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Analysis of the Use of Digital Puzzle Media on Elementary School Student's Learning Motivation (Case Study of 3rd Grade Students at SDN 1 Sajen Academic Year 2025/2026)

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Abstract
This study addresses the limited use of instructional media by elementary school teachers in fostering students' learning motivation in Science subjects. The purpose of this study is to analyze the use of digital puzzle media in enhancing students' learning motivation. This research employed a qualitative approach with a case study design conducted at SD N 1 Sajen. The participants consisted of 31 third-grade students, including 19 boys and 12 girls. The findings show that digital puzzle media effectively increase students' motivation and enthusiasm in Science learning. Observation and documentation results indicate that the media attract students' attention and encourage active participation during the learning process. In addition, interviews reveal that students feel more enthusiastic and engaged when learning using digital puzzle media. In conclusion, digital puzzle media can foster elementary school students' learning motivation in Science subjects and support more interactive and engaging learning experiences.
Keywords*: digital puzzle, learning motivation, Science*

Abstrak
Studi ini membahas keterbatasan penggunaan media pembelajaran oleh guru sekolah dasar dalam meningkatkan motivasi belajar siswa dalam mata pelajaran Sains. Tujuan penelitian ini adalah untuk menganalisis penggunaan media puzzle digital dalam meningkatkan motivasi belajar siswa. Penelitian ini menggunakan pendekatan kualitatif dengan desain studi kasus yang dilakukan di SD N 1 Sajen. Partisipan terdiri dari 31 siswa kelas tiga, termasuk 19 laki-laki dan 12 perempuan. Hasil penelitian menunjukkan bahwa media puzzle digital efektif meningkatkan motivasi dan antusiasme siswa dalam belajar Sains. Hasil observasi dan dokumentasi menunjukkan bahwa media tersebut menarik perhatian siswa dan mendorong partisipasi aktif selama proses pembelajaran. Selain itu, wawancara mengungkapkan bahwa siswa merasa lebih antusias dan terlibat ketika belajar menggunakan media puzzle digital. Kesimpulannya, media puzzle digital dapat meningkatkan motivasi belajar siswa sekolah dasar dalam mata pelajaran Sains dan mendukung pengalaman belajar yang lebih interaktif dan menarik.
Kata kunci: puzzle digital, motivasi belajar, Sains

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INTRODUCTION

Education is a systematic effort to guide the physical and spiritual aspects of students in order to create higher-quality individuals (Sujana, 2019). An ideal learning process at the elementary school level should actively engage students, create meaningful learning experiences, and utilize instructional media that align with student's characteristics (Wulandari, 2024). Learning is essentially an interaction process between teachers and students aimed at achieving predetermined learning objectives (Anitah, 2021). In the context of Science learning, instruction should not only focus on mastering concepts but also on developing scientific process skills and attitudes such as curiosity, honesty, and openness (Pratiwi et al., 2019). Science is defined as a systematic body of knowledge about natural phenomena obtained through scientific methods such as observation and experimentation (Latut & Anirisa, 2017). Therefore, Science learning requires innovative strategies and media to enhance student's motivation and active participation (Nugraha, 2018). Another advantage comes from the multisensory nature of the media, which plays an important role in attracting attention and encouraging student's enthusiasm in delving into the material (Putra et al., 2018).

However, these ideal conditions have not been fully achieved in practice. Based on observations conducted at SD Negeri 1 Sajen, teachers have attempted to implement innovative learning models such as cooperative learning and STAD. Nevertheless, the use of instructional media remains limited and has not been optimized to enhance student's learning motivation. The learning process is still dominated by lectures and conventional media such as textbooks and videos. As a result, students tend to be passive, less enthusiastic, and less engaged in Science learning activities.

This condition has a significant impact on student's learning motivation. Motivation plays a crucial role in determining student's engagement in the learning process (Cook & Artino, 2016). Students with low motivation tend to be less active in asking questions, participating in discussions, and exploring learning materials. Furthermore, low motivation can negatively affect learning outcomes and hinder the development of critical thinking skills and scientific attitudes (Kompri, 2016). If this issue persists, the objectives of Science learning will not be achieved optimally.

One of the challenges in the current education process is the limited availability of adequate learning media, which impacts student's ability to absorb lesson material effectively (Agustini et al., 2021). The limited use of educational learning media directly affects the decrease in student's conceptual understanding (Herayanti et al., 2017). The selection of learning media requires careful consideration to align with the characteristics of the students as well as the nature of the lesson material being delivered (Maqfiroh et al., 2020). To address this problem, innovation in instructional media is needed to enhance student's motivation and engagement. One potential solution is the use of digital puzzle media. This media combines elements of games and digital technology to create an interactive and enjoyable learning environment. Puzzle-based learning media have been shown to improve attention, memory, and student engagement (Pangastuti, 2019). In addition, game-based media can create a more enjoyable learning atmosphere and reduce student's boredom (Rumakhit, 2017). The integration of technology in learning has also been proven to enhance student's motivation (Shanmugam & Balakrishnan, 2019).

However, previous studies on puzzle-based learning have mainly focused on conventional (non-digital) puzzles and emphasized cognitive learning outcomes (Risqi & Siregar, 2023). Research specifically examining the use of digital puzzle media in elementary Science learning, particularly in relation to students' learning motivation, is still

limited. Furthermore, studies using qualitative approaches to explore students' learning experiences in depth are still scarce.

Based on this, there is a clear research gap, namely the limited empirical studies on the use of digital puzzle media in improving student's learning motivation in elementary Science learning. Therefore, this study aims to analyze the use of digital puzzle media on students' learning motivation in Science learning at the elementary level. This study is expected to provide theoretical contributions to the development of digital learning media and practical contributions for teachers in improving the quality of Science instruction.

METHOD

The research method used is descriptive qualitative research with a case study type of research. According to Bogdan and Biklen, as explained in Sugiyono's book (2020), descriptive qualitative research is the collection of data in the form of words or images, thus not emphasizing numbers. In addition, (Sugiyono, 2020) also explains that qualitative research methods are research methods used to study natural conditions of objects, where the researcher acts as the key instrument. Based on this, it can be synthesized that the data collection process is carried out in a naturalistic manner to maintain the authenticity of the data without converting it into symbols or numbers. This authenticity refers to the actual condition of the data and is logically acceptable based on objective reasoning.

The research was conducted in the odd semester of the 2025/2026 academic year, specifically in October-November. The research location was SD Negeri 1 Sajen, particularly in grade 3 for the Science subject with the material "Energy and Its Changes" and the research subjects were 31 grade 3 students of SD Negeri 1 Sajen, consisting of 19 boys and 12 girls. Participants in the study were selected using a purposive technique, meaning they were intentionally chosen because they were in line with the research objectives, which were to analyze the use of digital puzzle media on the learning motivation of elementary school students in Science, namely 1 teacher and 6 students.

The research procedure was carried out through several stages, namely (1) the preparation stage: the researcher conducted an initial observation in the class, discussed with colleagues to design science learning using digital puzzle media, and prepared research instruments. (2) The implementation stage: the researcher, together with colleagues, conducted science learning on the topic "Energy and Its Changes" using digital puzzle media. Students were actively involved in the learning process to encourage learning motivation. (3) The data collection stage: data was collected through direct observation during learning activities, interviews with the teacher and several students, and documentation in the form of photos or student work. 4) Analysis stage: the obtained data is analyzed qualitatively, emphasizing the use of digital puzzle media and its impact on students' learning motivation. (5) Reporting stage: the results of the analysis are presented in a research report that describes the findings comprehensively.

Data collection techniques were carried out in three stages, namely (1) Participatory observation, conducted by directly observing the science learning process using digital puzzle media. (2) Semi-structured interviews, conducted with class teachers and several students to gain deeper insights into the learning experience. (3) Documentation, in the form of photos, videos, or student works that serve as supporting evidence for the research activities.

Table 1. Guidelines for Observing Student Learning Motivation

No.	Aspect	Indicator	No. Item	Amount
1.	Internal Motivation	Diligent in facing tasks	1,2,3	3
		Persistent in facing difficulties	4,5	2
		The desire to succeed	6,7,8	3
2.	Eksternal Motivation	Interesting activities in learning	9,10	2
Amounts				10

The data collected in this study consisted of primary and secondary data. Primary data were obtained from observations of learning activities, interviews with teachers and students, as well as students' activities during the learning process. Secondary data were obtained from school documents, namely teaching modules and supporting references related to digital puzzle learning media. The main research instrument was the researcher themselves as the key instrument. To support data collection, the researcher used observation guidelines, interview guidelines, and documentation sheets. The observation guidelines focused on students' learning motivation and the use of digital puzzle media by teachers. The interview guidelines were used to explore the experiences and perceptions of both students and teachers. The documentation sheets were used to record relevant visual data and archives.

The data analysis technique was conducted qualitatively using the interactive Miles and Huberman model, which consists of three steps: (1) Data reduction, which is the process of selecting, focusing attention, simplifying, and transforming raw data into important information. (2) Data presentation, which involves organizing information in the form of a descriptive narrative so that it is easy to understand. (3) Drawing conclusions and verification, which is interpreting data to answer the research objectives. The analysis was strengthened through coding processes open coding, axial coding, and selective coding. Procedure for Interpreting data: (1) Comparing data sources (2) Linking findings with theory (3) Identifying patterns and meaning (4) Drawing conclusions. To ensure the validity of the data, this study used triangulation techniques, including both source triangulation and technique triangulation. Source triangulation was conducted by comparing data from teachers, students, and school documents. Technique triangulation was done by comparing the results of observations, interviews, and documentation.

RESULTS AND DISCUSSION

Science (IPA) material for third-grade elementary school students is integrated into the IPAS (Science and Social Studies) curriculum. Science learning is carried out by starting to use digital puzzle media, namely by arranging pieces of images related to the material on energy sources around us. The use of this digital puzzle media is more interactive because students are involved in operating the smartboard to form a complete image according to the learning material. Teachers are no longer constrained by time in preparing innovative

science learning media. The digital puzzle media is created by preparing images that match the learning material and then uploading them to a website, such as Jigsaw Explorer. The use of digital puzzle media results in changes in the learning process carried out by students. There are still 4 students whose intrinsic motivation in learning has not fully emerged. The seating arrangement also causes a lack of enthusiasm in students for following the lessons, for example, a seat located next to the smartboard so that their view cannot directly focus on the digital puzzle image presented.

Observation activities of learning in Grade III at SD N 1 Sajen, with a total of 31 students, seemed too crowded because the classroom was not spacious enough. This could result in limited movement for children if they want to participate by going to the front of the class, and it is difficult to move around in the corners of the room. The teacher appeared to have difficulty managing the class to be more effective. During classroom observation, the teacher innovated in science learning by using a candle for apperception and conducting simple experiments related to the material with the students. The teacher also consistently provided motivation and feedback on what the students had done. The observation focused on student behavior using an observation sheet. The aspects being observed were student's learning motivation by utilizing digital puzzle media in conducting science learning. The lesson was attended by 30 students because one student did not come due to being hospitalized. The results of the observation on students' learning motivation, both internal and external motivation, are as follows:

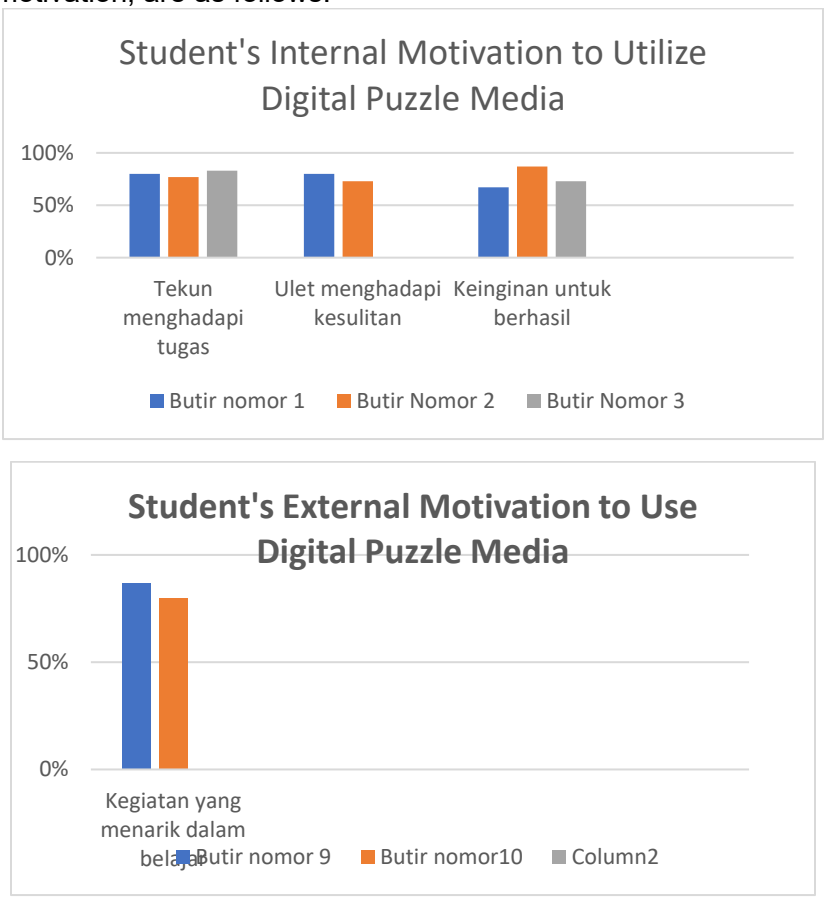

Figure 1. Student External Motivation to Use Digital Puzzle Media

The results of the study indicate that the use of digital puzzle media has a positive impact on students' learning motivation. Based on observations, more than 75% of students demonstrated active engagement, including diligence in completing tasks, active participation in group discussions, and persistence in solving digital puzzles. In addition, students showed enthusiasm and interest during the learning process, especially when interacting with the digital puzzle through the smartboard.

These findings indicate that digital puzzle media can enhance both intrinsic and extrinsic motivation. This is consistent with theory (Cook & Artino, 2016), who emphasize that motivation plays a key role in student engagement. Furthermore, states that motivation is influenced by both internal and external factors, which are effectively facilitated through digital puzzle media in this study(Kompri, 2016).

From the perspective of *game-based learning*, the findings are highly relevant. Game-based learning emphasizes challenge, interaction, and enjoyment in the learning process. The use of digital puzzles reflects these characteristics, as students learn through interactive play that requires active thinking and problem-solving. This finding is consistent with theory (Chen, 2017) who found that game-based learning improves student's motivation and learning outcomes. Similarly, the argue (Flaherty et al., 2017) that game-based learning creates a more enjoyable learning environment and reduces students' psychological pressure.

In terms of digital learning media, the findings reinforce the importance of integrating technology into education. Digital puzzle media provide a more interactive learning experience compared to conventional media. Students are actively involved in the learning process rather than passively receiving information. Similarly that argument (Shanmugam & Balakrishnan, 2019) who found that technology integration enhances students' intrinsic motivation. Additionally, digital media help present abstract concepts in a more concrete and visual form.

Regarding student's learning motivation in elementary schools, the use of digital puzzle media is particularly effective because it aligns with students' characteristics, who tend to enjoy play-based activities. This finding supports previous studies which show that puzzle media can improve attention, memory, and engagement. Students in this study demonstrated enjoyment, enthusiasm, and curiosity during the learning process (Hafidah et al., 2020).

However, several challenges were identified, including classroom space limitations and time management issues in implementing the media. Additionally, a small number of students still showed low motivation. This indicates that the effectiveness of instructional media must be supported by proper classroom management.

The novelty of this study lies in the integration of puzzle media with digital technology in elementary Science learning and its focus on students' learning motivation using a qualitative approach. Previous studies have mainly focused on conventional puzzles and cognitive outcomes, whereas this study highlights the role of digital puzzle media in enhancing both intrinsic and extrinsic motivation. Therefore, this study contributes to the development of innovative digital learning media, particularly in elementary Science education. The findings can serve as a reference for teachers in designing more engaging, interactive, and motivating learning experiences.

CONCLUSION

Based on the research results, it can be concluded that the use of digital puzzle media is effective in boosting the learning motivation of third-grade students at SD N 1 Sajen. The implementation of this media not only makes students more focused and active, but students also experience joy in learning until the end of the lesson. The increase in motivation is clearly reflected in the percentage of students' learning motivation, both internal and external. Students' internal motivation is seen from indicators such as diligence in facing tasks, perseverance when encountering difficulties, and the desire to succeed. Meanwhile, students' external motivation is observed from indicators of engaging learning activities.

The implications of this research are felt by classroom teachers and third-grade students. Teachers find it easier to prepare digital media for science lessons that capture students' attention. The effectiveness of digital puzzle media, in terms of time, cost, and meaningfulness in the learning process, successfully boosts students' enthusiasm for participating in science lessons. Teachers realize that the learning process does not solely rely on the technical aspects of creating media, which can be time-consuming. For students, indirectly, the use of digital puzzles in learning trains them to be more skilled in various ways. Students are not only required to think critically but are also encouraged to confidently express ideas, communicate effectively, and actively collaborate through group discussions. Another impact is that actively involving students in operating digital puzzle media can minimize student boredom in understanding science material.

Recommendations for teachers in utilizing digital puzzle media include always motivating teachers' creativity to use teaching media according to the needs and characteristics of students. Teachers can also use this digital puzzle media to be applied to subjects other than science, but should also consider the characteristics of the material being studied. For researchers, it can be used to study the use of digital puzzle media on other student abilities, such as critical thinking skills.

BIBLIOGRAPHY

Agustini, K., Santyasa, I. W., & Tegeh, I. M. (2021). Pengaruh penggunaan media pembelajaran digital terhadap motivasi dan hasil belajar siswa. *Jurnal Teknologi Pendidikan*, *23*(2), 150–160.

Anitah, S. (2021). *Strategi pembelajaran di SD*. Universitas Terbuka.

Chen. (2017). The effects of game-based learning on students' learning performance and motivation. *Educational Technology & Society*, *20*(2), 1–12.

Cook, D. A., & Artino, A. R. (2016). Motivation to learn: An overview of contemporary theories. *Medical Education*, *50*(10), 997–1014. https://doi.org/10.1111/medu.13074

Flaherty, J., Mc Carthy, M., & Mc Carthy, S. (2017). Game-based learning: Enhancing student motivation and engagement. *Journal of Educational Technology Systems*, *45*(3), 305–321. https://doi.org/10.1177/0047239516668740

Hafidah, N., Suyitno, H., & Widodo. (2020). Penggunaan media puzzle untuk meningkatkan hasil belajar dan keterlibatan siswa sekolah dasar. *Jurnal Pendidikan Dasar*, *11*(2), 123–130.

Herayanti, L., Habibi, H., & Fuaddunazmi, M. (2017). Pengembangan media pembelajaran berbasis multimedia interaktif untuk meningkatkan pemahaman konsep siswa. *Jurnal Pendidikan Fisika Dan Teknologi*, *3*(2), 98–104.

Kompri. (2016). *Motivasi pembelajaran: Perspektif guru dan siswa*. PT Remaja

Rosdakarya.

Latut, A., & Anirisa, N. (2017). Penggunaan media puzzle untuk meningkatkan hasil belajar siswa pada pembelajaran IPS di kelas IV MIN Lambaro Aceh Besar. *Universitas Islam Negeri Ar-Raniry Banda Aceh*.

Maqfiroh, S., Suyitno, H., & Sugiyanto. (2020). Pengaruh penggunaan media pembelajaran terhadap motivasi dan hasil belajar siswa sekolah dasar. *Jurnal Pendidikan Dasar*, *11*(1), 45–52.

Nugraha, W. S. (2018). Peningkatan Kemampuan Berpikir Kritis Dan Penguasaan Konsep Ipa Siswa Sd Dengan Menggunakan Model Problem Based Learning. *EduHumaniora | Jurnal Pendidikan Dasar Kampus Cibiru*, *10*(2), 115. https://doi.org/10.17509/eh.v10i2.11907

Pangastuti, R. (2019). Pengaruh media puzzle terhadap hasil belajar dan motivasi siswa sekolah dasar. *Jurnal Pendidikan Guru Sekolah Dasar*, *8*(3), 210–217.

Pratiwi, S. N., Cari, C., & Aminah, N. S. (2019). Pembelajaran IPA abad 21 dengan literasi sains siswa. Jurnal Materi dan Pembelajaran Fisika, 9(1), 34-42. *Jurnal Materi Dan Pembelajaran Fisika*, *9*(1), 34–42.

Putra, I. K. A., Dantes, N., & Suarni, N. K. (2018). Pengaruh penggunaan media pembelajaran terhadap motivasi dan hasil belajar siswa. *Jurnal Pendidikan Dasar*, *2*(3), 295–302.

Risqi, W., & Siregar, N. (2023). Media Papan Pintar Materi Perkalian dalam Pembelajaran Matematika Permulaan di Sekolah Dasar. *Jurnal Ilmiah Pendidikan Profesi Guru*, *6*(2), 233–241. https://doi.org/10.23887/jippg.v6i2.63497

Rumakhit, A. (2017). Pengembangan media pembelajaran puzzle untuk meningkatkan hasil belajar siswa. *Jurnal Pendidikan Dan Pembelajaran*, *6*(2), 45–52.

Shanmugam, K., & Balakrishnan, B. (2019). Motivation in learning using digital technology. *International Journal of Interactive Mobile Technologies*, *13*(7), 4–16. https://doi.org/10.3991/ijim.v13i07.10710

Sugiyono. (2020). *Metode penelitian kualitatif*. Alfabeta.

Sujana, A. (2019). *Konsep dasar pendidikan*. Remaja Rosdakarya.

Wulandari, K. D. (2024). Optimalisasi Pembelajaran Melalui Pemahaman Kemampuan Awal Peserta Didik. *Jurnal Sains Student Research*, *2*(6), 34–45.