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Planning, Implementation, and Evaluation of Biology Learning on the Human Excretory System Using Canva as a Learning Medium

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Abstract The rapid advancement of technology has led to the integration of digital tools in education to enhance student engagement and comprehension. This study examines the planning, implementation, and evaluation of biology learning on the human excretory system using Canva as an instructional medium for 11th-grade science students at SMAS Ibrahimy Wongsorejo, Banyuwangi. Employing a qualitative descriptive approach, data were collected through observations, interviews, and documentation to analyze the effectiveness of Canva in the learning process. The findings indicate that Canva facilitates structured lesson planning by providing interactive and visually appealing materials, making complex biological concepts more accessible. During implementation, students demonstrated increased engagement, creativity, and collaboration when utilizing Canva to design educational materials. Furthermore, evaluation through formative and summative assessments revealed improvements in students' understanding and retention of the subject matter. Teachers reported enhanced instructional delivery and positive student feedback regarding the use of Canva. However, challenges such as internet access and digital literacy were identified as areas requiring further attention.

Keywords: Biology learning, Canva, Digital media, Human excretory system, Instructional technology, Student engagement

INTRODUCTION

In the current era, technology has advanced rapidly, and both educators and students are encouraged to integrate technological tools to enhance the quality of education (Gopalan, 2016; Flowers & Moniz, 2002). The use of instructional

media as a learning aid enables teachers and students to develop new skills and apply innovative teaching methods (Nasution & Rizka, 2024; Nasution & Sofyan, 2024). The current curriculum emphasizes creativity, independence, and technological literacy, moving beyond traditional reliance on textbooks and teacher-centered instruction. With the rise of the Fourth Industrial Revolution (4.0), education is increasingly dependent on technology (Ilori & Ajagunna, 2020), including the use of digital media to facilitate learning activities.

Instructional media play a crucial role in the learning process, acting as a strategic tool to improve teaching effectiveness. Their presence directly influences student engagement and learning outcomes (Aulia et al., 2024; Nasution, 2024; Nursaid et al., 2023; Harahap et al., 2019). Teachers use media as a bridge to communicate subject matter more effectively, helping students grasp complex concepts. Modern technology, including educational media, can be seen as an essential tool in facilitating knowledge transfer and comprehension (Awogbami, 2020; Hajian, 2019).

The importance of instructional media in education has been demonstrated through various studies. Research by Ariyanto et al. (2018) on the use of biology teaching media in private high schools in Salatiga found that instructional media significantly enhance student engagement and participation. Their study revealed that 66.1% of students were more active in class when learning materials were supported by appropriate media. Similarly, a study conducted by Talakua & Elly (2020) on mobile learning in biology education found that technology-based instructional media increased students' interest and creative thinking abilities. The results showed an improvement in students' average scores, from a pre-test score of 73.67 to a post-test score of 80.22, indicating a positive impact on learning outcomes.

Despite the benefits of technology in education, several challenges remain in the teaching and learning process. Many students struggle to maintain focus during lessons, especially when instruction is limited to textbooks and lectures. Monotonous learning methods often lead to boredom, reducing student motivation (Adesola et al., 2019; Sharp et al., 2017). Additionally, limited facilities and inadequate access to digital tools hinder effective learning experiences (Chasubuta & Ndibalema, 2024). Given these challenges, technological advancements provide an opportunity to enhance the learning process through the integration of digital instructional media. As technological developments continue to evolve, the education sector must adapt by incorporating innovative learning tools to improve students' skills and academic performance.

One such technological innovation in education is Canva, a digital design platform that has been widely adopted as an instructional tool (Maksumah et al., 2025; Jannah et al., 2023; Kharissidqi & Firmansyah, 2022). Canva offers various features that allow educators to create visually appealing and interactive learning materials. Study by Purba (2022) examined the use of Canva in mathematics instruction at State Junior High School 1 Aek Kota Batu. The findings indicated that both teachers and students were highly interested in using Canva, as it

facilitated better understanding of mathematical concepts through visually engaging designs.

At SMAS Ibrahimy Wongsorejo, Banyuwangi, Canva has been implemented as a learning medium since 2020. In an interview, the vice principal of curriculum, stated, “Since late 2020, SMAS Ibrahimy Wongsorejo has started integrating Canva into the teaching process. This platform is considered practical and easy to use, providing a variety of features that enhance student creativity. With the advancement of technology, it is crucial for the younger generation to be proficient in digital tools”. This statement highlights the school’s commitment to adopting modern educational technology to support student learning.

Primary data collected from students and teachers at SMAS Ibrahimy Wongsorejo indicate that Canva significantly improves student engagement and comprehension. Interviews with students reveal that they find learning with Canva more enjoyable and effective compared to traditional methods. A student expressed, “Using Canva helps me visualize complex biological processes, making it easier to understand and remember”. Teachers also noted an increase in student participation and creativity. The biology teacher stated, “Students are more active and eager to explore the subject when given the opportunity to create their own visual content using Canva”.

Canva is particularly beneficial in teaching biology, especially in topics that require visual representation, such as the human excretory system. The complexity of this topic, including its structures, processes, and physiological mechanisms, makes it essential to use visual aids for effective learning. The mechanisms of the human excretory system, for example, are best understood through diagrams and animations, which Canva facilitates through its multimedia features. The ability to present information visually through Canva allows students to engage with the content more effectively (Jamaludin & Sedek, 2023), improving their comprehension and retention of complex biological concepts.

This study is motivated by the need to explore the use of Canva as an instructional medium in biology education, particularly in teaching the human excretory system. Despite the increasing adoption of Canva in various educational institutions, limited research has been conducted on its application in biology instruction. Additionally, while SMAS Ibrahimy Wongsorejo has implemented Canva, its effectiveness in teaching specific subjects, such as the human excretory system, has not been thoroughly analyzed. Therefore, this research aims to investigate the planning, implementation, and evaluation of biology learning using Canva as a teaching aid for 11th-grade science students at SMAS Ibrahimy Wongsorejo, Banyuwangi. Given the growing importance of digital learning tools, this study is essential to understanding how Canva can enhance biology education and address existing challenges in traditional teaching methods.

METHOD

This study employs a qualitative research approach to analyze the planning, implementation, and evaluation of biology learning on the human excretory system using Canva as an instructional medium for 11th-grade science students at SMAS Ibrahimy Wongsorejo, Banyuwangi. Qualitative research aims to produce descriptive data in the form of written or spoken words from the research subjects, allowing for an in-depth exploration of the phenomena under study (Sugiyono, 2013). The research follows a descriptive qualitative method, which seeks to explain and depict events logically, systematically, and accurately, based on actual occurrences (Soendari, 2012). This method enables the researcher to thoroughly investigate the use of Canva as a learning tool and its impact on students' understanding and engagement.

The study was conducted at SMAS Ibrahimy Wongsorejo in Banyuwangi, East Java. This school was selected because Canva has already been integrated into teaching practices, but its application in teaching the human excretory system had not yet been studied. The research subjects were selected using a purposive sampling technique, ensuring that the data sources chosen were the most knowledgeable and relevant to the study. The selected participants included the school principal, the vice principal of curriculum, the biology teacher, and 11th-grade science students who had participated in Canva-based learning sessions.

To gather comprehensive data, the study utilized three primary data collection techniques: observation, interviews, and documentation. Observation was conducted to examine classroom activities and interactions when using Canva as a teaching aid. This technique allowed the researcher to investigate non-verbal behaviors, student engagement levels, and teacher strategies during the lesson. Through direct observation, the study captured real-time experiences of students and teachers in utilizing Canva for biology learning.

Interviews were conducted with key informants, including the school principal, the vice principal of curriculum, the biology teacher, and selected students. The interviews followed a semi-structured format, allowing for open-ended responses while ensuring that essential topics were covered. The researcher used a notebook to document responses, and audio recordings were taken with prior consent from participants. The interviews provided valuable insights into teachers' perspectives on the effectiveness of Canva, the challenges encountered, and students' experiences in using the platform.

Documentation served as a supplementary method to validate findings obtained from observations and interviews. The researcher collected relevant teaching materials, lesson plans, student assignments, and photographs of classroom activities. This method ensured the credibility of the research by providing tangible evidence of Canva's implementation in the classroom setting.

For data analysis, the study applied the Miles & Huberman (1994) qualitative analysis model, which consists of three stages: data condensation, data display, and drawing and verifying conclusions. In the data condensation phase, the researcher selected, focused, and summarized data obtained from observations,

interviews, and documentation. This process ensured that only relevant information was included in the study while maintaining the richness of the qualitative data.

The next stage, data display, involved presenting the condensed data in a narrative format to facilitate understanding and interpretation. The data were organized in a manner that highlighted the key findings related to Canva's role in lesson planning, implementation, and evaluation. The use of text-based descriptions allowed for a detailed portrayal of how Canva influenced student engagement and comprehension.

The final stage involved drawing conclusions and verifying findings. Initially, preliminary conclusions were formulated based on emerging patterns and themes in the data. These conclusions were then refined through continuous comparison and validation against additional data collected in subsequent observations and interviews. The iterative process ensured that the conclusions drawn were credible and reflective of actual classroom experiences.

To ensure the validity and reliability of the findings, the study employed data triangulation through source and technique triangulation (Sugiyono, 2013). Source triangulation involved comparing data obtained from different respondents, such as students, teachers, and school administrators, to identify consistent themes and perspectives. Technique triangulation was conducted by cross-checking findings from different data collection methods, such as comparing interview responses with classroom observations and documentation.

FINDINGS AND DISCUSSION

This study aims to analyze the planning, implementation, and evaluation of biology learning on the human excretory system using Canva as a learning medium for 11th grade science students at SMAS Ibrahimy Wongsorejo, Banyuwangi. The findings of this study provide insights into how Canva supports the learning process and enhances students' engagement and comprehension.

Planning of Biology Learning Using Canva

Effective learning requires careful planning to ensure that students grasp the content effectively. At SMAS Ibrahimy Wongsorejo, teachers follow a structured approach before implementing lessons, including syllabus preparation, annual and semester programs, lesson plans, and the selection of appropriate teaching media. This aligns with best practices in lesson planning, which emphasize organization and structured guidance to facilitate learning.

Interviews with teachers indicate that before each academic year, they participate in workshops to review and refine their teaching plans. According to the biology teacher, "Before the new academic year, all teachers are required to attend workshops where we discuss lesson plans and instructional strategies. This helps us stay updated with new teaching methods and integrate digital tools such as

Canva into our lessons". The inclusion of Canva as a digital teaching aid is a strategic decision aimed at enhancing students' engagement through visual and interactive materials.

Furthermore, the use of Canva in lesson planning supports differentiated instruction, catering to students with diverse learning styles. Visual representation of biological structures, such as the human excretory system, aids in better retention and understanding of complex concepts. However, challenges such as the availability of stable internet connections and the need for digital literacy training among teachers and students remain areas of concern. As stated by Vice Curriculum Coordinator, "We recognize the need for digital literacy training for both teachers and students to maximize the potential of Canva in the learning process".

Implementation of Biology Learning Using Canva

The implementation phase involves translating lesson plans into actual classroom activities. The biology teacher utilizes Canva to design presentations, infographics, and interactive content, making the learning process more engaging. Observations during the research indicate that students show increased participation when learning materials are presented through Canva.

Figure 1. Documentation of Canva implementation as a learning medium for the Human Excretory System. Top left: observing activity, Top right: asking activity, Bottom left: information gathering activity, and Bottom right: associating activity.

Lessons are conducted in three stages: introduction, core activities, and conclusion. During the introduction, teachers greet students, take attendance, and introduce

the topic using Canva-based visual aids. This aligns with research suggesting that interactive multimedia can effectively capture students' attention and create a more engaging learning environment.

In the core learning activities, students observe, question, gather information, analyze, and communicate their findings. These steps reflect the scientific approach encouraged in modern pedagogical practices. For instance, students are tasked with creating their own posters on the excretory system using Canva, allowing them to explore creativity while reinforcing their understanding of the topic. As one student noted, "Using Canva to create posters made learning more fun. I could visualize the organs clearly, and it helped me remember the functions better".

However, interviews with students reveal that the initial adoption of Canva was met with challenges, including unfamiliarity with the platform and difficulties in accessing premium features. "At first, I found Canva difficult to use because I had never worked with it before, but after a few lessons, I got used to it and now I enjoy making designs for class assignments", shared another student. Over time, students adapted, and their ability to navigate Canva improved. The school administration supports this initiative by encouraging the use of Canva in multiple subjects, highlighting its versatility as an educational tool.

Evaluation of Biology Learning Using Canva

Assessment is a crucial component of the learning process, providing insights into student progress and instructional effectiveness. The evaluation of Canva-based learning in this study is conducted through formative and summative assessments, student participation, and teacher feedback.

Formative assessments include quizzes and interactive discussions facilitated through Canva presentations. Teachers also use Canva to design visually appealing worksheets and digital assignments, making assessments more engaging. "I noticed that students perform better in assessments that involve visuals, as they can easily recall information presented through images and diagrams rather than plain text", stated the biology teacher.

Summative evaluations, such as unit tests on the excretory system, reveal that students using Canva-based learning materials score higher than those relying solely on textbooks. This finding supports the argument that visual and interactive elements in digital media can significantly improve learning outcomes. "The students' average scores increased after implementing Canva, especially on questions that required understanding complex structures", confirmed the biology teacher.

Student feedback further highlights Canva's impact on motivation and engagement. Many students express a preference for lessons that incorporate digital media, stating that they find the content more accessible and easier to understand. However, some challenges remain, including limited access to premium templates and occasional technical difficulties. "Sometimes, Canva lags

when the internet is slow, and some of the better templates require payment, which makes it harder for us to use all features", noted a student.

Using Canva in Biology Learning

The study identifies several advantages of using Canva in biology learning. First, Canva enhances student creativity by providing tools for designing visually appealing educational materials, as also found by Annissa & Wikarya (2022). Second, the platform offers a user-friendly interface (Rahma et al., 2024) that allows both teachers and students to create and customize content easily. Third, Canva supports a collaborative learning environment where students can work on group projects, fostering teamwork and communication skills (Pedroso et al., 2023).

Despite these advantages, certain limitations exist. One of the primary challenges is the dependency on internet access, which can be a barrier for students in areas with unstable connections. Additionally, some advanced features require a premium subscription, limiting access to certain design elements. To address these challenges, schools should consider providing institutional access to Canva Pro and investing in digital infrastructure to support online learning tools.

This study highlights the effectiveness of Canva as a digital learning tool in teaching the human excretory system to high school students. The findings indicate that Canva enhances lesson planning, facilitates interactive learning experiences, and improves student comprehension and engagement. While challenges such as digital literacy and internet accessibility persist, the overall benefits of using Canva in education outweigh its limitations. As one teacher summarized, "Canva has transformed the way we teach. It not only makes lessons more engaging but also encourages students to be more creative in how they present their knowledge". Future research should explore the long-term impact of Canva on student learning outcomes across various subjects and its integration with other digital learning platforms.

CONCLUSION

The integration of Canva as an instructional tool in teaching the human excretory system has proven to be an effective approach for enhancing student learning experiences. The study demonstrates that Canva plays a crucial role in lesson planning, providing teachers with structured, visually engaging materials that improve instructional effectiveness. During implementation, students exhibited greater engagement and enthusiasm, as Canva allowed them to actively participate in content creation, fostering creativity and deeper understanding. Evaluation results showed significant improvements in students' comprehension and retention, highlighting the platform’s potential as a digital learning aid. Moreover, both teachers and students acknowledged Canva’s usability and impact on the learning process. Despite some challenges, including digital literacy gaps and internet connectivity issues, the overall benefits outweigh the limitations. This research

highlights the need for continued integration of digital learning tools in education, encouraging educators to adopt innovative approaches that align with modern technological advancements. Future studies should investigate the broader applicability of Canva across various subjects and learning environments to further validate its effectiveness in enhancing student learning outcomes.

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