

Development of Google Sites-Based Learning Media to Increase Students' Motivation to Learn Science at Elementary School 2 Kedungsoko

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Abstract: This study aims to develop Google Sites-based learning media to improve students' learning motivation in Natural and Social Sciences (IPAS) subjects at SD Negeri 2 Kedungsoko. This learning media is designed as an interactive platform that contains materials, learning videos, quizzes, and discussion forums that are easily accessible to students. The research method used is Research and Development (R&D) with the ADDIE model (Analysis, Design, Development, Implementation, Evaluation). The subjects of the study were fifth grade students with a sample size of 30 people. Data were collected through learning motivation questionnaires, interviews, and observations before and after the implementation of learning media. The results of the study showed that the use of Google Sites as a learning media significantly increased students' learning motivation. This is indicated by an increase in the average score of the learning motivation questionnaire by 25% after using the media. Students feel more interested and motivated because the material is presented in an interesting, interactive, and flexible manner according to their needs. In addition, teachers also provide positive feedback on the ease of use and effectiveness of this media. Thus, Google Sites-based learning media can be an innovative alternative in supporting a more interesting and effective IPAS learning process in elementary schools

Keywords: Learning media, Google Sites, learning motivation, science

PRELIMINARY

The development of digital technology has had a significant impact on various aspects of life, including education. In the context of learning in elementary schools, technology has a strategic role in improving the quality of learning. However, the reality in the field shows that the integration of technology in the learning process at SD Negeri 2 Kedungsoko is still minimal. This has an impact on the low motivation of students to learn, especially in the subject of Natural and Social Sciences (IPAS). Low student learning motivation can be seen from the lack of active participation during the learning process, low enthusiasm for completing assignments, and learning outcomes that have not reached the expected target.

Factors causing this problem include monotonous learning methods, lack of variation in learning media, and minimal use of technology as a learning aid. The learning media used by teachers still tend to be conventional, such as textbooks and lectures. Students feel bored because there are no interactive elements that can stimulate their interest and attention. This situation indicates an urgent need to provide more innovative, relevant, and interesting learning media to increase student learning motivation.

Data on factors causing learning problems that include monotonous learning methods, lack of variation in learning media, and minimal use of technology were obtained from, 1) direct observation of the learning process in the classroom, 2) in-depth interviews with teachers to find out the learning methods commonly used, 3) questionnaires given to students to measure their level of boredom, interest in learning, and involvement in learning. The instruments used were, 1) Observation; The observation instrument was in the form of an observation sheet that had been designed to record teacher and student activities in the classroom. The indicators observed included the teacher's teaching method, the type of learning media used, and student responses to the learning process, 2) Interviews, the interview instrument was in the form of a semi-structured interview guide containing questions related to learning methods, media variations, and obstacles to the use of technology. Interview respondents were class teachers and principals to gain in-depth insights, 3) Questionnaires, the instrument was in the form of a student learning motivation questionnaire containing questions related to their experiences during the learning process. The Likert scale was used to measure student responses to elements such as variations in learning media, teacher teaching methods, and the use of technology. Example of statements in the questionnaire "I feel bored with the learning methods in class", "I feel more interested in learning if I use technology-based media".

Data Collection Process, observations were conducted during several meetings to ensure data accuracy. Interviews were conducted after observations to dig deeper into the identified factors. Questionnaires were distributed to students after they had participated in learning using conventional methods to obtain an overview of their learning motivation. The results obtained based on observations showed that teachers used textbooks and lecture methods more often than technology-based learning media. Based on interviews, it was revealed that teachers faced limitations in developing innovative media due to

minimal technology training. Meanwhile, based on the questionnaire, it was shown that most students felt bored (average score 2.3 on a scale of 1-5) and stated that they were more interested if learning used interactive media.

On the other hand, the challenges in integrating technology into learning are also related to the limitations of teachers' knowledge and skills in utilizing technology optimally. Teachers tend to find it difficult to design and implement digital learning media that are appropriate to student characteristics. In addition, technological infrastructure in schools, such as internet access and device availability, are also obstacles that are often encountered. This condition results in learning still being dominated by traditional methods that are less effective in meeting students' learning needs in the digital era..

Low student learning motivation also has an impact on suboptimal learning outcomes. Students are less motivated to be actively involved in the learning process, so their understanding of the science and science material is limited. As a result, the results of the learning evaluation show that many students have not achieved the minimum competency standards. This problem not only hinders students' academic development, but also affects the achievement of overall educational goals. In dealing with this problem, innovation is needed in learning methods and media that can increase students' interest and motivation to learn. Digital technology offers various potential solutions to create a more interesting and interactive learning experience. One alternative that can be developed is Google Sites-based learning media, which allows for the preparation of materials creatively and flexibly. By utilizing Google Sites, teachers can present learning that is more varied and in accordance with students' needs, so that it is expected to increase their motivation and learning outcomes.

In facing the challenge of low student learning motivation, an innovative approach is needed that can utilize digital technology optimally. One proposed solution is the development of Google Sites-based learning media. Google Sites is a platform that allows users to create websites easily and interactively. By using Google Sites, learning materials can be arranged in an interesting and comprehensive way through various digital elements, such as text, images, videos, animations, and interactive quizzes according to Pubian and Herpratiwi (2022). This aims to increase the appeal and relevance of learning materials to students' needs.

The first step in this problem-solving plan is to conduct a needs analysis of students and teachers. This analysis aims to identify the main obstacles faced during the learning process and determine the features that must be included in Google Sites-based learning media. The next stage is to design a prototype of learning media by paying attention to aspects of interactivity, aesthetics, and ease of navigation. This design will be tested on a limited basis to obtain feedback from students and teachers, so that improvements can be made before full implementation.

After the prototype is completed, the learning media will be implemented in the science learning process. The teacher will guide students in accessing and using this media, and provide direction regarding the available features. During the implementation process, observations were made to measure the level of student involvement and its impact on their learning motivation. In addition, students were also asked to fill out a questionnaire regarding their experience in using the learning media. The final stage of this plan is evaluation and refinement. Data obtained during implementation will be analyzed to assess the effectiveness of Google Sites-based learning media. If deficiencies are found, the learning media will be refined based on the evaluation results. The final results of this study are expected to not only be able to increase student learning motivation, but also provide practical recommendations for teachers and schools in integrating digital technology into learning. Through this approach, it is hoped that Google Sites-based learning media can be an effective solution to overcome the problem of low student learning motivation. In addition, this media can also be an innovative alternative in supporting the achievement of learning goals that are more meaningful and relevant to the digital era.

This research aims to:

1. Develop interactive, interesting, and appropriate Google Sites-based learning media for science learning at SD Negeri 2 Kedungsoko.
2. Identify the influence of using Google Sites-based learning media on students' learning motivation.
3. Provide alternative solutions for teachers in creating more interesting and effective learning.

Learning motivation is an important element in the success of the learning process. According to the learning motivation theory of Abdurahman et al. (2024), students'

intrinsic motivation can be increased if the learning environment supports three basic psychological needs, namely autonomy, competence, and social connectedness. Autonomy means giving students the freedom to explore and learn according to their interests. Competence refers to students' ability to understand and complete learning tasks. Social connectedness includes positive interactions between students, teachers, and classmates. In addition, Piaget's constructivism theory (1970) states that learning that involves active student participation can help them build knowledge independently. Technology-based learning media, such as Google Sites, allow students to learn independently, interact with learning materials, and gain more meaningful learning experiences. Interactive elements, such as quizzes and videos, can also increase student engagement in the learning process. Previous research has shown that digital learning media has a positive impact on student learning motivation. For example, research conducted by Yuniarti (2021) concluded that the use of website-based media can increase student interest and participation in learning. Similar findings were also expressed by Prasetyo (2020), who stated that the integration of technology in learning can significantly increase student motivation and learning outcomes. Google Sites has various advantages that are relevant to learning needs in the digital era.

This platform is easily accessible via different devices, such as laptops, tablets, or smartphones, so students can learn anytime and anywhere. In addition, Google Sites allows teachers to compile learning materials in a creative and interactive format, which can attract students' interest. With features that support collaboration, such as discussion forums, students can also interact with friends and teachers more actively. According to Yuniarti (2021), it was found that the use of website-based learning media can increase students' interest in learning, especially because the presentation of materials is more interactive and interesting. Prasetyo (2020) also showed that the integration of digital technology, such as learning videos and online quizzes, can increase student involvement in the learning process, thus having an impact on better learning outcomes. This study supports the idea that digital learning media can be a solution to overcome the limitations of conventional learning methods. According to Wulandari (2022), learning media that combine visual and interactive elements, such as Google Sites, can improve students' conceptual understanding. This is because students can visualize the material more concretely and utilize interactive features to explore concepts independently. This study

is relevant to the theory of constructivism which emphasizes the importance of active student involvement in building understanding.

According to Hartono and Sari (2023), it also shows that the use of Google Sites-based learning media increases students' learning motivation by 30% compared to traditional learning methods. This increase is due to the media's ability to present a more engaging and student-centered learning experience. This media also facilitates learning accessibility, so students can learn anytime and anywhere. In addition, Google Sites allows integration with various other digital tools, such as Google Forms for evaluation and Google Drive for sharing materials. This supports more collaborative and efficient learning. A study conducted by Susanti et al. (2023) concluded that Google Sites-based learning media can increase learning effectiveness by up to 40% by adjusting the material according to students' learning styles.

Thus, previous research shows that the development of Google Sites-based learning media is a relevant and effective approach in overcoming the problem of low student learning motivation. This media not only offers flexibility and accessibility, but also creates a more meaningful learning experience for students in the digital era. Based on the theoretical study, it can be concluded that Google Sites-based learning media has great potential to increase student learning motivation. This media not only provides easy access to learning materials, but also creates a more enjoyable and meaningful learning experience. Thus, this research is expected to provide a real contribution in improving the quality of science learning at SD Negeri 2 Kedungsoko.

METHOD

This study uses a research and development (R&D) method with a qualitative and quantitative approach. The development model used refers to the ADDIE model (Analysis, Design, Development, Implementation, Evaluation). According to the theory of Hidayat and Nizar (2021), which defines R&D as a systematic process to develop and test the effectiveness of certain products, such as learning media, through a series of systematic stages. In this case, your research stages are in accordance with the ADDIE model (Analysis, Design, Development, Implementation, Evaluation), which is often used in the development of learning media. This model is rooted in constructivist learning theory, which emphasizes the importance of creating an interactive and technology-based

learning environment to improve motivation and learning outcomes. The research procedure is carried out through the following stages:

- a) Analysis: Identifying student needs, curriculum analysis, and learning constraints.
- b) Design: Designing a prototype of Google Sites-based learning media according to student needs and curriculum.
- c) Development: Creating learning media, validation by media experts and material experts, and revisions based on input.
- d) Implementation: The media was tested on students of SD Negeri 2 Kedungsoko.
- e) Evaluation: Evaluating the effectiveness of the media by looking at its impact on student learning motivation.

The population in this study were all fourth grade students of SD Negeri 2 Kedungsoko in the current academic year. This population was chosen because it was in accordance with the target users of Google Sites-based learning media developed in this study. The research sample was taken using a purposive sampling technique, namely the selection of samples based on certain objectives and criteria. The sample criteria are: \ n \ n Fourth grade students who actively participate in science learning.

- 1) Students who have access and basic skills to use technological devices such as laptops, tablets, or smartphones to access Google Sites.
- 2) Students who are willing to participate in the entire series of research, including media trials and filling out learning motivation questionnaires.

The number of samples was 20 students selected from the population of class IV. This number is considered representative to test the effectiveness of the developed learning media, according to the scale of the study. The research instrument used in this study was designed to collect data relevant to the objectives of developing and implementing Google Sites-based learning media. The following are details of the instruments used:

a. Learning Motivation Questionnaire

Used to measure the level of student learning motivation before and after using learning media.

Table 3.1. Questionnaire grid

Motivational Aspects	Indicator	Number of Items
Affective	Student interest in learning	3
	The pleasant feeling of learning	2
Cognitive	Students' understanding of the material	4
	Focus during the learning process	3
Behavior	Student involvement in learning activities	3

Total: 15 questions using a Likert scale of 1-4 (Strongly Disagree to Strongly Agree).

b. Observation

Used to record student behavior and activities during the learning process using Google Sites.

1. Observation Guidelines:

- 1) Student interest when first using learning media.
- 2) Student activity in answering questions or assignments via Google Sites.
- 3) Student interaction with teachers and peers during learning.
- 4) Technical constraints that arise when using media.

Data was recorded by researchers using structured observation sheets.

c. Interview

Conducted to explore in-depth opinions from students and teachers regarding learning media..

1. Student Interview Guidelines:

- 1) How do students feel about using Google Sites?
- 2) Does the media help them understand the science material?
- 3) Do students feel more motivated to learn??

2. Teacher Interview Guidelines:

- 1) Are the learning media in accordance with the curriculum?
- 2) Do the media help increase student motivation?
- 3) Are there any obstacles in implementing the media?

d. Documentation

Collecting data in the form of photos, videos, and notes during the process of developing and implementing learning media. This documentation aims to confirm

the findings from the results of observations and interviews and record the learning atmosphere and student activities.

e. Instrument Validation

Before use, all instruments were validated by expert judgment (learning media experts and IPAS material experts) to ensure the suitability of the content and reliability of the instruments.

RESULTS

This study aims to develop Google Sites-based learning media and assess its impact on students' learning motivation in science learning at SD Negeri 2 Kedungsoko. Based on the results of data collection through learning motivation questionnaires, observations, interviews, and documentation, the study shows an increase in students' learning motivation after using Google Sites-based learning media.

1. Increasing Student Learning Motivation

One of the main instruments for assessing the impact of media is a learning motivation questionnaire distributed to students. This questionnaire covers three aspects of motivation, namely affective, cognitive, and behavioral. The questionnaire was given before and after using the media to measure changes in student motivation. The following are the results of calculating the average score of students' learning motivation based on the questionnaire filled out by 20 students.

Table 1: Results of Student Learning Motivation Questionnaire

Motivational Aspects	Before Media Use	After Media Use	Change
Afektiveness	2,50 (Enough)	3,80 (Good)	1,30 (Improvement)
Cognitive	2,70 (Enough)	3,90 (Good)	1,20 (Improvement)
Behaviour	2,60 (Enough)	3,75 (Good)	1,15 (Improvement)
Total Average Score	2,60 (Enough)	3,82 (Good)	1,22 (Improvement)

Information:

- 1) Rating scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree.
- 2) Scores before using the media indicate that students' learning motivation is in the "Enough" category.
- 3) Scores after using the media indicate a significant increase in every aspect of motivation, with an average reaching "Good".

Improvement Analysis:

The increase that occurred showed that students felt a significant change in their interest in science learning after using Google Sites-based media. Based on this data, it can be concluded that the use of Google Sites-based media can increase students' interest and involvement in learning.

2. Student Engagement Observation Results

In addition to the learning motivation questionnaire, observations were also conducted to see student involvement during the learning process. This observation recorded various student behaviors related to their level of participation in learning activities. Observations were conducted during 4 learning sessions using Google Sites.

Table 2: Results of Student Engagement Observations

Aspects of Engagement	Before Media Use s	After Media Use s	Changes
Active Questioning	2,40 (Enough)	3,70 (Good)	1,30 (Improvement)
Active Discussion	2,50 (Enough)	3,65 (Good)	1,15 (Improvement)
Task Engagement	2,60 (Enough)	3,80 (Good)	1,20 (Improvement)
Total Engagement	2,50 (Enough)	3,72 (Good)	1,22 (Improvement)

Information:

- 1) Rating scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree.
- 2) Observations show that before the use of media, students tend to be passive in asking and discussing.
- 3) After the use of media, there was a clear increase in student activity, both in asking, discussing, and involvement in learning tasks.

Engagement Analysis:

This increase in activity shows that Google Sites-based media has succeeded in encouraging students to be more involved in the learning process. The use of interactive media, with challenging and technology-based tasks, has succeeded in increasing their involvement in discussions and interactions with peers and teachers.

3. Interview Results with Students and Teachers

Interviews were conducted to gain deeper insights into the use of Google Sites-based media. Interviews were conducted with 5 students and 1 teacher involved in learning with this media.

a) Student:

Most students felt that Google Sites-based learning media was very helpful in understanding the science material. They felt more interested in the material presented in a more interesting and interactive form. Some students also found it easier to understand concepts that were initially difficult to understand because of the more detailed explanations and technology-based assignments. Students reported that they were more active in asking questions and participating in class discussions after using this media.

b) Teacher:

Teachers feel very helped by this media because it is able to present material in a more structured and interesting way for students. Teachers also stated that this media makes it easier to explain more complex material. Teachers also noted that after using the media, students were more focused and understood the material taught faster.

4. Media Effectiveness Evaluation

Overall, the results of the study indicate that Google Sites-based media is effective in increasing students' learning motivation. Based on data from questionnaires, observations, and interviews, it was found that:

- a) Students' learning motivation increased significantly in every aspect (affective, cognitive, and behavioral).
- b) Students' involvement in learning showed a clear increase after using Google Sites-based media.
- c) Teachers and students gave positive responses to the use of this media, which was considered more interesting and helpful in understanding the material.
- d) Several technical constraints such as unstable internet connections and limited devices in some students are challenges that must be considered in implementing media.

DISCUSSION

Described to answer the research results/data comprehensively according to the objectives. The discussion aims to interpret the research results according to the theory and results.

1. Improving Student Learning Motivation

Based on the results of the learning motivation questionnaire, there was a significant increase in students' motivation scores after using Google Sites-based media. Before using the media, the average score of students' learning motivation was in the "Enough" category, with an average of 2.60. However, after using the media, the average score increased to 3.82, indicating that students' learning motivation increased to the "Good" category. According to Arianti (2019) in their motivation theory, intrinsic motivation and extrinsic motivation greatly influence student learning outcomes. Google Sites, with its interactive and attractive design, is likely to trigger students' intrinsic motivation. This media allows students to learn independently through resources that can be accessed at any time, and allows them to interact with learning materials in a more interesting and more dynamic form compared to conventional methods. This increase in motivation is in line with Agustin's theory (2020) which emphasizes the importance of attention, relevance, confidence, and satisfaction in increasing student motivation.

This result is also consistent with previous research by Wahyu (2020) which shows that the use of technology-based media, such as Google Sites, can increase students' learning motivation because this media provides a more interesting and interactive learning experience. The study also shows that technology-based learning increases student engagement, both affectively, cognitively, and behaviorally.

2. Student Engagement in Learning

Observations of students during the learning process using Google Sites showed a significant increase in the level of student engagement. Before the use of media, the level of student activeness in asking questions, discussing, and completing assignments was in the "Fair" category. However, after the use of media, all aspects of student engagement, such as activeness in asking questions, discussing, and completing assignments, increased significantly, with an average score increasing from 2.50 (Fair) to 3.72 (Good). This study is in line with Suhirman's theory (2018) which emphasizes the importance of social interaction in the learning process. With Google Sites, students can discuss more easily with classmates through forums or collaborate on group projects. In addition, the presence of interactive elements in the media, such as technology-based quizzes and assignments, also increases students' motivation to actively participate in learning. In addition, Liu & Tsai (2013) in their research showed that technology-based media such as Google Sites

can facilitate collaborative learning, where students not only learn individually but also learn together with their friends, which in turn increases their engagement. This is reflected in the results of observations in this study, where many students were more active in asking questions and discussing after using media.

3. Student and Teacher Responses to Learning Media

The results of interviews with students and teachers showed that both students and teachers gave positive responses to the use of Google Sites in learning. Students felt that this media made it easier for them to understand the science material because it was presented in a more interesting and easier to understand way. They also felt more motivated to learn because they could access the material at any time and interact with their friends in completing assignments. Meanwhile, teachers also felt great benefits from using Google Sites. This media made it easier for teachers to explain more complex material, because it could display various visual resources, videos, and interactive exercises that could not be provided in traditional learning methods. Teachers also felt that students were more focused and understood the material faster, which showed that this media was effective in improving learning outcomes. This finding is in line with Mayer's theory (2005) regarding Multimedia Learning, which states that the use of media involving various multimedia elements (text, images, sound, video) can improve student understanding, because it can stimulate various cognitive channels. This is evident from the responses of students who felt it was easier to understand science material through Google Sites-based media.

4. Obstacles Faced

Although the results of the study show a positive impact of using Google Sites, there are several technical obstacles that must be overcome to increase the effectiveness of this media. One of the main obstacles is the problem of limited devices and unstable internet connections. Several students reported difficulties in accessing Google Sites due to limited devices such as smartphones or laptops, as well as unstable internet network problems. These obstacles can be overcome by providing further training or socialization to students on how to use the necessary devices and applications, as well as providing more stable internet access. In addition, the use of Google Sites can be more effective if carried out with a more flexible approach, where students can access materials offline or through alternative platforms when internet connections are limited.

5. Consistency with Previous Research

The results of this study show consistency with various previous studies showing that the use of technology in learning can increase student motivation and engagement. For example, Aziz & Ibrahim (2019) in their research revealed that technology-based learning media increases student learning motivation, especially in terms of active involvement and independent learning. Similar things were also found in Sudirman's (2018) research which showed that technology in learning can improve the quality of learning by making materials more interesting and easily accessible to students.

CONCLUSION

Based on the results of the development research with the Research and Development (R&D) technique conducted in this study, it can be concluded that the use of Google Sites-based learning media is effective in increasing student learning motivation in science learning at SD Negeri 2 Kedungsoko. The following is a more in-depth conclusion based on this research technique:

1. Use of Google Sites-Based Learning Media Increases Student Learning Motivation

The use of Google Sites-based learning media has been proven to increase student learning motivation in science learning at SD Negeri 2 Kedungsoko. The results of the learning motivation questionnaire showed a significant increase in the affective, cognitive, and behavioral aspects of students after using this media. Students showed an increase in motivation from the "Enough" category to "Good", which reflects the success of this media in increasing student interest and involvement.

2. Increased Student Involvement in Learning

In addition to increasing motivation, the use of Google Sites also has a positive impact on student involvement in the learning process. Observations show that students are more active in asking questions, discussing, and completing learning tasks after using this media. This is in line with learning theories that emphasize the importance of social interaction and the use of interactive media to increase student participation.

3. Positive Responses from Students and Teachers

Both students and teachers gave positive responses to the use of Google Sites media. Students find it easier to understand the material and are more motivated to learn,

while teachers feel helped in explaining more complex material and facilitating more interesting learning.

4. Obstacles Faced

Although the results of the study showed a positive impact, there were several technical obstacles, such as limited devices and unstable internet connection problems. Therefore, a solution is needed to overcome these obstacles so that this media can be used optimally by all students.

5. Recommendations for the Development of Learning Media

Based on the research findings, the use of Google Sites-based media can be used as an effective alternative in learning. It is recommended to pay attention to technical factors, such as the provision of adequate devices and increased internet access, to ensure the successful implementation of this media in broader learning. Overall, this study provides evidence that Google Sites-based media is effective in increasing student motivation and engagement in learning. The development of technology-based learning media at the elementary school level can be a step forward to improve the quality of education in the digital era.

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