Volume 06 Issue 01 (2025) Pages 67 - 83
Journal of Social Science and Education
e-ISSN: 2722-9998, P- ISSN: 2723-0007
Available online at: https://jurnal.iainponorogo.ac.id/index.php/asanka

DEVELOPMENT OF INTERACTIVE PUZZLE MEDIA TO INCREASE STUDENTS' INTEREST IN LEARNING SOCIAL AND CULTURAL PROBLEMS

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ARTICLE INFO

Article history:
Received: Month xx, 20xx
Accepted: Month xx, 20xx
Published: Month xx, 20xx

Keywords:
Interest in Learning; *Puzzle;* Social Studies Lessons

ABSTRACT

The problem of low student interest in Social Sciences subjects, especially in social and cultural issues, is a significant concern. This study aims to develop interactive puzzle-based learning media to overcome these challenges. The media can increase interest in learning and provide a fun and engaging learning experience. This study uses the Research and Development (R&D) method with the ADDIE. The subjects of the study were seventh-grade students at SMP Bahrul Maghfiroh. Data collection was carried out through questionnaires, interviews, and documentation. The questionnaire results showed increased student interest in learning after using puzzle media, with an average score of 78%. During the learning session, students looked more active, focused, and enthusiastic when discussing and arranging puzzle pieces related to the learning material. This media not only delivers the material interestingly, but also encourages critical thinking and collaboration among students. In conclusion, interactive puzzles can be an effective alternative to learning media to increase students' interest in social and cultural material in Social Sciences subjects.

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INTRODUCTION

Education is one of the main pillars in forming quality human resources. In formal education, schools are essential in equipping students with knowledge, skills, and attitudes through current development. The quality of education must constantly be improved, considering that this country has human and various natural resources, so it must be utilized optimally (Azizah & Irawan, 2024). Learning is a complex process involving interacting with the environment to acquire new knowledge, skills, and understanding. These include various physical, social, and mental activities that can occur in a series of structured learning. Teachers are essential in conveying messages and as facilitators who can inspire, motivate, and guide students (Ghozali & Irawan, 2024). In addition, one of the significant challenges in education today is fostering

students' interest in learning subjects considered less interesting or challenging to understand. One of them is the material on socio-cultural problems in Social Sciences (IPS) Subjects (Mukminan et al., 2019).

Socio-cultural problems are an essential part of social sciences that aim to help students understand social phenomena that will occur in society and foster socio-cultural awareness from an early age. However, many students are less interested in learning this material because it is considered abstract, theoretical, and less relevant to their daily lives. These impact students' low active participation in the learning process and less-than-optimal learning outcomes (Susanti, 2019). In the context of the Social Sciences Subject, especially in the material on socio-cultural issues, encouraging interest in learning is a challenge for the teachers. The material is often considered boring because it is too theoretical and does not involve concrete activities.

Observations were conducted in class 7D with seven female students at SMP Bahrul Maghfiroh, Malang City. The observation results showed that students' interest in Social Sciences (IPS) subjects was still low. This low interest was seen during the implementation of PPL 1, where at the beginning of the meeting, the researcher tried to use the lecture method and play animated videos to convey the material. However, this approach has not been able to attract students' attention optimally. On the contrary, students seemed easily bored and tended to do other activities unrelated to IPS learning. The researcher tried to apply various learning approaches, including audio, visual, audio-visual, and kinesthetic media, to adjust to students' diverse learning styles. Of all the methods that have been tested, the researcher found that puzzles are one of the most effective media in increasing student interest.

To overcome these issues, teachers must be more creative in choosing and using innovative, interesting, and appropriate learning media for students' characteristics. One alternative media that can be used is puzzles, which are classified as educational game media. Puzzles are construction games built by installing or matching boxes or specific shapes to finally form a particular pattern (Elan et al., 2017). Puzzles have great potential in increasing active student involvement in the learning process. In addition, puzzles can stimulate thinking power, increase concentration, and provide meaningful and enjoyable learning experiences (Risnawati, 2024).

Puzzle-based learning media is believed to create a more interactive and engaging learning atmosphere. When students feel happy and interested in participating in the learning process, it will indirectly increase their interest in learning. High interest in learning is one of the key factors for success in achieving learning goals. Interest in learning has a robust correlation with student learning outcomes. Interested students tend to have high motivation, dare to face challenges, and are persistent in learning.

On the other hand, students who are not interested tend to be passive, easily bored, and less responsible for their learning tasks (Adam, 2023). Therefore, interest in learning needs to receive serious attention in learning. Thus, developing puzzle media on socio-cultural problem material is the right solution to increase students' interest in learning.

In addition, the use of puzzle media aligns with the active learning approach that emphasizes direct student involvement in building their knowledge. This media also supports problem-based learning (Arifin, 2021). Where students are challenged to organize information and find solutions logically and creatively, it is necessary to conduct development research to create puzzle media that are interesting and in accordance with learning objectives and content.

In the previous research with the title of developing puzzle learning media based on make a match to increase students' interest in learning PPKn class II SD, the researcher stated that the development of puzzle media based on make a match can increase students' interest in learning because it is included in the predicate very effective and has been tested which obtained an average result of 88.3%. This research uses the same R&D development approach and the ADDIE model design (Yusuf, 2016).

Based on the background above, the author needs to conduct a study entitled "Development of Puzzle Media to Increase Students' Interest in Learning on Socio-Cultural Problems". This study aims to produce a learning media product as a suitable puzzle for the learning process and determine its effect on students' interest in learning. With the results of this study, it is expected to contribute positively to the development of innovative learning media and support improving the quality of education, especially in the Social Sciences Subject.

RESEARCH METHOD

This study uses a research and development (R&D) method. R&D research aims to validate and develop products (Sari et al., 2024). The research and development (R&D) method creates certain products while testing their effectiveness. This study adopts the ADDIE development model, which includes analysis, design, development, implementation, and evaluation (Hidayat & Nizar, 2021). These five stages are sequential and cannot be done randomly because the steps are clear and structured.

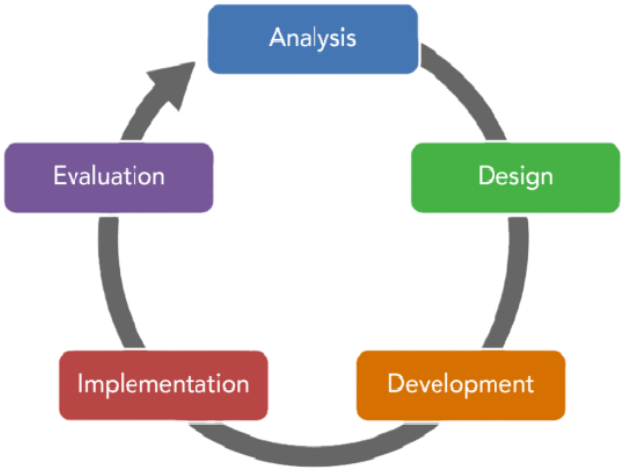


Figure 1. ADDIE Method Design

1. Analysis. At this stage, needs, student characteristics, learning objectives, and existing problems are identified. The results of this stage become the basis for designing learning media.
2. Design. This stage includes designing the material's content, learning strategies, media to be used, and appropriate evaluation. This design is made based on the results of the previous analysis.
3. Development. At this stage, the design that has been made is then developed into a real product (for example, learning media). Then, this product will be tested on a small scale to get initial feedback.
4. Implementation. The product that has been developed will be implemented in the real environment or on the target group. The goal is to see the effectiveness of the media in the actual context.
5. Evaluation. Evaluation is carried out to assess the success and quality of the product. Evaluation can be formative (carried out during the process) or summative (carried out at the end) to determine the extent to which learning objectives have been achieved.

This study uses data collection techniques like mixed questionnaires, interviews, and documentation. The data provides comprehensive information to develop effective products. The product was tested in class 7D of SMP Bahrul Maghfiroh, involving seven female students as respondents. The data obtained from the assessment results are presented in quantitative form. Furthermore, the data is processed and converted into qualitative data using a specific assessment interval determined by the following formula.

$$P = \frac{\Sigma x}{\Sigma xi} x\ 100\%$$

Symbol:

P = Validation percentage
Σx = Total number of answers for all items
Σxi = Total number of ideal values for all items
100 = Constant

The results of the calculations above are then used to determine the feasibility of the learning media. Eligibility categories can be seen in Table 1 (Muhsan et al., 2022).

Table 1. Questionnaire Assessment Criteria

Percenatage	Criteria	Description
1% - 20%	Very Unsuitable	Very Unusable
21% - 40%	Unsuitable	Unusable
41% - 60%	Less Suitable	Need Major Revision
61% - 80%	Suitable	Can be used with revision
81% - 100%	Very Suitable	Can be used without revision

To measure students' learning interest, researchers use a questionnaire. Learning interest is measured using a questionnaire because a questionnaire is an effective tool for systematically collecting data on a person's attitudes, feelings, and interests in something, including learning. Below is the Likert scale used by the researcher:

Table 2. Likert Scale

Answer Choices	Positive	Negative
Very appropriate	4	1
Appropriate	3	2
Inappropriate	2	3
Very inappropriate	1	4

RESULT AND DISCUSSION

The word "media" comes from the Latin medius, which means "middle", "intermediary", or "introduction". According to (Pagarra et al., 2022), in education, the media functions as a communication channel that connects teachers as message senders with students as message recipients. Learning media include graphic, photographic, or electronic tools to capture, process, and reconstruct visual or verbal information. Learning media is any tool that can convey teachers' messages to students to stimulate their thoughts, emotions, attention, and learning interests. The selection of media must be adjusted to the characteristics of students and learning topics so that the learning process takes place optimally (Hasan et al., 2021)

Therefore, the media is essential in delivering learning materials effectively and efficiently. In this study, the researcher used interactive puzzle media, classified as visual-interactive media that allow students to be directly involved in learning (Saleh et al., 2023). This type of media supports a constructivist approach, which is an approach that encourages students to build their understanding through direct experience and problem solving (Musfiqon, 2017)

According to Lestari & Salsabila (2023), Puzzles are a form of educational game designed to hone students' thinking skills, especially in logic and problem-solving. Technology-based and physical interactive puzzles are designed for students to interact directly with the media. Puzzle media is a game media consisting of pieces of pictures, boxes, letters, and numbers that form specific patterns. Students will desire to complete the game correctly and quickly from this pattern or picture. Playing puzzles is very interesting, requiring patience and stimulating students' thinking, so students' interest in learning increases (Yunita & Supriatna, 2021).

Based on (Yunita & Supriatna, 2021) Puzzle-making activities have benefits for the development and increasing of children's independence, namely increasing children's ability to think and learn to concentrate, training hand-eye coordination, improving cognitive skills related to learning and problem-solving skills, learning to socialize (in groups), training patience, introducing colors and shapes, training motor skills, and training concentration. Puzzle-making activities have advantages: varied

pieces, various colors, and complete puzzle shapes (Elan et al., 2017).

So it can be concluded that using Puzzle media can motivate students to learn better than conventional methods. The use of pictorial press in the form of puzzles can help the learning process of students to be more active and skilled in solving the problems they face. Puzzle activities are good observation and research tools for teachers, making it easy for teachers to observe children (Nisa et al., 2024). In addition, with puzzle-making activities, teachers can observe concentration, body movements, language, ways of thinking about completing tasks, and children's choices. The use of puzzles can increase student activity in learning.

According to (Sihombing et al., 2024), interest in learning is one of the important psychological factors that influence the success of the learning process. Interest is a feeling of preference and attachment to something or an activity without being told. Thus, interest in learning can be interpreted as a person's liking and interest in learning activities that encourage them to learn continuously. When someone is interested in a lesson, they will find it easier to understand the material, be active in learning activities, and not get bored or tired quickly. Interest in learning can also be understood as a student's positive attitude towards learning activities at and outside school (Rohmah, 2019). This interest will give rise to strong internal motivation to participate in the learning process, complete the tasks, and learn more about the learning material (Herawati et al., 2021). Therefore, interest in learning is the basic capital for students to develop intellectual potential and good learning attitudes.

Slameto explains that interest is "A high tendency of the heart towards something" (Nurhasanah & Sobandi, 2016). Interest is a relatively permanent trait in a person. Interest is a constant interest or tendency to pay attention to or be involved in something because of realizing its importance or value (Hernadijaya, 2020). Therefore, students' learning interests are vital. Until now, classroom management skills have been the teacher's ability to create and maintain an optimal teaching and learning atmosphere. This ability is closely related to the teacher's ability to develop beneficial, enjoyable conditions for students and healthy learning discipline (Aulia et al., 2021).

According to (Nurfadhillah, 2021), Learning media is essential in increasing students' interest in learning because it can convey material in a more interesting, visual, and easy-to-understand way. Through the media, students not only hear explanations but also see and interact directly with the material, so that learning becomes more lively and less boring. In addition, the media also helps adjust the learning process to the students' visual, auditory, and kinesthetic learning styles. With more enjoyable and meaningful learning experiences, students will be more motivated and interested in actively participating in lessons (Musfiqon, 2017).

Based on the research results related to "Development of Interactive Puzzle Media to Increase Students' Interest in Learning Socio-Cultural Problems Material," using the ADDIE model, which consists of 5 stages, including Analysis, Design, Development, Implementation, and Evaluation. The following are the results related to the research conducted.

1. Analysis

The analysis stage is the initial foundation for developing learning media. In this context, analysis is carried out to understand the learning needs faced by students deeply. The observations and interviews show that students' interest in learning is relatively low, mainly because the learning methods tend to be monotonous and less interesting. In addition, most students tend to be more active and motivated when learning activities are interactive or educational games.

Next, an analysis is carried out on the curriculum, basic competencies, and characteristics of the subject matter that are suitable to be developed into an interactive puzzle form. This media is designed to suit the needs of students at a certain level of education, their cognitive abilities, and their interests in visual and manipulative forms of learning. Teacher support in implementing the media is also part of the analysis stage.

The observations show that students' interest in learning several subjects, especially Social Sciences, is still relatively low. This condition was identified during the implementation of Field Experience Practice (PPL) 1, when the researcher first implemented learning with a conventional approach through lecture methods and animated video screenings. Although the material had been presented visually and informatively, students showed a passive attitude, were easily bored, and tended to be distracted by other activities that were not relevant to be learned. This finding indicates that the learning methods and media used were not fully aligned with the characteristics of the students' learning styles in the class.

As a response to these problems, researchers explored various alternative learning approaches while implementing PPL 1 and PPL 2, including audio-based, visual, audio-visual, and kinesthetic methods. The primary purpose of this exploration was to identify the most effective learning media in generating student interest, active involvement, and understanding. Based on the results of reflection on the implementation of learning, it was found that visual puzzle-based learning media combined with game elements or game-based learning had significant appeal in increasing student participation and learning motivation.

Puzzle media presents information in an attractive visual format and provides cognitive stimulation through critical thinking and problem-solving activities. In addition, this media encourages collaboration between students through fun and challenging group work. Interaction, arranging puzzles related to learning topics, creates a more dynamic, participatory, and meaningful learning atmosphere. As a result, students show increased motivation, concentration, and enthusiasm in participating in Social Science learning activities.

In addition to the effectiveness of the media, the potential for developing interactive learning media is also supported by external factors that support innovation, namely the teacher's openness to the application of new methods and media. Social Science teacher in the observed classes welcomed the use of more

creative and interactive approaches, and showed support for efforts to improve the quality of learning through innovative media. This support is essential in developing more adaptive and contextual learning strategies, especially in improving the quality of the process and results of social studies learning in schools.

Table 3. Learning Media Specifications

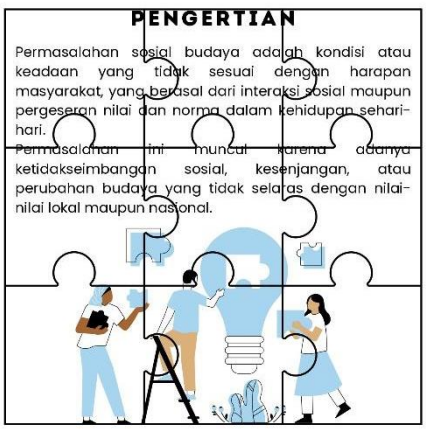
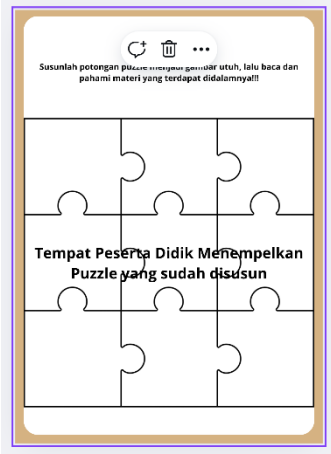
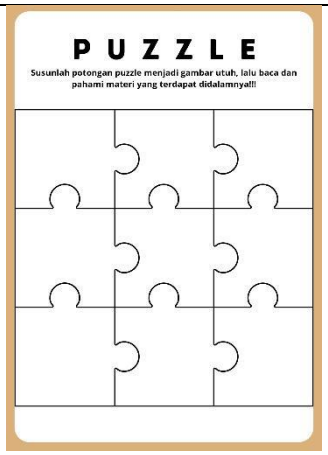
No.	Concept	Description
1.	Title	Development of Interactive Puzzle Media to Increase Students' Interest in Learning about Socio-Cultural Problems Material
2.	User	The users of this media are intended for teachers who teach Social Science subjects, with grade VII students as the main ones.
3.	Objectives	Develop valid and practical interactive puzzle media for socio-cultural problems material. In addition, another objective is to test the effectiveness of the interactive puzzle media that is developed in increasing students' interest in learning. For students, this learning media is expected to increase their enthusiasm.
4.	Type of media	A type of interactive media made from several puzzle pieces.
5.	Material guidelines	The learning material is compiled based on reference books provided by teachers at the junior high school level, with the title "Social Sciences for SMP/MTs Class VII Semester 2."
6.	Concept of the content	Socio-Cultural Problems material
7.	How to Make	This learning media uses the Canva application to create an interesting concept. Furthermore, the Canva results are printed and cut according to the puzzle shape conceptualized using Canva.
8.	Output	The final product of the development of this learning media is a puzzle, which will later be submitted to the school where the research was carried out.

2. Design

After the needs are analyzed, the next stage is to design interactive puzzle media. The design is carried out by referring to the learning objectives to be achieved. At this stage, the puzzle's form, the material presentation flow, and the visual and interactive elements that support student involvement are determined. The teaching materials are divided into small parts suitable for being packaged in the form of puzzles, so that students can learn through arranging, matching, or solving problems in a fun way. Determination of evaluation instruments is also carried out at this stage, both to assess the effectiveness of the media and to measure changes in

student learning interests. The development process will be more focused and efficient with a mature design.

Table 4. Media Design

NO	Media Design	Implementation Media
1		
2		
3		

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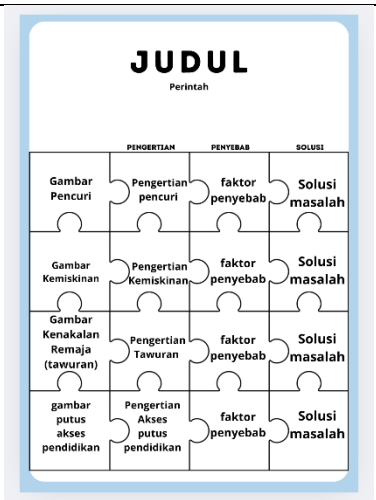
<td> 
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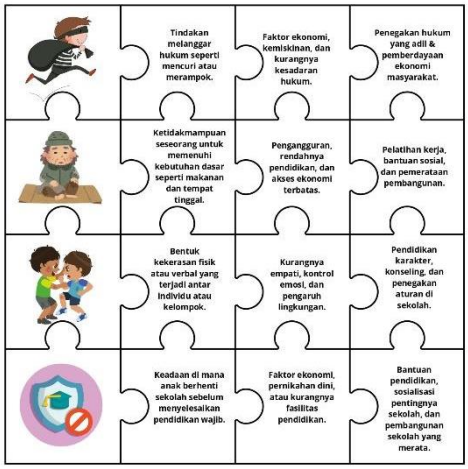
<td> 
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3. Development

The development stage is the process of concretizing the previously created design. In puzzle media development, this activity involves creating content (text, images, and animations) and compiling materials into digital form. In addition, the development stage focuses on developing and testing learning materials based on the results of the analysis and design stages. Details of activities in the development stage are the production of learning materials, programming and technology development, initial testing, and validation by experts. The main objective of development is to produce learning products ready to be tested at the implementation stage.

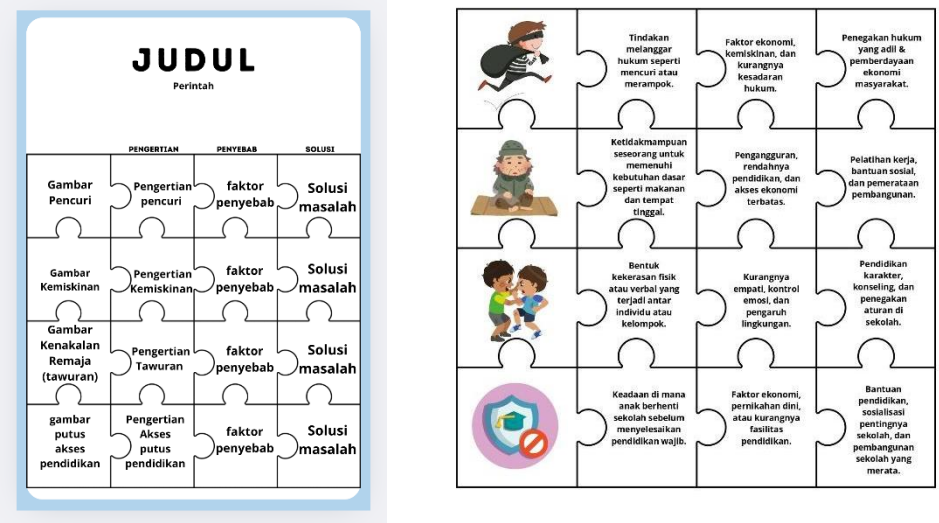

Figure 2. The shape of the puzzle from the initial concept until it becomes the form of puzzle media that will be used

Table 5. Results of Media Feasibility Test by Media Experts

No.	Aspek Penilaian	Skor
1.	Assessment Aspect	12
2.	Display Quality	18
3.	Content Quality	11
4.	Interactive	5
5.	Integration	7
6.	Usefulness	10
7.	Psychomotor Aspect	5
Total Score		**68**
Presentage		**77,2%**
Feasible Criteria		**Feasible**

The feasibility test conducted by media experts aims to obtain results and suggestions from expert validators so that the developed learning media becomes a quality product and is suitable for use. The total value obtained from the media specialist validator is 77.2%, with appropriate category or criteria. The feasibility test results conducted by the expert validator on the developed learning media obtained an overall percentage of 77.2% with a suitable category. It shows that this learning media is ideal for use as a learning medium for the material on Socio-Cultural Problems.

Table 6. Test of the Feasibility of Learning Materials by Material Experts

No.	Assessment Aspect	Score
1.	Material Relevance	10
2.	Material Organization	10
3.	Evaluation	10
4.	Language	7

5.	Learning Strategy	10
Total		**47**
Percentage		**78,3%**
Category		**Feasible**

The feasibility test results of the material expert validator on the developed learning media obtained an overall percentage of 78.3% with a feasible category. It shows that the puzzle learning media can be a learning medium for the Socio-Cultural Problems material.

Table 7. Learning Interest Questionnaire

NO	Student	Results
1	PD1	34
2	PD2	34
3	PD3	34
4	PD4	31
5	PD5	33
6	PD6	26
7	PD7	27
Total Score		**219**
Maximum Score		**280**
Percentage		**78%**

Based on the questionnaire that has been distributed to students with a total of 7 in one class, it can be seen that student interest has increased after the implementation of the Puzzle Learning Media. It can be proven based on the data from the questionnaire above, which shows that the final score is 219, with a maximum score of 280 and an average percentage of 78%. This score is included in the criteria "suitable" for social studies learning on socio-cultural problems. Although learning interest comes from within students, external factors such as teaching media still play an essential role in growing and increasing this interest. One of the media that has proven effective is interactive puzzle media. This media presents learning materials in a fun and challenging form to attract students' attention and trigger their curiosity.

4. Implementation

After the puzzle media has been developed and validated, the next stage is implementing or applying the media in a real learning environment. At this stage, the media is tested on the target student group in a typical learning atmosphere, for example, in the classroom during learning. Students are allowed to use the puzzle media in groups, with student guidance. During implementation, observations are made on student involvement, their responses to the media, and their interactions when using the media. In addition, teachers are also asked to provide feedback on the

practicality of using the media, easy access to materials, and the extent to which the media helps achieve learning objectives. This stage is crucial to see the effectiveness of the media in increasing students' interest and motivation to learn.

The figure below shows the initial activities of students in the implementation stage of learning media. In this situation, students focus on reading the Student Worksheets that have been distributed. It aims to ensure that they understand the contents and instructions in the Student Worksheet before using puzzle-based learning media. This initial understanding is essential so that students can follow learning activities smoothly and can answer questions or assignments given independently or in groups.

Figure 3. Students are reading and understanding Student Workbooks.

In this picture, the students are seen actively discussing in groups to complete the challenges from the puzzle media that has been given. The discussion shows collaboration among students in understanding the material and finding solutions together. This activity encourages social interaction and critical thinking skills. Through discussion, students can exchange understanding and clarify information from the Student Worksheet and puzzle media.

Figure 4. Students are discussing the puzzle

This figure shows the moment when students arrange a puzzle containing materials. This activity is the core of the use of the developed media. Arranging the puzzles trains students' motor skills, logical acuity, concentration, and conceptual understanding. In addition, this activity is designed to increase students' learning motivation, framed in an interesting and fun way.

Figure 5. Students are assembling puzzle learning media

5. Evaluation

Evaluation aims to measure the extent to which the developed puzzle media successfully increases students' interest in learning. Evaluation includes data collection through questionnaires, interviews, and observations to measure students' interest in learning. If the evaluation results show that the media is effective and well-received by students and teachers, then the media can be disseminated or used more widely. If there are still shortcomings, further revisions will be made to make the media more optimal.

Based on the results of the research conducted, the researcher found that in terms of media feasibility and material feasibility, both were declared "feasible" by media and material experts. So that this media can be used in the learning process in the classroom, it was stated that the results of the media feasibility test got a score of 77.2% and the results of the material feasibility test got 78.3%. In addition, to measure students' interest in learning, the researcher used a questionnaire to measure it, and the results obtained were a score of 219 with an average percentage of 78% and fell into the category of "feasible" for use in social studies learning on socio-cultural problems. In the application or implementation by researchers using puzzle media, it turns out that students appear to enjoy learning, are active in discussions, and work together. Students are trained to think and find answers to the questions given by the researcher.

CONCLUSION

Berdasarkan hasil penelitian, dapat disimpulkan bahwa media pembelajaran yang dikembangkan layak digunakan. Hal ini dibuktikan melalui hasil uji kelayakan

oleh validator materi yang memperoleh skor sebesar 78,3% dan validator media sebesar 77,2%, yang keduanya termasuk dalam kategori layak. Selain itu, berdasarkan kuesioner yang diberikan kepada 7 peserta didik dalam satu kelas, diketahui bahwa minat belajar siswa meningkat setelah diterapkannya media pembelajaran berbasis puzzle.

SUGGESTIONS

Based on the results of the research that has been conducted, there are several suggestions for further research. First, this research was conducted in one class with a limited number of students, so it is recommended that further research involve a larger and more varied sample size to obtain more general and representative results. Second, the development of interactive puzzle media into digital form or technology-based applications is highly recommended to be more in line with the characteristics of students in the digital era. Digital media is expected to increase interactivity, attractiveness, and accessibility of media in the learning process. Third, in addition to examining learning interests, further research can expand the focus on other aspects such as conceptual understanding, learning outcomes, critical thinking skills, and the ability to work together between students. Fourth, puzzle media can be combined with active learning models such as Project-Based Learning, Discovery Learning, or the STEM approach to create more meaningful and comprehensive learning. Sixth, it is also recommended to consider differences in learning styles and students' gender so that the learning strategies used can be more targeted. Finally, longitudinal research is also recommended to observe the effect of puzzle media on student interest and learning outcomes over an extended period. Thus, future research results are expected to contribute more comprehensively to developing innovative and effective learning media.

ACKNOWLEDGEMENT

With complete respect and gratitude, I express my highest appreciation to the State University of Malang, especially the Teacher Professional Education Program (PPG), for the opportunities that have been given and the invaluable guidance during the education process. The academic activities and field practices I have undergone have significantly shaped my pedagogical competence, personality, and professionalism as a prospective educator. Guidance from lecturers, mentor teachers, and all related parties is essential to strengthening my capacity as a future teacher. Hopefully, all the knowledge and experience I have gained can be implemented optimally in education to create meaningful and valuable learning for students and the nation's progress.

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