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Development of Guided Inquiry Module using Canva Media to Enhance Critical Thinking and Motivation in Digestive System Learning

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ABSTRACT

This study developed a guided inquiry-based learning module using Canva media to enhance critical thinking and learning motivation in Grade VIII students on the topic of the digestive system. Given the low science literacy and critical thinking skills in Indonesia, especially in junior high school science, this module aimed to address the gap in teaching abstract topics. A Research and Development (R&D) approach using the ADDIE model was applied in small-scale (10 students) and large-scale trials (55 students) at two junior high schools. Data were collected through expert validation, a critical thinking test, and a motivation questionnaire, analyzed using N-Gain and descriptive statistics. Results showed a moderate improvement in critical thinking (N-Gain of 0.63) and high student motivation (88% in the small-scale and 82% in the large-scale trial). The use of Canva within the inquiry-based approach significantly increased engagement and helped students understand abstract concepts, proving that combining inquiry-based learning with visual media is an effective strategy to improve critical thinking and motivation in junior high school science.

Keywords: Guided Inquiry; Canva Media; Critical Thinking; Motivation; Digestive System; Education Technology.

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1. INTRODUCTION

The demands of 21st-century education require students to master higher-order thinking skills so that they can analyze, evaluate, and draw logical conclusions in diverse real-life situations (Hikmawati et al., 2021; Susiloningsih et al., 2025). However, the 2022 PISA results show that many countries, including Indonesia, still struggle to achieve optimal levels of scientific literacy. Indonesia in particular ranks low in critical thinking, with most students only able to solve problems at a basic comprehension level, which underscores an urgent need to improve not only students' content mastery but also the quality of instructional design and learning experiences in science classrooms (OECD, 2023).

Critical thinking has become increasingly crucial as today's students face more complex problems than previous generations. Yet classroom practice is still often dominated by traditional approaches that prioritize memorization rather than the active construction of knowledge

through problem-solving and inquiry (Atika et al., 2024; Suryadi & Nugraha, 2024). Empirical studies indicate that many existing learning models have not successfully integrated critical thinking into classroom practice, especially in science topics that are abstract in nature, such as the human digestive system. This situation points to a clear research gap, namely the lack of structured and integrated learning models (such as guided inquiry) that are explicitly designed to strengthen students' critical thinking when dealing with complex scientific concepts (Antonio et al., 2023).

The guided inquiry learning model offers a promising response to this gap. Through sequences of guiding questions, investigations, and experiments, students are invited to engage actively in constructing their own understanding while being supported by a clear instructional structure. This process not only develops scientific knowledge, but also trains systematic and evidence-based thinking, skills that are essential for comprehending complex biological systems like human digestion (Ormanci & Cepni, 2025; Spatioti et al., 2022; Tapia et al., 2023). By positioning students as active inquirers, guided inquiry can cultivate the habits of mind needed for sustained critical thinking in science.

However, the effectiveness of guided inquiry also depends on how it is designed and implemented within a structured instructional framework. Models such as ADDIE provide a systematic basis for analyzing learners' needs, designing learning paths, developing materials, implementing instruction, and evaluating outcomes in an iterative manner (Nafiah et al., 2020; Sofyan et al., 2020; Spatioti et al., 2022). When guided inquiry is integrated into a well-designed module that has been systematically developed and refined, it is more likely to align with students' characteristics and context, thereby maximizing its potential to improve both learning processes and outcomes (Wang et al., 2025).

At the same time, learning motivation remains a key factor shaping students' engagement in inquiry-based activities. Self-Determination Theory (SDT) emphasizes that intrinsic motivation (rooted in the fulfilment of autonomy, competence, and relatedness) plays a central role in determining the quality of learning (Howard et al., 2021; Lawson et al., 2024). Research grounded in SDT shows that when instructional designs give students meaningful choice, support their sense of capability, and foster supportive social interactions, their motivation and academic performance tend to increase (Zhang et al., 2025). In this perspective, a guided inquiry module that allows students to direct aspects of their own learning and to experience success in challenging tasks can simultaneously strengthen critical thinking and motivation.

The use of appropriate learning media is also essential for realizing the full potential of guided inquiry, especially in topics such as food and the digestive system that involve abstract and dynamic biological processes. Canva, as a digital visual design platform, offers rich opportunities for presenting scientific content through infographics, diagrams, and other visual representations that are accessible to students (Astaño, 2025; Thi et al., 2023; Wijayanti, 2022). Studies have shown that well-designed visual and multimedia materials can enhance comprehension, increase interest, and support long-term retention of complex information (Çeken & Taşkın, 2022; Khacharem et al., 2020). In particular, infographic- and multimedia-based learning has been reported to improve students' ability to organize information and connect concepts in meaningful ways, which is highly relevant for understanding the interrelated organs and functions of the digestive system (Jaleniauskiene, 2022; Traboco et al., 2022).

Based on these considerations, this study aims to develop a guided inquiry-based learning module assisted by Canva media to enhance Grade VIII students' critical thinking skills and learning motivation on the topic of food and the digestive system. The main focus is to examine

the validity, practicality, and effectiveness of the developed module in improving these two key aspects. Through this development and evaluation, the study is expected to contribute to the design of science learning that not only delivers content, but also equips students with higher-order thinking skills and motivation that are essential for facing the challenges of 21st-century education.

2. METHODS

This study was conducted at MTs Salafiyah Syafi'iyah and SMP Negeri 5 Satap Randangan, both located in Banuroja Village, Randangan District, Pohuwato Regency, Gorontalo Province. These schools were purposively selected because they represent junior high schools in a rural area with relatively low science achievement and limited use of digital learning media, making them a relevant context for developing and testing a Canva-assisted guided inquiry module aimed at strengthening students' critical thinking and learning motivation. Following a Research and Development (R&D) approach using the ADDIE model (Analysis, Design, Development, Implementation, Evaluation), the study aimed to develop an effective teaching module designed to improve students' critical thinking and learning motivation through a guided inquiry-based learning approach. The ADDIE model was selected due to its systematic and flexible nature, which makes it suitable for iterative development and adaptation to meet the diverse educational needs observed in the classroom (Akmaluddin et al., 2025; Maulia et al., 2024; Spatioti et al., 2022).

During the Analysis phase, the researchers identified the learning needs, student characteristics, and existing environmental factors that impacted the teaching of the digestive system. This phase aimed to understand the challenges faced by students in developing critical thinking skills, especially when dealing with complex scientific concepts. Based on the data collected, the analysis allowed for the design of a tailored teaching module that addressed these gaps and aligned with students' needs. This structured approach ensured that the Design phase would result in a module that was well-suited to the students' learning styles and characteristics (Nafiah et al., 2020; Sofyan et al., 2020).

In the Design phase, learning objectives were carefully mapped to indicators of critical thinking (analysis, inference, evaluation) and motivation, guided by Self-Determination Theory (SDT). Worksheets (LKPD) were structured progressively to scaffold student learning, starting with observational tasks, moving on to formulating hypotheses, reasoning with data and diagrams, and culminating in drawing conclusions and communicating findings. In this phase, Canva was integrated as a tool for creating infographics and concept canvases, bridging abstract concepts with real-world applications and enhancing student engagement (Damopolii et al., 2024; Guàrdia Ortiz et al., 2024).

In the Development stage, the draft module was validated by subject matter experts and instructional design experts, assessing its content, construction, language, and the integration of lesson plans (RPP), worksheets (LKPD), and media. Feedback was used for revisions until the product met the validity criteria (Ermiana et al., 2024). Feedback from these experts was used to refine the module, which then underwent a small-scale trial in Grade VIII B (n=10). This trial focused on evaluating the readability, flow of activities, and the effectiveness of the Canva instructions. Revisions based on the feedback were made, and preparations were put in place for a large-scale trial.

In the Implementation phase, the developed teaching module was applied in real classroom settings. Trials were conducted in Grade VIII C at MTs Salafiyah (n=25) and SMP Negeri 5 Satap Randangan (n=30). The study employed a one-group pretest-posttest design, which enabled the

measurement of students' learning outcomes before and after the implementation of the teaching module. This experimental approach ensured a clearer picture of the module's effect on students' critical thinking skills and learning motivation. The following is the Modified ADDIE Model Development Scheme, as shown in Figure 1.

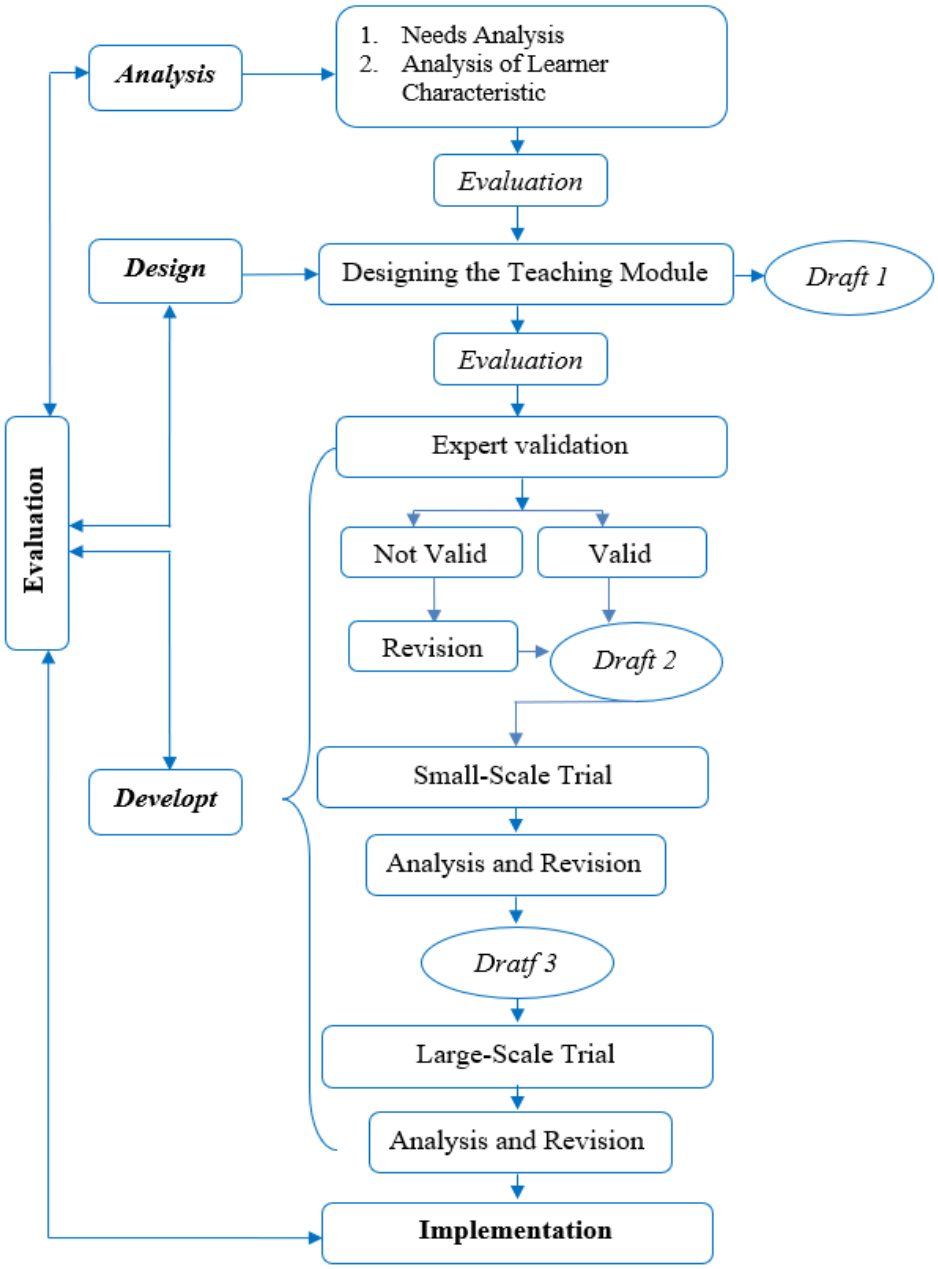

Figure 1. Modified ADDIE Model Development Scheme

Evaluation was conducted throughout the development process, ensuring that the module was refined at each stage. From the Analysis to the Design, Development, and Implementation stages, feedback from each phase was incorporated to ensure that the module met the intended learning outcomes and remained aligned with the students' needs. The research instruments used to collect data included interviews, product validation, observations, surveys, and pre- and post-tests (Ma et al., 2019).

Interviews with science teachers Arrellano et al. (2022) provided insights into the students' learning needs, while product validation by experts helped assess the module's quality (Wang et al., 2025), Classroom observations were used to evaluate the actual implementation of the module during lessons. Surveys measured students' responses to the teaching module and assessed their learning motivation (Guillén-gámez, 2025), while critical thinking tests (Rogers & Maccormac, 2025) were used to assess improvements in students' critical thinking abilities in the topic of the Food and Digestive System.

All collected data were analyzed to assess the validity, practicality, and effectiveness of the teaching module. The reliability of the critical thinking tests was assessed using Cronbach's Alpha (Edelsbrunner et al., 2025; Zakariya, 2022), The effectiveness of the module in improving students' critical thinking was evaluated using the N-Gain index calculated from the pre-test and post-test scores, whereas students' responses and learning motivation were analyzed using descriptive percentage statistics. Because this study is a developmental R&D project with a relatively small, non-random sample and its main purpose is to evaluate the potential of a prototype rather than to generalize to a wider population, inferential significance testing was not applied; instead, the magnitude and educational meaning of the N-Gain and descriptive indices were used to interpret the impact of the module.

3. RESULT AND DISCUSSION

This section presents the findings in response to the research question: How does the implementation of a guided inquiry-based learning module using Canva media affect students' critical thinking skills and learning motivation in the context of Digestive System education for Grade VIII students? The discussion focuses on two main aspects of the study: critical thinking skills and learning motivation. Findings are based on empirical data from pretest-posttest results, surveys, and student feedback. These are interpreted using Self-Determination Theory (SDT) and inquiry-based learning, to understand how the findings relate to existing literature on teaching strategies that promote critical thinking and motivation.

3.1 Validity and Reliability of the Learning Module and Critical Thinking Test

The validity of the learning module was assessed by four expert validators specializing in content and instructional design. They evaluated the lesson plan format, completeness of the module components, content appropriateness, and language clarity. The evaluation aimed to ensure the module met effective teaching standards and was suitable for classroom use. Based on their feedback, revisions were made, leading to Draft II, which was deemed ready for trial testing. The validation results showed an average validity score of 93.7%, categorizing the module as "Very Valid" (90%-100%). The individual scores ranged from 91.8% to 96%, confirming strong agreement among validators. This indicates the module's high validity and suitability for classroom use. The module encourages autonomy, allowing students to actively engage in their learning, and enhances competence through inquiry-based activities that promote problem-solving. The critical thinking test was validated by the same experts to ensure it accurately measured students' skills in engaging with the digestive system content. It received an average validity score of 88.85%, placing it in the "Very Valid" category (80%-89%). This high validity score confirms that the test was appropriate for measuring students' critical thinking abilities. The reliability of the test was assessed using Cronbach's Alpha, with a result of 0.61, indicating good consistency in measuring students' critical thinking across test items. Additionally, the difficulty level of the test questions was evaluated to ensure they were appropriately challenging.

Most questions were classified as moderate or easy, making them suitable for assessing higher-order thinking skills, as shown in Table 1.

Table 1. Module Validity Results

Validator	Validator's Precentage	Average Overall Precentage	Criteria
Validator 1	91,8%	93,7%	Very Valid
Validator 2	92,5%		Very Valid
Validator 3	94,5%		Very Valid
Validator 4	96%		Very Valid

These results confirm the high validity of the module, ensuring it can be used effectively in classrooms to promote critical thinking and support inquiry-based learning, as shown in Table 2.

Table 2. Critical Thinking Test Validity Results

Validator	Validator's Precentage	Average Overall Precentage	Criteria
Validator 1	94%	94,2%	Very Valid
Validator 2	91,6%		Very Valid
Validator 3	94%		Very Valid
Validator 4	97,2%		Very Valid

The validation of the critical thinking test confirms that the observed improvements in students' thinking skills are due to actual progress, not measurement errors. The N-Gain score of 0.63 in both the small-scale and large-scale trials demonstrates moderate improvement in students' ability to analyze, evaluate, and solve problems. The high validity score of the test further supports the claim that these improvements are genuinely attributable to the Canva-assisted inquiry-based learning module. This confirms that the inquiry-based approach, combined with tools like Canva, is an effective strategy for enhancing higher-order thinking skills, as shown in Table 3.

Table 3. Reliability of the Critical Thinking Test

Instrument	Cronbach's Alpha	Criteria
Critical Thinking Test	0,61	Good Reliability

The Cronbach's Alpha value of 0.61 indicates that the test is reliable and provides consistent results across different test items, supporting its use as an accurate tool for assessing students' critical thinking skills, as shown in Table 4.

Table 4. Difficulty Level of the Questions

No. Questions	R hitung	R Table	Validity Category	Difficulty Index	Difficulty Category
1	1	0,40	Valid	0,67	Easy
2	0,83	0,40	Valid	0,50	Moderate
3	0,47	0,40	Valid	0,54	Moderate
4	0,72	0,40	Valid	0,54	Moderate
5	0,95	0,40	Valid	0,58	Moderate
6	0,61	0,40	Valid	0,46	Moderate
7	1,13	0,40	Valid	0,67	Easy
8	0,72	0,40	Valid	0,42	Moderate

No. Questions	R hitung	R Table	Validity Category	Difficulty Index	Difficulty Category
9	0,96	0,40	Valid	0,63	Easy
10	0,51	0,40	Valid	0,42	Moderate
11	0,39	0,40	Invalid	0,38	Hard
12	0,40	0,40	Invalid	0,42	Moderate
13	0,61	0,40	Valid	0,42	Moderate
14	0,70	0,40	Valid	0,54	Moderate
15	0,70	0,40	Valid	0,54	Moderate
16	0,87	0,40	Valid	0,58	Moderate
17	0,81	0,40	Valid	0,63	Easy
18	0,49	0,40	Valid	0,29	Hard
19	0,64	0,40	Valid	0,63	Easy
20	0,61	0,40	Valid	0,38	Hard

The difficulty levels of the test questions were appropriately balanced, allowing for effective assessment of higher-order thinking skills without making the test too challenging or too simple for the students. This section confirms that both the learning module and the critical thinking test are highly valid and reliable. The learning module received high validity scores, indicating it is effective in promoting critical thinking and supporting inquiry-based learning. The critical thinking test showed good reliability and appropriate difficulty levels, ensuring it is a dependable tool for assessing students' cognitive abilities. Together, the module and test provide a solid foundation for improving student engagement, critical thinking, and motivation.

3.2 Implementation of the Learning Module

The learning module was evaluated through both small-scale and large-scale trials to assess its effectiveness in promoting student engagement and achieving learning objectives in real classroom settings. The small-scale trial was conducted at MTs Salafiyah Syafi'iyah (VIII C) with 10 students, focusing on the module's usability and its impact on enhancing critical thinking skills. Challenges such as time management and adaptation to inquiry-based activities were encountered. Some students, accustomed to traditional teacher-centered methods, struggled with the student-driven learning model. Additionally, the time allocated for certain activities was insufficient. To address these issues, clearer instructions and more time for specific activities were provided. Despite these challenges, the trial received positive feedback, with an average score of 78.3%, indicating good performance but highlighting areas for improvement in larger-scale trials.

Table 5. Implementation of Learning Activities (Small-Scale Trial)

Session	Precentage (%)	Criteria
1	78,3 %	Good

The 78.3% score indicated that the module was successful but required adjustments in time allocation and student adaptation. Following this, the module was tested in a larger classroom setting at SMP Negeri 5 Satap Randangan (VIII) with 55 students. The goal was to assess the module's adaptability and effectiveness in a more diverse group. The large-scale trial showed significant improvement, with the implementation score rising to 87%, reflecting better engagement and more effective use of time. Both students and teachers provided positive

feedback, indicating that the module was successfully applied, with greater student participation in the inquiry-based activities, as shown in Table 6.

Table 6. Implementation of Learning Activities (Large-Scale Trial)

Session	Precentage (%)	Criteria
1	80%	Good
2	90%	Good
3	92%	Good
Average	87%	Good

The increase in the implementation score from 78.3% (small-scale) to 87% (large-scale) suggests that the module is effective in both small and large classrooms. The higher score in the large-scale trial shows that the module can manage the dynamics of a larger classroom while maintaining high student engagement. However, some challenges remained, including technical issues with Canva. Some students faced difficulties using the platform, especially those unfamiliar with it. Access issues and device compatibility problems were also reported. Additionally, the larger class size made it harder for the instructor to provide individualized support, affecting student engagement. To address these challenges, technical training sessions were conducted to familiarize students with Canva, and additional time was provided to ensure full engagement. Structured group work was introduced to help students collaborate and support each other, overcoming the challenges of the larger class size, as shown in Figure 1.

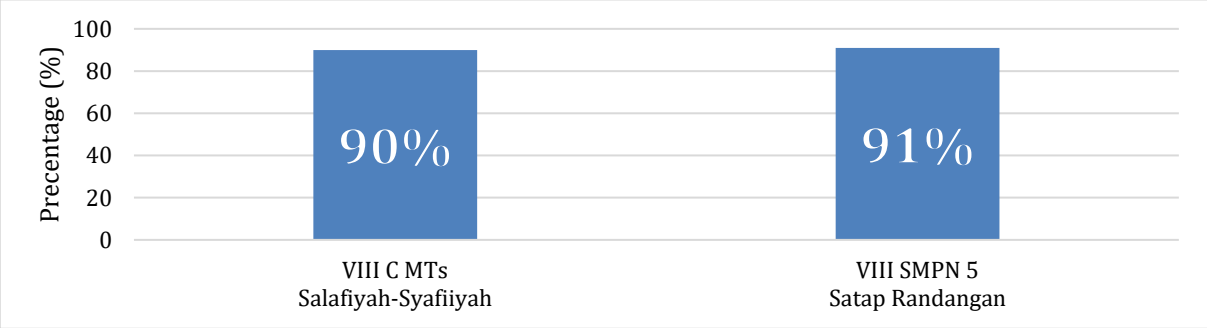

Figure 1. Graph of Learning Implementation using Guided Inquiry Teaching Modules Assisted by Canva Media

Figure 1 illustrates the results of learning module implementation in both trials. The graph shows the success rates in achieving learning objectives in both settings. It highlights that the module was effectively implemented in both trials, with higher engagement rates in the large-scale trial, confirming that the module works well in larger, more diverse classrooms. The module successfully promoted student engagement and developed critical thinking skills, with students actively participating in inquiry-based activities and showing improvements in both cognitive and motivational outcomes. Although challenges like technical issues and time management were identified, they were addressed through clearer instructions, technical training, and group work. These adjustments led to improved performance in the large-scale trial, confirming that the module can be successfully scaled to larger classrooms without losing its effectiveness.

3.3 Student Responses to the Learning Module

This section evaluates student responses to the learning module, focusing on their engagement and overall perceptions. Data were collected through surveys during both small-scale and large-scale trials. The results showed that the learning module, supported by Canva media, was generally well-received, with response rates ranging from 81% to 100%. In the small-scale trial, conducted at MTs Salafiyah Syafi'iyah (VIII C) with 10 students, the feedback was highly positive. Students found the module engaging, especially appreciating the use of Canva media to present the complex topic of the digestive system in an interactive and accessible way. The overall response rate was 88%, with students reporting that the learning activities were easy to follow and aligned with the learning objectives. The Canva media made the content more engaging, increasing student motivation. Students also noted that the module encouraged critical thinking, teamwork, communication, and independence.

Core components of inquiry-based learning. In contrast, the large-scale trial at SMP Negeri 5 Satap Randangan (VIII) with 55 students also showed positive responses, though the response rate dropped slightly to 82% due to the larger class size, which made providing individualized attention more challenging. However, the majority of students still found the module engaging, with Canva media helping them visualize complex concepts. Despite technical difficulties with Canva and issues such as access and device compatibility, students still expressed that the module was useful and engaging, and that they would like to use it again. Despite these challenges, students felt that the module was a valuable tool for learning and indicated that the learning activities were clear and facilitated their understanding of complex topics. The feedback from both trials indicates that the learning module was highly effective in engaging students and facilitating their learning. Positive responses from students in both trials reflect the success of the Canva-assisted guided inquiry approach in helping students understand the topic of the digestive system and promoting critical thinking. Although there were some technical difficulties in the large-scale trial, the module was still found to be engaging and effective in fostering student participation and collaboration. The integration of Canva media played a significant role in increasing student motivation and engagement, as it allowed students to interact with the content in a creative and dynamic way, as shown in Table 7.

Table 7. Student Responses (Small-Scale Trial)

Indicator	Precentage
Learning activities are easy to follow, the flow is clear, and aligned with learning objectives	83%
The worksheets help in understanding concepts, encourage group work, and guide inquiry	90%
The language is easy to understand, the content meets learning needs, and is relevant to daily life	84%
The appearance is engaging, making it easier to understand the material and increasing motivation	84%
The integration of lesson plans, worksheets, teaching materials, and Canva media supports each other	92%
Encourages critical thinking, teamwork, communication, and independence	89%
The module is enjoyable, useful, and students would like to use it again	87%
Average Overall Response (%)	88%

The feedback from the small-scale trial shows that students found the learning activities easy to follow and aligned with the learning objectives. The worksheets and Canva media helped students understand the concepts better and engage with the material. The 88% response rate indicates that the module was highly effective in enhancing student engagement and understanding, as shown in Table 8.

Table 8. Student Responses (Large-Scale Trial)

Indicator	Precentage
Learning activities are easy to follow, the flow is clear, and aligned with learning objectives	84%
The worksheets help in understanding concepts, encourage group work, and guide inquiry	83%
The language is easy to understand, the content meets learning needs, and is relevant to daily life	81%
The appearance is engaging, making it easier to understand the material and increasing motivation	84%
The integration of lesson plans, worksheets, teaching materials, and Canva media supports each other	79%
Encourages critical thinking, teamwork, communication, and independence	83%
The module is enjoyable, useful, and students would like to use it again	82%
Average Overall Response (%)	82%

The responses from the large-scale trial demonstrate that the module was effective in maintaining student engagement, even though the response rate was slightly lower than in the small-scale trial. The integration of Canva media and group work played a crucial role in keeping students engaged and motivated, despite the challenges of a larger class size and technical difficulties, as shown in Figure 2.

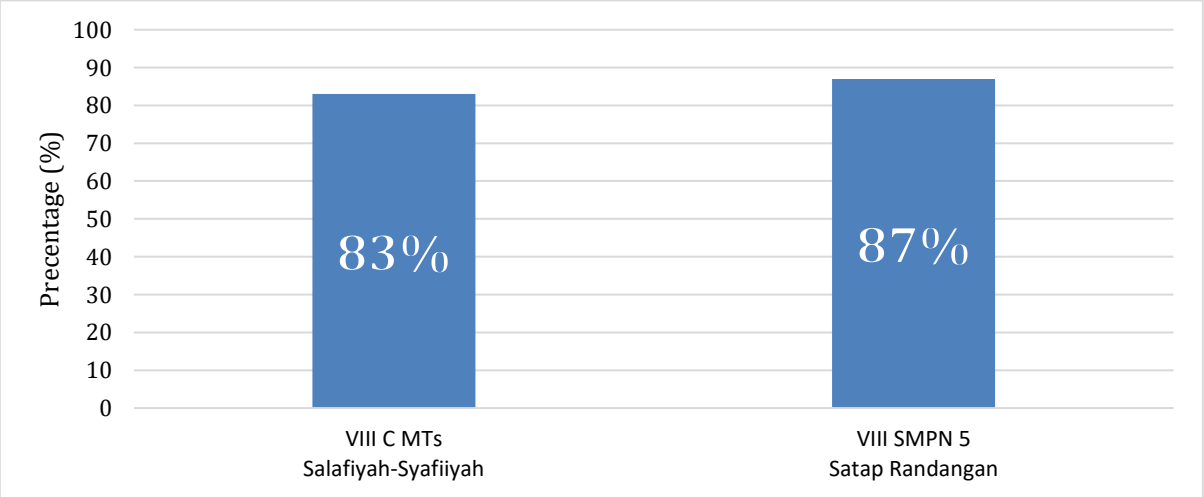

Figure 2. Graph of Questionnaire Results: Student Responses to Learning using the Guided Inquiry Instructional Module Supported by Canva Media

Figure 2 illustrates the student responses to the learning module in both the small-scale and large-scale trials. The response rates for VIII C MTs Salafiyah Syafi'iyah and VIII SMPN 5 Satap Randangan were 83% and 87%, respectively, both indicating positive feedback. These results highlight the effectiveness of the guided inquiry model and the impact of Canva media on student

engagement. While the small-scale trial had a slightly lower response rate of 83%, the large-scale trial saw a higher response rate of 87%, despite challenges like the larger class size and technical issues. Students in both trials expressed positive feedback, indicating that the module successfully engaged them in learning about the digestive system. The integration of Canva media made the learning process more interactive and helped students better visualize the content. In terms of student motivation, both trials showed that the module positively impacted motivation. The small-scale trial had an average motivation score of 83%, reflecting strong engagement. The module provided opportunities for autonomy and creativity, key components of intrinsic motivation, according to Self-Determination Theory (SDT). In the large-scale trial, motivation scores were still high at 82%, though slightly lower due to the larger class size and technical issues with Canva. Despite these challenges, the overall score remained high, demonstrating that the module helped students feel more empowered in their learning.

3.4 Improvement in Critical Thinking Skills (N-Gain)

The primary objective of this study was to assess the improvement in students' critical thinking skills after using the Canva-assisted inquiry-based learning module. Critical thinking was measured using pretest and posttest results, focusing on students' ability to analyze problems, formulate hypotheses, and propose solutions. The N-Gain formula was applied to determine the improvement, with a score closer to 1 indicating high improvement and a score closer to 0 indicating minimal improvement. In the small-scale trial at MTs Salafiyah Syafi'iyah (VIII C) with 10 students, the pretest score was 44%, showing low critical thinking skills. After using the module, the posttest score increased to 79%, resulting in an N-Gain of 0.63, indicating moderate improvement in critical thinking skills, particularly in problem analysis and solution development.

In the large-scale trial at SMP Negeri 5 Satap Randangan (VIII) with 55 students, the pretest score was 40%, and the posttest score rose to 77%, also resulting in an N-Gain of 0.63. This consistent improvement in both trials demonstrates that the module was effective in enhancing critical thinking skills in diverse classroom settings. The integration of Canva media helped visualize complex concepts and made the learning process more interactive, which facilitated students' understanding, particularly of abstract topics like the digestive system, as shown in Table 9.

Table 9. Critical Thinking Test Results (Small-Scale Trial)

Pretest	Posttest	N-Gain	Description
44**%**	79**%**	0,63	Moderate

In the large-scale trial, conducted at SMP Negeri 5 Satap Randangan (VIII) with 55 students, the pretest score was 40%, indicating limited critical thinking skills. After the module, the posttest score increased to 77%, leading to an N-Gain score of 0.63, consistent with the small-scale trial. This suggests the module was equally effective in both small and large classroom settings.

Table 10. Critical Thinking Test Results (Large-Scale Trial)

Pretest	Posttest	N-Gain	Description
40**%**	77**%**	0,63	Moderate

The consistent N-Gain score of 0.63 across both trials demonstrates the module's ability to improve critical thinking skills in diverse classroom settings. The moderate improvement reflects the module's success in enhancing problem-solving, hypothesis formulation, and analytical reasoning. The integration of Canva media in the module provided visual support and made the learning process more interactive, which helped students better understand complex concepts, such as the digestive system, as shown in Figure 3.

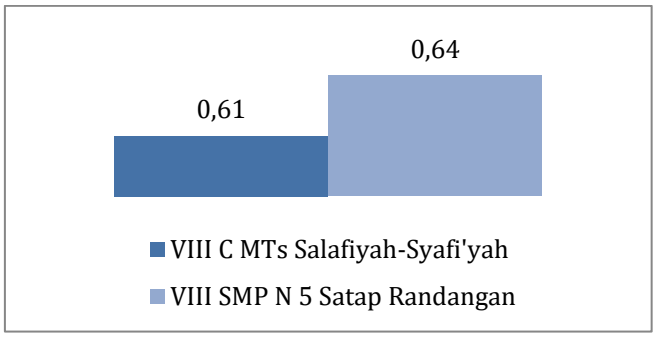

Figure 3. N-Gain Analysis for Critical Thinking Improvement

Figure 3 presents the N-Gain analysis for critical thinking improvement in both the small-scale trial at MTs Salafiyah Syafi'iyah (VIII) and the large-scale trial at SMP Negeri 5 Satap Randangan (VIII). The N-Gain scores indicate the level of improvement in students' critical thinking skills, with a higher score reflecting more significant improvement. In the small-scale trial at MTs Salafiyah Syafi'iyah, the N-Gain score was 0.61, suggesting a moderate improvement in students' ability to analyze, evaluate, and solve problems. In contrast, the large-scale trial at SMP Negeri 5 Satap Randangan showed a slightly higher N-Gain score of 0.64, indicating a slightly better overall improvement in critical thinking in this larger class setting.

These scores demonstrate that the Canva-assisted inquiry-based learning module effectively enhanced critical thinking skills in both trials, with similar improvements observed regardless of class size. The Canva-assisted inquiry-based learning module improved students' critical thinking skills in both small and large-scale trials, with a consistent N-Gain score of 0.63 indicating moderate improvement. Canva media played a key role in making learning more interactive and helping students better understand complex topics, such as the digestive system.

3.5 Impact on Student Motivation

The impact on student motivation was a key focus of this study, aimed at evaluating how the Canva-assisted inquiry-based learning module influenced both intrinsic and extrinsic motivation. Motivation questionnaires were administered during both the small-scale and large-scale trials, showing that the module had a positive impact on student motivation, with students expressing high levels of engagement. In the small-scale trial at MTs Salafiyah Syafi'iyah (VIII C) with 10 students, the average motivation score was 83%, indicating strong engagement. Students appreciated the interactive nature of the module and the opportunity for inquiry-based learning, which encouraged them to take an active role in their learning. The use of Canva media further increased motivation by helping students visualize complex concepts. The module provided autonomy and creativity, key factors in intrinsic motivation according to Self-Determination Theory (SDT).

Table 11. Learning Motivation (Small-Scale Trial)

Indicator	Precentage
Existence of desire and ambition to succeed	85%
Existence of drive and need in learning	87%
Existence of future hopes or aspirations	87%
Existence of recognition in learning	90%
Existence of engaging activities in learning	73%
Existence of a conducive learning environment	77%
Average Overall Learning Motivation Percentage (%)	83%

While the overall motivation score was high, the lower score for engaging activities (73%) suggests room for improvement in making certain activities more stimulating. In the large-scale trial at SMP Negeri 5 Satap Randangan (VIII) with 55 students, motivation was also high, with an average score of 83%. Despite the larger class size and technical difficulties with Canva, students remained engaged, indicating the module's ability to maintain motivation. The integration of Canva media was particularly appreciated for making the learning process more interactive, as shown in Table 12.

Table 12. Learning Motivation (Large-Scale Trial)

Indicator	Precentage
Existence of desire and ambition to succeed	83%
Existence of drive and need in learning	78%
Existence of future hopes or aspirations	83%
Existence of recognition in learning	86%
Existence of engaging activities in learning	78%
Existence of a conducive learning environment	80%
Average Overall Learning Motivation Percentage (%)	83%

While there was a slight decrease in motivation scores from the small-scale trial (83%) to the large-scale trial (82%), the overall motivation remained high, reflecting the effectiveness of the module in promoting student engagement even in larger classes with technical challenges, as shown in Table 4.

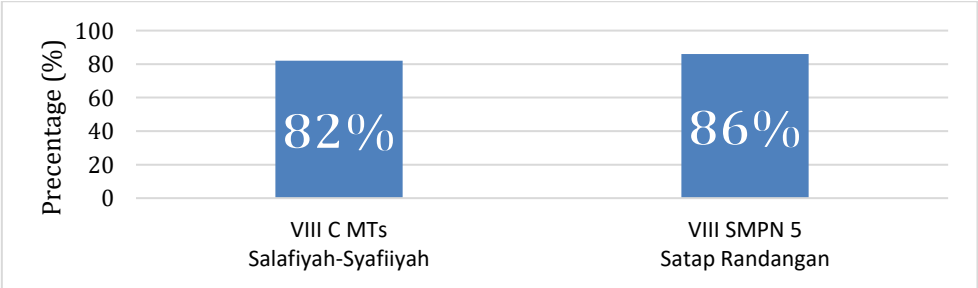

Figure 4. Graph of Questionnaire Results: Student Motivation

Figure 4 shows the results of the motivation questionnaire for both trials. VIII C MTs Salafiyah Syafi'iyah had an average motivation score of 82%, while VIII SMPN 5 Satap Randangan achieved 86%, both showing high levels of motivation. The graph confirms the positive impact of Canva media and the inquiry-based approach on student motivation. Despite the challenges in the large-scale trial, the module successfully maintained high engagement levels, indicating that interactive

learning tools and visual media are crucial in keeping students motivated. The findings from both trials indicate that the Canva-assisted inquiry-based learning module had a positive impact on student motivation. The Canva media helped students visualize complex concepts and engage with the material in dynamic ways. Although the motivation scores were slightly lower in the large-scale trial, they remained high, demonstrating the effectiveness of the module in promoting student motivation even in larger classroom settings with technical challenges.

4. CONCLUSION AND SUGGESTIONS

This study demonstrated that the Canva-assisted inquiry-based learning module effectively improved students' critical thinking skills and learning motivation, as evidenced by the positive results from both the small-scale and large-scale trials. The module, incorporating Canva media, facilitated student engagement and provided a valuable tool for enhancing the understanding of complex topics like the digestive system. Although technical issues and challenges with class size were encountered, the module proved adaptable and effective in both small and large classroom settings. Moving forward, it is recommended that the module be refined for even larger classrooms, incorporating more dynamic media elements to increase interactivity, and be expanded to other science topics. Further research is also needed to explore the module's scalability and long-term impact on student learning outcomes, particularly in diverse educational environments.

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