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Analysis of the Need for Innovative Use of Google Sites in Teaching Inland and Marine Geography Based on Student Characteristics

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Abstract

The development of digital technology in education is important to help students overcome difficulties in learning geography, especially abstract topics such as the hydrological cycle and marine water movements. This study aimed to develop interactive, contextual, and student-centered learning media using Google Sites for geography learning. The research used a Research and Development (R&D) approach with the 4D model, consisting of Define, Design, Development, and Dissemination stages. The study involved 35 students of class X at SMAN 1 Tumpang. Data were collected through classroom observations, questionnaires, and interviews distributed using Google Forms and analyzed descriptively. The results showed that students needed innovative digital learning media. About 68.6% of students preferred learning media containing contextual concepts and real-life examples, while 17.1% preferred collaborative learning features. In addition, 5.7% expected informative maps, and 8.6% wanted interactive quizzes. These findings indicate that Google Sites-based media can support effective and innovative geography learning.

[Perkembangan teknologi digital dalam pendidikan sangat penting untuk membantu siswa mengatasi kesulitan belajar geografi, terutama pada materi abstrak seperti siklus hidrologi dan pergerakan air laut. Penelitian ini bertujuan mengembangkan media pembelajaran interaktif, kontekstual, dan berpusat pada siswa berbasis Google Sites untuk pembelajaran geografi. Penelitian menggunakan pendekatan Research and Development (R&D) dengan model 4D yang meliputi tahap Define, Design, Development, dan Dissemination. Penelitian melibatkan 35 siswa kelas X SMAN 1 Tumpang. Data dikumpulkan melalui observasi kelas, angket, dan wawancara menggunakan Google Forms serta dianalisis secara deskriptif. Hasil penelitian menunjukkan bahwa siswa membutuhkan media pembelajaran digital yang inovatif. Sebanyak 68,6% siswa lebih menyukai media yang memuat konsep kontekstual dan contoh nyata, sedangkan 17,1% memilih fitur pembelajaran kolaboratif. Selain itu, 5,7% mengharapkan peta informatif dan 8,6% menginginkan kuis interaktif. Temuan ini menunjukkan bahwa media berbasis Google Sites dapat mendukung pembelajaran geografi yang efektif dan inovatif]. © The Authors.

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1. Introduction

The rapid development of digital technology has significantly transformed teaching practices in the 21st century and encouraged educators to integrate technology-based media into the classroom learning process. In geography education, the use of learning media plays a crucial role in helping students understand spatial phenomena, environmental processes, and various abstract concepts that require visualization [1], [2]. Technology-based learning media not only facilitate the delivery of knowledge but also create a more interactive, flexible, and student-centered learning experience [3]. The Society 5.0 era is further driving the education sector to adapt curricula and learning models to technological advancements. These adjustments include strengthening digital literacy, utilizing the Internet of Things (IoT), and developing critical thinking skills as efforts to address 21st-century learning challenges [4]. Additionally, advancements in information and communication technology also open up various new opportunities for improving the quality of the learning process.

These technological advancements will enable various innovations in learning methods that are more interactive, flexible, and engaging [5]. The changes occurring in the Society 5.0 era will bring about issues and challenges in the field of education, necessitating the utilization of technological systems. In practice, educators are expected to be able to operate technological tools and integrate them efficiently to achieve desired teaching objectives [6]. There are various ways to facilitate creative learning processes, one of which involves incorporating technology into learning materials during the learning process [7].

Instructional media are tools used to explain concepts, facts, principles, or specific instructional steps so that they appear more concrete [8]. The use of media in learning improves time efficiency, allowing teachers to have sufficient time to assist students [9], [10] who are struggling with their studies, clarify learning materials, and motivate students to learn. However, not all teachers possess the ability to develop learning media tailored to students' characteristics, making this a distinct challenge [11], [12]. The objective of developing learning media in geography is to visualize complex phenomena, such as geomorphological processes or atmospheric dynamics, making them easier for students to understand. By bridging the gap between abstract spatial data and cognitive comprehension, well-designed media can transform static geographical information into dynamic, relatable knowledge. Furthermore, the integration of accessible platforms like Google Sites offers a strategic solution to overcome technical barriers while ensuring that learning materials remain interactive and responsive to diverse student needs.

Several existing studies have examined the impact of using instructional media in geography classes. For instance, a previous study conducted by [13] showed that the use of video media in geography instruction can significantly improve students' cognitive learning outcomes. Another study by [14] at SMAN 1 Pariaman found that the use of video media in geography instruction significantly improved student learning outcomes compared to conventional methods. Meanwhile, findings from a study conducted by [15] indicate that the use of interactive multimedia in geography instruction yields better learning outcomes than static images, particularly among students with high learning motivation. Technology-based learning media can encourage student participation, foster creativity and critical thinking, and support students' motivation in learning activities [16].

The use of instructional media needs to be integrated with technology. Technology-based instructional media can support the learning process and align with the demands of today's technological age [17]. One example of technology-based instructional media is Google Sites. The use of Google Sites as an instructional tool in geography education has been gaining increasing attention among educators and researchers. Google Sites offers various advantages as a platform for delivering learning materials in an interactive and easily accessible manner [18], which can enhance student participation and learning outcomes. Several recent studies have extensively documented the efficacy of this platform; for instance, [19] Google Sites as an online learning platform for geography has proven effective in enhancing students' spatial critical thinking skills. This is evidenced by an increase in the average score from 67.64 on the pretest to 89.31 on the posttest following the implementation of the Google Sites-based learning platform, while [20] point out that the development of Google Sites as a learning platform can help students become more active and engaged in the learning process. Furthermore, [21] Google Sites as a tool for teaching geography has been shown to have a positive and significant impact on student learning outcomes. However, most prior research has limited its scope to static resources or general social science contexts, leaving a noticeable research gap regarding the simulation of dynamic natural phenomena. Therefore, the novelty of this study lies in addressing this gap by developing a specialized geography

learning module on Google Sites that seamlessly integrates interactive web-maps and real-time hydrological simulation models to foster a more intuitive spatial understanding.

Research conducted by [22] shows that an interactive learning medium based on Google Sites, applied to ecosystem material for 10th-grade high school students, recorded an average student response rate of 89%, which falls into the “very good” category. These results indicate that students not only feel comfortable using Google Sites but are also more actively engaged in the learning process. Additionally, [23] noted that teacher training in the use of Google Sites can enhance the teaching competencies of educators at Madrasah Aliyah, demonstrating the importance of technology training to support effective learning processes. Furthermore, the integration of Google Sites into geography instruction has been shown to improve students’ critical thinking skills. In a study conducted by [24], it was found that the use of Google Sites can be associated with an improvement in students’ critical thinking skills when addressing complex environmental issues. Google Sites provides a platform that facilitates the exploration of various geography themes and encourages students to think analytically.

Although previous studies have explored the implementation of Google Sites and other digital learning media, most studies focused on general science content or broader learning contexts. Limited studies have specifically examined students’ needs for developing Google Sites-based learning media in geography education, particularly on inland and marine water topics. This topic requires strong visualization and contextual learning experiences because it contains complex and abstract concepts related to hydrological processes and water dynamics. Therefore, this study aims to analyze students’ learning media needs as the initial stage in developing Google Sites-based geography learning media on inland and marine water materials. The findings of this study are expected to provide a foundation for developing innovative, relevant, and student-centered digital learning media in geography education.

2. Method

This study employed a Research and Development (R&D) approach using the 4D development model proposed by Thiagarajan, which consists of Define, Design, Development, and Dissemination stages [25]. However, the scope of this study was limited to the Define stage, which focused on identifying learning problems, analyzing students’ needs, and examining classroom learning conditions as the initial foundation for developing Google Sites-based learning media. The research procedure adopting the 4D model is illustrated in the following flowchart Figure 1.

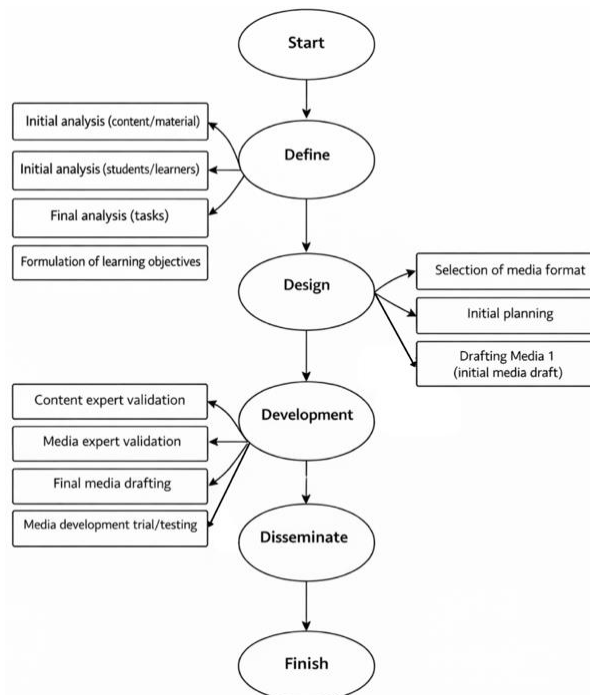


Figure 1. 4D Research Model Flowchart
Adapted from [26], [27]

This study employed a Research and Development (R&D) approach using the 4D model developed by Thiagarajan, Semmel, and Semmel, which consists of four stages: Define, Design, Develop, and Disseminate. The Define stage was conducted to identify learning needs, analyze learners' characteristics, and determine the competencies to be achieved. The Design stage involved preparing the prototype, learning materials, instruments, and assessment procedures. During the Develop stage, the product was validated by experts and revised based on feedback, followed by limited and field testing to evaluate its effectiveness and practicality. Finally, the Disseminate stage focused on implementing and distributing the final product to a broader educational setting to support its adoption and sustainability.

The study was conducted at SMA Negeri 1 Tumpang, located in Tumpang District, Malang Regency, East Java, Indonesia (Figure 2). The research participants consisted of one geography teacher and 35 tenth-grade students from class X-K in the second semester of the 2025/2026 academic year. The participants were selected to obtain information regarding students' learning characteristics, learning experiences, and their needs related to digital learning media for inland and marine water topics.

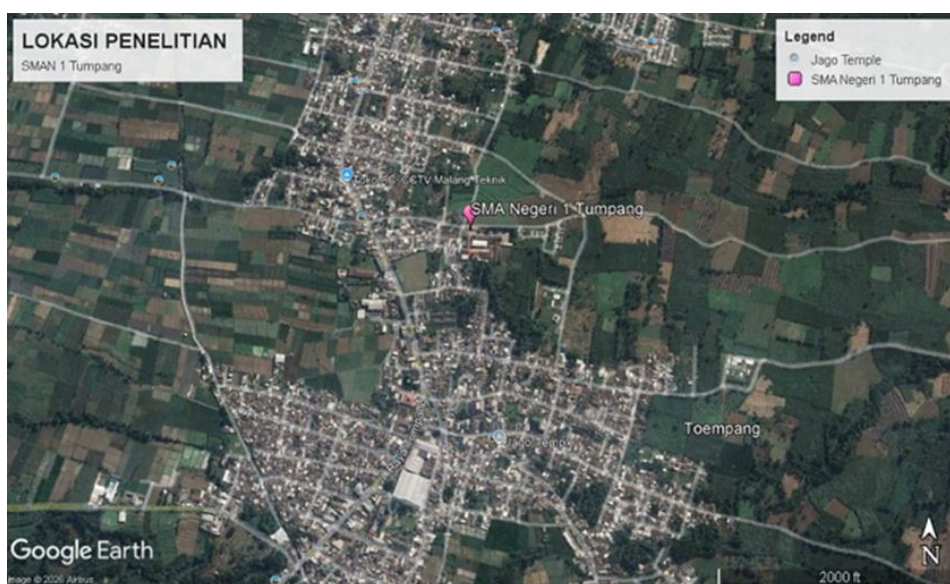


Figure 2. Research Location

Data for this study were collected through direct classroom observations aimed at examining the actual learning environment, identifying students' learning challenges, and evaluating the availability of instructional media and supporting facilities in the classroom. Based on the findings from these observations, a needs analysis was conducted as a preliminary step in the development of technology-supported learning media. The data used in this study were primary data obtained directly from the research site through classroom observations and questionnaires distributed to students via Google Forms. The questionnaire was developed to explore students' learning characteristics, their preferences toward instructional media, and their expectations regarding the use of digital learning platforms, particularly for inland and marine water materials. Several aspects were assessed through the questionnaire, including the clarity of learning content, language use, visual suitability, media design, and the types of learning features preferred by students.

The collected data were analyzed using descriptive quantitative methods. Students' responses to the questionnaire were measured using a four-point Likert scale (Table 1) to identify their learning needs and preferences related to the development of Google Sites-based learning media. The responses were then converted into percentages to provide a clearer interpretation of students' perceptions. This study was limited to the Define stage of the 4D development model, with a primary focus on identifying classroom problems and analyzing students' needs as the basis for subsequent media development.

Table 1. Likert Scale

Score	Category
1	Strongly Agree
2	Agree
3	Disagree
4	Strongly Disagree

Source: [28]

Next, to calculate the respondents' data scores, the researcher used the percentage formula proposed by [29], [30] as follows:

$$P = \frac{f}{N} \times 100\%$$

Notes:

P: percentage

f: response frequency

N: number of respondents.

3. Results

The results of the problem identification and needs analysis, conducted with the students as research subjects, indicate that they find it difficult to understand geography course material, which they perceive as being full of abstract concepts; they do not fully grasp the material by simply listening to the teacher's explanations; and they quickly become bored when the only learning materials used are textbooks. Based on the results of the needs analysis obtained through a Google Form questionnaire with 16 questions, the presentation of the students' needs analysis can be seen in Table 2 below.

Table 2. Student Needs Analysis

No.	Question Item	Response (%)	Description
1.	Do you find geography difficult to understand?	11,4	Very Difficult
		80	Quite Difficult
		2,9	Less Difficult
		5,7	Not Difficult at All
2.	Do you feel bored during geography lessons?	11,4	Very Bored
		65,7	Quite Bored
		17,1	Kurang Bosan
		5,7	Not Bored at All
3.	Do you think geography is mostly theoretical and based on memorization?	14,3	Strongly Agree
		57,1	Agree
		22,9	Disagree
		5,7	Strongly Disagree
4.	Do you think geography materials can be related to real-life phenomena in your environment?	60	Strongly Agree
		31,4	Agree
		0	Disagree
		8,6	Strongly Disagree
5.	How interested are you in inland and marine water materials?	14,3	Very Interested
		77,1	Quite Interested
		8,6	Not Interested
		0	Not Interested at All
6.	Do you experience difficulties in understanding materials through teaching methods and learning materials used by the teacher?	11,4	Very Difficult
		65,7	Quite Difficult
		17,1	Less Difficult
		5,7	Not Difficult at All
7.	Do you think inland and marine water materials are difficult to understand?	0	Very Difficult
		8,6	Quite Difficult
		17,1	Less Difficult
		74,3	Not Difficult at All
8.	How much knowledge do you have about inland and marine waters?	0	Very High
		45,7	Quite High
		48,6	Low
		5,7	Very Low
9.	What learning media are most often used by the teacher pada pembelajaran geografi selama ini?	28,6	PowerPoint
		31,4	E-Module
		2,9	Learning Video
		22,9	Printed Module
		14,3	Textbook
10.	Has your teacher ever used specific teaching materials or media (e.g.,	65,7	Yes
		34,3	No

11.	modules, videos, teaching aids)? Do you think it is necessary to develop learning media to make geography easier to understand?	65,7	Strongly Agree
		31,4	Agree
		0	Disagree
		2,9	Strongly Disagree
12.	Do you think geography learning is more enjoyable when using digital-based media?	31,4	Strongly Agree
		62,9	Agree
		5,7	Disagree
		0	Strongly Disagree
13.	Do you enjoy learning inland and marine water materials using varied media (audio, visual, audiovisual)?	45,7	Very Enjoyable
		51,4	Quite Enjoyable
		2,9	Less Enjoyable
		0	Not Enjoyable at All
14.	Do you agree that Google Sites-based learning media should be developed to support understanding?	37,1	Strongly Agree
		60,0	Agree
		0	Disagree
		2,9	Strongly Disagree
15.	What do you expect from Google Sites platform for learning inland and marine materials?	22,9	Opportunities for independent and collaborative learning
		42,9	Easy access to diverse and high-quality learning resources
		31,4	Interactive, creative, and clear learning experience
		2,9	Improved motivation and learning outcomes
16.	What features should be included in a Google Sites platform?	68,6	Interactive concepts and real-life case studies
		17,1	Informative and engaging maps for visualizing inland and marine water
		5,7	Engaging educational videos with interactive quizzes to test students' understanding after watching
		8,6	Class discussions and collaborative projects to learn from one another and share ideas

Source: Adapted from [31]

4. Discussion

Based on an analysis of student needs, it was found that the majority of students (68.6%) are more interested in learning materials that present interactive concepts and real-world case studies related to inland and marine waters. This indicates a strong preference for visual and auditory learning styles, with content such as informative maps (5.7%) and educational videos accompanied by quizzes (17.1%) being the most sought-after features. Additionally, 8.6% of students consider collaboration through class discussions and group projects to be an important component for deepening understanding. These findings align with research [18] stating that project-based technologies, such as Google Sites, can foster creativity and active student engagement. In addition, [32] found that using Google Sites to support learning can improve students' spatial critical thinking skills. However, challenges such as limited access to technology and the need for teacher training in operating digital platforms remain obstacles that need to be addressed.

Further discussion reveals that Google Sites is a platform well-suited to the characteristics of 21st-century learners. Its ability to integrate digital maps (Google Earth), videos (YouTube), and interactive quizzes (Google Forms) meets the need for high levels of visualization and interactivity. Empirical evidence suggests that this integration is highly effective in improving spatial critical thinking, as evidenced by significant increases in student test scores following the implementation of Google Sites-based e-learning. Moreover, the platform's versatility allows teachers to design higher-order thinking (HOTS) assessments within a single, cohesive digital environment, thereby fostering a more comprehensive understanding of complex geographical dynamics. Collaborative features such as document sharing (Google Docs) and discussion forums also support the development of 4C skills (critical thinking, collaboration, communication, and creativity). Theoretically, this approach aligns with constructivist theory, in which students construct knowledge independently through the exploration of multimedia content [6]. Empirical support from research [12] reinforces these findings, demonstrating that geography instructional videos are capable of significantly improving cognitive learning outcomes.

The pedagogical implications of this study emphasize the need for teachers to design project-based learning (PBL) content using Google Sites features, while schools need to provide

adequate technological infrastructure and training. However, this study has limitations in that the sample was restricted to a single school, so it needs to be expanded through future longitudinal studies. Recommendations for further research include the development of standard Google Sites templates for geography materials and an exploration of the impact of this medium on long-term learning motivation. Thus, the development of Google Sites-based learning media not only addresses students' needs but also contributes to adaptive innovations in geography education in the digital age.

5. Conclusion

Based on the results of this study, the development of Google Sites-based learning media has strong potential to support geography learning, particularly on inland and marine water topics. The findings show that students tend to prefer interactive learning media that present real-life case studies, visual content, and collaborative learning features, as these elements help them understand abstract geographical concepts more clearly and meaningfully. In addition, the results indicate that integrating digital learning platforms into geography instruction can better accommodate students' learning characteristics in the current educational context. This study contributes by providing empirical information about students' learning needs, which can serve as an important foundation for developing learning media that is more relevant, interactive, and aligned with classroom conditions. However, this study was limited to the Define stage of the 4D development model and involved participants from only one school. Therefore, further studies are needed to continue the development process, validate the product, and examine its effectiveness in broader educational settings.

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Informed Consent

We have obtained informed consent from all individuals included in this study.

Ethical Approval

The research related to human use has been complied with all the relevant national regulations and institutional policies in accordance with the tenets of the Helsinki Declaration and has been approved by the authors' institutional review board or equivalent committee.

References

- [1] B. R. Panjaitan and B. Waluya, "The Eurasia Proceedings of Educational & Social Sciences (EPESS) The Eurasia Proceedings of Educational Digital Learning Tools in Geography Education: A Systematic Literature Review," & *Social Sciences (EPESS)*, vol. 33, 2023, [Online]. Available: www.isres.org
- [2] H. Silaban, N. Fitri Istiawati, N. M. Wijaya, and D. Miswar, "The Influence of Geospatial Technology-Based Learning Media on Students' Spatial Thinking Ability under a Creative Commons Attribution (CC-BY) 4.0 International license," *Journal Learning Geography*, vol. 7, no. 1, pp. 44–56, 2026, doi: 10.23960/jlg.
- [3] N. Kerimbayev, Z. Umirzakova, R. Shadiev, and V. Jotsov, "A student-centered approach using modern technologies in distance learning: a systematic review of the literature," Dec. 01, 2023, *Springer*. doi: 10.1186/s40561-023-00280-8.
- [4] E. E. S. Limbong, S. D. Pasaribu, Y. B. S. Tampubolon, and R. H. Lubis, "The Relevance of The Independent Learning Curriculum to the 21st Century Learning Model in Development of Society Era 5.0," *EDUCTUM: Journal Research*, vol. 3, no. 3, pp. 100–106, 2024.
- [5] V. I. Pramudianto and L. N. Iskandar, "Pemanfaatan dan Pengembangan Media Digital dalam Pembelajaran Bahasa Indonesia Bagi Penutur Asing: Inovasi, Implementasi Dan Tantangan,"

- Sintaksis: Publikasi Para ahli Bahasa dan Sastra Inggris*, vol. 2, no. 6, pp. 117–128, Nov. 2024, doi: 10.61132/sintaksis.v2i6.1188.
- [6] E. B. Prastyo, M. N. Islam, and A. K. Putra, "Pengembangan Bahan Ajar Digital Mobilitas Penduduk dan Ketenagakerjaan Berbasis STEM," *ASANKA: Journal of Social Science and Education*, vol. 2, pp. 149–159, 2021, doi: 10.17977/um063v1i52021p533-541.
- [7] L. Amalida and L. Halimah, "Tantangan Pembelajaran Abad-21: Pengembangan Media Pembelajaran Interaktif Berbasis Power Point Untuk Meningkatkan Hasil Belajar Siswa," *Jurnal Ilmiah PENDAS: Primary Education Journal*, vol. 4, pp. 54–60, 2023, doi: 10.29303/pendas.v4i1.
- [8] M. Fahira, M. Kamza, J. Pendidikan Sejarah, and F. Universitas Syiah Kuala Correspondence Author, "Efektivitas Media Pembelajaran Flanelgraf Pada Mata Pelajaran Sejarah Untuk Meningkatkan Motivasi Belajar Siswa Kelas Xi Ips Sma Negeri Bunga Bangsa Nagan Raya," *JIMPS: Jurnal Ilmiah Mahasiswa Pendidikan Sejarah*, vol. 8, no. 3, pp. 2611–2622, 2023, doi: 10.24815/jimps.v8i3.24074.
- [9] A. Suryadi, *Teknologi dan media pembelajaran jilid i*. CV Jejak (Jejak Publisher), 2020.
- [10] N. Istiqomah and L. Y. Irawan, "Development of Smart Box Learning Media To Increase Student Learning Interest In The Material of Cultural Diversity Of The 7th Grade Community SMP Bahrul Maghfiroh," *ASANKA: Journal of Social Science and Education*, vol. 6, pp. 25–40, 2025, [Online]. Available: <https://jurnal.iainponorogo.ac.id/index.php/asanka>
- [11] M. V. R. Ningrum and H. Abas, "Pengembangan Media Pembelajaran Geografi Berbasis Sparkol Videoscribe," *geoedusains: Jurnal Pendidikan Geografi*, vol. 2, no. 2, pp. 75–91, 2021.
- [12] N. Umar, "ANALISIS HAMBATAN GURU DALAM MENGAPLIKASIKAN MEDIA PEMBELAJARAN PADA PELAJARAN BAHASA INGGRIS DI MTSN 1 TERNATE," *Jurnal Ilmiah Pengembangan Pendidikan*, vol. 2, no. 2, pp. 133–143, 2024, [Online]. Available: <https://ejournal.lpiqb.com/index.php/inovasi>
- [13] M. Mega, N. Asriati, N. Meily Adlika, P. Geografi, and F. Keguruan Dan, "Efektivitas Penggunaan Media Video Pada Pembelajaran Geografi Terhadap Hasil Belajar Kognitif Peserta Didik Kelas XI SMA Negeri 10 Pontianak," 2024.
- [14] D. Sahfitri, "Pengaruh Penggunaan Media Video Pembelajaran Geografi Terhadap Hasil Belajar Siswa Kelas XI SMAN 1 Pariaman Provinsi Sumatera Barat," *Jurnal Pendidikan Tambusai*, vol. 8, 2024.
- [15] Vonny, S. Santoso, and Sarwono, "Pengaruh Media Pembelajaran Multimedia Interaktif Terhadap Hasil Belajar Hakikat Geografi Ditinjau Dari Tingkat Motivasi Belajar Geografi Siswa Kelas X IPS SMA Negeri 2 Jayapura Tahun 2014/2015," vol. 2, no. 1, pp. 11–17, 2016.
- [16] F. I. Karengga and Suti'ah, "Analisis Tantangan Pengembangan Media Serta Bahan Ajar Berbasis Teknologi Dalam Meningkatkan Kompetensi Literasi Digital Siswa MI," *MUBTADI: Jurnal Pendidikan Ibtidaiyah*, vol. 6, no. 2, pp. 156–169, Feb. 2025, doi: 10.19105/mubtadi.v6i2.17153.
- [17] R. H. Afandi and L. Y. Irawan, "Pengembangan Media Pembelajaran Interaktif Berbasis Articulate Storyline 3 Pada Materi Perdagangan Internasional di SMP Bahrul Maghfiroh," *Pendas: Jurnal Ilmiah Pendidikan Dasar*, vol. 10, 2025.
- [18] H. Hidayat, O. S. Hidayat, and W. Widiasih, "Development of Google Sites-Based Learning Resources to Improve Mastery of Concepts and Process Skills in Electrical Circuit Materials," *Jurnal Penelitian Pendidikan IPA*, vol. 9, no. 6, pp. 4624–4631, Jun. 2023, doi: 10.29303/jppipa.v9i6.3612.
- [19] H. S. Widyantoro, S. Prihadi, and P. Wijayanti, "Pengembangan Media E-Learning Geografi Berbasis Google Sites Untuk Meningkatkan Spatial Critical Thinking Peserta Didik Pada Pembelajaran Geografi di Kelas X SMA Negeri 1 Boyolali Tahun 2022/2023," *GEADIDAKTIKA*, vol. 4, no. 1, p. 45, Jan. 2024, doi: 10.20961/gea.v4i1.73311.
- [20] I. Haluti, S. S. Eraku, and N. Mohamad, "Pengembangan Media Pembelajaran berbasis Google Sites berbantuan Aplikasi Quizizz pada Materi Lingkungan dan Kependudukan Kelas XI SMAN 5 Gorontalo Utara," *Jurnal Pendidikan Geografi Undiksha*, vol. 13, no. 1, pp. 49–59, Apr. 2025, doi: 10.23887/jjpg.v13i1.79268.
- [21] E. Wahyuni, N. Nefilinda, and A. I. Suryani, "Penerapan Media Pembelajaran Berbasis Google Sites di SMA Negeri 1 Tembilahan Hulu," *LaGeografia*, vol. 21, no. 1, p. 80, Oct. 2022, doi: 10.35580/lageografia.v21i1.36079.
- [22] S. F. Kamilah, I. Wahyuni, and D. Ratnasari, "Pengembangan Media Pembelajaran Interaktif Berbasis Website Menggunakan Google Sites Pada Materi Ekosistem Kelas X SMA," *BIODIK*, vol. 9, no. 3, pp. 176–181, Sep. 2023, doi: 10.22437/biodik.v9i3.25523.
- [23] H. Mardin and L. Nane, "Pelatihan Pembuatan Dan Pembuatan Google Sites Sebagai Media Pembelajaran Kepada Guru Madrasah Aliyah Se-Kabupaten Boalemo," *JURNAL ABDIMAS GORONTALO*, vol. 3, no. 2, pp. 78–82, 2020.
- [24] H. F. Safelly, A. K. Putra, L. A. Riwanti, and R. L. Mkumbachi, "Transformative Learning through Technology: How Google Sites-Enhanced Projects Foster Creative Thinking in Geography?," *Future Space: Studies in Geo-Education*, vol. 1, no. 4, pp. 438–453, Nov. 2024, doi: 10.69877/fssge.v1i4.37.
- [25] A. N. Defi and D. Faiza, "Pengembangan Media Pembelajaran Berbasis Video Animasi Pada Mata Pelajaran Dasar Listrik Elektronika," *Jurnal Vokasional Teknik Elektronika dan Informatika*, vol. 9, 2021, [Online]. Available: <http://ejournal.unp.ac.id/index.php/voteknika/>
- [26] E. Yunika et al., "Pengembangan Media Video Tutorial Berbasis Animasi Menggunakan 4D Untuk Mata Kuliah Praktik Batu Beton," *SNITT-Polteknik Negeri Balikpapan*, 2020.

- [27] K. O. Sanjaya and G. S. Mahendra, "Dokumentasi Pelestarian Objek Wisata Candi Tebing Gunung Kawi Menggunakan Platform Video 360," *JST (Jurnal Sains dan Teknologi)*, vol. 12, no. 3, Jan. 2024, doi: 10.23887/jstundiksha.v12i3.39127.
- [28] B. W. Widagdo, M. Handayani, and D. A. Suharto, "Dampak Pandemi Covid-19 Terhadap Perilaku Peserta Didik Pada Proses Pembelajaran Daring Menggunakan Metode Pengukuran Skala Likert (Studi Kasus Di Kabupaten Tangerang Selatan)," 2020.
- [29] S. Arikunto, *Prosedur Penelitian Suatu Pendekatan Praktik*. 2005.
- [30] S. Obhetan, A. M. Meha, and Y. Foeh, "Analisis Miskonsepsi Siswa Kelas VIII Pada Mata Pelajaran IPA Terpadu Di SMP N 3 Kota Kupang Tahun Ajaran 2018/2019," *Indigenous Biologi: Jurnal Pendidikan dan Sains Biologi*, vol. 3, no. 1, pp. 42–50, Jan. 2021, doi: 10.33323/indigenous.v3i1.63.
- [31] R. D. A. Budiman, U. Liwayanti, and M. Arpan, "Analisis Kebutuhan dan Kesiapan Penerapan Media Pembelajaran berbasis Android Materi Ilmu Akidah," *Edumatic: Jurnal Pendidikan Informatika*, vol. 6, no. 1, pp. 31–38, Jun. 2022, doi: 10.29408/edumatic.v6i1.5087.
- [32] H. S. Widyantoro, S. Prihadi, and P. Wijayanti, "Pengembangan Media E-Learning Geografi Berbasis Google Sites Untuk Meningkatkan Spatial Critical Thinking Peserta Didik Pada Pembelajaran Geografi di Kelas X SMA Negeri 1 Boyolali Tahun 2022/2023," *GEADIDAKTIKA*, vol. 4, no. 1, p. 45, Jan. 2024, doi: 10.20961/gea.v4i1.73311.

