Didin Saripudin, Wawan Darmawan, Tarunasena
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Developing Learning Media of Indonesian History to Raise Students' Historical Consciousness

Abstract

The research team sought to develop learning media of Indonesian history based on the historical reproduction of replicas of historical heritage objects and electronic pen (e-pen) maps. In general, the objective of this research is to develop and produce learning media of Indonesian history to raise students' historical consciousness. An instructional media company, "Pudak Scientific," is involved in aiding in developing and producing history learning media. A multi-year research and development approach was adopted, in which the first year focused on developing the model/prototype of the learning media in question, whereas the second year was concerned with building the product prototypes, production trials and field validation in high school. The learning media under development is in the form of i) replicas of historical objects in prehistoric era, ii) replicas of historical objects during the Hindu Buddhist era, iii) replicas of historical objects during the Islamic Empire, and e-pen maps of three historical periods of Indonesia. Replicas and e-pen maps serve as a medium to assist students in raising their historical consciousness.

Keywords: *learning media, Indonesian history, replica, prehistory, Hindu Buddhist Kingdom Era, Islamic Empire Era, historical consciousness*

Introduction

Learning media in history learning is a must-have tool to reduce the amount of verbalism in the classroom. Such historical learning media will also bring students

closer to the subject of history (Tarunasena, 2012). Studies by Kemp and Dayton (1985), Wallington (1996), Heinich, et al. (2005), and Yamashita (2011) suggest that learning media has the following benefits: i) it makes the presentation of messages clearer and less verbalistic, making messages easier to understand; ii) it overcomes the limitations of space, time and senses; iii) it attracts the attention of learners so as to boost their motivation to learn and foster a positive attitude to the learning process; iv) it engages students in more active and interactive learning; v) it provides a real experience that can foster self-help activities among students; vi) it delivers material uniformly; vii) it is efficient in time and effort; viii) it improves the quality of student learning outcomes; ix) it enables learning to be done anywhere and anytime; and x) teaching materials are more structured, logical and clearer, and teaching methods will be more varied.

Anderson (2006) classifies learning media into three major groups, namely print media, electronic media, and real objects or realia. Related to history learning media, based on the results of his research, he outlined twelve types of media used in learning history, which cover historical heritage; model/imitation; museum; historical laboratory; graphics (maps, charts); print media (books, modules, short stories, romance stories); projection media (OHP, slides, film); audio media (radio, tape recorder); audio visual (slide sound, movies, TV); Internet (website, blog); multimedia; and historical actors/witnesses.

Findings of discussions with teachers of history and a field survey reveal that the Indonesian history learning media has not been widely available. In fact, no party produces and sells learning media of Indonesian history. Such media is imperative to help teachers in teaching and convey messages from learning resources to the recipients of learning messages (students). As a means of presenting and delivering messages, learning media to some extent can represent teachers in providing a more appealing platform for presenting information to students (Komalasari & Saripudin, 2017).

The use of media in learning history is expected to raise students' historical consciousness, which is the objective of learning the history of Indonesia. Historical consciousness is the consciousness of the past, which when used properly can provide a greater insight into the present and magnify responsibility for the future (Cassirer, 1978). Historical consciousness is the basis for establishing national identity, which is the main capital in building the nation and state in the present and future (Widja, 1989: 7)

The History Education Laboratory of the Faculty of Social Science Education, Indonesian University of Education, has been undertaking projects on developing history learning media and has produced several prototypes of historical objects

of pre-history and the Hindu-Buddhist Kingdom era in Indonesia (Darmawan, et al., 2011). In addition, the laboratory has partnered with a learning media company named "Pudak Scientific", a company engaged in the field of learning media since 1978. The company warmly welcomed the partnership because it had not previously produced any learning media for the subject of Indonesian history despite its increasing needs and market demands.

In general, the objective of this research is to develop and produce learning media for the subject of Indonesian history to raise students' historical consciousness. The learning media under development is in the form of: a) replicas of historical objects, ancient humans and an electronic pen map of pre-historic sites spread in Indonesia; b) replicas of historical objects and an electronic pen map of the Buddhist Hindu Kingdom era; and c) replicas of historical objects and an electronic pen map of the Islamic Empire.

Research Methodology

This study adopted a research and development approach, which according to Borg and Gall (1989: 782), is "a process used to develop and validate educational products" which emerge as a strategy to enhance the quality of education.

Borg and Gall's (1989: 775) research procedure covering 10 steps was considered, which encompass research and information collection, planning, developing a preliminary form of the product, preliminary field testing, main product revision, main field testing, operational product revision, operational field testing, final product revision, and dissemination and implementation. In this research, however, only seven steps were utilized as follows.

Research Procedures	Descriptions
1. *Research and information collection*	Conducting a literature study and field research in museums and historical sites of Indonesia related to the issues at hand.
2. *Planning*	Preparation for formulating research framework; choosing what historical relics to be replicated; determining the objectives to be achieved at each stage, and conducting a feasibility study on a limited basis
3. *Developing a preliminary form of product*	Developing the initial form of the product to be produced, the prototypes of replicas and e-pen maps
4. *Preliminary field testing*	Validation from experts in history learning media

Research Procedures	Descriptions
5. *Main product revision*	Making improvements to the initial product based on the input from experts and practitioners
6. *Main field testing*	Producing replicas and e-pen maps by considering the feedback from high school teachers
7. *Operational product revision*	Finalizing the final form of the replicas and e-pen maps

The stage of developing a prototype and producing the learning media was conducted in the History Education Laboratory of Universitas Pendidikan Indonesia and in "Pudak Scientific" company. Replicas of historical items were then validated by three experts, i.e., a history education specialist, a learning media specialist, and an art expert, through focus group discussion (FGD). Furthermore, a field validation stage was carried out in three high schools in Bandung, Indonesia.

Research Results

Development of Replica Prototypes of Historical Objects

The learning media under development is in the form of: a) replicas of historical objects, ancient humans and an electronic pen map of pre-historic sites spread in Indonesia; b) replicas of historical objects and an electronic pen map of the Buddhist Hindu Kingdom era; and c) replicas of historical objects and an electronic pen map of the Islamic Empire.

Each historical period was made into one set, thus amounting to as many as three sets.

1. Set 1 consists of 17 replicas of historical objects in prehistoric era: Meganthropus Erectus, Pithecantropus Erectus, Homo Soloensis, the skull of Homo Erectus, the skull of Homo Sapiens, handheld axes, oval axes, square axes, sarcophagus, funnel axes, flakes, prehistoric statues, menhirs, kettle drums, ani-ani (a small traditional knife to harvest rice), and outrigger boats.

2. Set 2 consists of 14 replicas of historical objects during the Hindu Buddhist period consisting of Ciaruteun Inscription, Yupa Inscription, Brahma Statue, Wisnu Statue, Shiva Statue, Borobudur Temple, Prambanan Temple, Jawi Temple, Stupas, Borobudur Reliefs, Majapahit currencies, Majapahit state emblems, Majapahit Kriya Arts, and Petals.

3. Set 3 consists of 9 replicas of historical objects during the Islamic Empire consisting of the tomb of Sultan Malikus Saleh (Aceh), the tomb of Maulana Malik, Stamps, Javanese Special Mosques, Sadat Puppet, Golek Puppet, Crown of Aceh, Crown of the Malay kingdom, Crown of the Mataram kingdom.

The following are materials needed to manufacture replicas of the above historical objects: resin of various types, catalyst, wax, pigment, fiber of various types, clay, silicon rubber, matt, talk, and other mixtures. The necessary tools include brushes, sandpapers, mixing containers, knives, buckets, and other necessary items. As many as 40 pieces of replicas were identified in terms of the materials and sizes.

Figure 1. The replicas of prehistoric sites

Figure 2. The replicas of the Hindu Buddhist Kingdom

Figure 3. The replicas of the Islamic Empire

Developing the prototype of e-pen maps

E-pen maps utilized a sort of technology developed by "Pudak Scientific" company, which was then refined with contents related to the history of Indonesia. The e-pen maps are divided into three types: i) the map of prehistoric site spread era; ii) the map of the Hindu Buddhist Kingdom, and iii) the map of the Islamic Empire. What follows are development procedures of e-pen maps.

1. Determining three maps for the e-pen maps (Map Distribution of pre-dawn relics sites, Map of the Hindu-Buddhist Kingdom, and Map of the Kingdom of Islam);
2. Determining the e-pen map material;
3. Defining the dimensions (size) of the e-pen map media;
4. Exploring and identifying the content of the three theme maps based on available sources;
5. Developing content descriptions of the chosen historical site locations;
6. Determining the technique of filling sounds in the e-pen, along with determining the voice;
7. Validating the content accuracy of historical descriptions to be recorded into e-pen memory;
8. Performing the process of recording descriptions per each historic location of each map;

9. Validating the results and quality of the voice recording;
10. Finalizing the historical e-pen maps.

Figure 4. The map of the Hindu Buddhist Kingdom era

Expert validation results

Some expert recommendations on replica items that need to be updated and revised based on the results of the FGD are as follows.

Table 1. Expert recommendations on replicas of historical objects

No	Validated Replicas	Recommendation
1.	The skull of Homo erectus	The chin should not be made to stick out.
2.	Sarcophagus	The skull and the remains of offerings need to be added.
3.	Flakes	In terms of color, it needs to be dark black.
4.	Megalith Menhir	The foot of a buffer and a person for comparison are to be provided.
5.	Kettle drums	The kettle drum is to be replaced with a moko because it looks slenderer.
6.	Outrigger boat	The shape is to be revised because it is less large in size and less proportional.
7.	Jawi Temple	The color needs to be fixed so that there is an impression of a mixture of red, yellow and white.

No	Validated Replicas	Recommendation
8.	Majapahit state emblems	The color needs to be replaced with brick red
9.	The Tomb of Malik Al Shaleh	The shape is to be revised because it is not a tomb adapted to the original but only the headstone.
10.	Crown	The color is to be changed to black and each point of the compass is to be given a line.
11.	Prambanan Temple	The shape is to be revised and made split to see the inside of the temple.
12.	Borobudur Temple	The size is to be enlarged.
13.	Golek Puppet	The material needs to be replaced with resin.
14.	Sadat Puppet	The material needs to be replaced with resin.
15.	Pithecanthropus Erectus	The original form of body structure needs to be proportional.
16.	Flags	The size is to be enlarged to 45 x 30 cm and the material needs to be replaced with fabric.

Revised replicas of historical objects

Feedback from the experts was taken into account in refining the replicas. Refining was conducted in the following aspects:

Table 2. The results of refining the replicas of historical objects

No	Aspects	Refining
1.	Conformity in Shape	The engraving techniques on Borobudur temple, Prambanan temple and Crown have been adapted to the original form. The coloring on the Jawi temple, Majapahit emblems and Crown have been adjusted to the original color.
2.	Usefulness	The level of conformity of the replicas with the learning needs of the history subject at school has been taken into account and the price of the media has been adjusted to the common market price.
3.	Use of Material	Optimization of material utilization and material efficiency has been done to cut the high price of materials.
4.	Support Presentation	A support form in the replicas is required as comparison to the original replica size. The proportion of the support form with the original replica and the color of the support form have been adjusted.

The results of field validation

The replicas of historical objects were then validated by history teachers in three high schools. An overview of the validation results is presented in the table below.

Table 3. The results of field validation to replicas of historical objects on form

No	Assessed Components	Assessed Aspects	Validation Results (N=10)			
			Excellent (%)	Good (%)	Fair (%)	Poor (%)
A.	Conformity in Form	Shape proportion	90	10	0	0
		Balance in shape and size	70	20	10	0
		Coloring in contrast	40	30	20	10
		Shape engraving technique	30	50	10	10
		Unity in form, shape, size, and color	70	15	10	5
	Mean of Component A		**60,0**	**25,0**	**6,4**	**5,0**
B	Accuracy in Form	Fact accuracy	70	20	10	0
		Accuracy and appropriateness of the replica with the original form	60	20	20	0
		Technique accuracy	40	40	20	0
		Accuracy and appropriateness of replica making method	80	10	10	0
	Mean of Component B		**62.5**	**22.5**	**20.00**	**0.0**
C.	Usefulness	Alignment with the history subject according to the Curriculum of 2013	60	20	20	0
		Alignment with the learning needs in school	50	20	20	10
		Effectiveness of the learning media in school	70	20	10	0
		Helps raise students historical consciousness	50	30	20	0
	Mean of Component C		**57.5**	**24.17**	**14.07**	**2.5**
	Total		**60.0**	**23.89**	**17.65**	**2.5**

The validation table of the shape component shows that most aspects of the conformity of shape, accuracy of shape and usefulness of the replica of historical objects are considered good. Concerning the aspect of conformity, an area of improvement is the technique of carving and coloring to make it more appealing. Concerning the accuracy of the shape, what needs to be improved is the correctness and accuracy of the original shape with the replica. Then, concerning the usefulness, what needs improving is conformity of the media with the needs of history learning in school, which can help raise students' historical consciousness.

Table 4. The results of field validation of replicas of historical objects on presentation

No	Assessed Components	Assessed Aspects	Validation Results (N=10)			
			Excellent (%)	Good (%)	Fair (%)	Poor (%)
A.	Presentation Techniques	Creativity	90	10	0	0
		Coherence	70	20	10	0
		Consistency in presentation techniques	50	30	20	0
		Tidiness of presentation	30	50	20	0
	Mean of Component A		**60.0**	**27.50**	**12.50**	**0**
B	Use of Materials	Material utilization	40	30	20	10
		Material proportion	60	20	20	0
		Material consistency	70	20	10	0
		Material efficiency	40	40	20	0
	Mean of Component B		**52.5**	**27.5**	**17.5**	**2.5**
C.	Support Presentation	Needs of support form in replica	60	20	20	0
		Balance of form size of support element with original replica	40	30	20	10
		Coloring of support form	30	40	30	0
		Utilization of support form	50	30	20	0
		Consistency of support form	50	20	20	10
	Mean of Component C		**46**	**28**	**22**	**4,0**
		Total	**52.83**	**27.6**	**17.3**	**2.16**

The validation table of the presentation component demonstrates that most aspects of the presentation techniques, mastery of materials and presentation support of replicas of historical objects are considered good. Concerning the aspect of presentation techniques, an area of improvement is the consistency of the presentation techniques and tidiness of presentation. Considering the use of materials, what is to be improved is the material utilization and material efficiency. Finally, concerning the supporting elements of the presentation, what needs improving is the balance aspect of the size of the supporting form with the original replicas and coloring of the supporting form.

Discussion

The results reveal that the development of history learning media in the form of replicas and e-pen maps helps raise students' history consciousness. It can be analyzed as follows:

First, history learning media becomes a tool for teachers in teaching and a means of delivering messages from learning sources to the recipients (students) for the purpose of history education. Traditionally, history education is construed as an effort to transfer the grandeur of the nation in the past to the younger generation. With such a position, history education is a vehicle for passing down the nation's superior values. In this context, history education aims to establish the nation's pride and preservation of values. Additionally, history education is concerned with the effort to introduce learners to the discipline of history. Therefore, skills such as chronological thinking, historical understanding, analytical skills and historical interpretation, historical research abilities, historical issues analysis and decision making are all prime goals in history education (Hasan, 2012). Through learning media, the key objectives of history education can be achievable given the role of media as a means of presenting and sending messages in addition to representing teachers in providing learning to students (Komalasari & Saripudin, 2017).

Second, historical learning media in the form of replicas and validated e-pen maps indicate that most of the form and presentation components are considered good. This is made possible, for the development of history learning media in this respect it is in accordance with the development of educational technology. Furthermore, recent developments of paradigms in educational technology influence the development of learning media (Yamashita, 2011), among other things: 1) in the first paradigm, the learning media is the same as the visual audiences used by

instructors to perform their tasks; 2) in the second paradigm, the media is viewed as systemically developed and adhering to the rules of communication; 3) in the third paradigm, the media is seen as an integral part of the learning system and therefore requires a change in the other components of the learning process; 4) in the fourth paradigm, the media is viewed as one of the sources deliberately developed and/or utilized for learning purposes.

Third, the integration of replicas and e-pen maps in history learning can motivate students for better academic achievement. According to Gerlach et.al. (1980) and Green and Brown (2002), teaching media can enhance students' learning process, which in turn is expected to enhance academic achievement. Among the reasons why teaching media can enhance students' learning process there are: (1) learning will attract more students' attention so as to boost their motivation to learn; (2) teaching material will be more clearly meaningful so that it will be better understood by students, and will enable them to better reach teaching objectives; (3) teaching methods will be more varied, not merely verbal communication by teachers so that students will not experience boredom; (4) students will do more learning activities, not only listen to explanations from teachers but will do other activities such as observing, listening, performing/demonstrating, and many others (Saripudin and Komalasari, 2015).

Fourth, media development of replicas of historical objects and e-pen maps is an effective medium in helping learners gain hands-on experience. This media is most effective for achieving learning outcomes, as it provides concrete experience to learners. This is in line with the results of Saripudin and Komalasari's (2016a) study, which show that history learning is designed to equip learners with the skills and ways of historical thinking, shaping consciousness, nurturing national values, developing inspiration, and linking local events with national events in one series of history of Indonesia. The subject of Indonesian history concerns various historical events in Indonesia aimed at building the collective memory as a nation so that the identity of its people reveals itself and serves as a foundation in building the life of nation and state in the present and future (Saripudin and Komalasari, 2016b).

Conclusion

Based on the results of data collection and visits to historical sites and museums, the prototypes of replicas and prints were made in the form of i) replicas of historical objects in prehistoric era, ii) replicas of historical objects in the Hindu

Buddhist kingdom era, iii) replicas of historical objects at the time of the Islamic Empire. Prototypes of an e-pen map using technology were developed with the help of "Pudak Scientific" company, which were then refined with contents related to the history of Indonesia. The e-pen maps are divided into three types: i) the map of prehistoric site spread era; ii) the map of the Hindu Buddhist Kingdom era, and iii) the map of the Islamic Empire era.

The presented research is vitally important in a number of ways: i) it establishes a partnership between a university and industry in designing, developing, producing, and marketing instructional media of history; ii) it seeks to meet the needs of schooling in the provision of historical learning media that is not yet available on the market; iii) it assists teachers in improving the quality of learning history through the availability of effective learning media; iv) it helps raise students' historical consciousness through the use of the media in the form of replicas of historical objects and e-pen maps that can bring students closer to the objects of history.

Acknowledgments

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