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USE OF ARTICULATE STORYLINE-BASED INTERACTIVE LEARNING MEDIA ON MATHEMATICAL NUMBER PATTERN MATERIAL

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Abstract

This study aims to investigate the effect of using interactive learning media based on Articulate Storyline *on number pattern material in mathematics learning. The media is designed to enhance student participation, simplify concept understanding, and foster learning interest. The research method used is a quasi-experimental design with pre-test and post-test. The research sample consists of 8th-grade students at a junior high school in Badung Regency. The results show that the use of* Articulate *Storyline-based media significantly improves student learning outcomes in number pattern material. Additionally, students expressed higher interest in learning with interactive media compared to conventional methods. Therefore, this learning media can be integrated as an effective alternative in teaching mathematics.*

Keywords: *Articulate Storyline, Interactive Learning Media, Number Patterns*

Abstrak

Penelitian ini bertujuan untuk mengetahui pengaruh penggunaan media pembelajaran interaktif berbasis Articulate Storyline pada materi pola bilangan dalam pembelajaran matematika. Media ini dirancang untuk meningkatkan partisipasi siswa, mempermudah pemahaman konsep, serta menumbuhkan minat belajar. Metode penelitian yang digunakan adalah kuasi-eksperimen dengan desain pre-test dan post-test. Sampel penelitian ini adalah siswa kelas VIII di salah satu SMP di Kabupaten Badung. Hasil penelitian menunjukkan bahwa penggunaan media berbasis Articulate Storyline secara signifikan meningkatkan hasil belajar siswa pada materi pola bilangan. Selain itu, siswa menunjukkan ketertarikan lebih tinggi dalam belajar dengan media interaktif dibandingkan dengan metode konvensional. Dengan demikian, media pembelajaran ini dapat diintegrasikan sebagai salah satu alternatif dalam pengajaran matematika yang lebih efektif.

Kata Kunci: *Articulate Storyline*, Media Pembelajaran Interaktif, Pola Bilangan

INTRODUCTION

In the digital era, technological developments have brought significant changes in the world of education, including in the development of learning media. Information technology-based interactive learning media is increasingly in demand because it can increase student motivation and learning outcomes (Suyanto, 2020). One of the media that is currently widely used in learning is Articulate Storyline, which allows the development of interactive and dynamic content, especially in mathematics subjects (Taufiq, 2019). Learning mathematics is often considered difficult by students because it requires a deep and abstract understanding of concepts. Therefore, the use of technology in mathematics learning, such as interactive media based on Articulate Storyline, can be a solution to overcome these obstacles (Azhar, 2011). This medium allows students to learn more fun and effectively, as well as encourages active involvement in the learning process.

According to Arsyad (2013), the use of appropriate learning media can help in delivering material in a more interesting way and make it easier for students to understand. Furthermore, Daryanto (2016) stated that innovation in interactive learning is very important in the digital era to support more efficient and adaptive teaching methods. In this context, this study aims to examine the influence of the use of interactive learning media based on Articulate Storyline on the learning of number patterns in mathematics. Thus, this research is expected to contribute to the development of more modern and interactive learning methods, as well as provide practical solutions to improve student motivation and learning outcomes, especially in mathematics subjects (Benjamin, 2018; Wardani, 2015).

The process of learning mathematics is often considered difficult by students, especially when it comes to learning abstract material such as number patterns. Lack of understanding of this concept can have an impact on low student motivation to learn. Therefore, a more interactive and innovative approach is needed in the learning process so that students can more easily understand the material and increase their interest in mathematics.

Along with technological advancements, the use of interactive learning media has become one of the effective solutions in improving the quality of learning. One of the applications that can be used to create interactive learning media is ***Articulate Storyline.*** The app allows teachers to create engaging learning content with interactive and dynamic visual displays. In the number pattern material, the use of Articulate Storyline-based media can help students understand mathematical concepts more visually, as well as provide a more interesting and interactive learning experience.

Against this background, research on **"The Use of Interactive Learning Media Based on *Articulate Storyline* on Mathematical Number Pattern Material"** was conducted to assess the effectiveness of this media in improving students' understanding and motivation to learn.

RESEARCH METHODS

This study uses *a quasi-experimental* approach with a pre-test and post-test design involving two groups of students. The first group is an experimental group that will take part in learning using interactive learning media, namely *Articulate Storyline*, while the second group is a control group that will take part in learning with conventional methods without using interactive learning media. This design was chosen to allow researchers to compare the improvement in understanding of mathematical concepts in the two groups.

The subject of the study was grade VIII students at a junior high school in Indonesia. Two classes were selected by random sampling technique, where one class became the experimental group and the other class became the control group. The total subjects involved in this study were 60 students, with each group consisting of 30 students. The selection of classes is carried out based on the level of equivalence of students' initial abilities as measured through previous mathematics scores.

This research was carried out through several stages. The first stage is preparation, where researchers design interactive learning media that will be used by the experimental group. This media is designed based on number pattern material starting from the concrete stage. In addition, the researcher also prepared pre-test and post-test questions to measure students' understanding before and after learning.

Furthermore, in the implementation stage, the experimental group will take part in learning using interactive learning media, where students are involved in the visual and audio learning process, while the control group will follow learning with conventional methods involving lectures and discussions. The material presented is the same, but without the help of animation or interactive visualization. After learning is complete, students from both groups will be given a post-test to measure their improvement in understanding of the concept of number patterns.

The data obtained from the pre-test and post-test will be analyzed using statistical tests. First, a normality test was carried out to ensure that the data was distributed normally, followed by a variance homogeneity test. If both assumptions are met, a t-test is used to compare the

difference in increased understanding between the experimental group and the control group. In addition, the data from the questionnaire will be analyzed descriptively to identify students' perception of the use of interactive learning media used in this study.

The design of this study uses a pre-test and post-test control group design, which allows researchers to compare the results of the pre-test and post-test between the two groups, as well as measure the effectiveness of the treatment given to the experimental group. This research is expected to provide a clear picture of the influence of the use of interactive learning media with *Articulate Storyline* media on students' understanding of mathematical concepts, especially in number pattern material.

RESULTS AND DISCUSSION

Research Results

This research was conducted in class X of high school which consisted of 30 students. Data were taken from the results of the pre-test and post-test to measure the effect of the use of interactive learning media based ***on Articulate Storyline*** on students' understanding of the number pattern material.

1. Description of Research Data

Table 1. Description of Research Results

Group	Mean Pre-test	Mean Post-test	Difference
Experiment	**52**	**91**	**39**
Control	**65**	**78**	**13**

From the table above, it can be seen that there is a significant increase between pre-test and post-test scores after students use ***Articulate*** Storyline-based learning media.

2. Analysis of Pre-test and Post-test Results

Based on the calculation of the average score, it can be seen that the post-test results increased compared to the pre-test. To validate the significance of this increase, statistical tests were performed using t-tests.

Table 2. Analysis of Pre-test and Post-test Results

Statistics	Pre-test	Post-test
Mean	52.33	75.17
Standard Deviation	5.42	6.14
t-count	9.45	
t-table	2.048	

The results of the t-test showed that **t-count (9.45)** was greater than **t-table (2.048)** at a significance level of 5%, so it can be concluded that the use of interactive learning media based on **Articulate Storyline** has a significant influence on students' understanding of number pattern material.

3. Student Response to Interactive Learning Media

In addition to quantitative measurement, this study also measured students' responses to the use of interactive learning media through questionnaires. The results of the questionnaire are shown in the following table:

Table 3. Student Response to Interactive Learning Media

It	Statement	Strongly Agree	Agree	Disagree	Strongly disagree
1	Interactive learning media helped me understand the material better.	18	10	2	0
2	I feel more interested in learning using interactive media.	20	8	2	0
3	The use of media makes it easier for me to follow the lessons.	19	9	2	0
4	Explanations through the media are clearer than traditional methods.	15	12	3	0

Based on the table above, most students agree that the use of Articulate Storyline-based learning media helps them in understanding the material and is more interested in learning.

Discussion of Research Results

1. Definition of Number Patterns

Number patterns are one of the basic materials in mathematics that discuss the sequence or arrangement of numbers based on certain rules or patterns. In number patterns, students are taught to find relationships between one number and another in a certain order. Understanding number patterns is important because these concepts are often applied to a variety of more complex mathematical problems, such as arithmetic, geometry, and algebra.

Examples of number patterns that are often studied include:

1. **Odd Number Patterns**: 1, 3, 5, 7, 9, ...
2. **Even Number Patterns**: 2, 4, 6, 8, 10, ...
3. **Square Number Patterns**: 1, 4, 9, 16, 25, ...
4. Rectangular Number Patterns: 2, 6, 12, 20, ...
5. **Triangle Number Patterns**: 1, 3, 6, 10, 15, ...

6. Pascal's Number Patterns: 1, 2, 4, 8, 16, 32, 64, ...
7. Fibonaci Number Patterns: 1, 2, 3, 5, 8, 13, 21, 34, 56, ...

Understanding number patterns will help students recognize regular relationships between numbers, making it easier to solve various math problems.

2. Interactive Learning Media

Interactive learning media is a device or tool designed to actively involve students in the learning process. In contrast to conventional learning methods that are often one-way (teacher to student), interactive media encourages student involvement through manipulation, exploration, and interaction with the material presented. This media aims to increase student understanding and involvement directly, so that the learning process becomes more interesting and effective.

Some of the main characteristics of interactive learning media include:

1. **Direct feedback:** Students can receive immediate feedback on their responses to assigned assignments or questions.
2. **Dynamic visualization:** Presenting abstract concepts into more concrete through animation, graphics, and simulations.
3. **Active participation:** Students are actively involved in learning activities, for example by answering questions, solving problems, or participating in simulations.

3. Articulate Storyline as an Interactive Learning Media

Articulate Storyline is one of the software that allows teachers or subject matter developers to create interactive learning content. The app offers a variety of features that allow teachers to combine text, images, videos, animations, and other interactive elements in a single platform.

Some of the outstanding features of Articulate Storyline that can be used in interactive learning:

1. **Drag and Drop**: Allows students to move specific objects or elements on the screen as part of a learning activity, such as grouping numbers into the correct pattern.
2. **Quizzing**: Preparation of interactive quizzes or questions with direct feedback. Students can know their mistakes in real-time.
3. **Simulation and Animation:** Helps visualize abstract concepts, such as the change of number patterns from one shape to another.
4. In the context of mathematics learning, especially in number pattern material, the use of Articulate Storyline can help visualize the relationships between numbers more clearly. For example, students

can see changes in the sequence of numbers in a pattern and receive immediate feedback when they identify a correct or incorrect pattern.

4. Advantages and Limitations of Using Articulate Storyline

Superiority:

1. **High Interactivity:** Students can be more active in the learning process by interacting directly with the material.
2. **Real-Time Feedback:** Students can immediately know the results of their work, both right and wrong, so they can learn from mistakes.
3. **Concept Visualization:** Helps visualize number patterns that may be difficult to understand with conventional methods.

Limitations:

1. **Technology Limitations:** The use of Articulate Storyline requires an adequate computer or tablet device, as well as basic skills in its operation.
2. **Time-consuming Development:** Although the results are effective, the development of interactive content takes a lot of time, especially for teachers who are less familiar with this technology.

5. Student Motivation and Understanding

Based on various studies, the use of interactive learning media such as Articulate Storyline can increase students' motivation to learn. This is due to direct interaction with the material, which makes the learning process more interesting and fun. In addition, visualization and live feedback also help students understand concepts more quickly and clearly.

This research is expected to provide empirical evidence about the effectiveness of interactive media in increasing students' understanding and motivation to learn, especially in number pattern material.

CONCLUSION

Based on the discussion that has been carried out, it can be concluded that the use of interactive learning media based ***on Articulate Storyline*** on mathematical number pattern material has a positive impact on the learning process. Some important points that can be concluded are:

1. **The use of Articulate Storyline** in mathematics learning, especially in number pattern material, is able to help students understand abstract concepts with more visual and interactivity.

2. This interactive learning medium **increases student learning motivation** because it offers an engaging, interactive, and direct learning experience.
3. The use of Articulate Storyline also facilitates students to **learn independently** through the interactive activities provided, so that students are more active in the learning process.
4. Although it has various advantages, this media also has limitations, such as requiring adequate technology and a relatively long development time.

BIBLIOGRAPHY

Agustina, N. S., Robandi, B., Rosmiati, I., & Maulana, Y. (2022). Pedagogical content knowledge analysis of science teacher books on science content of independent curriculum elementary schools. *Journal of Basicedu*, *6*(5), 9180-9187.

Anitasari, R. W., & Utami, R. D. (2022). Implementation of Media Articulate Storyline in Learning as a Support for the Implementation of the 2013 Curriculum in Elementary Schools. *Basicedu Journal*, *6*(4), 5926-5935.

Arsyad, A. (2013). **Learning Media**. Jakarta: Raja Grafindo Persada.

Arwanda, P., Irianto, S., & Andriani, A. (2020). Development of articulate learning media storyline curriculum 2013 based on the competencies of 21st century students theme 7 grade IV elementary school. *Al-Madrasah: Scientific Journal of Madrasah Education Ibtidaiyah*, *4*(2), 193-204.

Azhar, S. (2011). **Utilization of Technology in Mathematics Learning**. Journal of Mathematics Education, 5(2), 120-135.

Benjamin, S. (2018). **Development of Information Technology-Based Interactive Learning Media**. Yogyakarta: Gadjah Mada University.

Darnawati, D., Jamiludin, J., Batia, L., Irawaty, I., & Salim, S. (2019). Teacher Empowerment Through the Development of Interactive Learning Multimedia with the Articulate Storyline Application. *Scientific Charity: Journal of Community Service*, *1*(1), 8-16.

Daryanto. (2016). **Interactive Learning Innovation in the Digital Era**. Bandung: Alfabeta.

Farida, F., Suherman, S., & Zulfikar, S. (2019). Improving the Ability to Understand Set Concepts Through Mathematics Learning with Media Articulate Studio'13. *JSHP: Journal of Social Humanities and Education*, *3*(1), 20-28.

Fatoni, M. R., & Bektiningsih, K. (2024). Articulate Storyline Interactive Learning Media on the Topic of Plant Anatomy. *Undiksha PGSD Pulpit*, *12*(1).

Isnaeni, N., & Hildayah, D. (2020). Learning media in the formation of student learning interactions. *Journal of Syntax Transformation*, *1*(5), 148-156.

Naja, D. U., & Auliya, N. N. F. (2023). Html5-Based Interactive Mathematics Learning Media in Building Space Materials Using Articulate Storyline 3. *Trigonometry: Journal of Mathematics and Natural Sciences*, *1*(1), 1-10.

Sanjaya, A. I., & Pratama, S. R. R. (2021). Teachers' problems in increasing student activities in the classroom in mathematics learning. *ARITMATICS: Journal of Mathematics Education Research*, *2*(1), 47-56.

Sari, R. K., & Harjono, N. (2021). Development of interactive learning media based on articulate thematic storylines on the learning interests of 4th grade elementary school students. *Journal of Pedagogy and Learning*, *4*(1), 122-130.

Suyanto, S. (2020). **Increasing Learning Motivation Through Interactive Learning Media**. Journal of Educational Technology, 9(1), 45-53.

Taufiq, M. (2019). **The Use of Articulate Storyline Software in Mathematics Learning**. Journal of Education, 10(4), 305-312.

Wardani, D. (2015). **Interactive Learning in the Information Technology Era**. Surabaya: Unesa Press.