Education

Developing a canva-based blended learning model to improve science learning outcomes at SMP Negeri 4 Ratahan, Indonesia

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Received 1 March 2025; Accepted 9 Apr 2025; Published 16 Apr 2025

Abstract

This research aimed to develop a blended learning model integrating Canva-based media to enhance students' motivation and learning outcomes in science, specifically on ecosystem topics for Grade VII at SMP Negeri 4 Ratahan. Employing the ADDIE development model (Analysis, Design, Development, Implementation, Evaluation), this study produced a digital learning resource aligned with the Indonesian "Merdeka Curriculum" and technological integration policies. The media was validated by experts in content and instructional design, showing high feasibility (above 90% in both expert assessments). Small- and large-group trials demonstrated that the Canva-based learning model significantly improved student motivation and comprehension, with 96% of students expressing positive responses and improved conceptual understanding. The model provided flexibility, interactivity, and accessibility through multimodal content, supporting student-centered learning. These findings suggest that integrating Canva into a blended learning framework offers a practical and effective solution for improving science education quality at the junior high school level.

Keywords: Blended learning, Canva media, Science education, Student motivation, Learning outcomes, Ecosystem

1. Introduction

The advancement of information and communication technology (ICT) has brought significant changes to the field of education. The integration of ICT into the learning process provides opportunities to create more engaging, interactive, and effective learning experiences. One prominent application of ICT in education is the implementation of blended learning, which combines face-to-face instruction with online learning. In line with rapid technological developments, educators are increasingly encouraged to innovate and provide high-quality learning that aligns with students' current needs. The government expects teachers to integrate ICT effectively into instructional content to facilitate student access to diverse knowledge sources available online (Moss, 2006; Arundaa, 2025; Mokalu, 2024) [32, 3, 19].

Currently, science learning in schools remains teacher-centered, with limited variation in instructional models and a predominant reliance on printed textbooks. This condition often leads to student disengagement and negatively affects learning outcomes (Rosinta & Meike, 2021; Arundaa, 2023; Bawotong, 2024) [4, 6]. In response to the Ministry of Education's 2025 directive on deep learning and technology-based instruction, there is a need to promote more meaningful learning experiences, particularly in junior high school science education. Observations at SMP Negeri 4 Ratahan confirm these challenges, suggesting the need to improve learning outcomes through the adoption of a blended learning model.

Blended learning offers substantial potential to enhance students' motivation and academic achievement by enabling autonomous and flexible learning, as well as fostering greater interaction with content and peers. It also allows for personalized instruction tailored to students' individual interests and learning needs. However, interviews with science teachers and classroom observations at SMP Negeri 4 Ratahan reveal that blended learning has not been optimally implemented. Instruction remains largely conventional, with ICT use limited to slide presentations or video playback, missing the full potential of blended learning to enhance science instruction quality.

Instructional media play a pivotal role in facilitating effective teaching and learning processes. The integration of technology into educational settings has revolutionized the way educators design and deliver content to students. According to Robin Moss (2006) [32], the use of technology-based learning media has the potential to significantly enhance student engagement and understanding by providing interactive and visually stimulating learning experiences. In the context of science education, effective instructional media can bridge the gap between abstract scientific concepts and real-world applications, enabling students to develop critical thinking skills and deeper conceptual understanding. Recent developments, such as the utilization of Canva-based blended learning models (e.g., Mokalu *et al*., 2023; Pertiwi, 2023; Mokalu, Repi & Ngangi, 2021) [20, 31, 21], exemplify how digital tools can be harnessed to create engaging, interactive, and student-centered learning environments. Therefore, the development of innovative instructional media that align with curricular goals and student needs remains an essential endeavor in modern education. (Tangdilian, 2023; Mokalu,

2021; Paat, 2023; Rochaety, 2006; Sanudin, 2023; Anitah, 2008) [39, 21, 24, 33, 34, 5].

Moreover, the use of innovative instructional media remains minimal. Existing learning materials tend to be monotonous and fail to engage students effectively. In contrast, engaging and relevant media can help learners better visualize abstract scientific concepts, such as those found in the ecosystem unit, thereby improving conceptual understanding. Canva, a user-friendly digital design platform, offers a variety of tools and templates to support the creation of interactive and visually appealing instructional materials, such as infographics, presentations, videos, and animations.

Given that ecosystem content in science requires engaging instructional strategies to facilitate comprehension, this study aims to develop a Canva-based blended learning model for students at SMP Negeri 4 Ratahan. The proposed model is expected to improve students' motivation and learning outcomes by fostering deeper understanding of science concepts, particularly those related to ecosystems.

2. Materials and methods

a) Blended learning model

Blended learning is designed to integrate face-to-face instruction with e-learning or online learning models. The concept of blended learning varies across the literature. According to Siboro (2024) [35], blended learning provides an opportunity to integrate innovations and technological advancements offered by online learning with the interaction and participation inherent in traditional learning. Bonk and Graham (2007) define blended learning as a convergence of traditional face-to-face instruction and computer-mediated learning environments. Similarly, Oliver and Trigwell (in Motteram & Sharma, 2009) [22] describe it as a seamless combination of traditional classroom instruction with online approaches. In essence, blended learning merges in-person teaching with technology-facilitated learning activities using computers, the internet, and various digital media. This integration offers significant advantages in enhancing students' comprehension of learning materials.

There are no strict guidelines regarding the proportion of face-to-face versus online instruction in blended learning implementation. Anitah (2008) [5] proposes several instructional alternatives for teachers: (1) a predominantly face-to-face model with online components limited to assignments, (2) a hybrid approach that uses offline methods to deliver content and online tools to teach skills and present student work, and (3) a model beginning with in-person instruction for project assignment followed by online activities for execution and presentation. Echoing Anitah, Rochaety (2006) [33] argues for flexibility in blending online and face-to-face instruction, depending on subject characteristics and learning objectives.

In pandemic or restricted-contact learning contexts, synchronous (real-time virtual sessions via Zoom or Google Meet) and asynchronous methods (on-demand access to learning materials) are recommended. Blended learning offers flexibility, enabling students to learn anytime and anywhere through pre-prepared digital content. It also promotes active learning through interaction and the positive use of students' digital literacy. Furthermore, blended learning strengthens information and communication technology (ICT) competencies, a key feature of 21st-century education. Students maintain teacher contact while accessing diverse online learning resources. Numerous studies, including Syarif (2012) [43], have confirmed that blended learning significantly enhances student motivation and academic performance compared to traditional face-to-face instruction.

b) Canva media in learning

Canva is an online design tool offering diverse editing options and the ability to create visual content such as banners, presentations, Facebook covers, invitations, infographics, posters, flyers, and more. It is a practical tool for educators to develop engaging instructional materials, thanks to its pre-designed templates and user-friendly interface. According to Febriana (2023) [8], Canva facilitates the teaching and learning process by supporting technological integration, creativity, and instructional innovation, thereby stimulating students' learning interest through visually appealing content. Tanjung and Faiza (2019) [40] similarly highlight Canva's usefulness in simplifying media design for teachers.

As a web-based platform, Canva is well-suited for educational use due to its accessibility and ease of use. Rahma and Delsina (2019) describe Canva as an online design platform offering ready-to-use templates for various purposes, including presentations, resumes, posters, brochures, and infographics. Canva also provides education-specific presentation templates.

Advantages of Canva

- It enables teachers to easily design instructional media.
- It offers a wide array of customizable templates.
- It is accessible anytime and anywhere via computers or mobile devices.

Limitations of Canva

- A stable internet connection is required.
- Some elements, templates, fonts, and multimedia features are behind a paywall.
- Shared use of templates may lead to content similarity. Nevertheless, with appropriate digital infrastructure and teacher training—especially using institutional accounts—Canva can be a cost-effective and versatile educational resource. (Citradevi, 2023; Febriana, *et al*., 2023) [7, 8].

c) Learning motivation

Motivation is a psychological condition that drives an individual to engage in specific actions. When applied to the context of education, learning motivation refers to the psychological impulse that encourages a person to engage in learning activities. It can be categorized into intrinsic and extrinsic motivation. Intrinsic motivation stems from within the learner, such as the desire to achieve personal goals or aspirations through learning. In contrast, extrinsic motivation is driven by external factors, such as the desire to achieve high

grades or class rankings. (Pasaribu, 2024; Paat, *et al*., 2024; Akbar, *et al*., 2024) [30, 29, 1].

Extrinsic motivation is also influenced by teacher-related factors. Teachers play a pivotal role in shaping student motivation through effective planning and the selection of appropriate methods, strategies, and instructional media. Well-designed learning experiences can enhance student engagement and drive, while poor instructional choices may lead to decreased motivation (Nanlohy, *et al*., 2023; Mokalu, *et al*., 2023; Paat & Mokalu, 2023; Paat, *et al*., 2023) [23, 18, 24, 25].

d) Critical thinking skills

Critical thinking refers to the active process of analyzing arguments, drawing conclusions, evaluating evidence, and making decisions to solve problems through reflective inquiry (Maulidah, 2023) [16]. It is an essential skill for addressing both societal and personal challenges (Sumampouw, 2012).

Critical thinking is influenced by both internal and external factors. Internal factors include student characteristics such as reading ability, motivation, writing skills, habits, physical condition, emotional state, prior knowledge, and gender (Hayati & Setiawan, 2022; Wesnedi & Rosadi, 2022; Hayudiyani *et al*., 2017; Kahar, 2020) [9, 44, 11]. External factors include instructional design, teacher-student interaction, and the broader social environment in which learning occurs (Mokalu, 2024) [19].

e) Conceptual understanding

Conceptual understanding is a core competency and fundamental goal in science education (Sumampouw, 2012). Rather than focusing solely on memorization, conceptual understanding emphasizes the ability to apply scientific concepts in real-life contexts (Herayanti *et al*., 2022; Kawuwung, 2023) [10, 12]. A strong conceptual foundation supports better knowledge retention, fosters active learning, and empowers students to critically select appropriate information sources (Siregar, 2019; Tengor, 2023; Solung, 2021; Tampinongkol, 2022) [36, 41, 37, 38].

In science learning, conceptual understanding entails students' ability to comprehend and articulate scientific concepts in their own words. This skill is crucial for advancing students' cognitive development across all subject matter (Kindangen, 2023; Mokalu, *et al*., 2024) [14, 17].

Research methodology

This study employed a research and development (R&D) approach using the ADDIE model, which comprises five systematic stages: Analysis, Design, Development, Implementation, and Evaluation. The R&D method is commonly used to produce specific educational products and assess their effectiveness. As a bridge between basic and applied research, R&D aims to create practical solutions grounded in empirical inquiry.

The general stages of the R&D process include:

- **Needs analysis:** Identifying existing problems or needs and analyzing user characteristics and the learning environment.
- **Product design:** Designing the intended product, including its objectives, features, and specifications.
- **Product development:** Creating the product based on the finalized design.
- **Product testing:** Conducting trials to determine whether the product functions as expected.
- **Product evaluation**: Assessing the product's effectiveness and efficiency in achieving its intended goals.
- **Product revision:** Improving the product based on evaluation results and feedback.
- **Product dissemination:** Distributing the final product to target users or relevant stakeholders.

Research subjects

The subjects of this study were Grade VII students at SMP Negeri 4 Ratahan. A small-scale trial was conducted at SMP Negeri 7 Ratahan, located within the same sub-district (Ratahan Timur), chosen due to its similar topography and school conditions.

Research instruments

The instruments used to collect data in this study included:

- Questionnaires (administered to media and content experts).
- Interviews.
- Classroom observations.

Data collection techniques

Data were collected using various techniques:

- Questionnaires were used to gather information on students' learning motivation.
- Tests were used to measure students' critical thinking skills and conceptual understanding.
- Interviews were conducted with teachers and students to explore their experiences using the Canva-based blended learning model.
- Observations were employed to examine classroom learning processes and teacher–student interactions during implementation.

Data analysis techniques

Quantitative data were analyzed using descriptive and inferential statistical techniques. Qualitative data were analyzed using descriptive methods to gain in-depth insights into participants' experiences and perspectives.

3. Results & Discussion

A. Research findings

This study aimed to develop Canva-based instructional media on the topic of ecosystems. The research and development procedure followed the ADDIE model—Analysis, Design, Development, Implementation, and Evaluation—adapted from Dick and Carey's instructional system design framework.

a) Analysis

The initial phase involved a needs analysis conducted through observations at SMP Negeri 4 Ratahan. The observations revealed minimal use of instructional media in Grade VII classrooms, where learning was predominantly supported by

PowerPoint and printed worksheets. These tools lacked the ability to stimulate student curiosity. Additionally, the school implements the Merdeka Curriculum, which emphasizes technology integration. This prompted the researcher to develop a more engaging and interactive learning medium using Canva.

b) Design

Based on the analysis, the researcher designed a prototype of interactive Canva-based media for the ecosystem topic. Initial product sketches and content layout were drafted to guide the development process.

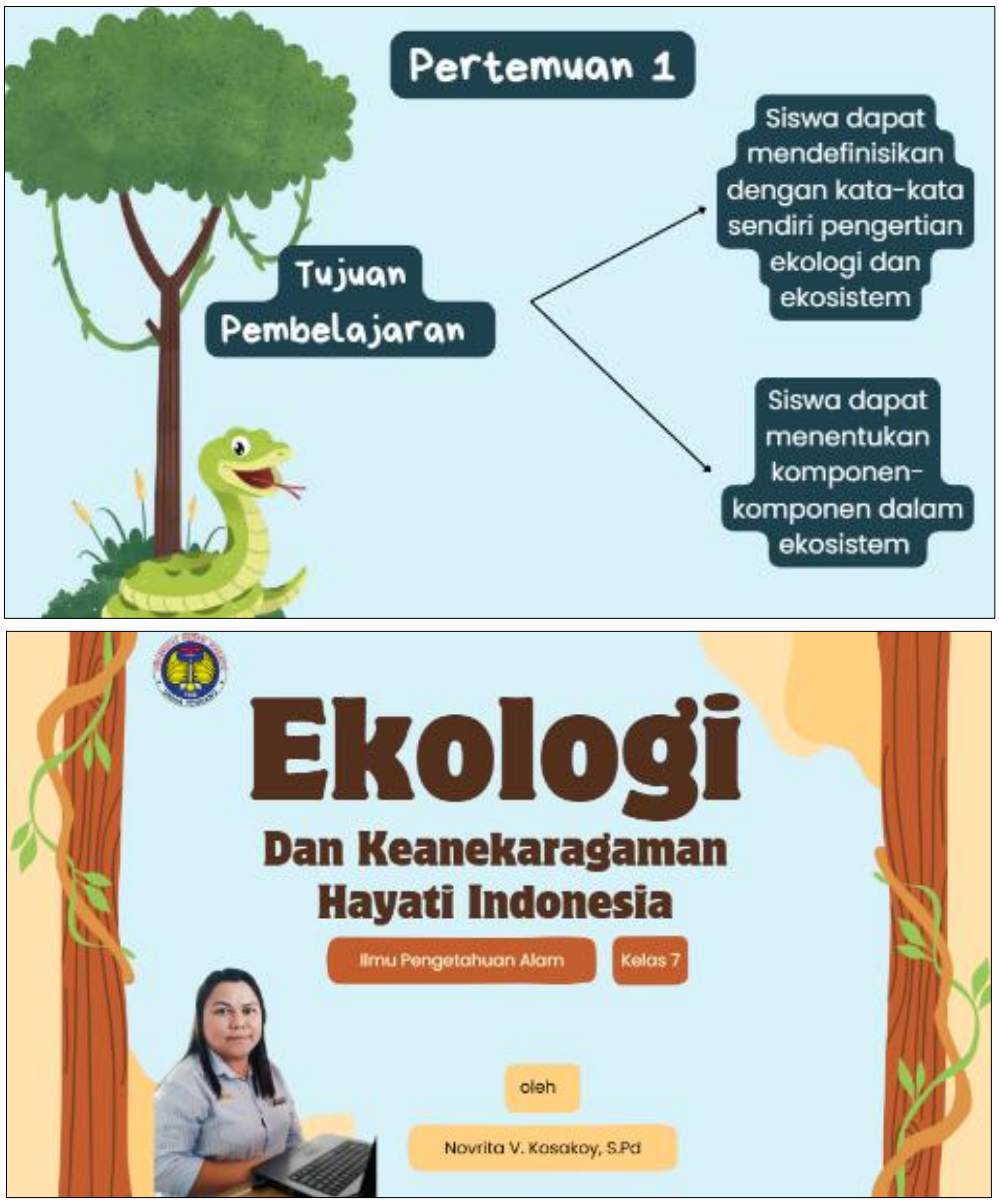

Fig 1: Canva Learning Media

c) Development

Media creation: The Canva-based media prototype was developed using content drawn from several junior high school science textbooks.

Product validation: The product underwent expert validation by content and media specialists.

- **Content expert validation**: Conducted twice, it assessed content relevance and alignment with the curriculum. The media received a 97% validity score, categorized as "very strong".
- **Media expert validation**: Also conducted twice, this focused on layout, typography, and visual appeal. The media earned a 93% score, indicating it was highly appropriate for use.

A small-group trial at SMP Negeri 7 Ratahan (with 7 students) showed a 96% positive response, confirming the media's effectiveness. Suggestions from experts regarding image clarity and contextual appropriateness were incorporated during revisions.

d) Implementation

Following revisions, the media was implemented in a large-group setting involving 18 students at SMP Negeri 4 Ratahan. Students accessed the media through links, videos, and PDFs shared via the class WhatsApp group. Learning activities

followed a blended learning model. A student response survey revealed 96% agreement that the Canva media enhanced learning effectiveness. Additionally, the teacher implementation checklist showed an 85.7% adherence rate to instructional components, indicating the practicality of the media.

e) Evaluation

Final evaluation included feedback from teachers and students. These suggestions guided the final revisions of the product.

B. Discussion

Designing canva-based instructional media

The primary goal of using Canva was to support student autonomy and engagement through interactive media. The development process began with selecting appropriate content—ecosystems—enhanced with illustrations and exercises. Expert reviews and small-group trials provided iterative feedback for improving the media. Students responded positively, particularly due to Canva's integration with their school accounts, allowing access to high-quality visual content. This resulted in increased motivation and comprehension.

The media's visual appeal, user-friendliness, and flexibility (e.g., conversion into various formats such as links, PDFs, videos, and slides) make it suitable for both classroom and independent learning. Furthermore, Canva's accessibility via multiple devices enhances its practicality.

Limited trial results

The limited trial showed a 96% positive student response. Teachers noted that Canva-based media helped students better visualize and understand the learning material, making science learning more enjoyable and less monotonous. Overall, the results confirmed the media's feasibility, practicality, and effectiveness in supporting blended learning for science education.

4. Conclusions

Based on the findings from the research and development of interactive Canva-based instructional media for the topic of Ecology and Biodiversity in Indonesia, the following conclusions can be drawn:

- The Canva-based media, integrated within a blended learning model for junior high school science (IPA) on the topic of Ecology and Biodiversity in Indonesia, is well-developed and suitable for use in classroom instruction to support teachers in facilitating effective learning.
- The Canva media product received positive responses from students, particularly when applied to the topic of Motion and Force.
- The Canva-based media, implemented within a blended learning framework for the topic of Ecology and Biodiversity in Indonesia, was positively received by students at SMP Negeri 4 Ratahan, indicating its effectiveness and acceptance in the school context.

References

1. Akbar JS, Mokalu YB, Rumengan SM, Djakariah D, Akbar AF, Paat M. Pengaruh penggunaan alat praktikum uji elektrolit terintegrasi model pembelajaran inkuiri terhadap keterampilan proses sains siswa. SOSCIED. 2024;7(2):696–705.
2. Akbar JS, Rumengan SM, Mokalu YB, Akbar AF. Pembuatan disertai pelatihan penggunaan inovasi alat praktikum kimia terhadap pemahaman konsep siswa MAK Madani Manado. J Pengabdi Kpd Masyarakat. 2024;4(3):186–95.
3. Arundaa R, Mokalu YB, Sintaro S. Church Management Information System of Syaloom Imandi Bolaang Mongondow. Nuansa Informatika. 2025;19(1):23–30.
4. Arundaa R, Widiana SA, Mokalu YB. Sistem Informasi Akademik di SMK Muhammadiyah Kotamobagu. J Inf Technol Softw Eng Comput Sci. 2023;1(3):105–14.
5. Anitah S. Media Pembelajaran. Surakarta: Panitia Sertifikasi Guru Rayon 13 Surakarta, 2008.
6. Bawotong LK, Rungkat JA, Paat M. Penerapan model contextual teaching and learning (CTL) pada materi pencemaran lingkungan untuk meningkatkan hasil belajar siswa SMP Negeri 6 Satap Likupang Barat. Charm Sains J Pendidik Fis. 2024;5(1):6–9.
7. Citradevi CP. Canva sebagai media pembelajaran pada mata pelajaran IPA: Seberapa efektif? Sebuah studi literatur. Ideguru J Karya Ilm Guru. 2023;8(2):270–5.
8. Febriana T, Suneki S, Suyoto S, Rochajati S. Pengembangan media pembelajaran berbasis Canva untuk meningkatkan kreativitas guru di sekolah dasar. J Sinektik. 2023;6(1):32–7.
9. Hayati N, Setiawan D. Dampak rendahnya kemampuan berbahasa dan bernalar terhadap kemampuan berpikir kritis siswa sekolah dasar. J Basicedu. 2022;6(5):8517–28.
10. Herayanti L, Habibi H, Sukroyanti BA. The development of inquiry-based teaching materials to improve physics teacher's conceptual understanding. J Penelit Pendidik IPA. 2022;8(6):3110–6.
11. Kahar S, Tumbel F, Paat M. The effect of environmental learning models on science process skills and learning outcomes of students in SMP Negeri 10 Manado. Int J Acad Res Dev. 2020;5(4):34–8.
12. Kawuwung FR, Paat M, Mokalu YB. Pembelajaran ekologi vegetasi. Mafy Media Literasi Indonesia, 2023.
13. Kembuan G, Tumbel F, Paat M. Development of problem-based learning-based student worksheets to improve student learning outcomes in Poigar 1 public middle school. Dev. 2019;4(5):16–20.
14. Kindangen CR, Paat M, Suryani NW, Rungkat JA. Pengembangan multimedia interaktif menggunakan model problem-based learning pada mata pelajaran IPA kelas VIII SMP Katolik Kembes. SOSCIED. 2023;6(2):361–72.
15. Makahinda T, Dungus F, Mokalu YB. Pengembangan perangkat model experiential learning dan teknik penilaian kinerja pada perkuliahan termodinamika. Sciening Sci Learn J. 2023;4(2):200–7.

16. Maulidah R, Anekawati A, Hidayat JN. Dampak pengetahuan awal terhadap keterampilan berpikir kritis siswa. Pros SNAPP Sos Hum Pertan Kesehat Teknol. 2023;2(1):266–77.
17. Mokalu YB, Arundaa R, Lahinta FC. Implementasi media pembelajaran web-blog model PjBL untuk meningkatkan hasil belajar dan keterampilan berpikir tingkat tinggi siswa. Sciening Sci Learn J. 2024;5(1):16–24.
18. Mokalu YB, Paat M, Lihiang A, Tumbel FM. Buku Ajar IPA 3. Penerbit Lakeisha, 2023.
19. Mokalu YB, Paat M, Polii IJ, Akbar JS, Kuron MA. Pengembangan model project-based learning berbasis pembuatan film untuk meningkatkan literasi mahasiswa pada mata kuliah Bahasa Indonesia Keilmuan. SOSCIED. 2024;7(2):760–9.
20. Mokalu YB, Paat M, Wowor EC, Tumewu WA, Kawuwung FR. Students' learning interest in the implementation of project-based learning models. SOSCIED. 2023;6(2):610–9.
21. Mokalu YB, Repi RA, Ngangi J. Developing Instagram-based biology animation learning media for junior high school students during COVID-19 pandemic in Manado. Int J Adv Educ Res. 2021;6(3):45–8.
22. Motteram G, Sharma P. Blending learning in a web 2.0 world. Int J Emerg Technol Soc. 2009;7(2):83.
23. Nanlohy FN, Roring VI, Tanor M, Mokalu YB. Pengaruh pendekatan inkuiri terbimbing terhadap hasil belajar mahasiswa pendidikan biologi semester VI pada materi kultur jaringan tanaman. SOSCIED. 2023;6(1):288–95.
24. Paat M, Mokalu YB. Development of web-blog-based learning media using problem-based learning model. SOSCIED. 2023;6(2):505–13.
25. Paat M, Mokalu YB. Guru dan pembelajaran (implementasi model pembelajaran berbasis masalah pada mata pelajaran biologi). CV Mitra Cendekia Media, 2023.
26. Paat M, Mokalu YB. Pelatihan pembelajaran berbasis daring melalui metode interaktif di Desa Pineleng, Kabupaten Minahasa. Madaniya. 2023;4(3):1185–92.
27. Paat M, Mokalu YB, Hadi Sutopo MMSI. Integrasi artificial intelligence dalam problem-based learning: Pendekatan praktis. Topazart, 2024.
28. Paat M, Mokalu YB, Wowor EC, Tumewu WA, Arundaa R. Implementasi multimedia-pembelajaran IPA biologi model PBL untuk meningkatkan hasil belajar siswa. SOSCIED. 2023;6(1):280–7.
29. Paat M, Sompotan AF, Pesik A, Mokalu YB, Moroki I. Penerapan multimedia pembelajaran berbasis masalah dalam meningkatkan hasil belajar dan keterampilan berpikir tingkat tinggi. J Pendidik MIPA. 2024;14(1):155–62.
30. Pasaribu LT, Paat M, Tumbel FM. Implementasi pembelajaran struktur dan fungsi jaringan hewan menggunakan Drosophila melanogaster berbasis PBL di SMA Katolik Rosa Delima Tondano. JSPB Bioedusains. 2024;5(2):151–8.
31. Pertiwi MG, Lihiang A, Paat M. Development of Animaker-based science learning multimedia on global warming materials at SMP Brother Don Bosco Tomohon. Web Semant Univ J Innov Educ. 2023;2(6):166–74.
32. Moss R. Learning, media and technology—40 years on. Learn Media Technol. 2006;31(1):67–80.
33. Rochaety PE. Sistem Informasi Manajemen Pendidikan. Jakarta: PT Bumi Aksara, 2006.
34. Sanudin TN, Paat M, Tumbel FM. Development of cooperative learning by utilizing circular design on the subject of energy at SMP Negeri 13 Manado. Int J Adv Educ Res. 2023;8(4):56–60.
35. Siboro A. Pengaruh model blended learning berbantuan media Canva dan Phet terhadap hasil belajar fisika SMA. The Eff Blended Learn Model Assist Canva Phet Media High Sch Phys Learn Outcomes, 2024, 13(2).
36. Siregar N, Sutopo H, Paat M. Mobile multimedia-based Batakologi learning model development. J Mob Multimedia. 2019;15(4):271–88.
37. Solung RS, Paat M. Pengaruh model pembelajaran Think Pair Share berbantuan media audio visual untuk meningkatkan hasil belajar siswa pada materi pencemaran lingkungan. Sciening Sci Learn J. 2021;2(2):106–13.
38. Tampinongkol NN, Paat M, Lihiang A. Pengembangan media audio visual dengan model problem-based learning (PBL) berbasis kearifan lokal Sulawesi Utara pada pembelajaran biologi di SMA. JSPB Bioedusains. 2022;3(2):136–43.
39. Tangdilian J, Tumbel FM, Paat M. Pengembangan media pembelajaran biologi model problem-based learning kelas X di SMA Negeri 3 Manado. JSPB Bioedusains. 2023;4(2):119–25.
40. Tanjung RE, Faiza D. Canva sebagai media pembelajaran pada mata pelajaran dasar listrik dan elektronika. Voteteknika (Vocational Tek Elektron Inform). 2019;7(2):79–85.
41. Tengor LG, Paat M, Suriani NW. Pengembangan LKS IPA berbasis model problem-based learning pada materi keanekaragaman hayati di SMP Negeri 3 Tondano. Sciening Sci Learn J. 2023;4(2):174–84.
42. Tumbel FM, Mokosuli YS, Paat M. Application of project-based learning insect characteristics around Lake Tondano in entomology course. J Biol Tropis. 2022;22(1):81–7.
43. Syarif I. Pengaruh model blended learning terhadap motivasi dan prestasi belajar siswa SMK. J Pendidik Vokasi. 2012;2(2):234–49.
44. Wesnedi C, Imron Rosadi K. Faktor Yang Mempengaruhi Berpikir Kritis Dalam Tradisi Kesisteman Pendidikan Islam Di Indonesia. J Ilmu Huk Human Polit. 2022;2(2):163–82.