

Conference Paper

Digitalization of Indonesian Culture: The 3-Dimensional Model of the “Patih” Character in Topeng Malang

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Abstract

The culture of Malang City cannot be separated from the traditional arts that exist therein. Of the famous ones is Topeng Malang, although it is now not as attractive as the modern art. Topeng Malang is peculiar in that it has 67 forms of mask design. One way to preserve the Topeng Malang culture, especially regarding mask design, is through digitizing. This research focuses on digitizing the whole form of the Topeng Malang, especially the Patih character, in addition to developing these characters into a human form with 3-dimensional modeling techniques. This is a descriptive procedural research model, resulting in a product. Data were obtained through observation, interviews and documentation. Observation collected visual data with regard to Topeng Malang's forms, references for re-forming the Patih character, literature and survey result. The character re-formation applied to patterns, shapes and colors of the Topeng Malang. Enhancing the design of the Patih character in Topeng Malang assets will revitalize the local wisdom in Malang and improve the recognition, pride, and image of Indonesian culture in the world. This result of this research can also be utilized as part of the materials for character education.

Keywords: Topeng Malang, 3D model, Patih character

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1. Introduction

It has been recognized that it is important to increase the cultural insight among future generations, by introducing local cultures, such as the Topeng Malang. As part of the the local culture, Topeng Malang conveys values, such as hospitality, good manners, religiosity, tolerance, and collectivity, which are highly relevant with regard to the seemingly declining ethical awareness among the Indonesian youth nowadays.

Nonetheless, in order to be productive, the Topeng Malang is in need of a fundamental transformation as the younger generation is now fond of modern arts, such as film,

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animation, and games. To be able to compete with the popularity of, for instance, Iron man and Captain America, the Topeng Malang has to be freshly visualized to attract the youth attention. Further, visualization is appropriately effective in increasing such a cultural awareness among the younger generation.

The use of mobile media in the visualization of Topeng Malang story is apt for education. This is accomplished through interactive media that produce movements by projecting a series of sequences of images drawn one by one to display motion actions on the screen (Müller & Tina, 2018). Based on observations in Junior High School 4 and MTSN 1 Malang, it was found that among grade VII students, the level of mobile phone ownership (95%) is higher than computer/laptop (65%). It was decided, therefore, that the research will take advantage of AR-TOP, an Android mobile phone-based offline learning media application. In addition to making learning easy, the AR-TOP also minimizes learning costs. In terms of the story contents, the development will utilize the results of studies undertaken by researchers, such as Wulan whose research, published in the 2003 RUAS Journal, examined the semiotic meanings of masks and costumes in the Topeng Malang (Astrini, Amiuza, & Handajani, 2013).

2. Literature Review

There have been a number of studies carried out related to Topeng Malang and augmented reality, by several researchers, such as: articles in National Library of the Republic of Indonesia web "Symbolism of the ensign in Reliefs in the Majapahit Period Temple and its present value" by Lidya Kieven. This study investigated symbolism contained in the reliefs of the Kendalisodo Temple on the slopes of Penanggungan Mountain (Kieven, 2015). An article in Litera Journal entitled "The Existence And Form Of The Panji Story Transformation" by Ida Bagus Manuaba (2018) studied the development of arts widely acknowledged as part of the Panji culture. Another international journal article entitled "The Symbolic Meaning of the Role of Wayang Topeng in Malang, East Java, Indonesia" by Robby Hidajat (2005) studied the villagers of Kedungmonggo in terms of the symbolic role that the Wayang Topeng played with regard to the environment. An article entitled "Mobile augmented reality: the potential for education" by Danakorn Nincarean, published in the 13th International Educational Technology Conference volume 103, pages 657-664, contributes to the rapid evolution of technology that has changed the face of education, when technology is combined with pedagogical foundations, which creates new opportunities to improve the quality of teaching and learning experiences. Due to the increasing use of mobile devices

globally, the widespread use of AR on a mobile device, such as smartphones and tablets, has become a growing phenomenon (Nincarean, Alia, Halim, & Rahman, 2013). There have been a growing number of research related to the use of augmented reality, such as Current Status, Opportunities and Challenges of Augmented Reality in Education in the Journal Computers & Education (Hsin-Kai, Silvia Wen, Hsin-Yi, & Jyh-Chong, 2013); Augmented Reality Technologies: Systems and applications, in the Journal Multimedia Tools and Applications (Carmigniani et al., 2011); Augmented Reality in Education and Training, in the journal TechTrends (Lee, 2012); Augmented and Virtual Reality Applications in Industrial Systems: A qualitative review towards the industry 4.0 era, in the journal IFAC-PapersOnLine (Damiani, Demartini, Guizzi, Revetria, & Tonell, 2018).

3. Methods

This research, which aims at encouraging autonomy in learning, is undertaken following the model offered by Borg WR & Gall MD, so as to produce certain stages as below.

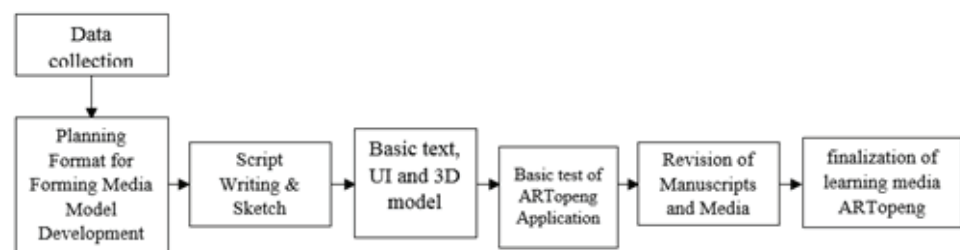


Figure 1: Research Model.

Data collection is the first step in carrying out this development research. At this stage literature review activities are carried out, in addition to data collection and needs analysis related to information about the learning conditions of the Topeng Malang in Malang City's junior high schools. Literature review activities include the following actions: (1) analyzing the contents of the curriculum in arts and culture subjects and skills targeted, in order to find concepts, functions, goals, and scope; competency standards, essential competencies, and substance of Topeng Malang learning materials; (2) Data collection is accomplished through observation, interview, and document techniques. The use of these three data collection techniques is intended to capture as much data as possible to obtain various findings during the research: (3) analyzing the concepts and material substance for the development of augmented reality learning media technology on Android.

Format Planning phase to establish media model development: planning the applications, filling out forms, and model selection. Writing & Script Sketching phase: preparing the contents script and model sketches which are the results of evaluating the Topeng Malang form. Basic text, UI, and 3D models phase: conducting typographic analysis, layout design, and making three-dimensional models based on the results at the sketch stage. Basic Test phase for ARTopeng Application: converting the three-dimensional model format, and the implementation of the model placement in the application. In the content writing section, an implementation of the design has been made. The Revision of Manuscripts and Media phase: evaluating the test results and making improvements. The finalization of AR-TOP learning media: combining mask module, mask character design module, and character explanation module.

4. Finding and Discussion

During the data collection process, it was known that, in the presentation, the story of Topeng Malang has not used all the characters available. One story presented only a few characters. The incomplete performance of the Topeng Malang had resulted in incomprehensive insights about the style of Topeng Malang. There are two types of characters in the Topeng Malang, the protagonist and antagonist. From the Topeng Malang data of the Panji and Patih characters, as shown in Figure 2, the type of characters can be seen which through the form of eyes, eyebrows, nose, mouth, mask color, and hat shape. The results of the data collection and character analysis stage of Topeng Malang shown in table 1.



Figure 2: Topeng Malang data.

At the design stage, the three dimension-model of Topeng Malang was carried out. The three-dimensional Topeng Malang design was based on the Topeng Malang data; 3-dimension modeling was done using the Zbrush / blender application. The process of three-dimensional models with shapes, colors, and textures was undertaken as carefully as possible, based on the available data. These three-dimensional models are hoped to increase the understanding of shapes that students may learn.

TABLE 1: Identification of Topeng Malang Characters

Character Name	Characteristics of Masks	Character and Role (in Psychological Dimensions)
Raden Patrajaya	<ul style="list-style-type: none"> - Slanted eyes - Nose: Gandik'an - Eyebrows: Kluwung - Mouth: Mop 	Protagonist Character: cheerful, loyal
Panji Anom	<ul style="list-style-type: none"> - Eye: Gabahan - Nose: Pangotan - Eyebrow: Blarak Sineret - Mouth: Dlimo Mlethek - Mustache: Ulo Nglangi 	Protagonist Character: knightly, brave, obedient

The design plan stage generated the AR-TOP flow chart. At this stage, it was decided that the appearance of the application scenario would be divided into three parts, namely the Topeng Malang model, the Topeng Malang character, and a description of the Topeng Malang characteristics. In this study, several “unfortunate mask characters” are used as the prototype stage.

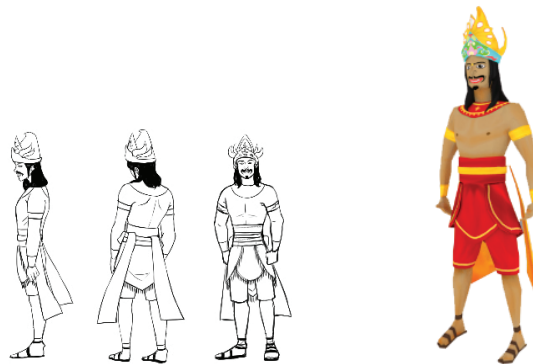


Figure 3: Topeng Malang Sketch and result.

5. Testing and Evaluation

For the AR-TOP application trial carried out in Malang State Junior High School, a total of 100 students participated. This test was applied to 3 classes, and was joined by the second year-Students. The procedure of the tests is as follows: students had received the Topeng Malang material before test; experiments carried out by providing content Topeng Malang through the AR-TOP application; next, students were given a feedback form to measure the effectiveness of AR-TOP Application. The results of the feedback can be seen in Figure 4.

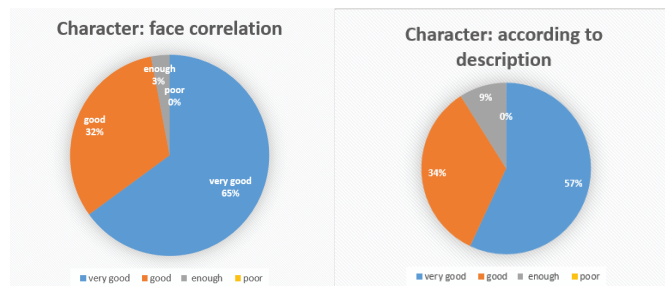


Figure 4: Topeng Malang Sketch and result.

6. Conclusions

The results of research on the application of AR-TOP visualization and application design suggested that Android-based Topeng Malang was well-developed, since the stage of analysis, concept, and implementation to the initial test phase. It gained a success rate of 83% when tested with 8 gadgets. The application by students resulted in an average score of 89%, with students experiencing an increased understanding of the material Topeng Malang.

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