20 minutes [3][4].

### 3 RESEARCH METHODOLOGY

Mobile Learning (m-Learning) is an educational development that relies on and develops from distance learning (d-Learning) and e-learning. Practically, m-Learning is an e-learning format that uses portable computer devices to access the lessons and enhance the learner's learning experience. At the same time, eLearning is also a part of d-Learning or distance learning as shown in Figure 1.

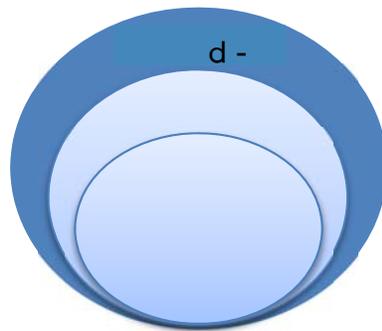


Figure 1: Relationship between M-E-D Learning

For M-Learning Design and Construction, the content design uses management systems for teaching and learning content and testing. Learners can contact through Chat and Web board using the principles of the ADDIE Model. [4][5][6]

1. Analysis is to analyze the target group, select and analyze content for creating motion graphic of the media. It also analyzes and plans for illustrations and media.

2. Design is to divide content and design media.

3. Development is to create all types of media, set composition, choose colors, edit and record audio and produce media to be used in the system.

4. Implementation is to try the media through the system with 5 samples for improvement.

5. Evaluation is to assess the quality and satisfaction by using multimedia experts and sample group to evaluate the media.

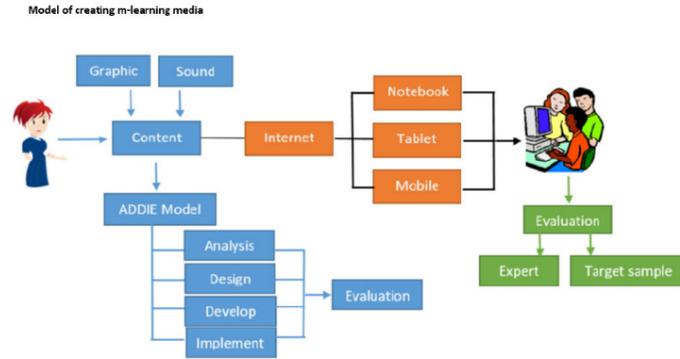


Figure 1: Model of creating m-learning media

For M-Learning Design and Construction, the content design uses management systems for teaching and learning content.

For the evaluation of quality and satisfactory level of sample, researchers calculate for the Mean Score and Standard Deviation score and present them in tables.

The formula to calculate Standard Deviation is as follows

$$SD = \sqrt{\frac{n \sum_{i=1}^n X_i^2 - (\sum_{i=1}^n X_i)^2}{n(n-1)}}$$

When  $SD$  = Standard Deviation

$n$  = The total number of items

$X_i$  = Rate of each Expert (1)

Level of Standard Deviation

Average scores 4.50 -5.00 means very satisfied

Average scores 3.50 -4.49 means satisfied

Average scores 3.00 -3.49 means neutral

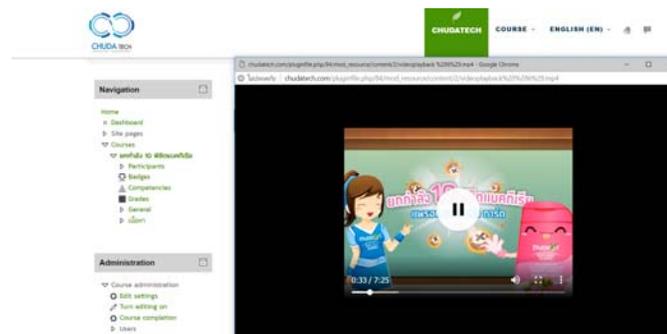


Figure 2: Content design and arrangement in the creative media



Figure 3: Motion graphics show handwashing steps

## 4 RESULTS

### 4.1 The evaluation scores from 31 participants

Table 1 The evaluation scores on visual and audio of the media from participants

Visual and audio evaluation	Average score	S.D.	Satisfactory level
The sequence of graphics is proper.	4.41	0.62	Satisfied
The use of color tones is proper.	4.41	0.67	Satisfied
<b>The average score</b>	<b>4.41</b>	<b>0.08</b>	<b>Satisfied</b>

Table 2 The evaluation scores on content of the media from participants

Content evaluation	Average score	S.D.	Satisfactory level
The content makes target group understand more of the benefits of proper handwashing	4.54	0.62	Very satisfied
The media presentation style helps understand how to be more hygienic to prevent catching diseases from contaminated hands.	4.45	0.62	Satisfied
<b>The average score</b>	<b>4.49</b>	<b>0.07</b>	<b>Satisfied</b>

Table 3 The evaluation scores on the overall creative media design from participants

Overall media design evaluation	Average score	S.D.	Satisfactory level
The overall creative media design is interesting and attractive	4.22	0.65	Satisfied
The overall creative media design helps understand the content	4.19	0.54	Satisfied
<b>The average score</b>	<b>4.20</b>	<b>0.08</b>	<b>Satisfied</b>

### 4.2 The evaluation scores from 4 experts

Table 4 The evaluation scores on content

Content evaluation	Average score	S.D.	Satisfactory level
The language use of content is proper.	5.00	0.00	Very Satisfied
The timing of content is proper.	4.67	0.58	Very Satisfied
The content is clear and easy to understand.	4.67	0.58	Very Satisfied
The content is interesting.	4.67	0.58	Very Satisfied
<b>The average score</b>	<b>4.75</b>	<b>0.22</b>	<b>Very Satisfied</b>

Table 5 The evaluation scores on motion graphic techniques

<b>Motion graphic evaluation</b>	<b>Average score</b>	<b>S.D.</b>	<b>Satisfactory level</b>
The graphics make the content convincing.	4.67	0.508	Very Satisfied
The graphics agrees with the content.	4.67	0.58	Very Satisfied
<b>The average score</b>	<b>4.67</b>	<b>0.29</b>	<b>Very Satisfied</b>

Table 6 The evaluation scores on narrated voice

<b>Background Narrated voice evaluation</b>	<b>Average score</b>	<b>S.D.</b>	<b>Satisfactory level</b>
The emotion of the voice is proper.	5.0	0.00	Very Satisfied
The narrated voice is clear.	5.0	0.00	Very Satisfied
<b>The average score</b>	<b>5.0</b>	<b>0.29</b>	<b>Very Satisfied</b>

## 5 CONCLUSION

In conclusion, the evaluation of Creative Media Design Using M-Learning "7 Steps of Washing Your Hands to Prevent Catching Diseases get the satisfactory cores of the target audience. On visual and audio evaluation, the average scores given by the target group were equal, 4.41 with S.D. = 0.62 (satisfied level), on 2 aspects: 1) the proper use of graphics and 2) the proper use of color tones. As the target group thought the media made them understand more of the benefits of proper handwashing. The average score on the aspect of the proper style of the media presentation, making them understand how to be more hygienic to prevent catching diseases, was 4.45 with S.D. = 0.62 (satisfied level). In summary, the designed media received the average score on presentation style, design and content of 4.20, S.D. = 0.65. (Satisfied level).

For the qualitative evaluation from 4 experts on audio and video, the score on the topic of language and narration is the highest, 5.0, followed by the fact that the story is clear, easy to understand, the content is interesting with the average score of 4.67 (Very Satisfied level). The average score is 4.75 and 4.67 (Very Satisfied level). Therefore, to keep washing your hands is very important to prevent the diseases.

It is suggested that the researchers should add other health related information into the creative media to encourage Thai people to be able to take care themselves at home. Also the researchers should develop another creative media for adults to teach their children how to wash their hands properly at home as it will encourage a good habit of handwashing among children nationwide.

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