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Animating Indonesian folklore "*Smong*" as a child-friendly guide for disaster preparedness

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ABSTRACT

Smong is a folklore from Simeulue Island in the western part of Indonesia. *Smong* contains wisdom about disaster preparedness and mitigation related to earthquakes and tsunamis. Although located near the epicenter of the earthquake, the inhabitants of Simeulue Island managed to save themselves when the 2004 Indian Ocean earthquake and tsunami disaster occurred through the local wisdom taught in the form of *Smong* folklore. As Indonesia sits in an earthquake and tsunami-prone area, the local wisdom of the inhabitants of Simeulue Island needs to be widely disseminated as a form of disaster preparedness. However, *Smong* is taught using the Devayan Language indigenous to Simeulue Island. Therefore, there is a need to adapt this into a modern platform so it can be understood throughout the nation, especially by the younger generation as an early guide for emergency preparedness. This article will discuss the process of adapting the folklore "*Smong*" into a child-friendly digital media in the form of animation for Indonesian society. The adaptation used the design thinking method through a double-diamond approach which consists of Discover, Define, Develop, and Deliver. The adaptation resulted in an animated film depicting the local wisdom from Simeulue Island accompanied by a song in the Indonesian language so it can be understood and becomes a medium of learning for the child about disaster preparedness related to earthquakes and tsunamis.

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1. Introduction

Smong is is folklore told in Devayan Language and preserved as an indigenous knowledge by the inhabitants of Simeulue Island in the western part of Indonesia. *Smong* tells about two events called "*Linon*" and "*Smong*". *Linon* refers to earthquake and *Smong* refers to tsunami. This folktale containing local wisdom about disaster mitigation is often told through *manafi-nafi* (folklore), *mananga-nanga* (lullaby), and *nandong* (folksong) which is played accompanied by violin and traditional tom-tom. Through these oral media, this local wisdom has been introduced from generation to generation in the Simeulue Island [1]. Hidayatullah (2023) reported in Deutsche Welle that *Smong* helped many inhabitants in Simeulue Island to prepare and save themselves when disaster hits [2]. Knowledge from *Smong* as a cultural heritage that is 116 years old shows how Simeulue residents managed to adapt and survive the 2004 earthquake and tsunami disaster. As a nation sitting in earthquake and tsunami prone area, the local wisdom of the inhabitants of Simeulue Island needs to be widely disseminated as a form of disaster preparedness. Indonesia is an archipelago nation located in the equatorial zone in South East Asia. With a vast area and more than 18,000 islands, Indonesia sports a rich biodiversity and cultural diversity, giving Indonesia a distinct identity of united multicultural nation [3].

However, behind this unique diversity, Indonesia is constantly under the threat of natural disasters since it is geographically located between three active tectonic plates: Eurasia Plate, Indo-Australia Plate, and Pacific Plate. This makes Indonesia as an active tectonic zone with high seismic and earthquake activity [4]. Aside of the tectonic plates, Indonesia is also located on the Ring of Fire and surrounded by ocean, making it prone to other natural disasters such as volcanic eruption and tsunami. One of the biggest natural disasters in recent year was the 2004 Indian Ocean earthquake and tsunami which resulted in a large number of victims in Banda Aceh. The mega-tsunami generated by the megathrust earthquake in the Aceh-Andaman subduction zone Mw 9.2 in 2004 was the largest tsunami disaster in the 20th century which claimed more than 200,000 people [5]. Therefore, disaster preparedness needs to be echoed and disseminated within the society to reduce the risk brought by the disaster.

Knowledge about disaster preparedness should become readily accessible and hammered into the society since the early age. This can be achieved through educating and integrating disaster preparedness into the learning process. According to Hakim, Inten, and Mulyani [6], Disaster mitigation education can be done in two step: Identifying local wisdom in disaster mitigation and integrating the local wisdom into a form of disaster literacy program for early childhood as it is something that is urgent and necessary to be developed immediately. One of the local wisdoms related to the disaster preparedness and mitigation is in the form of folklore called "*Smong*" possessed by the inhabitants of Simeulue Island. Although located near the epicentrum of the earthquake, the inhabitants of the Simeulue Island managed to save themselves when the disaster occurred. There have been two instances of similar event. One is the tsunami in 1907 and the other is the 2004 tsunami which is twice the size and power of the 1907 ones [5], [7], [8].

Thus, it is imperative to understand and integrate local wisdom into the children daily lives, especially *Smong*, to create a learning tool as a form of knowledge about disaster preparedness. Although the knowledge of disaster within the folktale *Smong* has saved many inhabitants of Simeulue Island, the folktale *Smong* remains elusive outside the Simeulue Island as there is no easily accessed media or visual works exist to convey this tale to the larger audience. The oral tradition containing disaster mitigation from Simeulue Island needs to be adapted and be made easily accessible in the current technological environment so that it can contribute towards emergency preparedness throughout the nation. This article will lay down the adaptation process of Simeulue Island's local wisdom by making the folktale *Smong* into a child-friendly animation. Animation is an effective medium to convey knowledge to children as the integration of visual materials with verbal instructions contributed to a blended approach of learning, greatly promoting children's ability of acquisition of knowledge and skills [9].

There are several previous researches related to *Smong* and disaster literacy in early childhood. For the research related to *Smong*, the first research is by Syafwina (2014) which argues that the story of *Smong* has saved the people of Simeulue. This article argued that *Smong* provides a knowledge about an early warning system against large waves and earthquakes that occur on the island [10]. The second research in relation to *Smong* is by Sutton (2021) which argues that Simeulue's disaster risk reduction (DRR) strategies have successfully reduced the risk of humanitarian casualties. The key element in Simeulue's DDR strategies is the transmission of *Smong* stories through lullabies. Simeulue's society has managed to use the essential capacity of music through lullabies to instil knowledge of *Smong* into the general population [11]. These two articles show that the Indigenous Knowledge (IK) within *Smong* should be adapted and transferred as it is a valuable knowledge in reducing disaster risk and to protect community security in the future. For the research related to disaster literacy in early childhood, the first research is by Triastari, Dwiningrum, and Rahmia (2021) which argues that there is a need for curriculum of natural disaster in Indonesia as a disaster-prone country and it is urgent that it is to be taught from an early age.

This article also argues that local wisdom is more effective in instilling disaster preparedness compared to appeals from the government so there is a need to make an alternative effort to build awareness and skills for the children in dealing with disasters [12]. The second research is by Machida, *et.al.* (2018) which stated the need of new teaching materials as educational

programs to disseminate disaster knowledge based on local wisdom in Kumamoto, Japan. This article uses photographs and 3D models to learn about local wisdoms and customs in dealing with disaster and raising children's awareness on disaster prevention [13]. These two researches show that there is a need to adapt local wisdom into new materials fit for children and student to engage as an alternative effort in learning about disaster preparedness.

As a nation located in a disaster-prone area, the local wisdom of the inhabitants of Simeulue Island needs to be widely disseminated throughout the archipelago, especially to the younger generation as an early guide for emergency preparedness. However, the folktale *Smong* remains elusive outside the Simeulue Island as there is no easily accessed media or visual works exist to convey this tale to the larger audience. The oral tradition containing disaster mitigation from Simeulue Island needs to be adapted and be made easily accessible in the current technological environment so that it can contribute towards emergency preparedness throughout the nation. This article will lay down the adaptation process of Simeulue Island's local wisdom by making the folktale *Smong* into a child-friendly animation. Animation is an effective medium to convey knowledge to children as the integration of visual materials with verbal instructions contributed to a blended approach of learning, greatly promoting children's ability of acquisition of knowledge and skills [9].

Based on the points presented above, this article aims to develop a new media to disseminate knowledge about disaster preparedness based on local wisdom found in Simeulue Island *Smong*. The media chosen in this article as a tool of learning for children is animation. Nurlaila (2022) in their study said that animation is the right media as a medium for preserving folklore. Animation is a medium that is easily accepted among children so that it can improve morale and foster a sense of love for the nation's culture. Animation is an interesting choice to channel messages as it can stimulate the thoughts, feelings, and willingness of students so that it can encourage their interest. Animated works are easily disseminated through various social media so that folklore gets higher attention in the community [14]. While the previous researches tried to incorporate the disaster mitigation based on local wisdom into a class curriculum and teacher - student interactions through photographic materials and 2D modeling for class learning, this article tried to adapt the local wisdom into modern tool in the form of digital media.

2. Method

The process of making this folklore-based animated film uses the design thinking method with a double diamond approach. This method was introduced by the Design Council in the UK. The double diamond approach refers to a visual metaphor that represents the four stages of making an animated film [15]. This method is also known as the 4D model which is derived from the first letter of the four stages, namely Discover, Define, Develop, and Deliver as shown in Fig. 1 [16].

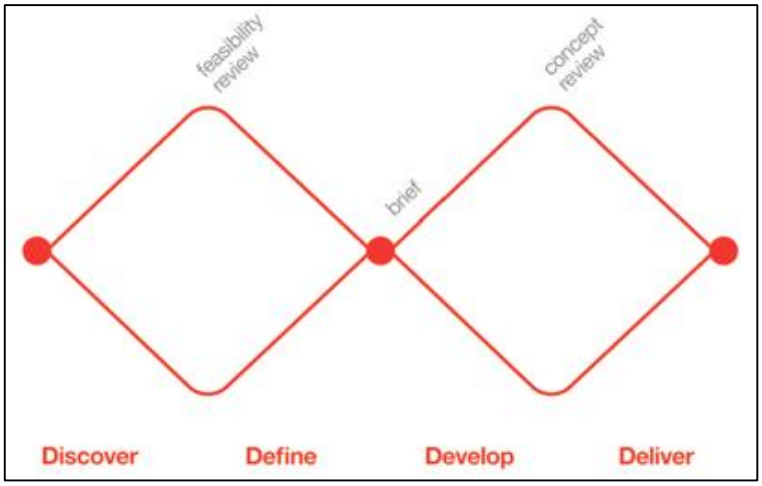

Fig. 1. Double Diamond (4D)

The first stage in the double diamond approach is called discover. This stage describes how designers seek information about the product or object that is about to be designed. This is a key point for the designer as this stage is expansive, consisting of conducting research, observation, drawing from imagination, looking for inspiration, and making design experimentation [15], [17]. This stage is also known as the first insight where the designer needs to identify the problems that require solution in the form of designed media [18]. The second stage is called define. This stage is the synthesis phase where the designer uses various methods to determine what idea, solution, or approach is best for solving the problem identified in the first stage [17]. Here, the designer needs to brainstorm ideas to formulate key concept that is needed for the third stage. The third stage is called develop. This stage aims at development, designing prototypes, testing, and refinements. At this stage, the designer needs to focus on the key concept that have been agreed upon in the previous stage. Here, the objective has changed towards the making process and there is little room for exploration. The last stage is called deliver. This stage presents the final design, builds, displays, and publish the results to the audience for feedback. Finalization of a product is included in the last phase of this design process.

3. Results and Discussion

This section will lay out the details of the process in the making of folklore-based animation, *Smong*. The process will be described based on the stages in the double diamond approach, from the concept making up to the distribution process to the audience.

3.1. Discover

This stage started with a research phase to collect data and previously available media used to convey the local wisdom of Simeulue Island in the form of folklore *Smong* and any disaster mitigation related media. The team visited the Tsunami Museum in Aceh, observing the way of life of the people living in Simeulue Island, and interviewing the traditional artists to gain an understanding to the lyrics and meaning behind the folklore *Smong*. Fig. 2 specifically show the visualization of the event leading to Tsunami. These panels are displayed in the Tsunami Museum in Aceh as a reminder of the mega-tsunami in Aceh in 2004.

Fig. 2. Aceh Tsunami Museum

The displayed imageries mainly consisted of pictorial display and diorama of tsunami. This is one of the starting points in brainstorming a new easily accessible media to convey the disaster in the form of animation. The next phase is observing the way the people of Simeulue Island convey the folktale of *Smong*. The observed way is conveying the tale through *nandong* (folksong) where the lyrics are sung with a high-pitched vocal, accompanied by the music created from violin and traditional tom-tom. Two persons are singing while playing the accompaniment, conveying the lyrics of *Linon* and *Smong* as shown in Fig. 3.

Fig. 3. Performing the Folksong *Smong*

The last phase in this stage is interviewing the traditional artists who performed the folksong. The team interviewed Mohd. Ridwan, better known as Moris Mesasilae, to gain a better understanding of the lyrics of *Smong*. Table 1 is *Smong* Lyrics.

Table 1. *Smong* Lyrics

Lyric Text	Meaning
Enggel mon sao curito	Listen to a story
Inang maso semonang	Once upon a time
Manoknop sao fano	A village drowned
Uwi lah da sesewan	That's how they tell it
Unen ne alek linon	Started by an earthquake
Fesang bakat ne mali	Followed by a huge wave
Manoknop sao hampong	The whole country drowned suddenly
Tibo-tibo mawi	Suddenly
Anga linon ne mali	The earthquake is so powerful
Uwek suruik sahuli	The water recedes
Maheya mihawali	Hurry up
Fano me singa tenggi	Search a higher place
Ede Smong kahanne	This event is known as *Smong*
Turiang da nenekta	This is the history of our ancestors
Miredem teher ere	Remember this truly
Pesan dan navi da	The message and advice (from the ancestors)

The lyrics is written in the Devayan language, which is the language spoken by the people of Simeulue Island. The lyrics will be the cornerstone on formulating the animation concept and the storyboard in the next stage.

3.2. Define

The results from the discovery stage are then collected and analyzed to brainstorm the appropriate concept for the characters and media. The team interviewed Mr. Yoppi to gain a better translation from the Devayan language to the Indonesian language to formulate the framework for making the sketchboard. The story follows closely to the progression of story found in the folklore *Smong*. The story started with *Enggel mon sao curito*, *inang maso semonang*, *manoknop sao fano* which translates into "Once upon a time, a village drowned". It then tells the cause of the drowning as told with the lyrics *Unen ne alek linon*, *fesang bakat ne mali*, *manoknop sao hampong tibo-tibo mawi* which translates into "Started by an earthquake, followed by a huge wave, the whole country drowned suddenly". The next story focused on the sign preluding to this event through the lyrics *Anga linon ne mali*, *uwek suruik sahuli* which translates into "The earthquake is so powerful and the water recedes".

The next part is the local wisdom related to the disaster mitigation in surviving the Tsunami which is conveyed through the lyrics *Maheya mihawali*, *fano me singa tenggi*, *ede Smong kahanne* which translates into "Hurry up and search a higher place above you because this event is

known as *Smong*". The story is then closed with the advice to heed this wisdom through the lyrics *Turiang da nenekta*, *miredem teher ere*, *pesan dan navi da*" which translates into "This is the history of our ancestors so remember this truly, the message and advice (from the ancestors)". After the plot of the story was established, the next phase is drafting the storyboard to help convey the story into a visual medium. The draft for the storyboard can be seen in Fig. 4. The storyboard was made manually as a basic guide for developing the animation in the next stage.

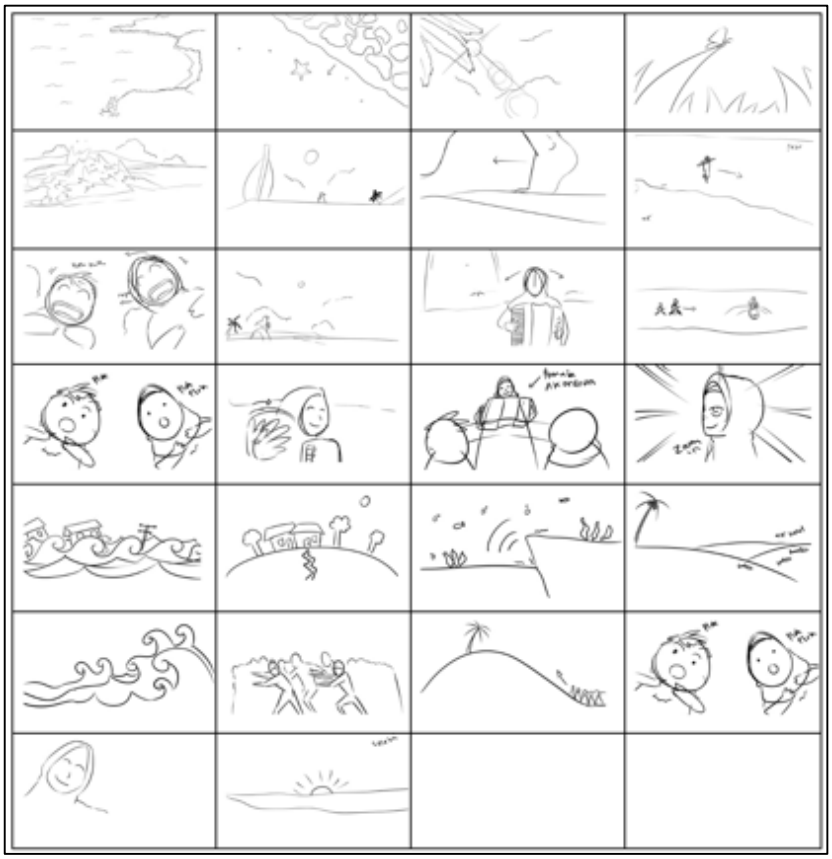

Fig. 4. Storyboard

Fig. 4 shows the storyboard used as a reference in designing the animation. Storyboard that records representative scenes in an animated film. The depiction of the setting and atmosphere becomes the basic reference for movement in the animation, which includes character poses, character positions, sound settings, dialogue, *etc.* Storyboard is the key in the animatic stage that becomes the reference for all stages of the production process [14].

3.3. Develop

This stage consists of the trial and development phase. Research data and storyboards are applied and processed into fully realized animated film. In animating the folklore *Smong*, the team uses frame-by-frame animation techniques. This technique creates key frames that will be put into sequential order. Hence, the time spent creating each frame and sequence can vary greatly [19]. Fig. 5 show one of the characters being animated frame by frame. The sequences are made with an adjusted number of frames so that the character's movements look real. Frame by frame is a technique of making animation by making inanimate objects appear to be able to move on their own or known as traditional animation techniques. Frame by frame is a manual drawing of each frame, then processed or put together the frames with the help of applications on the computer [14].

Fig. 5. Frame-by-Frame Technique in *Smong*

3.4. Deliver

This is the final phase of the double diamond process. The animation is uploaded on YouTube to get feedback from children who see it. In addition to YouTube, this animation can be played in schools so that children can understand and understand. The film is produced with 2D model. The language used is Acehnese with verses arranged to the music. the lyrics still use the devayan language, which is the language spoken by the people of Siemulue island. translation in Indonesian and sub title defaulf Thai language and script. This was done because in the 2004 Aceh tsunami, Thailand was also affected. The video format used is MP4 FHD (1080p) with 25 fps, 16:9 resolution and 4.11-minute duration. This animation is divided into 3 acts. The first half tells the activities of the people of Simuelue Island, one of which is weaving pandanus mats. The second half tells the story of the *Smong* disaster through a song whose lyrics come from the *Smong* poem. The setting and situation are to explain the signs of *Smong* and how to anticipate it. Act two is called the mitigation section. The third act is the closing act with a "call to action" for the younger generation to maintain *Smong* local knowledge for Disaster Risks Reduction (DRR). Fig. 6 shows the screening of the *Smong* animation film to elementary school students in the coastal area of Kulon Progo Regency, Yogyakarta Special Region. Kulon Progo Regency is located in the southern coastal area of Java Island. This area is one of the districts prone to tsunami disasters. The district is directly adjacent to the Indian Ocean and faces the subduction zone of the Eurasian and Indo-Australian Plates [20]. This picture was taken by a graduate student of Universitas Negeri Yogyakarta (UNY) named Bagus Adi Atma. The student made a work in the form of a tsunami alert application, and the *Smong* animation was used as a reference for disaster mitigation for children.

Fig. 6. Animation Screening in Front of Elementary School Children

Fig. 7 shows a snapshot of the scene performed by the characters. At the beginning of the table, the beach of Simeulue Island is shown. The next scene is an interaction between a mother who is weaving a pandanus mat with a boy and a girl named Umar and Meutia. Their habit is to play on the beach after school. The visualisation shown is the children's habit of playing on the beach.

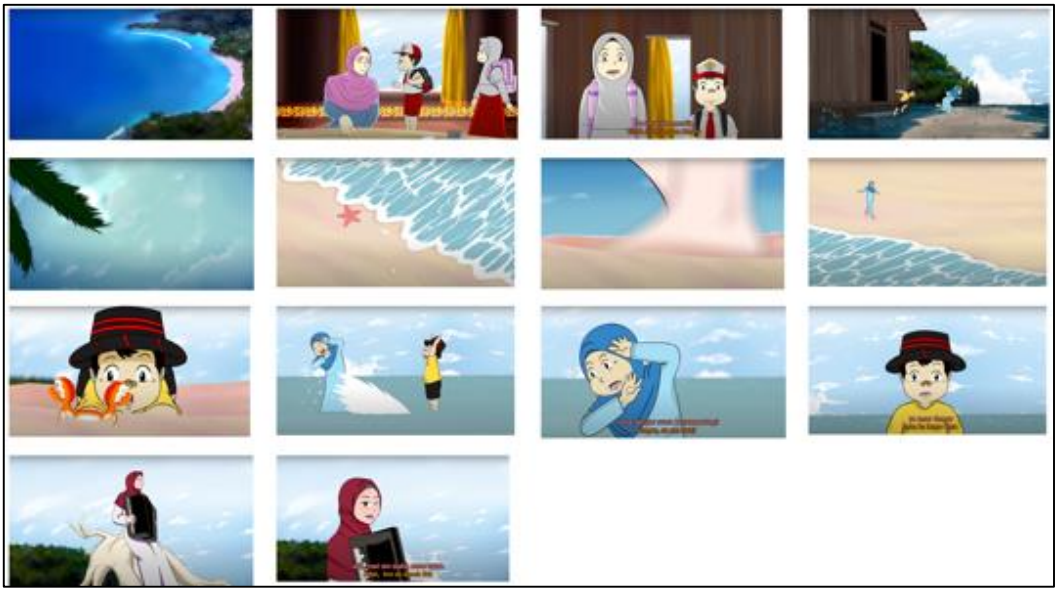

Fig. 7. Character Activity Film Trailer (First Round)

Fig. 8 shows the *Smong* verse sung in the native language of Simeulue Island followed by Indonesian so that children who listen to the *Smong* verse understand each word by word. These scenes are a form of visualisation of each lyric contained in the *Smong* poem. This act is the core of *Smong* disaster mitigation, starting with the story of the incident in ancient times, then the signs of disaster, and the anticipation that is done to save themselves. This section is packed with visuals depicting the atmosphere at the time of the *Smong*, making it easy to understand and accessible to children.

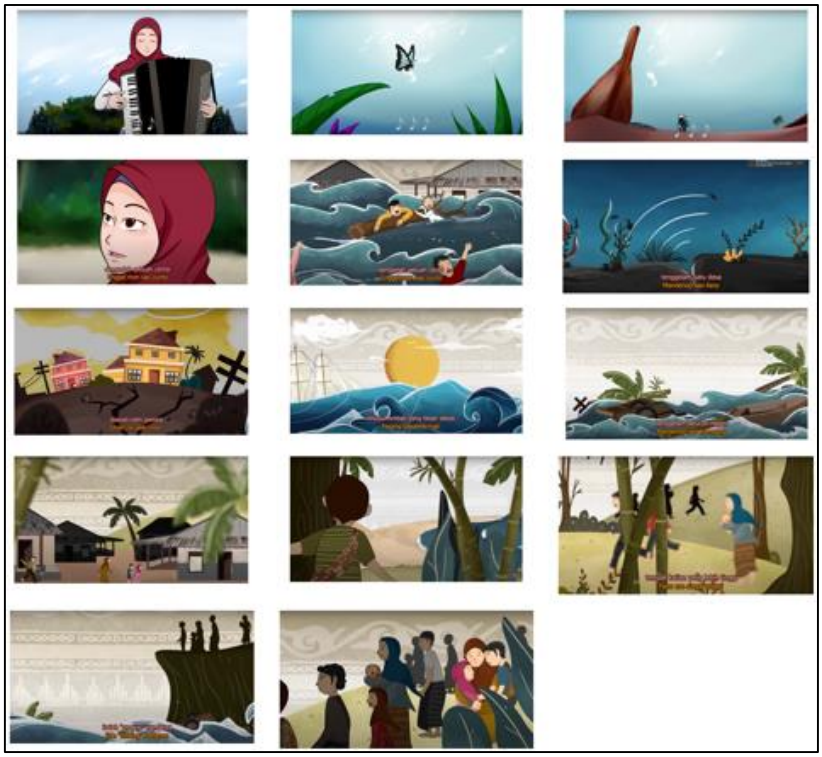

Fig. 8. Film Trailer about Disaster Mitigation (Second Round)

Fig. 9 shows a character singing a *Smong* verse inviting children to maintain the message conveyed by the ancestors until the future. this scene invites the younger generation to maintain local knowledge that acts as an action of disaster risk reduction (DRR) efforts.

Fig. 9. Closing Film Footage (Third Round)

4. Conclusion

Integrating local wisdom in building disaster preparedness is urgently needed and incorporated into the children's daily lives. This is to ensure that the knowledge pertaining to disaster mitigation are embedded within the mind. The digital era allows disaster mitigation to be delivered in an attractive form and presentation. An animated film is one of these possibilities. The local wisdom of *Smong* from Simeulue Island was adapted into animated visual form and transliterated from Devayan Language into Indonesian so that it can be disseminated throughout the nation. The animation uses characters in the form of cartoon so that it can be attractive for children nowadays and can be disseminated through various digital form to strengthen the knowledge about disaster mitigation. The initial response from the elementary school students in the coastal area of Kulon Progo Regency, Yogyakarta Special Region where the pilot screening of *Smong* animation takes place shows that children are eager to learn about local wisdom, especially when it was presented in a more modern and attractive way such as through animations. The animation shown to elementary school children is an effective medium to convey local wisdom-based disaster mitigation knowledge in other regions in Indonesia that have similar regions. Though this article specifically adapted the local wisdom of *Smong*, there are still many local wisdoms throughout Indonesia that needs to be adapted. The local wisdom of each tribe in Indonesia in facing and overcoming disasters needs to be conveyed in interesting visual forms with various kinds of media. Disasters always occur repeatedly in one period, such as the tsunami that occurred in 1907 occurred again in 2004. Traditional disaster mitigation through speech in the form of folklore can be disseminated and embedded to the memory of many generations, so that large numbers of casualties can be avoided. Through the use of new visual media such as animation, local wisdom in the form of folklore can be presented in the form of attractive visual content so that the messages from previous communities can be translated from generation to generation.

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