Volume 10 Number 1 February 2025

E-ISSN 2622 - 3627
P-ISSN 2502 - 5872

MATHLINE

Jurnal Matematika dan Pendidikan Matematika

Universitas Wiralodra

Editorial Team

ISSN 2502-5872 (Print)
ISSN 2622-3627 (Elektronik)

Volume 10 Number 1, February 2025, 127-142

DEVELOPMENT OF INTERACTIVE MEDIA WITH EDPUZZLE IN IMPROVING UNDERSTANDING CAPABILITY MATHEMATICAL CONCEPTS

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ABSTRACT

Based on the research results of 31 students who experienced difficulty in understanding mathematical concepts, by using Research and Development (R&D), and developing interactive media with Edpuzzle with the ADDIE model after experimental treatment, in learning some students experienced an increase in understanding of mathematical concepts, but the results of the analysis This results in an effectiveness of 0.89 with the effective criteria. After treatment was carried out through the development of interactive learning media with edpuzzle with validity of 80.73% with valid criteria, practicality of 81.0% with very practical criteria. The results of these values indicate that the media questionnaire results are suitable for use. The results of this research state that the development of interactive media with edpuzzle can effectively improve students' understanding of mathematical concepts.

Keywords: Ability to Understand Concepts, Edpuzzles, Interactive Media

How to Cite: Herwindo, R., Noer, S. H., & Sutiarso, S. (2025). Development Of Interactive Media With Edpuzzle In Improving Understanding Capability Mathematical Concepts. *Mathline: Jurnal Matematika dan Pendidikan Matematika, 10*(1), 127-142. https://doi.org/10.31943/mathline.v10i1.743

PRELIMINARY

The rapid advancements in Science and Technology (IPTEK) present a significant challenge in the contemporary educational landscape. The evolution of technology in education has increasingly embraced digital learning through modern technological media, thereby enhancing the execution of educational activities. This technological progression not only facilitates new opportunities for fostering creative, effective, and engaging learning experiences but also serves as a catalyst for innovation. One notable tool in achieving educational objectives is Edpuzzle. Edpuzzle is an online educational platform that utilizes interactive videos, enabling educators to customize learning videos for classroom use (Sirri & Lestari, 2020). It functions as an e-learning platform with a video-based learning management system, allowing students to explore and share educational materials (Hidayat, et al. 2023). Edpuzzle simplifies the learning process for students by delivering content

through interactive media (Kurniasih et al., 2023). Edpuzzle simplifies the learning process for students by delivering content through interactive media.

In mathematics education, a crucial aspect that students must grasp is the comprehension of mathematical concepts. This serves as the primary objective of all instructional materials presented by educators, who act as facilitators in aiding students to internalize the intended concepts (Yulianty, 2019). The development of this conceptual understanding enables students to approach problems logically, analyze the issues at hand, and subsequently resolve them based on the knowledge they have acquired (Aulia et al., 2020).

In comprehending mathematical concepts, students must achieve mastery of each sub-material indicator related to the concept. Mastery of these indicators is deemed essential and serves as a critical factor in students' success in grasping mathematical concepts. If students demonstrate signs of understanding during assessments, they are regarded as possessing strong conceptual understanding abilities (Effendi, 2017). By employing this context in their instruction, teachers can assist students in recognizing how the mathematical concepts learned in class can be applied in real-world scenarios (Haniah & Waluyo, 2024).

Indicators of conceptual understanding encompass the repetition of a concept, the provision of explanations on specific topics, the presentation of examples and non-examples, the demonstration of concepts through various mathematical representations, the establishment of necessary or sufficient conditions for the application and selection of certain operations, and the utilization of concepts or algorithms to address problems (Purwanti, 2016). In alignment with the findings reported by Effendi (2017), interviews with grade IX mathematics teachers revealed that out of 30 students, 10 failed to achieve satisfactory results. This failure was attributed to the students' insufficient mastery of the indicators of conceptual understanding, which hindered their ability to grasp mathematical concepts effectively.

Challenges in learning mathematics suggest that certain components of mathematical education are inadequately integrated (Sadewo et al., 2022). Learning disabilities in mathematics are conditions encountered by children, stemming from both internal and external factors. These disabilities disrupt cognitive processes, hindering their ability to engage in the standard learning trajectory, which encompasses receiving, responding to, and analyzing information acquired during mathematical instruction (Yeni, 2015).

The development of interactive Edpuzzle media presents a viable solution to address the challenges associated with students' understanding of mathematical concepts. According

to Sirri and Lestari (2020), their research indicates that Edpuzzle can be effectively utilized within WhatsApp group media for mathematics instruction; however, limitations such as students' restricted data quotas and unstable internet connectivity pose significant challenges. By employing interactive Edpuzzle media, it is anticipated that educators will find it easier to monitor students both directly and indirectly during the viewing of interactive videos that cover specific topics, as well as identify which segments of the video are either repeated or overlooked by students (Arfa et al., 2022).

Numerous studies have examined the challenges associated with creating interactive media using Edpuzzle. Notable examples include the findings of Purmintasari and Lesmana (2023), regarding the advancement of interactive media in history education (Portuna, 2023), as well as the development of interactive media in mathematics focused on power number concepts (Kurniasih, et al., 2023; Gusti et al., 2022). Additionally, Edpuzzle-based learning resources in mathematics and the formulation of educational materials through interactive videos on Islamic education have been explored (Kurniasih et al., 2023; Astriana et al., 2019) Efforts to enhance the understanding of mathematical concepts and stimulate the curiosity of class X MIPA 9 students at SMAN 4 Semarang have been implemented through a problem-based learning model supported by question cards (Purba et al., 2022), Furthermore, the ability to comprehend mathematical concepts has been assessed using the Discovery Learning and Group Investigation models at SMK Multi Karya. The outcomes of developing interactive media with Edpuzzle will serve as a crucial foundation for evaluating the validity, practicality, and effectiveness of the media.

METHODS

The objective of this research and development (R&D) methodology is to create a specific product and assess its performance. The research process utilizing the ADDIE model begins with the analysis phase, which involves identifying learning needs, analyzing student characteristics, and establishing learning objectives. The design phase focuses on formulating these objectives, selecting appropriate learning methods, and determining the media and teaching resources. The development phase encompasses the creation of teaching materials, the development of media and teaching resources, the compilation of teacher guides, and the selection of materials, with validity analysis employed to measure this stage. The implementation phase involves executing the teacher preparation program, delivering content, observing, gathering feedback, and making adjustments, with practical analysis used to assess the level of implementation. The evaluation phase, the final stage following

development, employs effectiveness analysis instruments to measure outcomes. According to Rustandi and Rismayanti (2021) the steps in developing a model consist of analysis, design, development, implementation, and evaluation. The instruments utilized in this study include various data collection techniques.

Data Collection Methods

The data collection techniques employed in this study are as follows:

Questionnaire

This questionnaire evaluates the validity of interactive media development products utilizing Edpuzzle. The validation sheet serves to assess the validity of the components within the interactive media. Data derived from product validity is grounded in the outcomes of product feasibility and practicality trials.

Interview

To acquire valid data, the researcher employed the interview method, positioning themselves as the interviewer and the educator as the resource person to extract information regarding the advancement of learning. The researcher conducted an interview with Mr. Suwarno, M.Pd., a grade IX mathematics teacher at MTs Negeri 2 South Lampung, to explore information pertinent to the development of mathematics education and comprehension of mathematical concepts.

Test

In the process of gathering research data, the researcher administered a test to assess the mathematical concept comprehension of grade IX students at MTs Negeri 2 South Lampung. Data was collected through a pretest and posttest conducted with grade IXD. The assessment consisted of descriptive questions that were utilized during the data collection phase.

Research Tools

In alignment with the objectives of the research instrument, the researcher developed and assembled the following tools:

Instrument Non Test

Instruments for the validation of interactive media utilizing Animeker and Edpuzzle were submitted to subject matter experts, esteemed lecturers, and practitioners for evaluation. This non-test instrument is designed to assess the degree of feasibility of the product derived from the development process.

Assessment Tool

This assessment tool is intended to evaluate students' proficiency in understanding mathematical concepts. The objective of this test is to gauge the degree to which students

have mastered and comprehended these concepts. The mathematical concept understanding assessment was administered to both the control and experimental classes, aiming to determine the competency test outcomes for each group. There are 31 students in class IX D at MTsN 2 South Lampung who serve as the subjects of this research. This study aims to assess the validity, practicality, and effectiveness of the media, as well as to evaluate the improvement in students' understanding of mathematical concepts.

According to Hutabri (2022), the validity criteria for the media utilized in this study are outlined in Table 1, as follows:

Table 1. Criteria for Validation Eligibility

Rating	Validation Criteria
$0.81 \leq P \leq 1.00$	Highly Valuable
$0.61 \leq P < 0.80$	Eligible
$0.41 \leq P < 0.60$	Fairly Acceptable
$0.21 \leq P < 0.40$	Impartical
$0.01 \leq P < 0.20$	Completely Undeserving

According to Rustandi and Rismayanti (2021), Table 2 presents the media utilized in this study based on the practicality criteria.

Table 2. Criteria of Practicality

Rating	Validation Criteria
$0.81 \leq P \leq 1.00$	Very Practical
$0.61 \leq P < 0.80$	Practical
$0.41 \leq P < 0.60$	Remarkably Practical
$0.21 \leq P < 0.40$	Less Practical
$0.01 \leq P < 0.20$	Impractical

To assess the effectiveness of the media, the two independent sample t-test formula (Azteria, 2020) is utilized as follows:

$$t = \frac{\bar{x}_a - \bar{x}_b}{\sqrt{\left(\frac{S_a^2}{n_a}\right) + \left(\frac{S_b^2}{n_b}\right)}}$$

Information
X_a = Mean for group a
X = Mean for group b
S_a = Standard Deviation for Group a
S_b = Standard Deviation for Group b
n_a = Quantity of samples in group a
n_b = Quantity of samples in group b

Determining the criteria for media effectiveness (Wahab et al., 2021) can be accomplished by utilizing the effectiveness table presented below:

Table 3. Criteria for Media Effectiveness

Interval	Interpretation
0.70 -1.00	Effective
0.30 – 0.69	Less Efficient
0.00 – 0.29	Ineffective

The attainment of effectiveness is contingent upon the results derived from an analysis conducted through two data sets from pretest and posttest assessments, which are evaluated using a two-sample t-test (independent t-test). This analysis serves to compare the average differences between two independent groups; for instance, one group of students may take the pretest while another group takes the posttest following a learning intervention. The two-sample t-test is employed to determine whether there is a statistically significant difference between the average pretest and posttest scores of the two groups, thereby concluding the effectiveness of the implementation of interactive media development. Edpuzzle is a platform that facilitates the creation of learning videos that engage directly with the audience. Through Edpuzzle, videos uploaded or selected from various sources, such as YouTube, can be enhanced with interactive elements, including multiple-choice questions, short answers, or voice notes that appear during playback. This feature enables students or audiences to engage directly with the material, respond to questions to assess their understanding, and receive immediate feedback.

Edpuzzle is highly effective in the educational context as it converts passive videos into more engaging and immersive tools. Users can manipulate specific points in the video to incorporate interactive elements, facilitating more structured and focused instruction. Additionally, Edpuzzle’s analytics feature enables educators or content creators to assess audience engagement and comprehension, providing data on responses and viewing duration. In summary, Edpuzzle delivers a more dynamic and enjoyable learning experience through interactive and accessible videos.

RESULT AND DISCUSSION

In the study at hand, a product was developed as an interactive media using Edpuzzle, aimed at enhancing students' comprehension of concepts. Analysis of the results, derived from interviews with mathematics teachers, revealed that the educators had never employed interactive learning media in their mathematics instruction; they relied solely on the lecture method and provided additional practice questions.

The development of interactive media utilizing Edpuzzle employs the ADDIE development model for product creation. This research model was established by two

prominent experts, Reiser and Molenda, who formulated ADDIE (Hidayat & Nizar, 2021). According to Reiser, the ADDIE framework encompasses the verbs: Analyze, Design, Develop, Implement, and Evaluate. Research conducted by Hidayat and Nizar (2021), indicates that the stages of the ADDIE model, as applied to Edpuzzle Interactive Media, consist of five phases: analysis, design, development, implementation, and evaluation. This aligns with findings from Handayani and Rahayu (2020), which also identify five stages in the development of interactive media. While this research has progressed through the development phase, it has encountered certain limitations.

The subsequent process for developing interactive media using Edpuzzle is outlined in Figure 1 as follows:

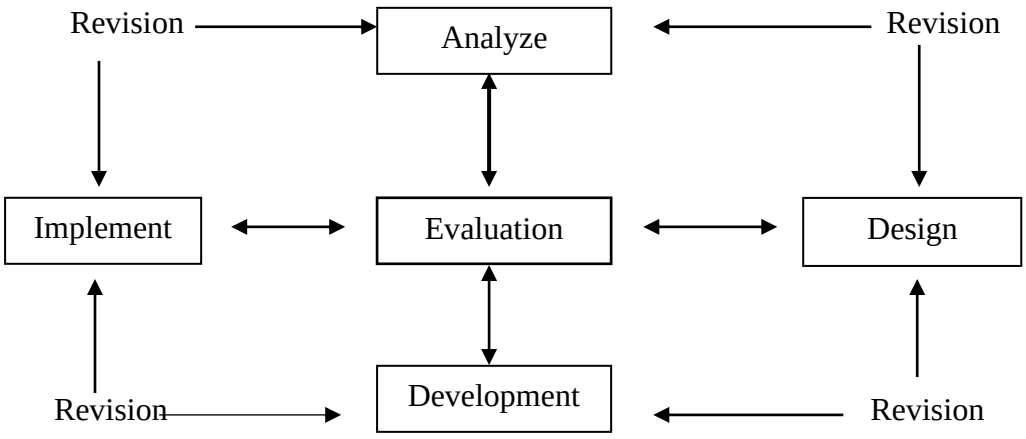

Figure 1. Development of the ADDIE Model Stages

The stages of developing interactive media utilizing the ADDIE model are as follows:

1. Analysis

The analysis phase in media development represents the foundational step undertaken to thoroughly comprehend the needs, context, and characteristics of users, as well as the environment in which the media will be utilized. This analysis seeks to identify existing challenges or requirements, establish the objectives to be met, and gain insight into the audience or end user. By performing a detailed assessment of media practicality and effectiveness, media developers can ensure that the final product is relevant, impactful, and aligned with user needs and the intended goals. This analysis phase commenced with an interview with a mathematics teacher at MTs Negeri 2 Lampung Selatan. The discussion with the mathematics teacher revealed that interactive media has not yet been employed in the teaching of mathematical concepts. Based on the conclusions drawn from a discussion with a mathematics teacher at MTsN 2 South Lampung, the development of interactive media utilizing Edpuzzle is crucial for enhancing the comprehension of mathematical

concepts. It serves as an effective solution and a supportive tool in fostering the understanding of these concepts.

2. Design

Design is the process of conceptualizing and developing a product, system, or solution intended to address a specific need or problem. It encompasses various elements, from the initial idea and structural planning to defining functionality and creating a prototype or model. In the realm of media, design pertains to the organization of visual, interactive, and functional components to ensure that the media is both effective and appealing to users. Design is an essential phase in the development of products or media, as it influences the appearance, functionality, and overall user experience. In the preliminary product design phase of interactive media utilizing Edpuzzle, this entails creating a general image on the interactive media menu, accompanied by a sketch of the page layout for an interactive media learning operation setting. The process of developing interactive media with Edpuzzle is illustrated in number 1 below:

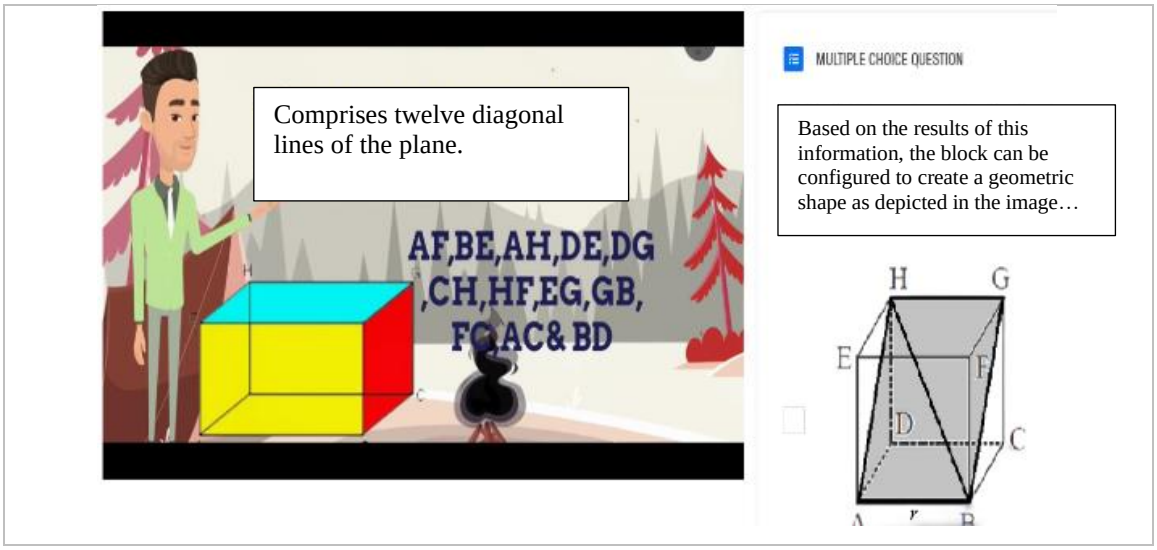

Figure 2. Interactive Media Design Process Utilizing Edpuzzle

The design process, particularly in the context of Edpuzzle, involves transforming a standard video into an interactive experience. This process incorporates questions related to the content, alongside animations, enhancing viewer engagement and comprehension.

3. Development

In the realm of interactive media like Edpuzzle, "development" pertains to the process of designing, creating, and enhancing interactive content or features intended to enrich the learning experience. The media development phase with Edpuzzle involves validated instruments, specifically media and material validation conducted by two individuals, along with validation by lecturers. The outcomes of the product development include evaluations from two expert media validators and material specialists, as detailed in Table 3, as follows:

Table 3. Validity Results of Materials and Media

No.	Validator	Percentage	Information
1.	Material expert	81.25%	Valid
2.	Media expert	80.21%	Valid
	average	80.73%	Valid

According to Table 3, the assessment results from two validators of materials and media indicate that the material validator achieved a percentage of 81.25% or 0.8125. This falls within the validity range of $0.81 \leq P \leq 1.00$, categorizing the validity results as highly appropriate (Hutabri, 2022). Regarding the material, the content is accurate, comprehensive, and aligned with the relevant curriculum, employing language that is accessible to the target audience. Based on this assessment, the media and materials no longer require revision and are ready for use in the learning process. The results indicate that the validity of the material is confirmed and does not necessitate any revisions.

The assessment results, corroborated by two expert media validators, indicate that the outcomes achieved are valid, with a percentage score of 80.21% or 0.821. Media validation serves as an evaluation of the product design produced (Wira et al., 2021). According to Hutabri (2022), if the media validation results fall within the range of $0.81 \leq P < 1.00$, the media is deemed highly valid. The validation outcomes from both media and material experts demonstrate that the developed learning media meet the established standards. In terms of media, the visual design, interactivity, and functionality are optimized, featuring elements that are engaging and easily comprehensible for the audience. This media operates effectively across various devices and supports learning objectives proficiently. These findings affirm that the media is valid and appropriate for use, with the average assessment results from the two validators for the material and media validation reaching 80.73% or 0.8073. This aligns with Hutabri (2022), which states that a score of $0.81 \leq P < 1.00$ indicates that the validity results are highly suitable.

4. Implementation

This implementation stage serves as a trial phase for the results of interactive media development involving 31 students from class IX D and one mathematics teacher at MTs Negeri 2 South Lampung. The purpose of this trial is to evaluate the practicality and effectiveness of the media utilized by the students under the guidance of one of the teachers. Based on the findings of the practicality assessment conducted among teachers and students, the results displayed in Table 4 are as follows:

Table 4. Outcomes of Media Practicality Analysis from Educators and Learners

No.	Media Practicality	Percentage	Information
1.	Student	80%	Practical
2.	Teacher	81%	Very Practical
	average	81%	Very Practical

Based on Table 4 above, the results indicate that 80% of students found the media to be practical, while the validation of practicality by the mathematics subject teacher yielded an achievement percentage of 81%, categorized as very practical. Understanding the practicality of learning media is essential, as it is one of the criterion for effective learning media is its user-friendliness (Annisa et al., 2020). According to the two practicality assessments, 81% of respondents rated it as very practical, indicating that the media is appropriate for use.

5. Evaluation

The final section conducts an analysis of the effectiveness test of a product aimed at enhancing the comprehension of mathematical concepts among the IX D students of MTsN 2 South Lampung. This is achieved through a pre-test and post-test data analysis utilizing a written assessment with specific indicators. Furthermore, the effectiveness of the media in improving students' understanding of mathematical concepts is presented in Table 5 as follows:

Table 5. Results of the Effectiveness of the Paired Sample T-Test

Data	Number of Students	Average	Standard Deviation	Effectiveness
Pre test	31	35	21	0.89
Post test	23	55	25	

The effectiveness analysis results, derived from a media effectiveness experiment utilizing a two-sample t-test, yielded a value of 0.89. This result falls within the effective range of 0.70 to 1.00 (Wahab et al., 2021). The effectiveness score of 0.89 indicates that the development of interactive media using Edpuzzle is effective in enhancing students' comprehension of mathematical concepts. The Evaluation Stage follows the implementation phase of the media, during which 31 students from class IXD and one mathematics teacher at MTsN 2 South Lampung have executed the implementation of the media developed through Edpuzzle. This evaluation stage serves as an assessment of the media's feasibility, practicality, and effectiveness. The outcomes of these stages are presented in Table 6 and Figure 3 as follows:

Table 6. Outcomes of the ADDIE Stage

Test Outcomes	Result	Criteria
Validity	80.73%	Valid
Practicality	81%	Very Practical
Effectiveness	89%	Effective

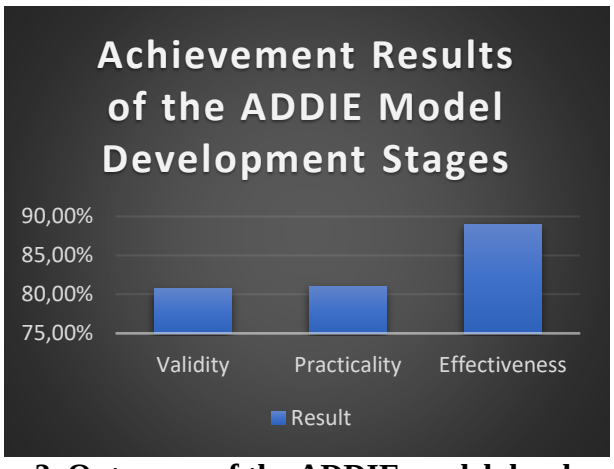

Figure 3. Outcomes of the ADDIE model development phases

Based on the findings presented in Table 6 and the number 2, the evaluation of the ADDIE development stages for media development indicates that the feasibility stage achieves a very valid criterion, with a score of 80.73% or 0.873. According to Hutabri (2022), if the material's validity falls within the range of $0.81 \leq P \leq 1.00$, the validity results are deemed very feasible, rendering the media suitable for use. The practicality stage of the media attained a score of 81.00% or 0.81; if the practicality level is $0.81 \leq P \leq 1.00$, the criteria are classified as very practical and applicable (Rustandi & Rismayanti, 2021). Furthermore, the media's effectiveness reached a score of 0.89; if the effectiveness level is between 0.70 - 1.00, this indicates that the effectiveness criteria have been met (Wahab et al., 2021). In addition to the development stages, the study also identifies implications and limitations. According to Giyanto et al (2020) outline six limitations in their research: sample limitations, as this study utilizes a sample from a single class or school, which restricts the generalizability of the results to a broader population; time constraints, as the brevity of the study hinders the acquisition of long-term results regarding the use of Edpuzzle on students' problem-solving skills; variations in student backgrounds, since this study does not account for the academic backgrounds and abilities of students, which may influence learning outcomes; technology skills, as not all students possess the same level of technological proficiency, potentially affecting their interactions with Edpuzzle; motivational factors, as this study does not conduct an in-depth exploration of elements that could impact learning effectiveness and access to technology; and finally, some students may encounter barriers to device access and internet connectivity, which can hinder their ability to engage in online learning.

Based on the aforementioned explanation, the limitations of this research, as generally encountered by students, stem from time constraints, disparities in student backgrounds, and differences in technological proficiency. The findings of the study reflect the outcomes derived from the development of interactive media utilizing Edpuzzle through the ADDIE model. The ADDIE framework encompasses five stages: Analyze, Design, Implement, and Evaluate (Hidayat & Nizar, 2021). The data collected indicates that mathematics teachers and all grade IX D students at MTs Negeri 2 Lampung Selatan in 2024 provided a favorable evaluation of the mathematics learning media. Both teachers and students expressed a strong preference for the media, particularly the interactive components developed with Edpuzzle, which facilitate a better understanding of mathematical concepts. Students who have grasped the concepts effectively during the learning process are likely to

achieve higher academic performance, as they find it easier to engage with the material (Yuliani et al., 2018).

This is evident from the results of the assessment of the practicality instrument for a media, which yields data on field practice at MTs Negeri 2 South Lampung. In addition to theoretical components, practical application is also included. One phase of the practicality test, which evaluates both expectations and actual outcomes, involves requesting students to complete a user response questionnaire or practicality questionnaire (Annisa et al., 2020). The results from the completed questionnaires indicate that the majority of students believe that learning mathematics through Edpuzzle represents a significant innovation that enhances their motivation and interest in learning (Sugestiana & Soebagyo, 2022).

The practicality test phase is the outcome of the Edpuzzle media development trial, indicating that the feedback from students and mathematics teachers at MTs Negeri 2 Lampung Selatan is favorable. This suggests that the media instructor's assessment results are practical. This can serve as a reference for future research, particularly for other media development studies related to Edpuzzle. Despite the diligent execution of this research, certain limitations and weaknesses remain unavoidable. Notably, the data source is exclusively derived from the responses to the instrument questionnaire. Consequently, there may be subjective elements influencing the completion of the questionnaire, including the timing of responses and the inherent characteristics of the respondents, such as honesty and apprehension in answering the assessment instrument. Furthermore, due to time constraints and responsibilities, respondents may not engage in thoughtful consideration when providing answers, often prioritizing expedience over accuracy.

In addition to existing research data sources, further investigation is required to assess the responses of mathematics teachers regarding students' comprehension of mathematical concepts through interactive media, such as Edpuzzle, at MTs Negeri 2 in South Lampung Regency in 2024. This necessity arises from the limited factors currently available to evaluate the reactions of mathematics teachers to students' understanding of mathematical concepts via interactive media.

CONCLUSION

The findings of the study regarding the development of the ADDIE model for interactive media utilizing Edpuzzle demonstrate its effectiveness in enhancing the comprehension of mathematical concepts, evidenced by a significance level of 0.00 (two-tailed). The media's validity was assessed at 80.73%, while the effectiveness results reached

81.00%. The conclusions drawn from various analyses indicate that the media meets valid criteria for validity, achieves a high level of practicality, and demonstrates effective criteria in terms of effectiveness. These findings suggest that students initially perceive mathematics as challenging, particularly in grasping mathematical concepts. However, following the implementation of Edpuzzle's interactive media through educational videos, students found that understanding mathematical concepts was not as daunting as they had previously believed.

Based on the findings of this study, additional measures are required in the advancement of interactive media utilizing Edpuzzle to evaluate the effectiveness of media in enhancing the comprehension of mathematical concepts in addressing the challenges of the 21st century. Furthermore, this study serves as a reference for other research related to the development of interactive media through comprehensive assessment instruments.

REFERENCES

Annisa, A. R., Putra, A. P., & Dharmono. (2020). Kepraktisan Media Pembelajaran Daya Antibakteri Ekstrak Buah Sawo Berbasis Macromedia Flash Practicality Of Learning Media for Antibacterial Power of Sapodilla Fruit Extract Based Macromedia Flash. *Inovasi Pendidikan Sains*, *11*(1), 76. https://dx.doi.org/10.20527/quantum.v11i1.8204

Arfa, A. N., Supriyatin, T., Syafa'atun, S., & Kurniawan, M. A. R. (2022). Mengembangkan Media Pembelajaran Interaktif Dengan Edpuzzle di SMPN 11 Bekasi. *Jurnal Pengabdian Masyarakat Biologi Dan Sains*, *1*(2), 15–24. https://doi.org/10.30998/jpmbio.v1i2.1294

Astriana, Waluyo, S. B., & Siswanto, B. (2019). Upaya Meningkatkan Kemampuan Pemahaman Konsep Matematis dan Rasa Ingin Tahu Siswa Kelas X MIPA 9 SMA N 4 Semarang Melalui Model Problem Based Learning Berbantuan Kartu Soal. *PRISMA, Prosiding Seminar Nasional Matematika*, *2*(1), 893–898. https://journal.unnes.ac.id/sju/index.php/prisma/

Aulia, J., Fitraini, D., & Risnawati, R. (2020). Pengaruh Penerapan Model Pembelajaran Scaffolding terhadap Kemampuan Pemahaman Konsep Matematis Berdasarkan Self Efficacy Siswa SMP/MTs. *JURING (Journal for Research in Mathematics Learning)*, *3*(4), 367. https://doi.org/10.24014/juring.v3i4.10647

Azteria, V. (2020). *Universitas esa unggul 2019-2020*. *Kml 366*, 0–9.

Effendi, K. N. S. (2017). Pemahaman Konsep Siswa Kelas Viii Pada Materi Kubus Dan Balok. *Symmetry: Pasundan Journal of Research in Mathematics Learning and Education*, *2*(4), 87–94. https://doi.org/10.23969/symmetry.v2i2.552

Gusti, I., Ngurah, A., Jayantika, T., Made, N., & Andini, P. (2022). Media Pembelajaran Berbasis Edpuzzle Pada Pembelajaran Matematika. *Jurnal Edukasi Matematika Dan Sains*, *XI*(2), 1. https://doi.org/10.5281/zenodo.7367399

Handayani, D., & Rahayu, D. V. (2020). Pengembangan Media Pembelajaran Interaktif Berbasis Android Menggunakan Ispring Dan Apk Builder Untuk Pembelajaran Matematika Kelas X Materi Proyeksi Vektor. *M A T H L I N E Jurnal Matematika Dan Pendidikan Matematika*, *5*(1), 12–25. https://doi.org/10.31943/mathline.v5i1.126

Haniah, R. N., & Waluyo, M. (2024). *Development Of Computational Mathematic Thinking Test Instruments Based On Computered*. *9*(3), 675–690. https://doi.org/10.31943/mathline.v9i3.648

Hidayat, F., & Nizar, M. (2021a). Model Addie (Analysis, Design, Development, Implementation and Evaluation) Dalam Pembelajaran Pendidikan Agama Islam. *Jurnal Inovasi Pendidikan Agama Islam (JIPAI)*, *1*(1), 28–38. https://doi.org/10.15575/jipai.v1i1.11042

Hidayat, S. M., Nana, & Makiyah, Y. S. (2023). Efektivitas Penggunaan Media Pembelajaran Edpuzzle Berbasis Video Terhadap Hasil Belajar Peserta Didik pada Materi Suhu dan Pemuaian. JIPFRI (Jurnal Inovasi Pendidikan Fisika Dan Riset Ilmiah), 7(2), 72–81. https://doi.org/10.30599/jipfri.v7i2.2183

Hutabri, E. (2022a). Validitas Media Pembelajaran Multimedia Pada Mata Pelajaran Simulasi dan Komunikasi Digital. *Snistek*, 296–301. https://ejournal.upbatam.ac.id/index.php/prosiding/article/view/5363

Kurniasih, S. R., Nugraha, M. S., & Muslih, H. (2023). Pengembangan Bahan Ajar Video Interaktif berbasis Edpuzzle dalam Pembelajaran Pendidikan Agama Islam. *Jurnal Pendidikan Agama Islam Al-Thariqah*, *8*(2 SE-Articles), 245–264. https://doi.org/10.25299/al-thariqah.2023.vol8(2).14513

Yuliani, N. E., Pahlawan Tuanku Tambusai, U., & Tuanku Tambusai No, J. (2018). *Kemampuan Pemahaman Konsep Matematis Siswa Kelas VIII SMPN 1 Kuok Melalui Model Pembelajaran Koopearatif Tipe Group Investigation*. *2*(2), 91–100. https://doi.org/10.31004/cendekia.v2i2.51

Portuna, A. (2023). Pengembangan Media Pembelajaran Interaktif Matematika Menggunakan Edpuzzle Pada Materi Bilangan Berpangkat. Jurnal Kongruen, 3(1), 52–61. https://jurnal.unsil.ac.id/index.php/kongruen/article/view/11437

Purba, P. A., Sitompul, P., & Napitupulu, E. E. (2022). Kemampuan Pemahaman Konsep Matematika Menggunakan Pembelajaran Discovery dan Group Investigation di SMK Multi Karya. *Paradikma Jurnal Pendidikan Matematika*, *15*(2), 85–93. https://digilib.unimed.ac.id/id/eprint/58485/

Purmintasari, Y. D., & Lesmana, C. (2023). Pengembangan Media Pembelajaran Interaktif Edpuzzle dalam Pembelajaran Sejarah. Fajar Historia: Jurnal Ilmu Sejarah Dan Pendidikan, 7(2), 197–209. https://doi.org/10.29408/fhs.v7i2.12370

Rustandi, A., & Rismayanti. (2021). Penerapan Model ADDIE dalam Pengembangan Media Pembelajaran di SMPN 22 Kota Samarinda. *Jurnal Fasilkom*, *11*(2), 57–60. https://doi.org/10.37859/jf.v11i2.2546

Sadewo, Y. D., Purnasari, P. D., & Muslim, S. (2022). Filsafat Matematika: Kedudukan, Peran, Dan Persepektif Permasalahan Dalam Pembelajaran Matematika. *Inovasi Pembangunan : Jurnal Kelitbangan*, *10*(01), 15–28. https://doi.org/10.35450/jip.v10i01.269

Sirri, E. L., & Lestari, P. (2020). Implementasi Edpuzzle Berbantuan Whatsapp Group Sebagai Alternatif Pembelajaran Daring Pada Era Pndemi. *Jurnal Pendidikan Matematika Indonesia*, *5 Nomor 2* (September), 67–72. https://journal.stkipsingkawang.ac.id/index.php/JPMI/issue/archive

Sugestiana, S., & Soebagyo, J. (2022). Respon Siswa Terhadap Implementasi Media Edpuzzle dalam Pembelajaran Matematika di Masa Pandemi Covid 19. *Jurnal Basicedu*, *6*(2), 2637–2646. https://doi.org/10.31004/basicedu.v6i2.2439

Wahab, A., Junaedi, J., & Azhar, Muh. (2021). Efektivitas Pembelajaran Statistika Pendidikan Menggunakan Uji Peningkatan N-Gain di PGMI. *Jurnal Basicedu*, *5*(2), 1039–1045. https://doi.org/10.31004/basicedu.v5i2.845

Wira, A., Hamka, J., Tawar Padang, A., & Barat, S. (2021). *Validitas dan Efektivitas Media Pembelajaran Berbasis Android Mata Pelajaran Komputer dan Jaringan Dasar Pendidikan Teknologi dan Kejuruan, Universitas Negeri Padang addres, telp/fax*. https://doi.org/10.37859/jeits.v3i1.2602

Yeni, E. M. (2015). Kesulitan Belajar Matematika Di Sekolah Dasar. Jurnal Pendidikan Dasar, 2(2), 1–10. https:// jfkip.umuslim.ac.id/index.php/jupendas/article/view/231

Yulianty, N. (2019). Kemampuan Pemahaman Konsep Matematika Siswa Dengan Pendekatan Pembelajaran Matematika Realistik. *Jurnal Pendidikan Matematika Raflesia*, *4*(1), 60–65. https://doi.org/10.33449/jpmr.v4i1.7530