Mixed Reality (MR) in Folklore Learning

Yunus Abidin(✉) and Trifalah Nurhuda

Universitas Pendidikan Indonesia, Bandung, Indonesia
yunusabidin@upi.edu

Abstract. Folklore is seen as one of the outdated and ancient types of literature. This has an impact on the low interest of students to learn folklore. Whereas on the other hand folklore is a literary work that is full of cultural values and is very important for students to learn at school. Based on this fact, this research focuses on efforts to package folklore using mixed reality technology. Efforts to package folklore using this technology are carried out through Educational Design Research (EDR). This study involved the respondents of the assessment team, namely material experts and learning media experts. Data were collected using a questionnaire. The data was processed by descriptive statistics. Based on the results of the study, it can be stated that the product developed in this study is categorized as very good. Materially, folklore packaged with mixed reality technology in terms of the feasibility of content, presentation components, linguistic components, and contextuality are categorized as very good. Judging from the technical quality aspect of the mixed reality design, the quality of the marker books, and the quality of the media are generally considered to be in the very good category. Based on the results of this study, folklore packaged with mixed reality technology is suitable for use in learning folklore in elementary schools.

Keywords: Folklore · instructional media · mix reality

1 Introduction

The development of the 21st century has had an impact on developments in various aspects such as technology and information, science which ultimately has an impact on the field of education (Jan, 2017). In this regard, education in the 21st century is faced with several major challenges, namely building technologically literate and future-minded students and cultural literacy (Teo, 2019).

Based on this, there needs to be a change in the pattern of learning in Indonesian education to further develop high knowledge, understanding, and skills in line with 21st century technological advances and not to ignore core cultural knowledge (Boholano, 2017). In order to realize these educational goals, one of the things that must be done is to improve students' reading literacy and students' cultural literacy. Whereas on the other hand, education in Indonesia is faced with the fact that students' reading literacy skills are low. Based on the results of the 2018 PISA test and survey, data shows that the performance of Indonesian students is still relatively low. The average achievement score of Indonesian students for reading literacy is ranked 70. The ranking and average

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score of Indonesia is much different from the results of the 2015 PISA test and survey which was ranked 62 (OECD, 2016) (OECD, 2019). Thus, the literacy rate of students in Indonesia has decreased from 2015 to 2018.

Judging from the aspect of cultural literacy, Indonesian students also have a similar problem, namely the low cultural literacy of students. Cultural literacy begins with the concept of cosmopolitanism, namely as a manifestation of one's identity (ethnic, national, cultural) and cultural capital that is accumulated through experience with the educational process (Johnson, 2014). In line with this definition, the low cultural literacy of students is indicated by the weakening of students' sense of pride in their ethnic identity, as well as the weakening of their love for their homeland and culture. It can be understood that by having cultural literacy skills, a person can improve their social interactions and can also increase knowledge of the norms that apply around them.

In line with the problems above, one way to solve this problem is to foster reading literacy while at the same time fostering student cultural literacy. This coaching effort can be done by bringing students closer to folklore that contains cultural values. The choice of folklore as one of the solutions to develop two literacy students is in line with the fact that folklore has the inherent vitality of the indigenous population and the strength of their local language (Farr, 2009). At the same time, folklore reveals the life and spirit of ordinary people and describes their emotions and ways of thinking. Practically all students are familiar with folklore although they may not be aware of its distinctive characters.

Furthermore, folklore comprises a large body of literature that proves to be of interest to readers (Palmer & Davis, 1990). Most folklore is presented in a straightforward and simple style that incorporates action and colorful characters that appeal to all levels of readers. In the context of learning, folklore-based learning is a term used to represent the use of fairy tales to study complex topics (Humpherys & Babb, 2020). In addition, learning folklore (folklore) can improve students' memory skills or students' cognitive abilities (Agbenyega et al., 2017).

Realizing the importance of folklore, there needs to be a solution chosen so that folklore can attract and increase students' motivation to read it. The solution basically must be able to present folklore in an interesting new form. Folklore must be packaged well and have a contemporary nuance so that it can attract students to read and review it again. The packaging of folklore that meets these criteria is by optimizing the use of mixed reality technology.

Mixed Reality (MR) is a virtual world technology that mixes the concepts of Augmented Reality with Virtual Reality. Virtual Reality (VR) and Augmented Reality (AR) are different types of technology. AR is a technology that presents an expansion of the physical world by using layers of digital information into it such as objects that do not exist in the real world, making them appear as if they exist in the real world. VR is a technology that can place as if a person is in a visual environment seen in VR glasses (Huang et al., 2019).

Regarding MR, several studies have proven that the use of MR can improve student learning outcomes. Not only improving the ability of certain students, the use of MR has also been claimed to be able to develop learning abilities in students with low spatial abilities (Weng et al., 2018). Other studies have also proven that the application of MR

can make a very significant contribution to the potential for collaboration with peers (Beyoglu et al., 2020). Thus, that the application of MR in the learning process can support the development of students' abilities and can improve communication and collaboration between students in line with competencies in the 21st century.

Another rationale that supports the repackaging of folklore through MR technology is that MR products can be developed using virtual glasses that are integrated with the cloud or server both online and offline so that they can display a real picture in virtual form so that it can give the impression that learning to students is more interesting and interesting. Fun (SiNoplu & Karaoğlan Yilmaz, 2021). Thus, the technology that has been designed aims to improve students' technological literacy skills, reading literacy, as well as cultural literacy. Through MR-based folklore learning, students can interact with characters or cultural artifacts from folklore in virtual form. In addition, this technology can provide continuous information and correlate with learning in schools.

In line with the description above, the purpose of this research is to design an MR-based folklore learning media that is suitable for use in learning. The long-term goal of this research is that this technology can be used by teachers and school students in the future and can be developed into a multipurpose technology in supporting learning.

2 Method

The research method used in this research is the educational design research model and or Educational Design Research (EDR). Research design/development as a viable strategy for socially responsible research in educational technology. One of the main advantages of design research is that it requires practitioners and researchers to collaborate in identifying real teaching and learning problems, creating prototype solutions based on existing design principles, and testing and refining prototype solutions and design principles until satisfactory results have been obtained. Achieved by all parties (Akker, 2006). Design research is not an activity that individual researchers can undertake in isolation from practice; its nature ensures that progress will be made with respect to, at a minimum, the clarification of problems facing teachers and learners, and ideally, the creation and adoption of solutions along with strong explanations of models and design principles.

One of the models that can be used to design and develop products is the ADDIE model. The ADDIE model includes analysis, design, development, implementation, and evaluation (Richey & Klein, 2005). The ADDIE development model is a systematic learning design model. There are stages that must be done to develop a product development that allows researchers to evaluate development at each stage.

In line with the description above, this research data was collected using an instrument in the form of a questionnaire. The data sources for this study were 5 material experts and 5 media experts who functioned to weigh the developed MR media. The focus of the assessment on the language aspect includes aspects of content feasibility, presentation components, linguistic components, and contextuality. The focus of the media aspect includes the technical design of MR, the quality of the marker book, and the quality of the media in general. The data collected was processed using descriptive statistical analysis techniques.

3 Results and Discussion

In line with the methods and techniques of media development used in this study, it can be stated that the development of folklore learning media through packaging folklore with MR technology is carried out through several stages of development. The first stage of development is to draw up a media program outline (GBPM). Making GBPM serves to minimize the possibility of material errors in the development of learning media. The steps that can be taken in preparing the GBPM include: (1) identifying the needs and characteristics of students, (2) detailing the learning objectives to be achieved, (3) formulating material points or subjects, and (4) formulating the form of material presentation learning. The second stage is the development of a flowchart. The flowchart or flowchart used is a program flowchart that explains in detail how the steps or procedure sequences of a program are executed.

The next stage is making a storyboard. The storyboard is intended so that the flowchart that has been made can be described in more detail in each frame/slide. Storyboard or storyline arrangement is a detailed description of the content of the application that will be created. The development of several storyboards in this study refers to the following basic concepts (Fig. 1).

Based on the above guidelines, one of the development steps in VR applications is to develop VR videos. The development of VR videos begins with compiling the scene/story stages in detail so that there is a match between the video produced and the stages of the story and the VR design that must be developed. One of the story scenes in the developed VR video can be presented as follows. The final stage is to develop an AR model for folklore.

The media that has been developed is then validated by experts to determine its suitability and feasibility for use in learning. Based on this, the following are the results of the media usability test which was developed based on linguists and media experts. The validation of the material experts was carried out by five lecturers who are experts in the field of learning Indonesian Language and Literature. Validation to material experts aims to get responses in the form of assessments and also suggestions regarding several aspects of the product being developed. The following are the results of an assessment or validation from a material expert (Table 1).

The feasibility of the content/material according to the material expert's view obtained a percentage score of 91.4% which was interpreted that the product developed was "Very Good" in terms of content/material. The assessment is based on indicators

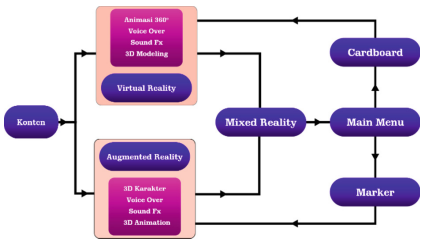

Fig. 1. Grand Design MR Folklore

Table 1. Material Expert Assessment

Number	Aspect	Score	Percentage
1	Eligibility of Content/Material	160	91,4
2	Components of Serving	85	85
3	Language Component	65	86,67
4	Contextual Component	60	80
Average			85,76

which include: (1) conformity of content with KD, (2) conformity of content with syllabus, (3) conformity of content with indicators, (4) depth of material, (4) correctness of scientific concepts, (5) accuracy material visualization, (6) conformity with the development of science. The presentation components of the indicators which include: (1) logical presentation, (2) coherence of presentation, (3) coherence, and (4) suitability and accuracy of 3D objects that appear, get a percentage score of 85% which is interpreted that the product developed includes "Very Good" in terms of application presentation components and marker books.

This learning media has a few linguistic components. Based on the expert's point of view, the linguistic component of the folklore MR media obtained a percentage score of 86.67% which was interpreted that the product developed was "Very Good". Linguistic indicators include: (1) the use and presentation of language according to the level of student development, (2) the accuracy of grammar and spelling used, and (3) the accuracy in the use of symbols that represent words that can be easily understood. This media can be assessed contextually through indicators which include: (1) the attachment of the material presented to real world life, (2) the ability to encourage students to connect schemata with their application in everyday life, and (3) modeling. Based on the expert's view regarding the contextual component of the media, the percentage score obtained is 80% which is interpreted that the product developed is "Good" in contextual terms.

Based on the assessment from the point of view of the material expert above, it can be concluded that this learning media is feasible without revision. The average percentage obtained is 85.76%, which is interpreted that the learning media belongs to the "Very Good" category according to assessments and reviews from material experts. The validation of the media experts was carried out by five Multimedia experts. Validation to media experts aims to get responses in the form of assessments and suggestions about the products developed, namely MR Folklore-based learning media equipped with market books. The following are the results of the assessment or validation from media experts (Table 2).

The technical quality and design of the MR technology application obtained a percentage rating of 92.5% which indicates that the quality of the media is in the "Very Good" category with indicators that include: (1) the appearance of the layout elements of the navigation buttons on the application makes it easier for users, (2) clarity of audio pronunciation in the application, (3) the attractiveness of the application display design according to the characteristics of students, (4) the use of harmonious and pleasing color

Table 2. Media Expert Assessment

Number	Aspect	Score	Percentage
1	Eligibility of Content/Material	160	91,4
2	Components of Serving	85	85
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4	Contextual Component	60	80
Average			85,76

composition, (5) 3D objects that appear, (6) the application helps in introducing the content of the story, (7) attention grabbing, and (8) easy to access.

Media assessment in the form of a marker book has indicators that include: (1) the suitability of the size of the book by carrying it, (2) the suitability of the size of the book with the content, (3) the design of the cover/cover of the book is attractive, (4) the quality of the book paper is not easily damaged, (5) the neatness of the layout of the text and images in the book, (6) the colors used are in accordance with the characteristics of the students, (7) the pictures and texts used are interesting, (8) describe the teaching materials, and (9) markers are easy to read. The percentage obtained is 88.8% and it can be interpreted that the book is in the "Very Good" category.

Media quality includes applications with AR features and printed books. Media quality assessment indicators include: (1) the use of media, and (2) the usefulness of the media in facilitating students to be active in learning. Media quality got a percentage score of 100%, which means the media quality is "Very Good". In addition to assessing there are several notes put forward by media experts. The advice given is regarding the need to test applications on various smartphone cameras so that users know the level of compatibility of the applications made. This is because this application that is installed on a smartphone that has low specifications cannot run properly. On the other hand, based on the overall assessment from the media expert's point of view above, it can be concluded that this learning media is already feasible to use with notes. The average percentages obtained are 85.75% and 93.76%, which are interpreted that the overall learning media is classified as "Very Good" according to assessments and reviews from media experts.

The success of developing MR Folklore in this research is expected to improve students' learning abilities. Furthermore, the developed folklore MR will also be able to develop students' cultural literacy. This is very reasonable in line with research that has been done which proves that the use of AR technology is very effective in the learning process (Mustaqim, 2016). In the field of mathematics, technology has also been used, especially VR technology which has been proven to be able to improve student learning outcomes (Rachman, 2017). Another field that uses AR technology for learning in elementary schools is learning the introduction of the Javanese language which has also proven to be effective in using technology (Kusuma et al., 2019). The folklore developed in the research combines the use of VR as a medium to package stories. With this packaging, students are expected to be able to watch the story with full

concentration so that their understanding of the story becomes better. AR technology is used to provide more experience about characters, settings, and various other components related to folklore. Through the integration of these two technologies, it is believed that students can be more interested in folklore and better understand the values contained in it. This is reinforced by one of the MR-based studies in Indonesia in the field of religion which proves that by combining VR and MR students understand more about prayer procedures and can perform prayers properly (Yusuf et al., 2021).

4 Conclusion

Based on the results of the research that has been carried out, several conclusions can be drawn. The first conclusion is that this research proves that efforts to revitalize folklore through packaging folklore using MR technology can be carried out in several detailed and systematic stages of development. This detailed and systematic packaging effort can produce MR folklore as the product of this research. The resulting folkloric MR product received a very good assessment, both based on the results of validation and assessment of material experts and validation and assessment of media experts. The next stage of the media that has been successfully developed is also necessary to test the feasibility of both from the side of students as potential users and from the side of teachers as potential users. It is hoped that further feasibility assessments from both sides of the developed folklore MR media can be applied in learning in elementary schools both to improve reading literacy and to further improve cultural literacy and technological literacy.

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