

NOTION AS A WEB-BASED LEARNING MEDIUM FOR ENHANCING LEARNING MOTIVATION IN GRADE VII INFORMATICS

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Abstract

This study aims to examine the development of students' learning motivation across the cycles of Classroom Action Research (CAR) through the use of Notion as an interactive learning medium in data analysis instruction. The research is motivated by the low level of student motivation observed during data analysis learning, indicating the need for appropriate solutions involving digital media, instructional methods, and effective pedagogical approaches. The study adopts a Classroom Action Research design conducted in several cycles, with data analyzed using quantitative techniques. The findings reveal that the integration of Notion as an interactive learning medium, supported by suitable teaching methods and pedagogical strategies, significantly enhances students' learning motivation. Students demonstrate higher engagement in learning activities, increased participation during lessons, and greater interest in understanding data analysis concepts. Furthermore, Notion's flexibility and interactive features enable systematic organization and easy access to learning materials, which further supports students' motivation and learning autonomy. Overall, this study highlights the potential of Notion as an effective digital learning medium for enhancing students' motivation in data analysis learning. The findings contribute to the development of innovative instructional practices and suggest that interactive digital media can be further explored and implemented in diverse learning contexts. This study may also serve as a reference for future research on technology-enhanced learning and student motivation.

Introduction

Motivation is a key concept used to explain the direction and intensity of behavior, commonly referring to an individual's willingness and desire to engage in certain actions (Keller, 2009). In educational contexts, student motivation plays a crucial role in the learning process. Research by Davoudi and Parpouchi (2016) indicates that when students receive adequate support and encouragement from teachers or parents, their motivation to learn increases significantly. Furthermore, students' learning motivation can be stimulated by external factors, such as teaching methods and the creative use of instructional media (Riswanto, 2017). Similarly, Adirestuty and Huriyah (2016) report a positive relationship between teachers' creativity and students' learning motivation.

Creating engaging and creative learning environments has become a major challenge for teachers. Mgboro (2019) emphasizes that teachers are not only responsible for providing learning materials but are also required to creatively design, implement, manage, and evaluate the entire learning process. In today's digital era, students are increasingly familiar with mobile devices from an early age, which can negatively affect their learning motivation if instructional practices fail to engage them effectively. Therefore, teachers must design enjoyable and interactive learning experiences to stimulate students' motivation and active participation (Putra et al., 2025).

Instructional media serve as tools that facilitate teaching and learning processes by making learning messages clearer and more effective. Advances in science and technology have significantly expanded the use of digital learning media, offering substantial benefits for educational practice (Gesya et al., 2022). However, the selection of instructional media must align with learning objectives to ensure effective, motivating, and meaningful learning experiences (Susanti, 2021). The integration of technology in education requires compatibility between technological tools and instructional strategies to enhance students' learning motivation (Sholeh & Nur Efendi, 2023). Consequently, learning content, instructional strategies, and technology should be viewed as an integrated whole in instructional design (Rida & Deny Setiawan, 2024).

Web-based learning media support student-centered learning by accommodating diverse learning styles (Wassef & Elkhamisy, 2020). Blending online platforms with face-to-face instruction can foster meaningful interactions among students, teachers, and learning resources, leading to higher learning satisfaction (Jamil et al., 2019). One freely accessible online platform that can be utilized in education is Notion. Notion is an all-in-one productivity application that enables users to create and manage documents, databases, schedules, tasks, and web pages in a single platform. It is accessible across desktop, web, and mobile devices, allowing flexible learning anytime and anywhere.

Based on observations conducted during the Teaching Practicum Program (PPL) of the *PPG Prajabatan 2024 Cohort 2* at SMPN 8 Malang, data collected from 30 students in Class 7C through a questionnaire revealed an overall learning motivation score of 73.30%, indicating room for improvement. Supporting interviews with several students showed low engagement, limited use of textbooks, and boredom when instructional delivery lacked interactivity. These findings were reinforced by pre-test results in data analysis, where only 23% of students met the minimum mastery criterion (KKM), while 77% did not.

In response to these challenges, this study seeks to provide learning experiences that foster student motivation and engagement throughout the instructional process. Accordingly, an online learning medium using Notion was developed to support both classroom instruction and independent learning. The purpose of this study is to enhance students' learning motivation in Informatics education, with the ultimate goal of improving their learning outcomes.

Methods

This study employed a Classroom Action Research (CAR) design, a reflective and cyclical research approach conducted by teachers within their own classrooms to solve instructional problems and improve the quality of learning. The CAR process consists of four main stages: planning, action, observation, and reflection (Susilo et al., 2011). More specifically, CAR aims to enhance the quality of educational inputs, processes, and outcomes; assist teachers and other educational practitioners in addressing learning difficulties; improve professional attitudes; and foster an academic culture that supports continuous improvement in educational quality (Salim

et al., 2019). In this study, CAR was applied to utilize Notion as an instructional medium to enhance seventh-grade students' learning motivation in Informatics education.

The participants of this study were 30 seventh-grade students from Class 7C at SMPN 8 Malang. The research was conducted in two cycles to examine changes in students' learning motivation and learning outcomes following instructional improvements in each cycle. Learning motivation was measured through a questionnaire administered as both a pre-test and a post-test to the same group of students to ensure consistency in data comparison.

The learning motivation questionnaire consisted of six indicators: learning persistence, resilience in facing difficulties, interest and attention in learning, achievement motivation, learning independence, and strength of learning intention. A detailed description of these indicators is presented in Table 1.

Table 1. Indicators of Students' Learning Motivation Questionnaire

No.	Indicator	Description
1	Learning persistence	Students' consistency and diligence in completing learning tasks and following lessons
2	Resilience in facing difficulties	Students' ability to remain engaged and not give up when encountering learning challenges
3	Interest and attention	Students' curiosity, focus, and attentiveness during the learning process
4	Achievement motivation	Students' desire to achieve positive learning outcomes
5	Learning independence	Students' ability to learn autonomously without excessive reliance on the teacher
6	Strength of learning intention	Students' internal drive and willingness to participate actively in learning

Data obtained from the questionnaire were analyzed using descriptive percentage analysis based on a Likert scale. The percentage score was calculated by dividing the total score obtained from both favorable and unfavorable items by the maximum possible score, then multiplying the result by 100 percent, as adapted from Sugiyono (2018). The interpretation of students' learning motivation levels is presented in Table 2.

Table 2. Interpretation of Students' Learning Motivation Scores

Percentage (%)	Category	Description
75.1–100	Very High	Students are highly motivated
50.1–75.0	High	Students are well motivated
25.1–50.0	Moderate	Students show low motivation
0–25.0	Low	Students' learning motivation is poor

The results of the motivation analysis were used as a basis for refining the instructional media and learning strategies implemented in each CAR cycle. After completing each cycle, post-test motivation data were collected and analyzed using the same descriptive percentage technique to evaluate changes in students' motivation.

To support the motivation data, cognitive pre-tests were administered to measure students' initial understanding of data analysis concepts prior to the implementation of the Notion-based learning media. Post-tests were then conducted at the end of each cycle to examine improvements in both students' learning motivation and learning outcomes after the use of Notion as an interactive learning medium.

Results and Discussion

Learning Media Product

This study resulted in the development of a Notion-based learning medium designed for the topic of basic data analysis in Grade 7 Informatics at SMPN 8 Malang. The learning media can be accessed through the following link: <https://chief-plantain-636.notion.site/Pengolahan-Data-Dasar-18db840fc6aa801280d7fdfcc83bd8b3>

The Notion-based learning media was developed to support the implementation of Discovery Learning integrated with Teaching at the Right Level (TaRL) and Culturally Responsive Teaching (CRT). The platform was selected due to its flexibility, ease of access, and ability to integrate various learning components into a single, well-organized digital environment (Rahmatulloh et al., 2023). This design enables students to navigate learning materials independently while still receiving structured guidance from the teacher.

The learning media consists of several integrated components, including learning modules, presentation materials, student worksheets (LKPD), and an assessment submission section. Each component was designed to align with the stages of the Discovery Learning model and to accommodate students' diverse learning levels, as emphasized in the TaRL approach.

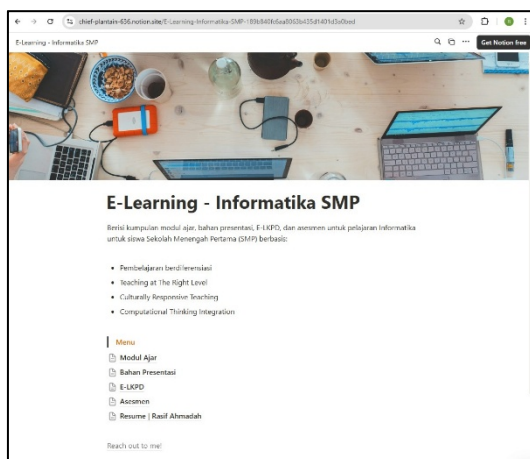


Figure 1. Main Interface (Homepage) of the Notion-Based Learning Media

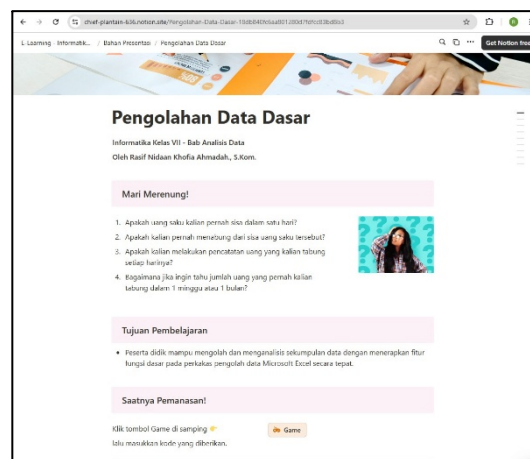


Figure 2. Presentation Materials (Learning Content)

Figure 1 presents the main interface (homepage) of the Notion-based learning media. The homepage functions as a central navigation hub, allowing students to access learning modules, presentation materials, LKPD, and assessment sections efficiently. The structured layout and clear menu organization were designed to reduce cognitive load and support students' learning focus.

The learning modules provide concise explanations of basic data analysis concepts, presented in simple and contextual language. Figure 2 illustrates the presentation materials embedded within the Notion pages, which are used as visual supports during classroom instruction. These materials play a crucial role in the stimulation and problem identification stages of the Discovery Learning model by connecting abstract data concepts to students' everyday experiences.

Student worksheets (LKPD) are integrated directly into the platform to promote active learning and inquiry. As shown in Figure 3, the LKPD guides students through activities such as data collection, data processing, and data interpretation. This integration encourages higher-

order thinking skills and supports learning independence, as students can complete tasks, organize their responses, and revisit materials at their own pace.

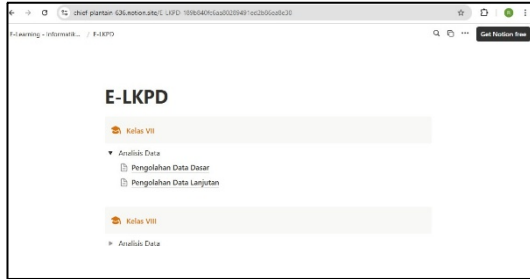


Figure 3. Student Worksheets (LKPD) Integration

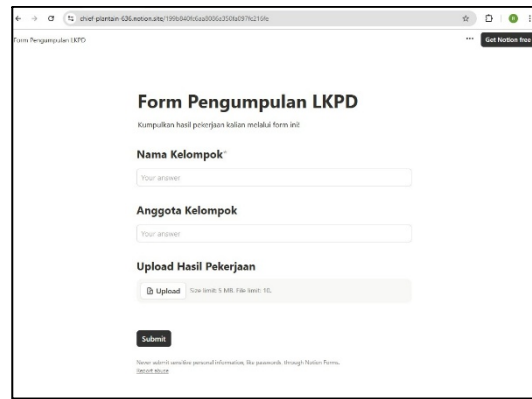


Figure 4. Assessment Submission Feature

The assessment submission feature is presented in Figure 4, which allows students to submit assignments and learning outcomes digitally through the Notion platform. This feature supports accountability and responsibility for learning while enabling teachers to monitor student progress systematically and provide timely feedback.

Overall, the Notion-based learning media functions not only as a content delivery tool but also as an instructional scaffold that supports meaningful learning (Chakraborty, Patil, & Rallabhandi, 2026). Its integration with Discovery Learning, TaRL, and CRT principles contributes to increased student engagement, learning motivation, and improved learning outcomes, as reflected in the results of Cycle II. These findings indicate that well-designed digital learning media can play a significant role in facilitating effective and student-centered Informatics learning at the junior secondary level.

Results of Cycle I

Cycle I was conducted to examine the initial implementation of the Notion-based learning media using the Classroom Action Research (CAR) model adapted from Kurt Lewin, which includes planning, action, observation, and reflection (Nisya, 2019).

Planning

At the planning stage, a learning motivation questionnaire was distributed to students of Class 7C using Google Forms, followed by interviews with several students. This stage aimed to identify students' motivation levels and learning needs in Informatics. The results of the initial motivation assessment are presented in Table 3.

Table 3. Students' Learning Motivation Scores (Pre-Cycle)

Aspect	Score Obtained	Maximum Score	Percentage (%)	Category
Learning persistence	418	600	69.67	High
Resilience in facing difficulties	458	600	76.33	Very High
Interest and attention	427	600	71.17	High
Achievement motivation	446	600	74.33	High
Learning independence	431	600	71.83	High
Strength of learning intention	367	480	76.46	Very High
Average			73.30	High

The data indicate that students generally demonstrated a high level of learning motivation. However, cognitive pre-test results showed that only 23% of students met the minimum mastery criterion (KKM) in data analysis, indicating weak initial understanding. Based on these findings, instructional materials and the Notion-based learning media were developed for implementation in the action stage.

Action

In Cycle I, the Notion-based learning media was implemented using a Discovery Learning model. The learning activities consisted of three phases: opening, core activities, and closing. During the opening phase, the teacher conducted greetings, attendance, classroom rule clarification, and administered a pre-test using Quizizz to stimulate students' engagement and readiness. This approach aligns with Wiggins and McTighe (2017), who emphasize the importance of early engagement in learning.

In the core activities, students explored data analysis materials through Notion, practiced basic Excel functions, and worked collaboratively in small groups to complete LKPD tasks. At the end of the session, students submitted their work through the Notion platform. The lesson concluded with reflection and feedback.

Observation

Observations focused on students' motivation and engagement during learning activities. A post-cycle questionnaire was administered, and the results are presented in Table 4.

Table 4. Students' Learning Motivation Scores (Cycle I)

Aspect	Percentage (%)	Category
Learning persistence	66.96	High
Resilience in facing difficulties	76.25	Very High
Interest and attention	72.50	High
Achievement motivation	74.82	High
Learning independence	70.36	High
Strength of learning intention	75.67	Very High
Average	72.76	High

Although there was a slight decrease in the overall motivation percentage compared to the pre-cycle data, classroom observations revealed improved student engagement compared to previous teacher-centered instruction. Post-test results showed that 30% of students achieved the KKM, indicating a 7% improvement from the pre-test.

Reflection

Reflection revealed several challenges, including limited student interaction with the learning media and insufficient teacher guidance during media use. These issues suggested the need for stronger instructional support and more active facilitation. Consequently, improvements were planned for Cycle II, focusing on enhanced teacher guidance and clearer instructional scaffolding.

Results of Cycle II

Planning and Action

Based on the reflection results from Cycle I, several improvements were made in Cycle II to optimize the learning process. The instructional design was revised by strengthening the implementation of the Discovery Learning model, particularly its core syntax: stimulation, problem identification, data collection, data processing, verification, and drawing conclusions

(Sinambela, 2017). These stages were applied more systematically to ensure that students were actively involved in constructing knowledge rather than passively receiving information.

To address the challenges identified in Cycle I, teacher guidance was intensified, especially in supporting students' interaction with the Notion-based learning media. The teacher provided clearer instructions, scaffolding questions, and step-by-step guidance on how to navigate learning materials, complete LKPD tasks, and organize learning outputs within the Notion platform. This support aimed to enhance students' confidence and reduce technical barriers that could hinder learning motivation.

In addition, Cycle II incorporated Culturally Responsive Teaching (CRT) by integrating local tourism data from Malang as contextual learning material. This approach was intended to make learning more meaningful by connecting Informatics concepts with students' cultural and social environments. Students actively accessed learning resources through Notion, collaborated in completing LKPD tasks, and submitted their assignments digitally. Teacher facilitation was further intensified to encourage active participation, foster discussion, and sustain students' learning motivation throughout the learning process.

Observation and Reflection

The observation and reflection phase following the implementation of Cycle II provides important insights into the development of students' learning motivation and academic achievement. The learning motivation data collected at the end of Cycle II are presented in Table 5, which summarizes students' motivation levels across six key aspects.

Table 5. Students' Learning Motivation Scores (Cycle II)

Aspect	Percentage (%)	Category
Learning persistence	69.23	High
Resilience in facing difficulties	80.00	Very High
Interest and attention	72.12	High
Achievement motivation	77.12	Very High
Learning independence	77.12	Very High
Strength of learning intention	75.00	Very High
Average	75.10	Very High

As shown in Table 5, the overall average learning motivation score reached 75.10%, categorized as *very high*. Among the measured aspects, *resilience in facing difficulties* recorded the highest percentage (80.00%, very high), indicating that students demonstrated stronger perseverance when encountering challenging Informatics tasks. This improvement suggests that the learning activities facilitated through Notion, combined with guided inquiry and differentiated instruction, helped students develop greater confidence in problem-solving processes.

Several other aspects, including *achievement motivation*, *learning independence*, and *strength of learning intention*, also fell within the *very high* category, each scoring 77.12% or above. These findings indicate that students were increasingly motivated to achieve learning goals and showed a greater sense of responsibility for their own learning. The structured presentation of materials and learning tasks in Notion may have supported this development by allowing students to access resources independently and revisit learning content as needed.

Meanwhile, *learning persistence* (69.23%) and *interest and attention* (72.12%) were categorized as *high*. Although these aspects did not reach the *very high* category, they still reflect a positive learning disposition. The slightly lower scores in these aspects may indicate that maintaining sustained attention over longer learning sessions remains a challenge for some students,

particularly in technology-based learning environments. This finding highlights the need for varied learning activities and interactive elements to sustain students' focus.

Comparatively, the average motivation score in Cycle II increased by 2.34% from Cycle I and 1.8% from the pre-cycle condition. Although the increase was relatively modest, it demonstrates a consistent upward trend in students' learning motivation across cycles. This gradual improvement aligns with the nature of motivational development, which typically evolves incrementally rather than instantaneously.

In terms of cognitive learning outcomes, the post-test results in Cycle II revealed that 47% of students achieved the Minimum Completeness Criteria (KKM), representing a 17% improvement compared to Cycle I. This increase suggests that the enhancement of learning motivation was accompanied by better academic performance, although not all students had yet reached the expected mastery level. The findings indicate that motivational gains may precede more substantial improvements in learning outcomes, especially in content areas that require higher-order thinking skills such as data analysis.

Overall, the observation and reflection of Cycle II indicate that the instructional strategies and learning media applied in this study were effective in fostering students' learning motivation and supporting gradual improvements in academic achievement. However, the results also suggest that continued refinement of learning activities and extended implementation may be necessary to achieve more substantial learning gains in subsequent cycles.

Discussion

Overall, the implementation of Notion as a web-based learning medium integrated with the Discovery Learning model, Teaching at the Right Level (TaRL), and Culturally Responsive Teaching (CRT) approaches contributed positively to improvements in both students' learning motivation and learning outcomes. The quantitative evidence presented in Table 6 and Table 7 strengthens this conclusion by illustrating changes in motivation categories and average achievement scores across research cycles.

Table 6. Distribution of Students' Learning Motivation Categories

Category	Cycle I (%)	Cycle II (%)
High	60.71	53.85
Very High	39.29	46.15

Table 7. Average Student Learning Outcomes

Assessment	Average Score
Pre-test	52.07
Cycle I	62.50
Cycle II	69.13

Table 6, which presents the distribution of students' learning motivation categories, indicates a meaningful shift in motivational quality between Cycle I and Cycle II. While the percentage of students categorized as having *high motivation* decreased slightly from 60.71% to 53.85%, this change was accompanied by an increase in the *very high motivation* category from 39.29% to 46.15%. Rather than indicating a decline, this pattern suggests a motivational progression, where a portion of students transitioned from high to very high motivation. This finding supports the view that learning motivation is dynamic and evolves throughout the learning process, influenced by instructional design, learning environment, and learner engagement (Puthree et al., 2021).

In addition to motivational changes, Table 7 demonstrates a consistent improvement in students' learning outcomes. The average score increased from 52.07 in the pre-test to 62.50 in Cycle I and further to 69.13 in Cycle II. This gradual increase indicates that students not only became more motivated but also achieved better conceptual understanding of informatics content. The use of Notion facilitated structured material organization, clear learning pathways, and continuous access to resources, which supported students' independent learning and cognitive engagement. Similar findings were reported by Wassef and Elkhamisy (2020), who emphasized that web-based learning platforms can improve learning outcomes when aligned with formative instructional strategies.

The pedagogical integration of Discovery Learning encouraged students to actively explore informatics concepts and construct knowledge through guided inquiry, while the TaRL approach ensured that learning activities were adjusted to students' readiness levels. Meanwhile, the CRT approach strengthened the relevance of learning materials by connecting them to students' cultural and contextual experiences. The combined application of these approaches created a supportive and inclusive learning environment, which is reflected in both the motivational improvements shown in Table 6 and the achievement gains in Table 7. This finding aligns with Meriatami et al. (2024), who highlight that innovation in junior high school informatics learning requires the integration of digital media with adaptive and context-sensitive pedagogical strategies.

Furthermore, the findings of this study reinforce the broader trend of technology-enhanced learning, where digital platforms function not merely as content delivery tools but as interactive learning ecosystems. Ananda and Herwanto (2024) found that the integration of digital learning media with student-centered instructional models significantly enhanced learners' autonomy and motivation. Although their study focused on vocational education, the underlying principle—that digital media can effectively foster motivation when designed to support active and meaningful learning—corresponds with the results observed in this study.

Nevertheless, the slight fluctuation in motivation categories shown in Table 6 also indicates that the use of technology alone does not automatically guarantee sustained motivation. Continuous instructional support, reflective teaching practices, and adaptive learning strategies remain essential to maintain and enhance students' motivation over time. Therefore, the effectiveness of Notion as a learning medium is closely linked to its pedagogical integration rather than its technological features alone.

In summary, the data presented in Table 6 and Table 7 provide empirical evidence that the integration of Notion-based learning media with Discovery Learning, TaRL, and CRT approaches can enhance students' learning motivation and learning outcomes in informatics instruction. These findings contribute to the growing body of research on innovative digital learning practices and support the implementation of web-based learning platforms in junior high school education.

Research Limitations

This study employed a Classroom Action Research (CAR) design conducted in a single class, namely Grade VII C of SMPN 8 Malang, involving 30 students. As a result, the findings are context-specific and cannot be generalized to broader educational settings. The scope of the study was limited to students' learning motivation and learning outcomes in Informatics, particularly in data analysis instruction, which may restrict the applicability of the results to other subjects or learning contexts.

Moreover, the implementation of Notion was confined to selected features developed and utilized during two research cycles, meaning that the platform's full range of functionalities was not explored. In addition, students' learning motivation was primarily measured through self-reported questionnaires, which may be subject to response bias and students' subjective perceptions. These limitations should be considered when interpreting the findings.

Conclusion

This study concludes that the use of Notion as a learning medium, integrated with the Discovery Learning model and supported by Teaching at the Right Level (TaRL) and Culturally Responsive Teaching (CRT) approaches, is effective in enhancing students' learning motivation and learning outcomes in Grade VII Informatics at SMPN 8 Malang. The integration of interactive digital media with appropriate instructional models and pedagogical strategies contributed to increased student participation and active engagement in the learning process.

The findings indicate that well-designed digital learning media can facilitate meaningful learning experiences by promoting student engagement, learning autonomy, and motivation. Although the observed improvement in learning motivation was relatively moderate, the consistent increase in students' learning outcomes across research cycles suggests that the applied instructional strategies positively influenced the overall learning process.

Future research is encouraged to explore a wider range of interactive features within Notion or other digital learning platforms, such as the integration of instructional videos, interactive quizzes, or game-based activities during the introductory phase of learning. In addition, the development of more interactive student worksheets (LKPD) embedded directly within digital platforms may further enhance student engagement, motivation, and academic achievement.

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