



RESEARCH ARTICLE

Development of Web-Based Infographic Poster Media as a Geography Learning Media on Atmospheric Material

Hesi Eka Putri^{1*}, Rima Meilita Sari¹, Ayu Suciani¹

¹ Samudra University, Langsa, Indonesia

✉ Corresponding author: hesieka201001@gmail.com

Received
15 May 2026

Accepted
14 August 2026

Published
31 August 2026

DOI
<https://doi.org/10.23960/jlg.v7.i2.321>

ABSTRACT

Advances in educational technology require teachers to utilize innovative learning media that are tailored to students' needs. In geography classes, particularly when covering Atmospheric Dynamics, students often struggle to understand concepts because the material is abstract and contains a great deal of complex information. This study aims to develop a web-based infographic poster as a learning media for Geography on the topic of Atmospheric Dynamics and to determine the level of feasibility and practicality of the developed media. The research method used is Research and Development based on the ADDIE model, which consists of the Analysis, Design, Development, Implementation, and Evaluation stages. The research subjects included subject matter experts, media experts, language experts, Geography teachers, and 10th-grade students at SMA Negeri 1 Rantau Selamat. Data collection was conducted using validation sheets and user response questionnaires. Data analysis employed quantitative descriptive techniques in the form of percentages. The research results show that the web-based infographic posters developed received a feasibility score of 98.75% from subject matter experts, categorized as "highly feasible"; 98.67% from language experts, categorized as "highly feasible"; and 92.38% from media experts, categorized as "feasible." Additionally, the practicality test yielded a score of 94.67%, categorized as "highly practical."

Keywords: Canva, atmospheric dynamics, infographics, learning media, poster



© 2026 The Author(s).

Published by Universitas Lampung.

This open access article is distributed under

a **Creative Commons Attribution (CC-BY) 4.0 International license.**

1. INTRODUCTION

The implementation of the Merdeka Curriculum scheduled for 2024-2026 requires a transformation in the learning process that focuses on students and is based on strengthening 21st century skills. Learning in the 21st century emphasizes the development of 4C skills, namely critical thinking, creativity, collaboration, and communication that are integrated with the use of information and communication technology (OECD, 2023). In line with this, the Merdeka Curriculum gives teachers the freedom to create relevant teaching materials and learning media in accordance with the characteristics of students in Phase E (Ministry of Education and Culture, 2022). The importance of strengthening 21st century competencies is increasingly seen through the 2022 PISA results released by the OECD. The science scores of Indonesian students have not reached 383, which is far below the OECD average of 485, and has not shown significant progress when compared to 2018 (OECD, 2023). One of the reasons is the weak

ability of students to analyze scientific data and phenomena presented in visual form. Meanwhile, the principles carried out by the Merdeka Curriculum emphasize that the learning process should be fun, meaningful, and utilize digital technology to achieve these competencies (Wardani et al., 2023).

However, a literature review shows that the implementation of ICT-based learning in schools still faces various obstacles. Many teachers have difficulty in creating interactive digital learning media in the era of the Merdeka curriculum due to limited time, technical capabilities, and supporting facilities. As a result, learning approaches tend to remain conventional and have not been able to meet the learning needs of Generation Z students who have a strong tendency towards visual content rather than long texts (Syukur, 2025).

This condition has a direct effect on the learning process of Geography Phase E in class X, especially on the topic of Atmospheric Dynamics. Learning outcomes in Phase E require students to be able to analyze atmospheric phenomena and their consequences for life (Ministry of Education and Culture, 2022). The material on atmosphere is something abstract, resulting in many students experiencing misunderstandings about the concept. Data shows that 67% of class X students have difficulty visualizing the process of cloud formation (Indriana et al., 2021). This happens because phenomena such as cloud formation and wind cannot be observed directly in the classroom. Atmospheric phenomena not only involve complex physical processes but also have a significant and immediate impact on human life. A good understanding of atmospheric dynamics is essential for humans to maintain the balance of nature and mitigate the negative impacts of atmospheric activities.

This condition shows the importance of using appropriate learning media to overcome the abstract nature of the material. Therefore, teachers need learning tools that can turn non-concrete concepts into more real. Learning media functions to increase the effectiveness of learning so that the process becomes faster, more accurate, and attracts students' interest in the material taught (Sahudra et al., 2021). However, in the field, the selection of media often does not consider the needs of students and the characteristics of the material. Teachers often use the same media for different methods, regardless of the teaching objectives, type of assignment, or characteristics of the students. As a result, the learning atmosphere becomes unsupportive, even though one of the main functions of the media is to help teachers create a good learning environment.

Based on the results of the needs analysis conducted at SMA Negeri 1 Rantau Selamat, it is possible to get an idea that the learning process in the Atmospheric Dynamics material still does not utilize the varied learning media. Learning tends to use the lecture method with printed books as the main learning resource supported by static slide presentations. This condition causes students to receive more information passively so that their involvement in learning is still not optimal. The Atmospheric Dynamics material includes concepts such as atmospheric layers, changes in air temperature, air pressure, wind, weather, and climate that are abstract so that they are difficult to observe directly by students. Therefore, the presentation of materials that rely only on printed books and presentation slides has not been able to provide adequate visualization of these concepts.

In addition, students also show a tendency to be less interested in reading long descriptions of material in geography textbooks. Instead, they prefer learning media that presents information visually through a combination of images, colors, icons, and the presentation of concise and systematic information so that it is easier to understand. On the other hand, schools already have facilities and infrastructure that support the application of digital learning media. The availability of internet networks in the school environment and the permission of students to use smartphones during the learning process are potential that can be used to develop digital-based learning media.

The development of web-based infographic posters is offered as a solution to overcome the complexity of atmospheric dynamics materials. Infographics have the main advantage of presenting dense text into attractive visuals so that it makes it easier for teachers to convey material while motivating students to learn (Arfan et al. 2024; Sidauruk et al., 2025). Infographics support conceptual understanding through the effective incorporation of verbal and visual elements (Laela & Dixit, 2025). Web-based

infographic media has its high accessibility. Students can access learning materials anytime and anywhere, which supports learning flexibility in the digital era (Armila et al., 2024).

The Canva platform was chosen as the main tool in the development of infographic poster media. Canva is a web-based graphic design app that offers ease of use with an interface, drag-and-drop, and thousands of innovative templates. Canva provides a full range of graphic design features, such as templates, icons, illustrations, graphics, typography, and color combinations that make it easy for developers to create engaging learning materials without the need for advanced graphic design skills. In addition, Canva is user-friendly so that the media development process becomes more efficient and allows teachers and researchers to produce visual media that is communicative according to the characteristics of students (Pelangi, 2020).

The infographic that has been developed will be published in the form of Canva Web. Through this feature, infographics can be accessed online using browsers on various devices through links (URLs) or QR Codes without the need for additional application installation. In addition, media is easier to share with students, can be updated at any time without changing the link that has been shared, and has a responsive display on computer and smartphone screens. These characteristics support flexible digital learning and independent learning in accordance with the implementation of the Merdeka Curriculum (Putra & Filianti, 2022).

Unfortunately, the development of Canva's infographic poster that specifically discusses Atmospheric Dynamics material in accordance with the learning outcomes of Phase E in the Merdeka Curriculum is still limited. The novelty of this research lies in the development of media that is not only in the form of static posters, but web-based infographic posters designed using the Canva application and published in the form of Canva web so that it can be accessed dynamically through various devices without the need to install additional applications. In addition, the media content is compiled based on the Learning Outcomes (CP) Phase E of the Merdeka Curriculum which emphasizes the integration of physical and socio-geographical aspects, so that it is expected to be able to provide a more interesting, contextual, and in accordance with the characteristics of 21st century students.

Based on the above explanation, the researcher is interested in developing a web-based infographic poster as a Geography learning media for Atmospheric Dynamics material in class X. Infographic posters were chosen because they are able to convey complex information in a visual and concise way, and are supported by a web platform so that they can be accessed by students at any time independently. This research aims to develop learning media in the form of infographic posters that are feasible and practical to use in geography learning.

2. LITERATURE REVIEW

2.1 Visual Learning Media and Infographic Posters in Geography Education

Learning media are tools used to convey instructional messages and stimulate students' thoughts, attention, interest, and engagement in the learning process (Akbar et al., 2021; Munadi, 2018). The use of learning media is particularly important in Geography because the subject involves not only concepts but also various phenomena and processes that cannot always be directly observed. Visual media, such as images, graphs, diagrams, posters, and infographics, can help present information in a more concrete, structured, and understandable manner. The selection of learning media should consider the learning objectives, students' characteristics, available facilities, and ease of use (Fansury et al., 2019).

One form of visual media relevant to Geography learning is the infographic. An infographic is a form of visual communication that presents information, data, or concepts through a combination of text and visual elements, allowing complex information to be conveyed concisely and systematically (Smiciklas, 2022). In education, infographics can transform complex or abstract content into more structured visual representations. An infographic poster combines the characteristics of a poster as an attention-grabbing visual media with the principles of infographics, which emphasize concise, hierarchical, and informative

presentation. These characteristics make infographic posters suitable for presenting Geography content that requires visualization of processes, relationships between components, and factual information.

The use of infographics is particularly relevant to Atmospheric Dynamics. This topic includes various concepts and processes, such as atmospheric layers, weather and climate elements, cloud and precipitation formation, and air movement, which cannot always be directly observed. Presenting these concepts through images, diagrams, icons, and visual sequences can help students connect information and understand the processes more systematically. Therefore, infographic posters can serve as a media that bridges abstract concepts and more accessible visual representations.

2.2 Web-Based Infographic Media and Previous Studies

The development of digital technology provides opportunities to create visual learning media that are not only visually appealing but also accessible through digital devices. Canva is a web-based graphic design platform that provides various features and templates for developing visual content, including posters and infographics. Its ease of use, availability of diverse visual elements, and ability to share designs through links make Canva relevant for developing digital learning media (Pratiwi & Sujana, 2021; Wijaya et al., 2023). In Geography education, the platform can be used to present geographic phenomena and processes through illustrations, diagrams, graphs, and other visual elements.

Previous studies have demonstrated the potential of infographic and web-based media in Geography education. Fajaruddin (2025) developed Canva-based infographic learning media for Geography using the ADDIE model and reported very high validation results from media and material experts. Widyantoro et al. (2024) developed Google Sites-based Geography e-learning media on Atmospheric Hydrosphere and found that the developed media received very good evaluations and positively supported students' critical thinking skills. Meanwhile, (Sari, 2018) developed Prezi-based Geography learning media on Atmospheric Dynamics and reported that the media was valid and received positive responses regarding its practicality.

These studies indicate that infographic, web-based, and digital media have considerable potential to support Geography learning. However, previous studies have focused on different materials and media formats. Fajaruddin (2025) focused on Canva-based infographics for Indonesian natural resources, while Widyantoro et al. (2024) developed Google Sites-based e-learning for Hydrosphere Dynamics. (Sari, 2018), on the other hand, developed Prezi-based media for Atmospheric Dynamics. Therefore, there remains an opportunity to develop a web-based infographic poster specifically designed to present Atmospheric Dynamics for Grade X students. This study addresses this gap by developing a media that combines concise visual information with web-based accessibility.

3. METHOD

3.1 Research Design

This research is research and development (R&D), which aims to produce products and evaluate the results of the development (Sugiyono, 2019). The development model used is the ADDIE model. The selection of the ADDIE model is based on systematic, structured stages, and the evaluation for each stage so that it is very relevant to be used for the development of educational products (Branch et al., 2009). The ADDIE model consists of five stages, namely analyze, design, development, implementation, and evaluation.

The first stage is the analyze stage, which aims to identify problems that occur in geography learning and formulate solutions to these problems. This stage consists of curriculum analysis and learning objectives, material analysis, analysis of student characteristics and needs, and analysis of the availability of facilities and infrastructure.

The second stage is the design stage, this activity is related to the design of the product to be developed. Things that are done at the design stage are arranging the material that will be used in the

infographic, designing a storyboard that includes sketches and visual layouts including the selection of colors, typography, illustrations or icons to be used.

The third stage is the development stage. At this stage, the plans that have been compiled at the design stage are realized into finished products. The product is developed using the Canva app and then published in the form of Canva web. Furthermore, expert validation is carried out to ensure the feasibility of the product that has been developed. The expert validation carried out includes the validation of media, material, and language experts. Validation is carried out until the product is declared valid and feasible based on the results of expert validation.

The fourth stage is the implementation stage. This stage is a product trial for users to get feedback and see the application of the product. This trial was carried out during geography learning where students accessed media independently through a link or scanned a QR Code using their respective devices. During and after the learning process, data collection was carried out through 1) Student response questionnaire to assess aspects of attractiveness, ease of access, and usefulness of media, 2) Teacher response questionnaire to assess the application of media in learning, and 3) Researcher observation to record technical obstacles that arise during use.

The fifth stage is the evaluation stage. This stage is carried out at each stage of the ADDIE model. The results of the evaluation at each stage are the basis for improvement and improvement so that the developed product is feasible and practical to use in geography learning.

3.2 Participants

The participants in this study consisted of three expert validators, one geography teacher, and 28 Grade X students. The expert validators comprised a material expert, a media expert, and a language expert, who were purposively selected based on their academic expertise and relevance to the aspects being evaluated. One geography teacher from SMA Negeri 1 Rantau Selamat participated as a practitioner, while 28 Grade X students participated as the target users of the developed infographic media. SMA Negeri 1 Rantau Selamat was selected based on the results of the needs analysis, which indicated a need for alternative learning media to support geography instruction. The selection of the Grade X students employed purposive sampling, with the criterion that the students had studied the atmospheric layers material. Therefore, the participants were selected based on their relevance to the validation and implementation of the developed infographic media.

3.3 Instruments

The research instruments consisted of a needs analysis questionnaire, interviews, validation sheets, response questionnaires, and documentation. Needs analysis questionnaires and interviews were used at the Analyze stage to identify media needs and learning conditions. Validation sheets are used at the Development stage to assess the feasibility of the product by material, media, and language experts. The response questionnaire was used at the Implementation stage to find out the practicality of the product based on the responses of Geography teachers and 28 students of class X of SMA Negeri 1 Rantau Selamat. Documentation is used as supporting data during the development process, including storyboards, product revisions, trial activities, as well as archives of validation and questionnaire results.

3.4 Data Analysis

The research data was analyzed qualitatively and quantitatively. Qualitative data were obtained from the results of interviews and analyzed descriptively to draw conclusions. Quantitative data was obtained from the results of validation and response questionnaires using a Likert scale of 1–5, then analyzed by calculating the percentage of scores and categorized based on the criteria that had been set.

4. RESULTS AND DISCUSSION

Analysis Stage

The analysis stage is carried out to identify learning needs, media usage conditions, material characteristics, and student needs for the media to be developed. The results of observations at SMA Negeri 1 Rantau Selamat show that geography learning, especially atmospheric dynamics material, is still dominated by the use of printed textbooks and static presentation slides. Atmospheric dynamics material includes abstract concepts, such as atmospheric layers, temperature, air pressure, wind, weather, and climate, which are difficult for students to observe directly. In addition, students tend to be less interested in reading long text descriptions and prefer to present information through structured images, colors, and visuals. This condition shows that the use of text-based media and conventional delivery has not fully supported students' understanding of the material. Therefore, learning media that presents information visually, concisely, and systematically is needed. Infographic posters were chosen as an alternative because they are able to combine short text with visual elements so that information on atmospheric dynamics material can be presented in a more interesting and easy to understand for students.

The design stage is carried out to design learning media before the development stage. Activities include the preparation of outlines and storyboards based on Phase E Learning Outcomes and Learning Objectives. The material is compiled from relevant books and articles, then systematically designed by considering the use of visual elements, such as images, animations, and typeface and font size to support the readability and appeal of the media. The infographic is designed in six pages, namely (1) cover, (2) atmospheric layer, (3) weather and climate, (4) climate characteristics in Indonesia, (5) global climate change, and (6) BMKG. The media is 60 × 80 cm using VAG Rounded Next Shine and Montserrat fonts, while the font size is adjusted to the needs of each page. The following is an outline and storyboard for the atmospheric layer infographic.

Table 1. Atmospheric Layer Infographic Outline

Page	Material	Content	Supporting Visuals
Earth's Atmosphere Earth's Protective Layer			
Learning Objectives: Students can explain the influence of the atmosphere on life well and correctly.			
1	Atmospheric Layer	- Definition of Atmosphere The atmosphere is a layer of gas that covers the earth from the surface to deep in space. On Earth the altitude of the atmosphere starts from 0 – 560 km above the earth's surface - Gas Content in the Atmosphere Nitrogen (N₂) – ±78%, Oxygen (O₂) – ±21%, Argon (Ar) – ±0.93%, Carbon Dioxide (CO₂) – ±0.04%, ap Water (H₂O) – 0–4% (varied). - Structure of the Atmospheric Layer It includes the height, functions, characteristics, and unique phenomena of each layer of the atmosphere, namely the troposphere, stratosphere, mesosphere, thermosphere, and exosphere layers	- Earth illustration - Illustration of molecules of gases in the atmosphere - Illustrations for each layer of the atmosphere (weather, ozone, planes, meteors, auroras, satellites)

Source: Researcher Document, 2026

Table 2. Atmospheric Layer Infographic Storyboard

Pg.	Arrangement	Remarks
1		1. Title : Atmospheric Layer : Earth's Protective Layer 2. Learning objectives page 1 3. Definition of atmosphere 4. Atmospheric gas composition data 5. Illustration of atmospheric layers 6. The Earth's atmospheric layers include unique characteristics, roles, dynamics, and phenomena

Source: Researcher Document, (2026)

Development Stage

The next stage is the product development stage. The Development Stage is carried out by realizing the storyboard and outline that have been previously designed, including the preparation of the material, the arrangement of the layout, the selection of color combinations, the use of font types, and the addition of visual elements to support the presentation of the material. The app used in product development is Canva. Once the infographic is complete, it is then published in the form of Canva web. The results of product development can be seen at the <https://sinar-jaya.my.canva.site/infografis-dinamika-atmosfer-dan-dampaknya> link. After the infographic is designed, then expert validation is carried out. The purpose of the product validation process is to ensure that the developed product has a good level of validity and is feasible to be implemented in the school environment. The following are the results of validation of material, media, and language experts.

Table 3. Subject matter expert validation results

No	Aspects	Total Score	Maximum Score	Percentage	Validation Criteria
1	Content Eligibility	39	40	98,0%	Highly Worth It
2	Presentation	25	25	100,00%	Highly Worth It
3	Language	15	15	100,00%	Highly Worth It

Source: Researcher Document (2026)

Table 4. Linguist validation results

No	Aspects	Total Score	Maximum Score	Percentage	Validation Criteria
1	Readability and Rules of PUEBI	24	25	96,0%	Highly Worth It
2	Accuracy of Terms and Meanings	20	20	100,00%	Highly Worth It
3	Infographic Presentation	20	20	100,00%	Highly Worth It
4	Web-Based Linguistics	25	25	100,00%	Highly Worth It

Source: Researcher Document (2026)

Table 5. Subject matter expert validation results

No	Aspects	Total Score	Maximum Score	Percentage	Validation Criteria
1	Media Usage	26	30	86,7%	Highly Worth It
2	Media Display	71	75	94,67%	Highly Worth It

Source: Researcher Document (2026)

Implementation Stage

The next stage is the implementation stage. At this stage, products that have been confirmed to be eligible are tested on a limited basis. The purpose of this stage is to find out the practicality of the media that has been developed based on the practitioner's response and the student's response. The following are the results of practitioner responses and student responses.

Table 6. Practitioner response results

No	Aspects	Total Score	Maximum Score	Percentage	Validation Criteria
1	Eligibility of Content and Materials	19	20	95,00%	Very Practical
2	Web-Based Linguistics	15	15	100,00%	Very Practical
3	Graphics and Web Display	19	20	95,00%	Very Practical
4	Practicality and Utilization	18	20	90,00%	Very Practical

Source: Researcher Document (2026)

Table 7. Results of student responses

No	Aspects	Total Score	Maximum Score	Percentage	Validation Criteria
1	Ease of Use	467	560	83,40%	Very Practical
2	Appearance and Language	480	560	85,70%	Very Practical
3	Advantages	438	560	78,20%	Practical

Source: Researcher Document (2026)

Evaluation Stage

The last stage of this study is the evaluation stage. Based on the evaluation carried out, the developed media was declared feasible and practical to be used as a learning media in schools in the hope of supporting more effective and interesting learning, especially in atmospheric dynamics material.

Product Development

Process The development of atmospheric dynamics infographic media was carried out using the ADDIE model which includes the stages of analysis, design, development, implementation, and evaluation. The results of the analysis show that atmospheric dynamics matter has interrelated concepts and some of the phenomena cannot be observed directly, so it requires visual, concise, and systematic presentation. This condition is the basis for choosing web-based infographics as a learning media because it is able to combine short text with visual elements and provide flexibility of access through various devices. At the design stage, media is designed through storyboards and outlines that are tailored to learning outcomes, learning objectives, material characteristics, and student needs. The preparation of the design is systematically carried out to ensure that the order of the material remains directed and avoids information density in the presentation of infographics.

In the development stage, the design is realized using Canva and compiled independently considering the layout, typography, color, illustrations, and readability of digital media. The material is presented in seven pages in stages, ranging from atmospheric layers to climate change, BMKG, glossary, bibliography, and quizzes, so that the relationships between concepts can be understood systematically. The selection of visual elements, typefaces, and color combinations is adjusted to create a hierarchy of information, reading comfort, and an emphasis on important concepts. The product is then published in

the form of Canva web so that it can be accessed online through students' devices. Thus, media development not only considers visual and aesthetic aspects, but also pedagogical suitability, readability, material systematics, and ease of access in supporting atmospheric dynamics learning.

The infographic media that has been completed is developed, then expert validation is carried out, namely material experts, linguists, and media experts. This validation aims to ensure that the developed media is feasible and can be used in learning activities. The media generated from development activities cannot be implemented before being validated (Yaqin, 2020). The results of media validation are part of the validity indicators to obtain validation results in accordance with the aspects that have been determined (Kurniawan et al., 2021). Overall, the infographic media developed was declared feasible based on the validation results of material experts, linguists, and media experts, and was declared practical based on the results of practitioners and students in the limited trial.

Thus, the infographic media developed is feasible and practical to be used in limited trials as a learning media. The infographic media developed has several advantages that support its use in learning atmospheric dynamics. First, the media is developed in a site format using Canva so that it can be accessed easily without the need for additional app installations or large file downloads. Media can also be accessed through a variety of devices, such as laptops and smartphones, providing flexibility for students to study independently anytime and anywhere. Second, the media is equipped with a barcode that directs students to additional sources of information, such as supporting materials, so that additional information can still be provided without making the main display too dense. Third, the media provides glossaries and quizzes as learning support features. Glossaries help students understand important terms and concepts, while quizzes are used to evaluate students' understanding of the material that has been studied. Fourth, the media has a systematic layout with the use of relevant visual elements so that information can be presented more attractively and helps increase the attractiveness of learning.

5. CONCLUSION

Based on the results of the research, atmospheric dynamics infographic media was developed using the ADDIE model through the stages of analysis, design, development, implementation, and evaluation. Media is designed based on learning needs and material characteristics, then developed using Canva and published in Canva Web. The validation results showed that infographic media was declared feasible to be used as a learning media, with a feasibility percentage of 98.75% from material experts, 98.89% from linguists, and 92.38% from media experts. The results of the trial showed that infographic media received a positive response from practitioners and students, with percentages of 94.67% and 82.40%, respectively. Thus, the Canva Web-based infographic media developed is declared feasible and practical to be used as an alternative learning media to atmospheric dynamics materials.

ACKNOWLEDGMENT

The author also extends their gratitude to all those who contributed to and assisted with the research process and the preparation of this article.

REFERENCES

- Akbar, M. R., Mulyadi, M., & Shandi, S. A. (2021). Kajian Literatur Media Pembelajaran Grafis dalam Pembelajaran Bahasa. *Jurnal Pendidikan Bahasa*, 11(2), 46–56. <https://ejournal.tsb.ac.id/index.php/jpb/article/view/527>
- Armilah, I., Miswar, D., & Adha, M. (2024). Utilization of CANVA as a Learning Media for Social Studies.

International Journal of Educational and Life Sciences, 2(4), 283–291.
<https://doi.org/10.59890/ijels.v2i4.1691>

- Arfan, U., Irwanto, D., & Yuliawan, K. (2024). Infografis prakiraan cuaca di Provinsi Papua Tengah dengan menggunakan QGIS & Adobe Photoshop. *Jurnal Teknologi dan Informatika*, 1(2), 99–110.
<https://doi.org/10.70539/jti.v1i2.18>
- Fajaruddin, S. (2025). Pengembangan media pembelajaran infografis berbasis aplikasi Canva pada mata pelajaran geografi.
- Fansury, A. H., Lutfin, N., & Arsyad, S. N. (2019). Audio books as teaching media to blind students in learning EFL. *Klasikal: Journal of Education, Language Teaching and Science*, 1(1), 1–9.
<https://doi.org/10.52208/klasikal.v1i1.4>
- Indriana, A., Yusuf, M., Maru, R., & Saputro, A. (2021). The effectiveness of discovery learning on geography learning to reduce student misconceptions. *La Geografia*, 19(3), 284–301.
- Kurniawan, F. S., Nafillah, K., & Kumara, R. B. (2024). The development of SETS-based e-modules for industrial chemistry according to IMO Model Course 7.04. *Jurnal Inovasi Pembelajaran Kimia*, 6(2), 332–334.
- Sari, N. N. (2018). Pengembangan Media Pembelajaran Geografi Berbasis Prezi pada Materi Dinamika Atmosfer dan Dampaknya Terhadap Kehidupan. *Jurnal Buana*, 2(2), 656.
<https://doi.org/10.24036/student.v2i2.119>
- Sari, N. N. (2018). Pengembangan Media Pembelajaran Geografi Berbasis Prezi pada Materi Dinamika Atmosfer dan Dampaknya Terhadap Kehidupan. *Jurnal Buana*, 2(2), 656.
<https://doi.org/10.24036/student.v2i2.119>
- Laela, O., & Dixit, A. (2025). The use of infographics as a representation media to support students' understanding in physics learning: A literature review. *Islamic Journal of Integrated Science Education (IJISE)*, 4(2), 99–105. <https://doi.org/10.30762/ijise.v4i2.5940>
- OECD. (2023). PISA 2022 results: Factsheets: I. https://www.oecd-ilibrary.org/education/pisa-2022-results-volume-i_53f23881-en
- Pelangi, G. (2020). Pemanfaatan aplikasi Canva sebagai media pembelajaran bahasa dan sastra Indonesia jenjang SMA/MA. *Jurnal Sasindo UNPAM*, 8(2), 79–96.
- Putra, L. D., & Filianti, F. (2022). Pemanfaatan Canva for Education sebagai media pembelajaran kreatif dan kolaboratif untuk pembelajaran jarak jauh. *EDUCATE: Jurnal Teknologi Pendidikan*, 7(1), 125–138.
<https://doi.org/10.32832/educate.v7i1.6315>
- Sahudra, T. M., Ariska, R. N., & Nursamsu, N. (2021). The initiatives to strengthen teachers' online learning skills during the Covid-19 pandemic. *AL-ISHLAH: Jurnal Pendidikan*, 13(3), 1917–1923.
<https://doi.org/10.35445/alishlah.v13i3.883>
- Sidauruk, E., Marbun, D., Tampubolon, Y., Theresa, T., Napitupulu, E., & Manurung, H. M. (2025). Analisis penggunaan media Canva untuk meningkatkan minat belajar siswa. *PENDIPA Journal of Science Education*, 9(2), 475–479. <https://doi.org/10.33369/pendipa.9.2.475-479>
- Sugiyono. (2019). *Metode penelitian pendidikan*. Bandung: Alfabeta.
- Syukur, Y. (2025). *Promosi literasi di era digital baik di Indonesia*. Yogyakarta: Mata Kata Inspirasi.
- Widyantoro, H. S., Prihadi, S., Wijayanti, P., Studi, P., Geografi, P., & Keguruan, F. (2024). 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. 4(1).
- Yaqin, A. (2020). *Pendidikan akhlak dan moral berbasis teori kognitif*. Depok: Raja Grafindo Persada.