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# Need Analyze as an Effort to Completely Solve in Learning Loss and Cultural Crisis Towards Golden Age Indonesian 2045

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## ABSTRACT

This study aims to determine the need for interactive learning media for mathematics with a virtual reality-based ethnomathematics approach as an effort to resolve the phenomenon of learning loss and cultural crisis towards Indonesia Emas 2045. This research method uses a quantitative descriptive method, with data collection techniques through the results of the pretest of VIII grade students and the distribution of interview questionnaires. This research was conducted at SMP Plus Rahmat Kediri with a population of 66 students. Based on the pretest results, 96,96% of students' scores were still below the KKM. In addition, the interview results showed that students' interest and ability to remember math learning after a long holiday were not good with a percentage of 33,43%, and 32,42% respectively. Students' interest and understanding of Kediri local culture is not good with a percentage of 39,54%. In learning mathematics with a good category, 62,72% of students have used interactive learning media for mathematics, but many students have never applied ethnomathematics of Kediri local culture to geometry material as a learning medium as shown by a percentage of 25,15%. In addition, 78,18% of students are interested in virtual games based on virtual reality. However, many students have never used mathematics learning media with a virtual reality-based ethnomathematics approach, with a percentage of 25,51%. Therefore, efforts are needed in the field of education to overcome the phenomenon of learning loss and cultural crisis completely, one of which is by developing interactive learning media on virtual reality-based ethnomathematics.

***Keywords:*** *Learning Loss, Cultural Crisis, Interactive Learning Media, Ethnomathematics, Virtual Reality*

## INTRODUCTION

To achieve the Golden Age Indonesian 2045, Indonesian is making various preparations, one of which is by utilizing the demographic bonus that is expected to occur in 2035. President Joko Widodo responded to the demographic bonus by implementing the vision of a Golden Age Indonesian 2045,

which includes four main pillars: 1) Human resource and technology development; 2) Sustainable economy; 3) Equitable development; 4) National resilience and governance **(1)**. The potential of qualified students is one of the determining factors in welcoming the demographic bonus towards Golden Age Indonesian 2045 **(2)**. In this situation, the government needs to play an important role in advancing development through improving the quality of learners, one of which is through quality education. Quality education is one of the important indicators in creating the quality of learners. This is relevant to the purpose of national education based on the mandate of article 3 of Law No. 20/2003 the purpose of national education is to develop the potential and character of students to become individuals who are spiritually, intellectually, and socially complete **(3)**. However, there are big challenges faced by the Indonesian people in welcoming the demographic bonus towards the Golden Age Indonesian 2045, one of which is the phenomenon of learning loss that has not been completely resolved. This learning loss phenomenon can be dangerous if it is not resolved completely because it can hamper the potential of students to welcome the demographic bonus toward the Golden Age Indonesian 2045.

After the COVID-19 pandemic, students have lost learning opportunities or experienced setbacks in academic achievement due to disruptions in the continuity of the education process, which has led to students experiencing the phenomenon of learning loss **(4)**. There is evidence that shows that students experience the phenomenon of learning loss, namely based on data from the 2022 PISA results, Indonesian experienced a decrease in the average reading literacy score at the international level by 18 points. In terms of math literacy, the score decreased by 13 points **(5).** Based on the results of PISA 2022, shows that the phenomenon of learning loss that has not been resolved completely can occur in all subjects, including mathematics **(6)**. Many students view math learning as complicated to understand and apply **(7)**. One of the more complicated mathematics materials to understand and apply is geometry. This condition can be seen in research **(8)** which shows that students' understanding of geometry is still at stage 0, namely at the visualization stage.

In this era of globalization, the trend of gadget addiction has made students tend to spend their time playing virtual games, such as Mobile Legend, PUBG, and Free Fire, where these games are based on virtual reality **(9)**. Virtual reality technology is a technology that allows individuals to use computers to explore real objects in three-dimensional space, giving them the experience of being physically involved in real life **(10)**. But so far, the use of virtual reality is still more dominantly used in the context of games, even though virtual reality can be used as an interactive learning medium. By using virtual reality, students can experience sensations as if they can enter another dimension that displays objects with a shape similar to the original, so that it can increase students' understanding of the material being taught and arouse students' interest and motivation to learn **(11)**.

In addition to addiction to virtual games, the transformation and changes in social interactions, culture, and habits of society in the era of globalization have a rapid impact on culture, namely the emergence of a crisis in local culture, which has the potential to cause a shift towards a new culture. Learners tend to be more interested in learning foreign cultures than local cultures. This can be seen from the tendency of learners to imitate the latest fashion trends, both with positive and negative impacts, as well as their interest in famous food from various countries, art, and lifestyle **(12)**. The phenomenon of cultural crisis is urgent and must receive more attention. Therefore, through various educational strategies, various efforts are made to overcome the problem of cultural crisis faced by students.

Thus, to resolve the threat of learning loss and cultural crisis in education, especially in learning mathematics, various forms of renewal and creativity in teaching and learning activities are needed, one of which is interactive learning media innovation. Interactive learning media is a tool that is used with the intention of improving the learning process **(13)**. The use of interactive learning media can create more creative and innovative learning that makes students not feel bored and will encourage them to follow the learning process with enthusiasm, so interactive learning media has a significant influence on teaching and learning activities, especially in mathematics lessons **(14)**.

Based on observations through interviews conducted with mathematics teachers at SMP Plus Rahmat Kediri, after a long holiday, students have experienced the phenomenon of learning loss. Mathematics teachers have tried to overcome the phenomenon of learning loss in students by making interactive learning media for geometry material in the form of props and applications, but the level of understanding of mathematics learning by students is still not fully optimal. Many students still have difficulty doing math problems, especially in geometry material. In addition, the math teacher also stated that students' interest in local culture, especially Kediri local culture, is still very minimal. There are still many students who are eroded by the onslaught of western culture. This shows that the phenomenon of learning loss and cultural crisis among students is still not resolved completely.

Seeing this phenomenon, various efforts are needed to overcome this problem in the scope of education. Thus, based on these problems, the researcher aims to analyze the needs of interactive learning media in mathematics lessons, especially geometry material, in order to completely overcome the phenomenon of learning loss and cultural crisis in students.

## MATERIALS & METHODS

The method used in this study uses quantitative descriptive methods. Quantitative descriptive research is a statistical method that is usually used to describe and summarize numerical data in detail with the aim of facilitating understanding and decision-making based on existing data **(15)**. This research was conducted at SMP Plus Rahmat Kediri on 66 students of class VIII and teachers of SMP Plus Rahmat Kediri and was held on May 20, 2024.

In collecting research data, the researcher first prepared an interview and assessment questionnaire that had previously been validated. The data collection technique used was filling out an interview questionnaire using a Likert scale on a Google Form. The data obtained was then subjected to quantitative descriptive analysis to obtain the final results. The calculations used in this analysis are as follows:

$$P = \frac{F}{N} \times 100\%$$

Description:

P= Percentage

F = number of responses from respondents

N = number of respondents Description

The percentage score obtained will be converted into a qualitative value in the following categories:

**Table 1. Categories of Interview Score Percentage**

| Value Interval | Category |
|---|---|
| 0%-20% | Not very good |
| 21%-40% | Not good |
| 41%-60% | Fairly Good |
| 61%-80% | Good |
| 81%-100% | Very good |

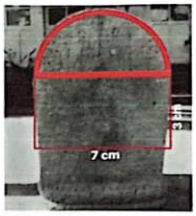
Furthermore, researchers also conducted a pretest on geometry material of flat and spatial shapes for students of class VIII SMP Plus Rahmat Kediri on May 20, 2024. The instrument on this pretest is in the form of essay questions as many as 5 items that have been adapted to the material on the geometry of flat and spatial shapes. The following are the questions used as a pretest for class VIII students, which are presented in figures 1 and 2.

**SOAL PRE-TEST**

Nama Lengkap :
Kelas :
No. absen :

Isilah pertanyaan berikut dengan jawaban yang benar!

1. Perhatikan parasasti yang selalu dijadikan patokan menentukan hari jadi Kediri, prasasti ini Bernama Prasasti Harinjing




Tentukan luas daerah yang tergambar pada Prasasti Harinjing! $\pi = \frac{22}{7}$

2. Lihat di Simpang Gumul Kediri berbentuk sebuah lingkaran tepat berada didalam persegi.

Jika panjang rusuk persegi adalah 14 cm, maka berapakah luas daerah diantara persegi dan lingkaran? Sebutkan sifat-sifat yang berada pada lingkaran di Simpang Gumul tersebut!

3. Perhatikan gambar berikut!

Gambar tersebut merupakan tahu kuning yang merupakan salah satu oleh-oleh khas Kediri. Selanjutnya tahu kuning itu diberi nama Tahu Takwa. Tahu Takwa tersebut menyerupai

**Figure 1. Pretest Questions**

bangun kubus dengan panjang sisi 8 cm. Berapakah luas permukaan dan volume dari ketiga tahu takwa tersebut?

4. Berikut ini merupakan gambar Sumber Sugih Waras yang terletak di Desa Dukuh, Kecamatan Ngadiluwih, Kabupaten Kediri

Kolam yang ada pada Sumber Sugih Waras tersebut menyerupai bentuk balok. Apabila diketahui panjang kolam 11 meter, lebar kolam 9 meter, dan kolam pada Sumber Sugih Waras ini diisi dengan air hingga setinggi 2,5 meter, berapakah volume air pada kolam di Sumber Sugih Waras tersebut?

5. Apabila seseorang ingin membuat tahu takwa yang merupakan oleh-oleh khas Kediri berbentuk kubus dengan luas permukaan per tahu takwa sebesar 384 $cm^2$, berapakah volume tahu jika seseorang tersebut membuat sebanyak 15 buah tahu takwa?

**Figure 2. Pretest Questions**

Data on students' pretest results were analyzed by comparing the scores of students who reached the minimum completeness criteria (KKM) with the scores of students who did not reach the KKM, with the KKM score being 75.

## RESULT

Based on the results of research through interview questionnaires, information from students regarding the phenomenon of learning loss and cultural crisis is presented in the table. The following is a table of the results of the interview questionnaires of students in classes 8A and 8B of SMP Plus Rahmat Kediri:

**Table 2. Interview Questionnaire Results**

| No | Indicator | Percentage |
|---|---|---|
| 1 | Interest, and the ability of students to learn mathematics, especially geometry. | 33,43% |
| 2 | The ability to remember mathematics material, especially geometry, that has been studied previously after a long holiday. | 32,42% |
| 3 | Learners' understanding and interest in local Kediri culture rather than western culture. | 39,54% |
| 4 | Experience using both conventional and technology-based math learning media | 62,72% |
| 5 | Learners' understanding and experience in applying ethnomathematics of Kediri local culture to learning mathematics and geometry material. | 25,15% |
| 6 | Learners' interest in virtual games such as Mobile Legend, PUBG, and Free Fire | 78,18% |
| 7 | Experience using mathematics learning media on geometry material using a virtual reality-based ethnomathematics approach. | 25,51% |

Based on questionnaire data obtained from students of classes VIII A and VIII B, SMP Plus Rahmat Kediri obtained information on indicators of interest and the ability of students to learn mathematics, especially geometry at 33,43%. This shows that students' interest in learning mathematics, especially geometry material, is in the not good category. Furthermore, the indicator of the ability to remember mathematics material, especially geometry that has been studied before after a long holiday, obtained a percentage of 32,42%, which indicates that the indicator is in the not goodcategory. Of the four indicators, it has been shown that the phenomenon of learning loss in students is still not completely resolved.

Then, on the indicator of students' interest in and knowledge of Kediri's local culture, a percentage of 39,54% was obtained, which shows that the indicator is in the not good category. There are still many students who are eroded by the influence of outside culture. This proves that the phenomenon of cultural crisis that occurs in students is still not resolved completely.

In addition, it is shown that 62,72% of students have used mathematics learning media, especially geometry material, both conventional and technology-based, and these indicators show that they are in the good category. However, the understanding and experience of students in applying ethnomathematics of Kediri local culture to learning mathematics geometry material is still in the not good category, with a percentage of 25,15%. Then the indicator of the level of interest of students in virtual games such as Mobile Legend, PUBG, and Free Fire, where the three virtual games are based on virtual reality, is in a good category with a percentage of 78,18%. However, the experience of students in using mathematics learning media on virtual reality-based geometry material using the ethnomathematics approach is only 25,51%, which shows a not good category.

Furthermore, researchers also conducted pretests on students of class VIII SMP Plus Rahmat Kediri. The pretest results obtained are as follows:

**Table 3. Pretest Results of Class VIII Learners**

| Class | VIII A | VIII B | Overall |
|---|---|---|---|
| **Complete (score above the KKM)** | 0% | 6,06 % | 3,03% |
| **Incomplete (score below the KKM)** | 100 % | 93,93% | 96,96% |

Based on the pretest scores of class VIII students of SMP Plus Rahmat Kediri, it was found that 0% of the scores of class VIII A students were above the KKM and 100% of the pretest scores were still below the KKM so the average score of class VIII B students was not complete. Meanwhile, from class VIII B students, it was found that only 6,06% of students' scores were above the KKM and 93,93% of students' scores were below the KKM so the average score of class VIII B students was not complete. Overall, it was found that 96.96% of students scored below the KKM score and only 3,03% of students scored above the KKM score. When viewed on the pretest score of students in class VIII SMP Plus Rahmat Kediri, shows that the mathematics ability in geometry material of students in class VIII SMP Plus Rahmat Kediri is still in the low category.

Based on the results of the interview questionnaire and the results of the pretest conducted with class VIII students of SMP Plus Rahmat Kediri, the conclusion that can be drawn is that there is still a phenomenon of learning loss and a cultural crisis that has not been resolved completely in students.

## DISCUSSION

Based on the results of the analysis obtained, it proves that the phenomenon of learning loss and cultural crisis among students has not been completely resolved. The phenomenon of learning loss is evidenced by the results of interviews with students who show interest in mathematics, which are in the not good category with an average percentage of 33,43%, the ability to remember math material that has been taught after a long holiday is in the not good category with a percentage of 32,42%, and based on the results of students' pretests, which show that students' ability to learn mathematics on geometry material is still below the average KKM, which is 96,96%. This is relevant to the evidence of the phenomenon of learning loss in students through data from the 2022 PISA results, which show that Indonesia's mathematical literacy ranking rose 5 positions compared to 2018, but the score decreased by 13 points **(5).** The pretest results on geometry material also show that the ability of students based on Van Hiele's theory is still at the visualization stage. This is relevant to the results of research **(8)**, which show that students' understanding is still at stage 0, namely at the visualization stage.

Furthermore, based on the results of interviews with students, it proves that the knowledge and interest of students in Kediri local culture are still in the not good category, with an average percentage of 39,54%. This is relevant to research **(12)**, which shows that many students are more interested in foreign cultures than local cultures. In addition, students mostly like to play virtual games, such as Mobile Legend, PUBG, and Free Fire, where virtual games are shown with a percentage of 78,18%. However, most students have never used virtual reality as a medium for teaching mathematics, especially in geometry material with an ethnomathematics approach to local Kediri culture. This is evidenced by the results of interviews with students regarding using mathematics learning media on virtual reality-based geometry material using an ethnomathematics approach, as shown by a percentage of 25,51%.

Seeing this situation, various efforts are needed in the field of education as a step to overcome the phenomenon of learning loss and the cultural crisis completely. One form of effort is to develop interactive learning media for mathematics based on geometry material through a virtual reality-based ethnomathematics approach. Based on research conducted by **(16)**, it is proven that the use of interactive learning media can increase students' interest and learning outcomes in learning mathematics. Therefore, researchers want to develop

interactive learning media for mathematics on geometry material through a virtual reality-based ethnomathematics approach as an effort to overcome the phenomenon of learning loss and cultural crisis completely to welcome the Golden Age Indonesian 2045.

## CONCLUSION

It can be concluded that there is still a phenomenon of learning loss and a cultural crisis that has not been resolved completely in students, as evidenced by the results of the pretest and the results of interviews with eighth grade students of SMP Plus Rahmat Kediri. Based on the pretest results, 96,96% of students scored below the KKM standard. Furthermore, based on the results of student interviews, students' interest and ability to remember math learning after a long holiday in the category are not good, with a percentage of 33,43% and 32,42%, respectively. The understanding and interest of students in the local culture of Kediri in this category is not good, with a percentage of 39,54%. In learning mathematics, 62,72 % of students in this good category have used mathematics learning media, but only 25,15% of students have applied Kediri local culture as a medium for learning mathematics. In addition, 78,18% of students are interested in virtual reality-based virtual games, but many students have never used mathematics learning media with a virtual reality-based ethnomathematics approach, as shown by a percentage of 25,51%. Seeing this phenomenon, researchers want to develop interactive learning media for mathematics on geometry material using an ethnomathematics approach to local Kediri culture based on virtual reality. The goal is to foster enthusiasm and make students interested in learning mathematics, especially geometry, while introducing them to the local culture of Kediri. With the combination of ethnomathematics and virtual reality, researchers hope that students can enjoy learning mathematics and can resolve the phenomenon of learning loss and cultural crisis in order to get to the Golden Age Indonesian in 2045.

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