

***The Development of Multimedia Story Book for Promotion of the Moral and Ethics  
Development for Hearing Impaired Student's Grade 1***

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**Abstract**

Multimedia story book is useful and has many advantages for hearing impaired students. This paper presents information based on reliable literature reviews about the multimedia story book design framework for hearing impaired students. The purpose of this research is to explore the application of a multimedia story book approach in teaching the hearing impaired students in moral and ethics. In addition, the paper aims to inform educators as to the importance of understanding in three aspects of this study: multimedia design, hearing impaired learning design, and interface design. This current study shows how these three aspects can be combined to furnish a multimedia story book prototype for hearing impaired students. In the next phrase, the researcher will create the multimedia story book for hearing impaired students.

Keywords: multimedia story book, hearing impaired student, moral and ethics

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## Introduction

Providing education to hearing impaired students is important for the development of Thailand. Although, schools must be able to teach children with physical disabilities and focus on this group of children, schools also need to develop appropriate teaching methods that will enhance the development of hearing impaired students. Thus, the educational system in Thailand should not be confined to the hearing student. It must also provide opportunities for children who are hearing impaired, and who are considered disadvantaged (Department of Education, 2003). According to a survey of the disabled population, by the National Statistical (2017) 1,771,417 people out of the 65.4 million Thai populations have disabilities, including 323,735 hearing impaired. This represents 18.27% of the total Thai disabled population. Therefore, to provide education for those hearing impaired students, the traditional public and private schools have established a special education program which was established with the goal of providing a road to a successful, happy, and normal life.

The Basic Education Core Curriculum is aimed at the full development of learners in all respects such as morality, wisdom, happiness, and potentiality for education and living. Thus, the direction of such human capacity development would focus on providing children and youths with a firm foundation for attaining morality and public-mindedness, together with capacities, skills and basic knowledge essential to their future lives, leading to sustainability in national development (National Economic and Social Development Board, 2006)

This current study includes interviews with teachers (Angkana, 2017) in Thung Mahamek School for the deaf on 25 February 2017. From interviewer, the teachers said about problems as following: 1) The deaf and hard of hearing students didn't like to work together or teamwork, 2) They lack of kindness such as when the teacher carry heavy bag; they didn't help their teachers, and 3) They didn't share something or give for their friends.

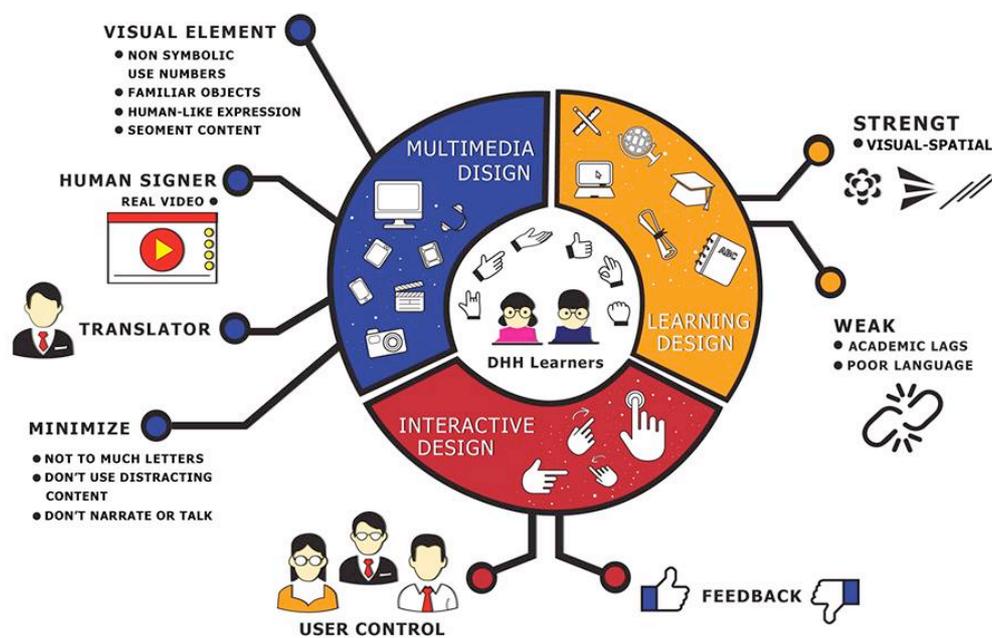
The study found that: In addition, Theunissen SCPM and et al., (2014) suggests that children with hearing impairment have to develop about moral because children and adolescents with prelingual, severe to profound hearing loss more often experience social difficulties than normal people, which is manifested in problematic peer relations (Wolters N and et al., 2011), behavior problems (Barker DH and et al., 2009), and antisocial personality (i.e., poor impulse control, lack of empathy). The students with hearing impaired, they were physical characteristics of these children. This is one factor that was cut off from society. So the opportunity to communicate or socialize is not the same as a typical child, such as facial expressions, inappropriate behavior with friends (Barker DH and et al., 2009), which delayed about social learning and ability to respond adaptively to another person's need (Decety & Jackson, 2004)

The way to solve problems in ethic and moral for students with hearing impairment is to help the student acquire a basic knowledge of how to adapt to another's person (Nunner-Winkler G et al., 1988) and social learning. The research related to students who are hearing impaired students including interviews with teachers found that hearing impaired students have the ability to remember images (Techaraungrong, et al., 2017) and deaf children will learn from what they see and what they do (Finney

EM, et al., 2001) indicated that visual and verbal learners learned better from multimedia materials than pictures or words.

The researchers suggest one way to address these problems of hearing impaired is to create multimedia-based instruction. This can improve social learning skills. The present findings posit that multimedia helps students understand content that cannot be described in words. It is widely used to present information so that people of all levels can understand quickly and accurately. The students learn more efficiently, develop creative thinking skills and understand concepts easier. Furthermore, findings indicate that media of instruction in story book for students with hearing impairment can be successful because picture can portray deaf gain through image fictional stories and other genres that portray the unique qualities and advantages of visual ways of being rather the loss of hearing. As a result, this study designed a framework to promote the moral and ethics development for hearing impaired students.

This study proposed to design multimedia story book for hearing impaired students. In order to meet the needs and expectations of hearing impaired student; therefore, the design principles were selected based on the analysis for identifying design consideration framework. Each category includes a set of features as follows: 1) Learning design that adopts the guidelines as strategies to present hearing impaired background such as visual strengths, academic lags, weak academic skills, etc., 2) Multimedia design that adopts the guidelines as strategies to design the interaction between the courseware and hearing impaired students, and 3) Interactive design that adopts the guidelines as strategies to reduce cognitive load. The researchers developed multimedia story book based on the consideration design multimedia framework (See Figure 1).



**Figure 1.** The multimedia story book design framework for hearing impaired

This current research summarizes the multimedia story book for hearing impaired students in three steps. Two steps follow the e-book design framework (Roskos K. and Brueck J, 2009; Mayer, R. E., 1997): multimedia design and interface design.

Furthermore, the researchers used the hearing impaired learning design pedagogy that focuses on the corporative nature of sight learning and learning style in a school for the hearing impaired. In the next phrase, the study will create the multimedia for hearing impaired students.

- Multimedia design

The multimedia design is implemented for the hearing impaired to support literacy, learning, principle and communication. Also included tips for creating multimedia design:

**Table 1:** Multimedia guidance (Mayer, R. E., 1997)

No	Multimedia guidance
1	Learners learn better from words and graphics than from words alone.
2	Students learn better when explanations are personalized rather than non-personalized.
3	Beginner learners learn better when given principle-based explanations than they do when asked to infer principles by themselves.
No	Multimedia guidance
4	Students learn better by manipulating the materials rather than by passively observing others manipulate the materials.
5	Students learn better when given opportunities to reflect during the meaning making process.

These principles are displayed in Table 1.1 to guide the process of learning. Mayer emphasized that educators need to design the instructional message in a manner that will facilitate students' cognitive learning processes. As such, educators should make the objectives for the educational activity clear to students ahead of time, and students should be encouraged to familiarize themselves with the topic of interest prior to attending the lecture.

**Table 2:** Mayer's principles for designing effective instructional multimedia (Mayer, R. E., 1997)

No.	Mayer's principles
1	Coherence Principle – People learn better when extraneous words, pictures and sounds are excluded rather than included.
2	Signaling Principle – People learn better when cues that highlight the organization of the essential material are added.
3	Redundancy Principle – People learn better from graphics and narration than from graphics, narration and on-screen text.
4	Spatial Contiguity Principle – People learn better when corresponding words and pictures are presented near rather than far from each other on the page or screen.
5	Temporal Contiguity Principle – People learn better when corresponding words and pictures are presented simultaneously rather than successively.
6	Segmenting Principle – People learn better from a multimedia lesson is presented in user-paced segments rather than as a continuous unit.

7	Pre-training Principle – People learn better from a multimedia lesson when they know the names and characteristics of the main concepts.
8	Modality Principle – People learn better from graphics and narrations than from animation and on-screen text.
No.	Mayer's principles
9	Multimedia Principle – People learn better from words and pictures than from words alone.
10	Personalization Principle – People learn better from multimedia lessons when words are in conversational style rather than formal style.
11	Voice Principle – People learn better when the narration in multimedia lessons is spoken in a friendly human voice rather than a machine voice.
12	Image Principle – People do not necessarily learn better from a multimedia lesson when the speaker's image is added to the screen.

- Learning design

DHH students have shown slower achievement than their same-aged hearing peers across academic domains, including math proficiency (Pagliaro & Kritzer, 2012; Zarfaty, Nunes, & Bryant, 2004). In order to promote successful integration in a mainstream educational setting and minimize the risk of academic delays, it is essential that early learning experiences build on academic foundations (Yoshinaga-Itano, 2004, Cole & Flexer, 2011). The learning design is the guideline to support the hearing impaired student and learning style:

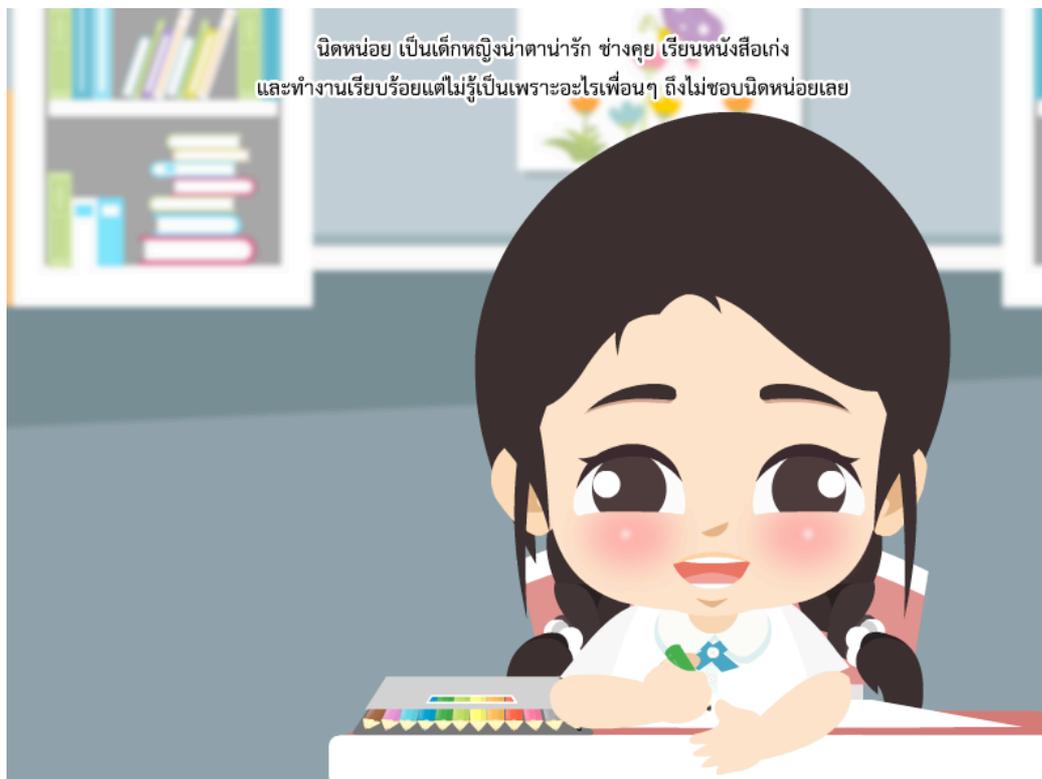
- A strong primary relationship between child and parent leads to strong self-identity and more appropriate peer interactions.(Vaccari, C. & Marschark, M., 1997).
- The increase in deaf and hard of hearing learners, postsecondary institutions will be required to provide educational technologies to accommodate individual needs of the learners (Lang & Steely, 2003).
- Instructional designers will be instrumental in providing access to technology that will improve access to an equal education for students with disabilities (Joiner, 2010).
- Support from parents on social issues increases the child's social independence and increases socialization with peers and motivation to socialize (Crick NR, Grotperter JK, 1995).
- Deaf and hearing impaired use sign language for communication (Hoffmeister & Wilber, 1979).
- Deaf parents identify with their children, provide appropriate model relating with other deaf individuals and encourage autonomy within their children (Lane et al., 2011).
- Use of visual and spatial images, sense of sight and the visualization of objects and helps create internal mental images/pictures (Gardner, 1983).
- Use imagery instructions to facilitate learning, students are more successful in recalling and retaining information. The ability to create mental images is a part of cognitive learning. (Kosslyn, 1975)
- Interface design

The interface design is the guideline to support the hearing impaired student when using the multimedia storytelling book:

- Icons for children should be designed, so they represent actions or objects in a recognizable manner and easily distinguishable from each other (Tessmer, M. & Richey, C., 1997).
- Icons should also be sized so that children can easily click on them (Shneiderman, B., & Plaisant, C., 2010).
- Use of text should be minimized for children (Mayer, 2009).
- Design multimedia and an interface that is familiar to the children in school and daily life (Aungkana, 2017).

### **Application to the prototype**

This study follows the multimedia story book design framework for the guideline in developing the prototype. This study examines the effect of multimedia use on hearing impaired children's ability to learn math using a multimedia storytelling book. During the development of the prototype, each step was tested with hearing impaired students who were the targeted users. The results of the testes were evaluated by teachers in the deaf school. From the evaluations, the strengths and weaknesses of the prototype were accessed and the comments by the teachers were used to improve quality and flexibility of the design. Formal evaluation for the completed prototype was conducted. Examples of the prototype are shown in Figure. 2, 3, 4, and 5. From examples, there were two stories about honest and thoughtful. The stories was based on daily life is school and home.



**Figure. 2** Content of story



Figure. 3 Content of story



Figure. 4 Content of story



Figure. 5 Content of story

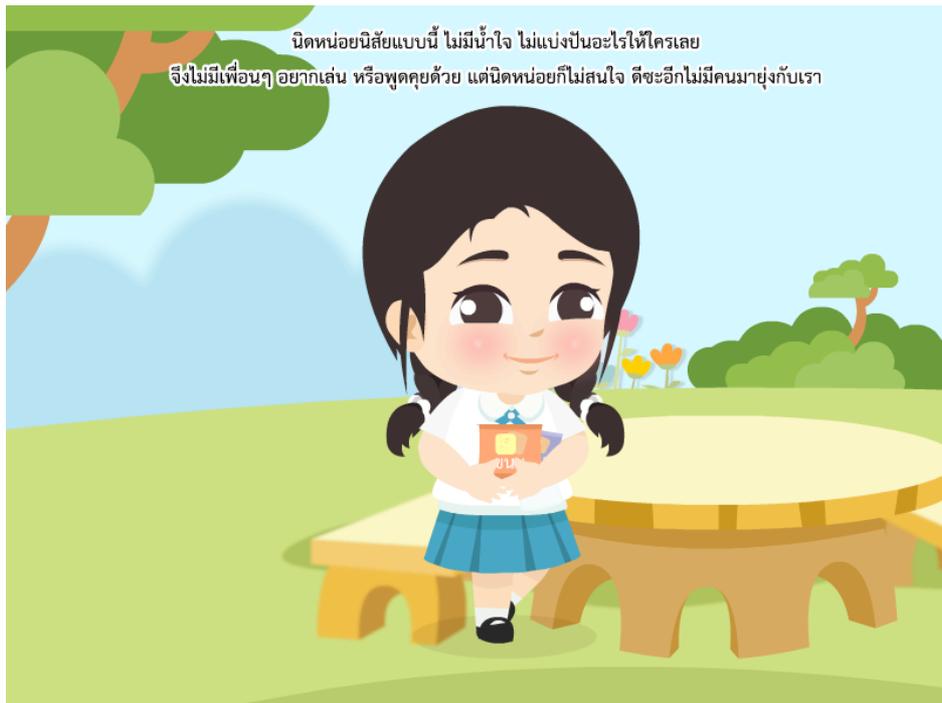
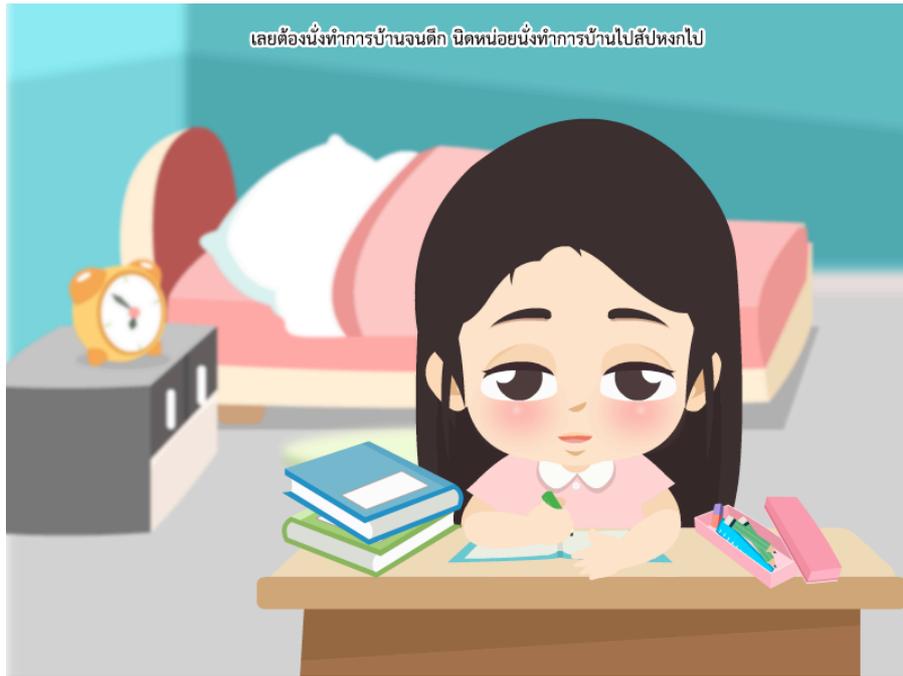


Figure. 6 Content of story



**Figure. 7** Content of story



**Figure. 8** Content about the scene of story

## **Conclusion**

This paper examines in four steps of the usability design of the multimedia story book based on a literature review; multimedia design, learning design, interface design and the hearing impaired learning. This current study also provides guidelines for students' use of the multimedia story book. The multimedia story book for hearing impaired was designed as an educational tool to support hearing impaired students and teachers in Thailand's school for the deaf. The first step of the framework of the multimedia story book has been designed and prototype. The current design covers ethics and morals because the Ministry of Education announced a policy and bringing knowledge, raising awareness of the value of sufficiency economy philosophy harmony, peace, etc (National Economic and Social Development Board, 2006). Morality is the foundation of the learning process that links families, institutions, religions, and educational institutions so that they are good people, knowledgeable and happy. This study is scope of two topic that to be thoughtful and to be honest.

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