The Development of Augmented Reality-Based Flashcard "Oreng Madureh" As An Introduction To Madurese Culture

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Abstract

The development of augmented reality (AR) based flashcard media "Oreng Madureh" has the potential to become an effective and interesting educational and cultural promotion tool. This research aims to develop learning media using AR-based flashcards on introductory Madurese culture material, which includes an introduction to traditional clothing, typical food, and traditional houses. This development research employed the ADDIE model, which consists of five stages: analysis, design, development, implementation, and evaluation. Data collecting techniques used were observation, questionnaires, interviews, and documentation. The product was validated in four trial stages by material experts, learning media experts, and small-group and large-group field trials. The data was analyzed quantitatively and qualitatively. The material expert questionnaire obtained 91.07%, and the learning media expert questionnaire obtained 92.64%, with feasible criteria and no need for revision. The small-group trial obtained 87.14%, and the large-group trial obtained 84.89%, both in the high category. These results indicate that this media is suitable for use in the learning process. The development of this media implies attracting children to understand and appreciate the cultural diversity around them through interactive learning activities and developing children's fine motor and cognitive skills.

INTRODUCTION

The important role of education in supporting activities in human life cannot be separated from the implementation and study of education by the social conditions and situations that exist in society. Education in Indonesia studies three groups: natural science, social science and humanities. (Suandi et al., 2016; E. Susanti & Endayani, 2018). Cultural education develops cultural values and character in each student to develop themselves as individuals, communities and national colours (Kemdikbud Web Manager, 2017). The aims of cultural education include a) developing the heart/conscience/affective potential of students as humans and citizens who have cultural values and national character; b) developing habits; c) instilling a spirit of leadership and responsibility in students as the nation's successors; d) develop students' abilities to become independent, creative, national-minded humans; e) develop the school life environment as a learning environment that is safe, honest, full of creativity and friendship, and with a sense of nationality (Normina, 2018).

Current developments and globalization can hurt the preservation and sustainability of local culture (Adiwijaya et al., 2022; Santoso et al., 2023; Suparno et al., 2018). Seeing the fact that Indonesian people currently prefer foreign cultures that they consider interesting, unique, and practical. Many local cultures have faded due to the lack of future generations interested in learning and inheriting. There is a phenomenon where children will love foreign

cultures more than their own (Ayu et al., 2022; Pane et al., 2017; Ri'aeni et al., 2019). Melinoski's theory is very visible in the shift in cultural values that lean towards the West, where information has become a powerful force influencing the human mind in this era of globalization. Seeing the phenomenon above, it is important to introduce culture to children. Culture and history are important values that contribute to children's development, especially behaviour (Lestariningrum & Wijaya, 2019). Behaviour can be shaped, changed and controlled to achieve certain goals (Fauziah & Fitriyah, 2020). Based on this explanation, we need to introduce culture to children through fun activities and keep up with the times so that children are interested in learning and preserving their culture.

Indonesia is an archipelagic country rich in customs and culture on various islands (Arin & Dwanoko, 2021a). Indonesia has a culture with its characteristics. The diversity of cultures makes Indonesia a country that is very rich in culture, so it can provide great capital for the growth of a national culture that is nationally conscious. Culture has assets and characteristics that cannot be compared to other countries. Meanwhile, each region in Indonesia has its cultural characteristics, such as customs, traditional clothing, typical food, traditional houses, regional songs, and traditional weapons, one of which is Madurese culture. Madura Island is known to have a distinctive, stigmatic, stereotypical and unique culture (Fajriyeh & Zayyadi, 2023). Madura has a lot of traditional riches (Hamzah et al., 2018), diversity, and value. Early childhood must be familiar with Madurese culture that is still alive, even those that have become extinct. The introduction of Madurese culture to early childhood has its urgency and challenges. It is believed to be one of the important learning contents for early childhood because it is the foundation for forming a child's identity. Considering this, young children need to be introduced to their culture early. This is what attracted the attention of researchers to look more deeply into the introduction of Madurese culture with Android-based media.

Based on observations and interviews with educators at Dharma Wanita PBB 04 Da'iring Kindergarten, Socah District, Bangkalan Regency, East Java Province, so far, local culture in this school has not been taught enough to young children so that children are less able to understand what local wealth is owned in Madura. When children were asked about typical Madurese food, the children remained silent and could not answer. This condition is not good for children's development because they do not know their characteristics and culture. Based on interviews with several educators at the school, it was explained that the introduction of local culture to children has received little attention. The educator explained that the lack of cultural introduction was not due to no reason but because, so far, educators had not been provided with teaching materials or media with local cultural themes, especially Madurese culture. This is in line with the statement (Yektyastuti & Ikhsan, 2016) that teachers' limitations in providing information and time can be overcome with the existence of learning media. Learning media often does not adapt to learning needs. This statement is supported by (Rosyida & Adi, 2018), who emphasizes that the ability of educators to utilize learning media is minimal, so many educators still use lecture and whiteboard methods without adapting them to current learning needs. Learning media can communicate information to stimulate children's thinking power and learning readiness (Ekayani, 2017).

Alternative learning media selection should also be adjusted to educational developments. The use of technology in the 4.0 revolution era is no longer strange in supporting education in learning. In the era of Industrial Revolution 4.0, many new technological advances have emerged. The operation of technology is becoming easier to help with daily work. Therefore, augmented reality technology and flashcard media introduced Madurese culture in this revolutionary era. The era of Industrial Revolution 4.0 is in the form

of cell phones. Mobile phones are very widely used by Indonesian society, especially children and teenagers. Augmented reality technology is a technology that combines 2D or 3D computer-made objects into the real environment that exists around the user. Objects displayed by AR can help students produce new perceptions that enable them to interact with the real environment. (Ani Ismayani, 2020). Flashcards are cards that contain pictures. In line with the opinion above, flashcards are small cards containing photos, text, or symbols on the front that remind or direct children to something related to the image (Arsyad, 2014). The images displayed can be images of clothes, houses, food or existing photos, which are then attached to cards and combined with augmented reality technology.

Research related to the development of Android-based media to introduce culture has been carried out by several researchers, including the introduction of Madurese culture (Amil et al., 2020; Faqih & Setyawan, 2021; Hidayat & Komariah, 2017; Muizzah, 2017), Wakatobi culture (Atina et al., 2022), Sumba culture (Arin & Dwanoko, 2021), and provincial culture in the WITA section (Yanti & Budiyati, 2020). Research examining the introduction of culture through augmented reality has been carried out by several researchers, such as Visitor Guide Application in museums (Cahaya, 2022), the introduction of augmented reality at the Cakraningrat Bangkalan museum based on QR-Code (Dellia et al., 2022), the introduction of Javanese script (Susilo et al., 2021), traditional Kalimantan houses (Rahadi et al., 2017), and Indonesian fabrics (Ferdiansyah & Kurniawan, 2019) Meanwhile, research on augmented reality-based flashcards has been carried out by several researchers, namely: introduction to marine animals for early childhood. (Utami et al., 2020), Vocabulary for elementary school children (M. T. Hidayat & Yulianti, 2020; Nursabra et al., 2023), and increasing children's intelligence during the Covid-19 pandemic (Soflianti et al., 2021).

From the problems that have been described, research that several previous researchers have carried out has not introduced culture to early childhood using augmented reality-based flashcard media, so researchers are interested and offer solutions to create Android-based learning media with augmented reality-based flashcard media for introducing Madurese culture to early childhood (4 – 6 years old). This development is expected to make it easier for educators to introduce Madurese culture with image media that can be visualized with 3D images containing traditional clothing, typical food and houses. This research aims to develop Android-based learning media to make it easier for children, especially in introducing Madurese culture.

METHODS

This research employed the Research and Development (R&D) method. Research and development are used to produce and test a product's effectiveness (Sugiyono, 2016). Research and development is a method of producing a new product that will go through product feasibility testing. The product developed can be hardware or software that has been tested. The research and development were carried out using the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model.

The ADDIE model emphasizes the analysis of a component following the available stages. The ADDIE model has five stages that are easy to understand and apply in developing a product in the form of learning videos, teaching materials, learning modules and others (Tegeh et al., 2014). The ADDIE model has a development procedure with a systematic, effective, and efficient process, as depicted in Figure 1.

This research uses questionnaires as instruments. Data collection techniques include data processing with several stages from the results of expert validation and trials, which involve qualitative and quantitative analysis. Data collection techniques in research and

development include observation, interviews, questionnaires or expert trial questionnaires, small and large group trials, and documentation.

The subjects for product trials were 4–6-year-old children, precisely 15 children from Dharma Wanita Kindergarten 04 Da'iring of Socah District and 35 children from RA Muhammadiyah Junganyar of Socah District, Bangkalan Regency, East Java. The trials identify various shortcomings of the initial product designed and assessed by experts. The trial was conducted in small groups of 10-15 people (Rayanto & Sugianti, 2020). The large group test determines the product produced to be applied in the learning process in large groups of 25-35 people.

The analysis stage was done by analyzing problems through observations and interviews with the Principal of TK Dharma Wanita PBB 04 Da'ring and RA Muhammadiyah Junganyar on October 6, 2022. The design stage was carried out through several steps, namely making detailed specifications regarding the shape, concept, and needs of the product to be developed; drafting the application content; developing software; and implementing, which was then validated by material experts and learning media experts in approximately seven months. The implementation phase was done through a small-group trial with 15 children at Dharma Wanita PBB 04 Da'iring Kindergarten on April 10, 2023, and a large-group trial with 35 children at RA Muhammadiyah Junganyar on May 5, 2023. After that, the researchers evaluated for approximately one month.

This research also used instruments to collect various supporting data types as references or guides to obtain evidence. The instruments can contain data acquisition components for needs analysis and the feasibility criteria for the learning media product that will be developed by the researcher (W. Susanti, 2021). The research instrument consisted of measuring instruments, questionnaire sheets, and documentation. The purpose of collecting data was to measure the product's suitability so that the product could be used. The research instruments can be reviewed in outline as shown in table 1.
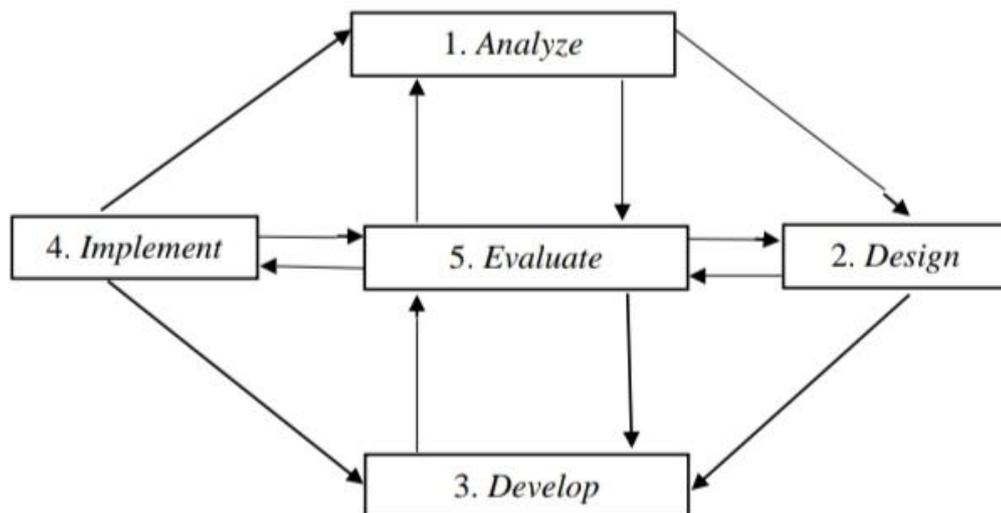

Figure 1 ADDIE Model's Stages
Source:(Tegeh et al., 2014)

Table 1. Research Instruments

Data collection technique	Observed data	Subject	Instrument Data collection
Response questionnaire	*The results are in the form of student responses to the effectiveness of augmented reality-based flashcard media.*	Learners	Student response questionnaire sheet.
Material expert validation questionnaire	*The results of material expert validation are in the form of validation of material.*	Material expert	Material expert validation sheet.
Media expert validation questionnaire	The results of media expert validation are in the form of media validation used before the product trials.	Learning media experts	Learning media expert validation sheet.
Documentation	The documentation results are in photos regarding the overall implementation of interview activities, usage trials, submission of learning media, and others.	Students, educators, and others	Photos, expert validation sheets, and student response questionnaires.

Source: Data Researcher

The data analysis technique was carried out by analyzing the results of media assessments by experts and children. This research uses quantitative and qualitative data in questionnaire responses to determine the suitability of learning media. The test subjects used in research and development consist of expert validations and product trials. The focus of this research was adjusted to the development of flashcard media based on augmented reality "Oreng Madureh" in introducing Madurese culture, so the test subjects were expert validators to provide assessments of instruments and product quality to determine the feasibility of the product.

This research also used qualitative and quantitative data analysis techniques. The quantitative data obtained was calculated using the following formula (Ramansyah, 2018):

$$Answer\ Percentage = \frac{F}{N} \times 100\%$$

Description of the formula:

P: Percentage of feasibility and validity

F: The sum of the scores of the alternative answers chosen by the subject

N: The maximum number of scores of the entire subject (total respondents)

RESULTS AND DISCUSSION
A. Result

The product developed was a learning media in the form of augmented reality-based flashcard media, "Oreng Madureh", as an introduction to Madurese culture. The learning media developed only contains material introducing Madurese culture, namely traditional clothing, typical food, and traditional Madurese houses. The stages of media development are explained by the selection of models for developing products regarding the feasibility level. Product feasibility can be obtained through expert assessments by media experts and material experts. Product feasibility was obtained based on the results of student response

questionnaires. The process of obtaining research data is displayed through development stages using the ADDIE model with five stages. Based on research and development as carried out by the developer, the following research results were obtained:

Data Analysis Stage

Based on the results of observations on test subjects, it was clear that almost all children only memorized a few songs and the Madurese language. When given material introducing Madurese culture, such as typical food and other traditional houses, the children did not recognize them. The results of interviews with class teachers at Kindergarten Dharma Wanita PBB 04 Da'iring and RA Muhammadiyah Junganyar, during the lessons in introducing Madurese culture, the lessons used printed media, such as posters containing pictures of Madurese culture and Madurese songs. After conducting observations and interviews, the researchers were interested in developing an augmented reality-based flashcard media, "Oreng Madureh", as an introduction to Madurese culture to introduce Madurese culture to children.

Design Stage

The design stage was to develop the concept of the content in the application. Planning for flashcard media based on augmented reality "Oreng Madureh" as an introduction to Madurese culture went through several stages: 1) Determining the material be presented, namely adapting it to cultural elements according to existing problems; 2) Determining media creation software (Adobe Photoshop and Adobe Illustrator), code production using the Visual Studio application, and media production using the Unity application; 3) Compiling a storyboard, namely making an initial description of the augmented reality-based flashcard media application "Oreng Madureh" starting from an initial description of the appearance of the media, content, and material created via Canva.

Development Stage

The third stage was development. The development of "Oreng Madureh" requires several software, including Adobe Photoshop version cc2020 and Adobe Illustrator version cc2020 for making the display, Visual Studio application version 1.78 for making the program code, the Unity application version 2018.4.15 and Android version 4.4 (KitKat) for making the media.

At this stage, a series of activities were conducted, namely, experts' validation and product trials. The product design is as follows:

Figure 2. Flashcard Front Design

Figure 3. Initial Display

Figure 4. Main Menu

Figure 5. AR Camera Display

Figure 6. Name Guessing Quiz Game

Figure 7. Matching Images Game

a. **Implementation Stage**

This stage was carried out by conducting small-group and large-group trials. The group trial stage aimed to determine whether the developed product was practical and effective. At this stage, students were asked to form groups and play the augmented reality-based flashcard media "Oreng Madureh" alternately with direction from the researcher or group companion.

At this stage, the expert validation stage was carried out by the material and media experts to obtain input, suggestions, and improvements to the Augmented Reality-based flashcard media "Oreng Madureh" that has been designed. Table 2 shows the validation results from material experts.

Table 2 Learning Material Expert Trial Data Results

No.	Statement	Assessment Score	Category
	MATERIAL		
1.	Compatibility of images/illustrations with material on Introduction to Madurese Culture	4	Excellent
2.	Clarity of 7 kinds of images Introduction to Madurese Culture	3	Good
3.	Suitability of the material to the characteristics of early childhood	3	Good
4.	Compatibility of the material with aspects of knowing Madurese culture	4	Excellent
5.	The accuracy of the material content in delivering material regarding the introduction of Madurese culture through augmented reality-based flashcards	4	Excellent
	CONTENT		
6.	Children can recognize Madurese culture in the form of traditional clothing, typical foods, and traditional houses	4	Excellent
7.	Children can guess the names in the "Guess the	4	Excellent

No.		Score	Category
	Name" menu		
8.	Children can arrange images in the "Matching Images" menu	4	Excellent
9.	The material "Oreng Madureh" can improve children's ability to recognize Madurese Culture at the age of 4-6 years	4	Excellent
10.	Children can remember and get to know Madurese's Culture from the quiz "Guess the Name."	4	Excellent
11.	Children can remember and learn about Madurese Culture from the quiz "Matching Pictures."	4	Excellent
12.	The ability to foster children's curiosity to recognize Madurese Culture in the form of Traditional Clothing, Typical Food, and Traditional Houses	3	High
LANGUAGE			
13.	Language is simple, logical, and easy for children to understand	3	High
14.	Language Suitability to Early Childhood	3	High
	Total Answers	**51**	

Table 3 Assessment Attainment Levels

Achievement Level	Predicate	Information
90%-100%	Very high	Very feasible; no need to revise
75%-89%	High	Feasible, no need to revise
65%-79%	Quite high	Less feasible, needs revision
55%-64%	Less height	Unfeasible, needs to be revised
5%-54%	Very less high	Very unfeasible and needs to be revised

(Ramansyah Modified, 2018:52)

Based on Table 2, the material experts provided a score of 91.07%, which means that the achievement rate is 90-100% (very feasible and does not need revision). Thus, the development of Augmented Reality-based flashcard media "Oreng Madureh" as an introduction to Madurese culture can be continued at the field trial stage without revision.

Table 4 shows the result of validation from learning media experts. The media experts provided a score of 92.85%, which means that the achievement rate is 90-100% (feasible and does not need revision). Thus, the development of Augmented Reality-based flashcard media "Oreng Madureh" can be continued as an introduction to Madurese culture.

Table 4 Learning Media Expert Trial Data Results

No.	Statement	Assessment Score	Category
	ASPECTS OF SOFTWARE ENGINEERING		
1.	Effectiveness and efficiency in the development of augmented reality-based flashcard media as an Introduction to Madurese Culture	4	Excellent
2.	Maintainable (can be maintained/managed easily)	4	Excellent
3.	Reusability (easy to use in operation)	3	High
4.	Compatibility (can run various hardware and software)	3	High
5.	Clarity of image display in augmented reality applications	4	Excellent
6.	Media makes it easier for children to recognize Madurese Culture, which includes traditional clothing, typical foods, traditional houses	4	Excellent
	VISUAL COMMUNICATIVE ASPECT		
7.	Flashcards can be maintained/managed easily	4	Excellent
8.	Audio clarity (dubbing, sound, effect, background. music)	3	High
9.	Visual clarity (layout, design, typography, colour)	4	Excellent
10.	Clarity of animation (characters and other supporting	4	Excellent

	characters/objects)		
	TECHNICAL ASPECTS		
11.	Designed according to the purpose and function of learning media	4	Excellent
12.	Easy for kids to use	4	Excellent
13.	The clarity of content in the Augmented Reality application "Oreng Madureh" is suitable for children	3	High
14.	The display of the Augmented Reality application icon "Oreng Madureh" according to the child	4	Excellent
	Jumlah Total	**52**	

1. Results of the Small-group Trial

Researchers involved 15 students to conduct a small-group trial. The results can be seen in Table 5. The results of the assessment of respondents to the small-group trial were 366 out of the expected score of 420. The feasibility percentage can be calculated with the following formula:

$$Feasibility\ Percentage = \frac{366}{420} \text{ X } 100\%$$
$$= 87{,}14\%$$

Based on Table 4, the Augmented Reality-based flashcard media "Oreng Madureh" in small group trials received a qualification of "High" or "Feasible, no revision needed" because the achievement rate of the assessment obtained was 84.17%.

Table 5. The Results of Small-group Trial

No	Statement	Assessment Score		
		Score	Total Score	Percentage
	HIGHLIGHTS			
1.	Children are interested in the appearance of the application "Oreng Madureh."	4,4,4,3,4,4,4,4,4,3 ,3,4,4,4,4	57	95%
2.	Children interested in playing the application "Oreng Madureh."	4,4,4,3,4,4,4,4,4,3 ,3,4,4,4,4	57	95%
	EASE			
3.	Children can use the application "Oreng Madureh" easily.	4,4,4,3,4,4,3,3,4,3 ,3,3,3,3,4	52	86,6%
4.	Children easily understand the rules of using the application "Oreng Madureh."	3,4,3,3,3,3,3,3,4,3 ,3,3,3,3,4	48	80%
	UNDERSTANDING			
5.	Children can recognize Madurese culture through the Augmented Reality flashcard "Oreng Madureh."	3,4,3,3,4,3,3,4,4,3 ,3,3,3,3,4	50	83,3%
6.	Children can recognize the names of Madurese culture through the "Guess the Name" menu.	3,3,3,4,3,3,4,4,4,3 ,3,3,3,3,3	49	81,6%
7.	The child can remember and match the picture by name through the "Matching Pictures" menu.	4,4,4,4,4,4,4,4,4,3 ,3,3,3,2,3	59	88,3%
Number of Scores			**366**	
Average Number of Percentages				**87,14%**

2. Large-group Trial Results

The results of large-group trial data in this study can be seen in Table 6. Based on table 6. The Augmented Reality-based flashcard media "Oreng Madureh" in large group trials received a qualification of "High" or "Feasible, no revision needed" because the assessment achievement rate obtained was 84.89%.

Table 6. The Results of Large-group Trial

No	Statement	Assessment Score		
		Score	Total Score	Percentage
HIGHLIGHTS				
1.	Children are interested in the appearance of the application "Oreng Madureh."	4,4,4,4,4,3,3,4,3,4,4,3,3,3,4,4,4, 4,4,3,3,4,4,4,3,4,4,4,4,3,3,4,4,4	129	92%
2.	Children interested in playing the application "Oreng Madureh."	4,4,4,4,4,2,3,4,4,4,4,3,3,3,4,4,3,4, 4,4,3,3,4,4,4,3,4,4,4,4,4,3,4,4,4	126	90%
EASE				
3.	Children can use the application "Oreng Madureh" easily	3,4,3,4,3,2,2,4,3,4,4,3,3,3,4,4,4,4, 3,4,3,4,4,4,4,3,4,4,4,4,3,4,4,3,4	124	88%
4.	Children easily understand the rules of using the application "Oreng Madureh."	3,3,3,3,3,2,2,3,3,4,4,3,3,3,3,4,3,4, 3,4,3,3,3,3,3,2,3,3,4,3,3,4,4,3,3	110	78%
UNDERSTANDING				
5.	Children can recognize Madurese culture through the Augmented Reality flashcard "Oreng Madureh."	4,4,4,4,4,3,2,4,2,3,3,3,3,3,3,4,3,3, 3,3,3,2,3,4,3,3,4,3,3,3,2,3,4,3,4	112	80%
6.	Children can recognize the names of Madurese culture through the "Guess the Name" play menu	3,3,3,4,3,3,2,3,2,3,3,3,3,3,3,4,2,4, 2,4,3,3,3,3,3,3,3,2,3,2,2,2,4,3,4	100	71%
7.	The child can remember and match the picture by its name through the "Matching Pictures" play menu	4,4,4,4,4,3,3,4,4,4,4,4,4,4,4,4,4, 4,4,4,2,4,3,4,4,4,3,3,3,4,4,4,3,4	131	93%
Number of Scores			832	
Average Number of Percentages				84,89%

b. Product Revision Evaluation

At this stage, the researchers evaluated or revised media improvements based on observations while implementing augmented reality-based flashcard media "Oreng Madureh". Suggestions and inputs aimed at getting the final product developed to be perfect and have good quality so that using augmented reality-based flashcard media "Oreng Madureh" is expected to stimulate the ability to recognize Madurean culture.

Revisions will be made if weaknesses or deficiencies are found. However, based on the results of trials on 50 children aged 4-6 years showed that the responses were excellent and no weaknesses or shortcomings were found. Therefore, there was no need to revise the product.

B. Discussion

According to the National Association for the Education of Young Children (NAEYC), early childhood is a child aged zero to eight years (Qistia et al., 2019). The learning process for children must pay attention to the characteristics of the child's developmental stage. According to (Suyadi, 2015), early childhood education consists of several programs to advance children's cognitive, social, emotional, verbal and growth development from birth to 8 years of age.

Introduction to Madurese culture in early childhood is important (Dellia et al., 2022; Faqih & Setyawan, 2021.; Muizzah, 2017; Yuandana & Fitriyono, 2022) because children's growth and development cannot be separated from their context or environment, more broadly regarding their cultural environment. Vygotsky believes that culture, social interaction and history greatly influence children's mental development or behaviour (Saputra & Suryandi,

2016). Learning based on culture and social interaction will impact children's perception, memory and way of thinking (Mulyati, 2019).

The impact if children are not introduced to the culture, especially local culture, has values contained in it, including values regulating and directing one's behaviour. (Widiansyah et al., 2018). This aims to help raise awareness of loving, being proud, and preserving local culture in young children so that this culture does not feel foreign to them. One of the local cultures in Indonesia that has been affected by globalization is the Madurese culture. According to Sairin (Fanny Rizkiyani & Dianti Yunia Sari, 2022) However, globalization also hurts Indonesia, for example, in the field of education (Setyawati et al., 2021) and social fields (Dwi Widianti, 2022), Globalization is believed to be responsible for the emergence and dominance of consumer culture in Indonesia. The influx of foreign culture can also create a national identity crisis. In previous decades, it was feared that the culture of Asian countries would be eroded and replaced by Western culture. However, in recent years, the emergence of wave newspapers or K-poop has encouraged the interest of the younger generation to learn and adapt Korean culture, starting from the way they dress to the language, which is then feared to result in the abandonment of Indonesian culture as well as Madurese culture. (Rizkiyani & Sari, 2022).

This research has limitations in using it, including the following: 1) development of learning media in the form of flashcard media based on augmented reality "Oreng Madureh", 2) focus on introduction only on traditional clothing, typical food and traditional Madurese houses, 3) Development of this media is aimed at children 4-6 years old.

There are several suggestions for this research. Educators can use the augmented reality-based flashcard media "Oreng Madureh" as a learning support in introducing Madurese culture to children, namely learning while playing. Apart from that, it is hoped that this application can inspire educators to develop other media that can introduce Madurese culture to children more widely. Future researchers hope that the augmented reality-based flashcard media application "Oreng Madureh" will motivate them to develop other media with different themes to support learning in a wider introduction to Madurese culture in early childhood.

The use of augmented reality-based flashcard media "Oreng Madureh" in introducing Madurese culture to early childhood has several positive implications. The following are some of the potential implications of applying this technology in learning, namely: increasing the attractiveness of learning, providing interactions and in-depth learning experiences, making it easier to understand abstract concepts, introducing the diversity of Madurese culture, developing fine motor and cognitive skills when children touch, explore, and selecting objects on the screen, creates a collaborative learning atmosphere, can monitor the child's progress in understanding information, and connects the child with the real world.

CONCLUSIONS

Based on the research and development results, it can be concluded that through the five stages of development using the ADDIE model, the media feasibility results from the material and media experts were categorized as very feasible and no revision is needed. The results of small-group and large-group trials are in the feasible category and do not need revision. Based on the final evaluation results, the children's response was excellent, and no weaknesses or shortcomings were found. Therefore, there was no need to revise the product, and the media can be directly used in learning, especially in introducing Madurese culture to early childhood by recognizing, describing, and identifying traditional clothing, typical food, and Madurese traditional houses.

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