

## THE EFFECTIVENESS OF SCIENCE LEARNING IN JUNIOR HIGH SCHOOLS WITH CANVA DIGITAL MEDIA: SYSTEMATIC LITERATURE REVIEW

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### ABSTRACT

Natural Science (IPA) learning at the junior high school (SMP) level requires an innovative approach to help students understand basic concepts such as quantities and units. One of the increasingly demanding approaches is using digital media to develop teaching materials, where the Canva platform is one of the most popular tools. This study aims to explore the different types of Canva-based teaching materials used in science learning, assess their effectiveness on students' understanding of concepts, and explore the best classroom application strategies. This research was conducted through a systematic literature review method with the PRISMA approach, which focuses on the study of the use of Canva in the context of science learning in junior high school. Literature sources are obtained from three primary databases, namely Google Scholar 90 article, Scopus 20 article, and DOAJ 10 article. A total of 120 to ensure relevance, the search was conducted using keywords such as "quantity and unit", "Canva digital media", "science learning", and "inquiry". The time limit for article publication ranges from 2021 to 2025, focusing on teaching materials that carry a multi-representation approach in science teaching at the junior high school level. A total of 10 scientific articles that met the criteria were further analysed using a narrative analysis approach, by grouping information based on the data that was successfully extracted. This study's findings show that Canva can significantly improve learning outcomes, student participation in the learning process, and their motivation through engaging and interactive visuals. Canva also allows for the multi-representation of concepts, contributing to a deeper understanding of the material. However, challenges remain, including the limited ability of teachers to operate Canva and the affordability of digital infrastructure in some schools.

**Keywords:** Science learning, Canva, digital media, effectiveness, multi-representation, educational innovation

### INTRODUCTION

Science learning in junior high school requires students to understand basic concepts in depth to develop critical and analytical thinking. One of the fundamental concepts in Natural Science (IPA) learning is quantity and units. This concept is the basis for understanding other materials in physics and science in general. (Murjana, 2017). However, various studies show that many students have difficulty understanding the concepts of magnitude and units in a multi-representational manner, resulting in their low understanding of advanced concepts. (Mila Rosa Angraini et al., 2024).

One factor that affects students' understanding of concepts is the limitation of the teaching materials teachers use. Teachers often face obstacles in providing teaching materials tailored to students' characteristics, especially in adapting teaching methods based on digital technology that can increase student involvement in learning. (Yulianci et al., 2021; Haifaturrahmah et al., 2024). Therefore, innovation is needed in developing teaching materials that are more effective, attractive to students, and support multi-representation-based learning.

The use of technology in education is growing in the digital era. One digital media that can be used to develop interactive teaching materials is Canva. Canva is a graphic design platform that provides various interesting features for creating visually based teaching materials, such as infographics, posters, and interactive presentations. (Amanda et al., 2023; Nela Rofisian et al., 2024)) Using Canva in learning has increased students' motivation and understanding of the concept. (Saputro et al., 2024).

Several studies have assessed the extent to which digital media plays a role in improving the quality of learning at the junior high school (SMP) level. One of the relevant studies in this context was conducted by (Eviota & Liangco, 2020) Revealed that applying teaching materials developed through Canva in science learning can increase students' active participation and support a more comprehensive and meaningful understanding of concepts. In addition, another study (Puspitasari et al., 2021) Found that Canva's digital media can be used to develop students' critical thinking skills.

Canva's advantage as a learning medium lies in its flexibility in providing a variety of attractive visual formats and ease of access for teachers and students. Research conducted by (Meila Noor Syafria, I. A., Pratiwi & Kuryanto, 2020) It shows that using Canva can increase the effectiveness of the learning process because it presents information more clearly and interestingly than conventional methods. Additionally, Canva allows the integration of various multimedia elements, such as images, animations, and videos, which can enrich students' learning experiences. (Arwanda et al., 2024).

However, although many studies have shown the benefits of using Canva's digital media-based teaching materials, their implementation is still limited. (Fauziah et al., 2023). Several studies reveal that not all teachers have sufficient skills in using digital technology to develop effective teaching materials. (Murjana, 2017; Ridwan, Murzal, &

Hurul In. (2024). Therefore, training and mentoring teachers in developing Canva-based teaching materials is important.

In addition, the effectiveness of Canva's digital media-based teaching materials is also influenced by the readiness of the school infrastructure. (Saharsa et al., 2018). Research conducted by Yulianci et al. shows that the main obstacle to using digital technology in learning in junior high schools is limited access to technological devices and a stable internet connection. Therefore, schools and the government must provide adequate facilities and infrastructure for digital-based learning.

In this study, a systematic literature review will be conducted to explore the types of Canva digital media-based teaching materials used in quantitative and unit learning in junior high schools and evaluate the effectiveness of their use. This study will use the PRISMA method to identify, filter, and analyse relevant scientific articles from various academic databases, such as Google Scholar, Scopus, and DOAJ.

The findings of this study are expected to provide a more comprehensive understanding of the contribution of Canva-based digital teaching materials to improving the quality of learning of quantitative and unit materials at the junior high school level. In addition, this study aims to present strategic recommendations for educators and policymakers on designing a more optimal learning approach through digital technology.

Thus, this research is part of an effort to encourage the transformation of education towards the digital era, especially in strengthening the effectiveness of science learning at the junior high school level. Canva, as a digital teaching medium, can be used as an innovative alternative to answer various challenges in teaching concepts of magnitude and units while increasing student participation and understanding in the learning process.

## METHODOLOGY

This study applies a systematic literature review method with the PRISMA (*Preferred Reporting Items for Systematic Reviews and Meta-Analyses*) approach. This approach is used to explore, assess, and summarise various study findings related to using Canva's digital media-based teaching materials in the learning process of quantitative and unit materials at the junior high school level. This literature review is based on the Research

Question (RQ) to get maximum results. The purpose of structuring this research question is to focus more on the literature review and to make it easier for researchers to obtain related data. The summary of Research Questions (RQ) in this study is in Table 1 below.

**Table 1. Research question**

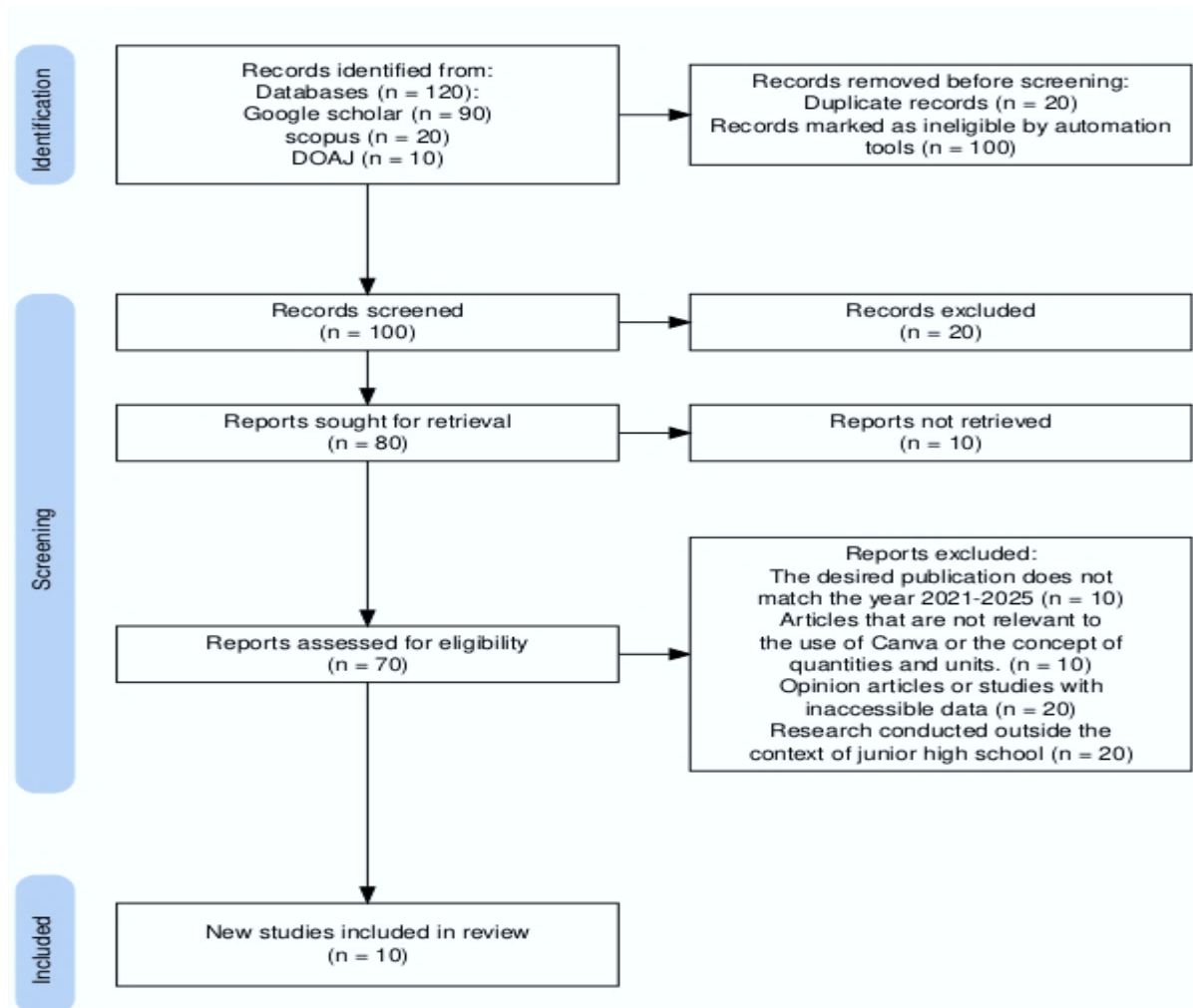
No	Research Question	Explanation
1	What types of digital media-based teaching materials are Canva used in science learning?	Analyse the variety of Canva-based teaching materials used in junior high schools.
2	How can Canva's digital media-based teaching materials affect students' conceptual understanding effectively?	Measure the impact of the teaching materials on the level of students' understanding and critical thinking.
3	What is the optimal method for implementing Canva's digital media-based teaching materials?	Explore the best techniques and strategies for the implementation of these teaching materials.

This research uses data sources from various academic databases: Google Scholar, Scopus, and DOAJ. Keywords used in literature searches include "quantities and units, Canva digital media, science learning, and inquiry". The selected articles are scientific publications from 2021 to 2025. Irrelevant articles are removed based on titles and abstracts. Articles that meet the inclusion criteria are evaluated in full text to ensure relevance. Eligible articles must discuss Canva's digital media and its quantitative and unit learning application. Articles that do not use the context of junior high school or are irrelevant to education are excluded. The data search results, with these criteria, will be operated by the researchers to review the articles. The inclusion and exclusion criteria in this literature are in Table 2 below.

**Table 2. Inclusion and Exclusion Criteria**

Criteria	Inclusion	Exclusion
Year of Publication	Articles published between 2021 and 2025.	Articles published before 2021.
Research Topics	Focus on Canva's digital media-based teaching materials in science learning.	Articles that are not relevant to the use of Canva or the concept of science.
Types of Research	Empirical studies or literature reviews that are relevant to the research objective.	Opinion articles or studies with inaccessible data.
Education Level	The research was conducted in a Junior High School (SMP) context.	The research was conducted outside the context of junior high school.

The data obtained from the selected articles includes information about the types of teaching materials, the methods of application, and the results of their use. Then select the article to be reviewed. The following is a chart of the article selection process.



**Diagram 1. PRISMA**

**Data Analysis Techniques** Data analysis is carried out narratively with the following steps: Grouping articles based on learning focus (e.g. multi-representation or critical thinking aspects). Synthesise information to find patterns and relationships in data—elaborating the main findings to answer the research question. **Data Validation** To ensure the validity of the analysis results, data triangulation was carried out by comparing information from various relevant articles. This approach aims to reduce bias in the interpretation of data. **Research Outputs** The final results of the research are compiled

as a narrative that explains the types of teaching materials based on Canva digital media, their effectiveness, and recommendations for their use in quantitative and unit learning.

## RESULT AND DISCUSSION

The research results reviewed are compiled in a table that explains the types of teaching materials based on Canva digital media, their effectiveness, and recommendations for their use in science learning.

**Table 3. Literature Review Analysis Results on Science Learning in Junior High School with Canva Digital Media**

No.	Heading article	Technology Used	Material	Methodology	Level	The effectiveness of Canva's Learning Media
1	The Effectiveness of Canva Media to Improve the Learning Outcomes of Grade VII Students at SMP Negeri 2 Labuapi (Hafsah et al., 2024)	Canva, Kuesioner Google Form,	IPA (Basic concept of ecosystem )	Experiential (Pretest-Posttest Control Group Design)	Junior High School Class VII	The use of Canva is efficacious in improving student learning outcomes. The average score of students' pretest was 33, while the average posttest score increased to 66, with the percentage of students who achieved KKM increasing from 16.6% to 83%. The questionnaire showed that students responded positively to Canva, with the majority expressing and strongly agreeing with the effectiveness of this medium in learning.
2	Analysis of the Characteristics of Web-Based Interactive E-Modules Using the Canva Application and Its Implementation in Junior High School Science	Canva, Website, Interactive E-modules	IPA (Hydrological, Ecological and Alternative Energy Cycles)	Qualitative Descriptive Analysis	SMP (VII-IX)	Web-based e-modules using the Canva application have characteristics that can support the direct instruction method and flipped classroom in junior high school science learning.

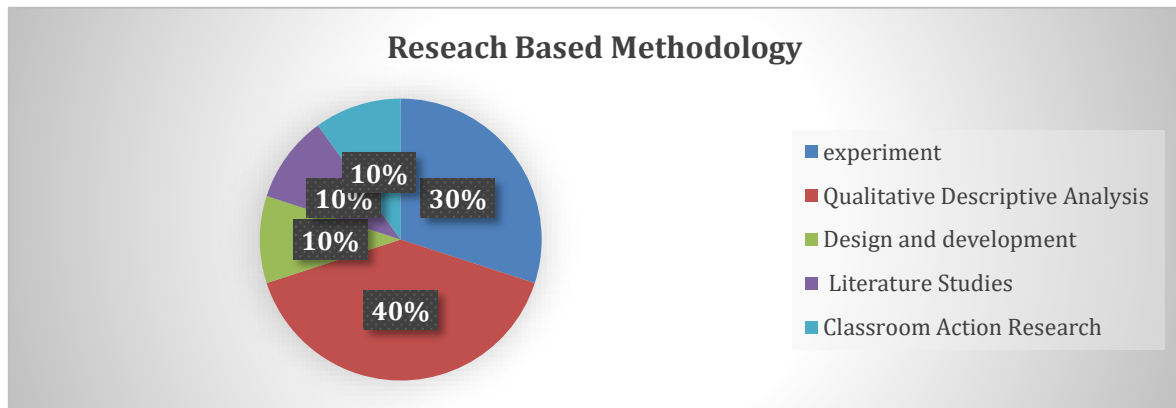
- Learning  
(Bartolomeus  
Kristi  
Brahmantia  
Putra, 2024)
- 3 Application of Canva Application-Assisted Learning Media to Improve Learning Outcomes of Grade VIII Students of SMPN 24 Makassar (Syamsidar et al., 2023)
- Canva
- Science (Digestive System in Humans)
- Experimen (One Group Pretest-Posttest Design)
- Junior High School Class VIII
- The application of learning media using the Canva application in grade VIII students at SMP Negeri 24 Makassar shows increased learning outcomes. This is reflected in the N-gain value 0.30, which is included in the medium category. Using Canva as a supporting tool in delivering Human Digestive System material significantly improves student learning outcomes, shown by the statistical test results with a t-count value of 10.55. In addition, the analysis results also indicated consistency in improving learning outcomes in the group of students using Canva-based media, with an F-count value of 0.52.
- 4 Designing Science Learning Media for Class VIII Using the Canva Application with a Microblogging Model at SMPN 1 Lubuk Alung (S Oktavia et al., 2023)
- Canva, Microblogging, Digital Infographics
- Science (Ecosystems and Biodiversity)
- Design and Development (R&D - Research and Development)
- Junior High School Class VIII
- Canva-based learning media in science class VIII at SMPN 1 Lubuk Alung can help teachers execute the learning process more effectively.

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| 5 | Implementin<br>g Canva In<br>The Digital<br>Learning<br>Process For<br>Junior High<br>School<br>(Titiyanti et<br>al., 2022)   | Canva                 | Various<br>Subjects  | Qualitative<br>Descriptive<br>Analysis                        | Junior<br>High<br>School                 | Audiovisual-based<br>learning media, such<br>as the Canva app, are<br>feasible for learning<br>and positively<br>impact students and<br>teachers.  |
| 6 | Canva as a<br>Learning<br>Media for<br>Science<br>Subjects:<br>How<br>Effective? A<br>Literature<br>Study<br>(Citradevi,<br>2023)   | Canva                 | Science<br>(Basic<br>Concepts<br>of Physics<br>and<br>Biology)       | Studi Literatur<br>(Systematic<br>Literature<br>Review - SLR) | Junior<br>High<br>School<br>(VII-IX)     | Canva improves<br>understanding of<br>science concepts,<br>motivates students,<br>and supports science<br>literacy. As a<br>learning medium,<br>Canva is suitable for<br>abstract science<br>learning activities, as<br>it presents<br>visualisations that<br>help students<br>understand the<br>material more easily.   |
| 7 | The<br>Influence of<br>Android-<br>Based<br>Interactive<br>Multimedia<br>on<br>Improving<br>Learning<br>Outcomes<br>and<br>Motivating<br>Students<br>(Rahman et<br>al., 2021)               | Canva,<br>Android App | Chemistry<br>(Buffer<br>Solution)                                    | Experiential<br>(Pretest-Posttest<br>Control Group<br>Design) | Junior<br>High<br>School<br>(VII-IX)     | The use of Android-<br>based interactive<br>multimedia (Canva)<br>in buffer solution<br>learning resulted in<br>student learning<br>achievements that<br>exceeded the school-<br>set MOH. In<br>addition, applying<br>this media can<br>increase student<br>learning motivation,<br>where motivation<br>has a positive<br>correlation with<br>learning outcomes. |
| 8 | Application<br>of Project-<br>Based<br>Learning<br>Model to<br>Improve<br>Understandin<br>g of Science<br>Concepts for<br>Junior High<br>School<br>Students<br>(Ewisahrani<br>et al., 2020) | Canva, Model<br>PBL,  | Science<br>(Utilisatio<br>n of<br>Alternativ<br>e Energy<br>Sources) | Classroom<br>Action Research<br>(PTK)                         | Junior<br>High<br>School<br>Class<br>VII | Project-Based<br>Learning—Project-<br>based learning tools<br>are considered<br>feasible for<br>improving the<br>understanding of<br>alternative energy<br>sources by grade VII<br>students of SMPN<br>02 Wera.  |

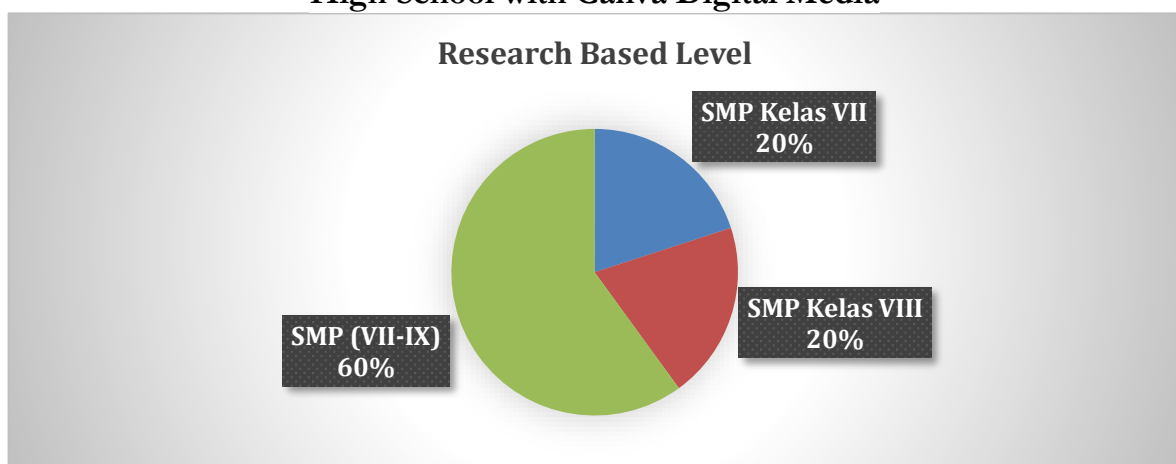


9	Digital Media Analysis of 21st Century Learning Videos Using Canva Applications in Science Learning (Meila Noor Syafria, I. A., Pratiwi & Kuryanto, 2020)	Canva, Digital Video, Animated Infographic	Science (Basic Physics and Chemistry Concepts)	Qualitative Analysis	Junior High School (VII-IX)	Canva's application-based learning videos in Natural Sciences subjects are innovative and engaging media, in line with the development of 21st-century education that emphasises the use of technology in various aspects of life. In addition, Canva offers easy access, intuitive operation, and relatively affordable costs. Thus, using Canva-based learning videos can be an effective solution for teachers in developing digital learning media in the modern era.
10	Canva App as an Engaging Learning Media in the Digital Age (Dwi Nur Indah Sari et al., 2023)	Canva, Interactive Multimedia, Digital Graphics	Various Subjects (Science, Mathematics, Languages, etc.)	Qualitative Descriptive Analysis	Junior High School (VII-IX)	The Canva application is one of the interesting applications used as a learning medium. It has various interesting features that support the learning process.

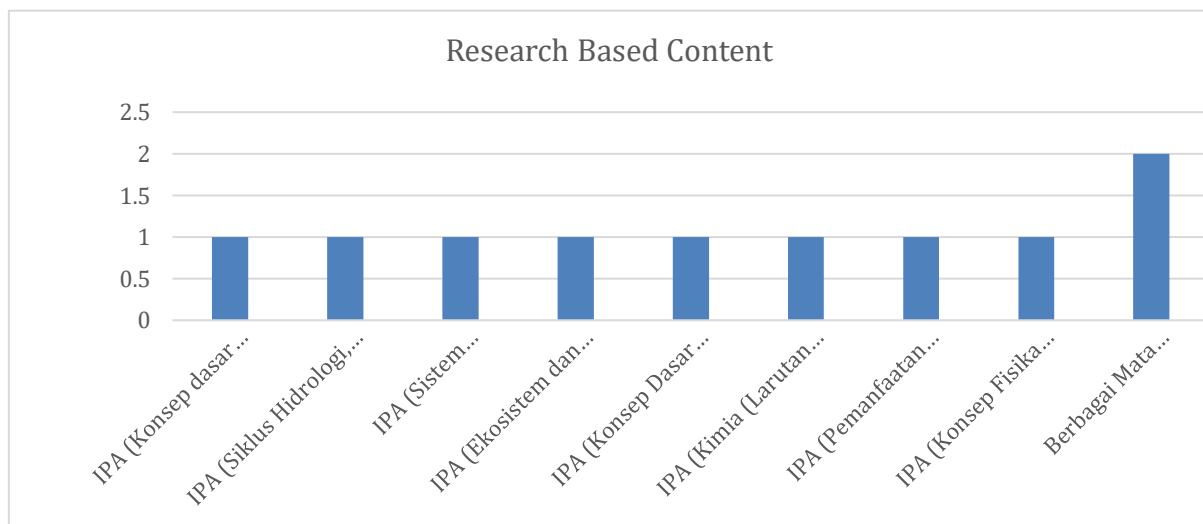
Based on the table above, technology-based learning media are increasingly developing along with the progress of the digital era. One of the most frequently used media in education is Canva. Based on the table presented, various studies examine the effectiveness of Canva learning media in improving learning outcomes, motivation, and student engagement in the learning process. Then it is presented as a Circle Diagram related to the research methodology. A Circle Diagram about the level of education as the focus of research, and the last one is presented as a Bar Diagram, which is about research materials whose learning process is based on Canva digital media.



**Diagram 1. Literature Review Analysis Results on Science Learning in Junior High School with Canva Digital Media**



**Diagram 2. Literature Review Analysis Results on Science Learning in Junior High School with Canva Digital Media**



**Diagram 3. Literature Review Analysis Results on Science Learning in Junior High School with Canva Digital Media**

Studies have shown that the use of Canva in learning positively impacts student learning outcomes. A significant increase in learning outcomes, with the average pretest score of 33 increasing to 66 on the posttest (Hafsah et al., 2024). The percentage of students who achieve KKM increased from 16.6% to 83%, demonstrating Canva's effectiveness in improving understanding of science concepts, particularly in the basic concepts of ecosystems. Another study by Syamsidar et al. also showed an N-gain score of 0.30 in learning the human digestive system, which is classified as medium (Syamsidar et al., 2023). This proves that using interactive visual media such as Canva can help students understand abstract concepts in science more easily. In addition, Rahman et al. examined the use of Android-based interactive multimedia (Canva) in chemistry learning (a buffer solution). They found that this approach improves academic achievement and increases students' motivation in learning. (Rahman et al., 2021).

In addition to improving learning outcomes, Canva also contributes to student motivation and engagement in the learning process. Canva-based interactive media in mathematics learning can increase student motivation. (Putra et al., 2024). The interactive visualisations provided by Canva can help students understand abstract science material, such as concepts in physics and biology. (Citradevi, 2023). High motivation correlates with better understanding, as students are more involved in the learning process. This study aligns with research by Ewisahrani et al., which showed that the Project-Based Learning (PBL) method, with the help of Canva, can improve students' understanding of alternative energy sources. (Ewisahrani et al., 2020).

Canva's advantage as a learning medium lies in its flexibility and ease of use. Web-based e-modules with Canva support learning methods such as direct instruction and flipped classrooms, which provide flexibility for students to understand the material independently (Bartolomeus Kristi Brahmantia Putra, 2024). In addition, Canva-based learning videos are an innovative solution that aligns with 21st-century education, where technology plays a central role in learning. (Meila Noor Syafria, I. A., Pratiwi & Kuryanto, 2020). Canva is not just used in one particular method or subject. S. Oktavia et al. show that Canva-based microblogging models in science learning can help teachers in implementing more effective learning (S Oktavia et al., 2023). Canva's features allow integration in various subjects, such as Science, Mathematics, and Language. (Dwi Nur Indah Sari et al., 2023). Digital infographics and Canva-based learning videos have also

been shown to attract students' attention, improving understanding and retention of information in learning.

**Flexibility and Ease of Use:** Canva is a flexible and easy-to-use learning medium for teachers and students. (Bartolomeus Kristi Brahmantia Putra, 2024) Highlights that the web-based e-module with Canva supports direct instruction and flipped classroom methods in science learning. Meanwhile, Meila Noor Syafria, I. A., Pratiwi, and Kuryanto (2020) highlighted that Canva-based learning videos are an innovative solution suitable for 21st-century education because of their easy and economical access.

Several studies have compared Canva to other learning media. Android-based interactive multimedia (Canva) is more effective than conventional learning methods in improving student learning outcomes. (Rahman et al., 2021). In addition, the effectiveness of Project-Based Learning (PBL) in science learning was enhanced when combined with PBL methods and interactive media such as Canva. (Ewisahrani et al., 2020).

Based on various studies, Canva is efficacious in improving student learning outcomes, motivation, and engagement. However, there are still several opportunities for further research, such as exploring the use of Canva in learning more complex science topics, such as quantities and units in physics. (Mila Rosa Angraini et al., 2024), Comparative analysis of Canva with other learning media platforms, such as Kahoot! or Quizizz, Canva's use in artificial intelligence (AI)-based learning models for learning personalisation (Jannah & Atmojo, 2022). Research has shown that Canva is an innovative, flexible, and effective digital learning medium. With its ability to improve learning outcomes, motivate students, and help students visualise complex science concepts, Canva is one of the most relevant learning solutions in the digital age.

Additionally, while Canva has proven effective in improving student learning outcomes and motivation, some challenges must be considered in its implementation. One of them is the availability of access to technology and the readiness of teachers and students to utilise this digital platform optimally. (Titiyanti et al., 2022). Not all schools have adequate infrastructure, such as stable internet access and supporting technological devices, especially in remote areas. Therefore, the right strategy is needed, such as training teachers in designing Canva-based learning media and developing modules that can still be used offline for students with limited internet access. (Fitri et al., 2023).

In addition to the technical aspects, it is also necessary to consider how Canva can be integrated into more interactive and collaborative learning models, such as blended learning or project-based learning (PBL) (Ewisahrani et al., 2020) and Inquiry-Based learning (Yani et al., 2020; Caparoso & Orleans, 2024). With features that support concept visualisation and student creativity, Canva has the potential to be a medium that is not only instructional but also encourages deeper exploration and discussion in the classroom. This is in line with the 21st-century education trend that emphasises the development of critical thinking, creativity, communication, and collaboration skills (4c skills), so that learning not only focuses on academic achievement, but also equips students with relevant skills for the future (Nurhadifah Amaliyah, Eka Fitriana, 2024). However, the above research still needs updates or further research to discuss Canva as a learning medium in the topic of magnitude and unit. This research will serve as a broader reference for the development of Canva-based learning and enrich teaching methods in various fields of science.

## CONCLUSION

Canva's use of digital media in science learning in junior high schools has been proven effective in improving student learning outcomes, motivation, and engagement. Studies have shown that Canva-based teaching materials can help students understand concepts more deeply through engaging visuals. Additionally, Canva's flexibility allows for implementation in various learning methods, such as interactive e-modules, learning videos, and microblogging models.

However, implementing Canva in schools presents challenges, such as teachers' limited skills in developing digital teaching materials and uneven technology infrastructure. Therefore, training for teachers and support from schools and the government are needed to provide adequate facilities.

Overall, Canva is an innovative learning medium that can support the transformation of digital education, especially in overcoming the challenges of large and unit concept learning in junior high school. However, more research is still needed to explore optimising the use of Canva in various other science learning contexts.

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