

# Analysis of Junior High School Students' Learning Media Preferences: Case Study in Bener Meriah Regency

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## ABSTRACT

Learning media play a vital role in enhancing students' understanding by transforming abstract concepts into concrete experiences, especially in today's technology-driven educational landscape. This study aims to analyze Junior High School students' preferences for learning media based on five indicators: learning modality, engagement and motivation, media effectiveness, technology and media use, and assessment preferences. Using a descriptive quantitative approach, data were collected through a four-point Likert scale questionnaire administered to 93 students across three Junior High Schools in Bener Meriah Regency. The findings reveal a strong preference for technology-based and multimodal learning media that integrate visual, auditory, and kinesthetic elements. Virtual laboratories were considered the most effective in facilitating concept comprehension, while multiple-choice tests were the most preferred form of assessment due to their objectivity and practicality. These results underscore the need for developing adaptive, interactive, and student-centered media that cater to diverse learning styles. This study contributes to the growing literature on media preferences by providing empirical insights that can help educators select more suitable learning tools and design inclusive instructional strategies. Such understanding is essential for improving student engagement, motivation, and academic achievement in 21st-century learning environments.

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## ARTICLE INFORMATION

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## INTRODUCTION

Education is a complex process involving various interconnected elements, one of which is the use of learning media as tools for delivering instructional content. Learning media convert abstract concepts into more concrete and understandable forms for students. Prasetyo and Abduh (2021) and Sholikhah et al. (2024) explain that learning media play a crucial role in overcoming limitations during the learning process and in enhancing student engagement. Their use is essential in improving conceptual understanding, adapting to technological advancements, and supporting diverse learning needs. Effective integration of learning media is also expected to equip students with the necessary skills to face future challenges. Furthermore, the presence of appropriate media has a substantial impact on how students focus, respond, and participate in classroom activities. Teachers are therefore required to continuously develop their competencies in selecting and utilizing suitable media to enhance the overall learning experience (Hanaysha et al., 2023; Ramzan et al., 2023). The thoughtful selection and application of media are not only beneficial for knowledge delivery but also for fostering motivation and active involvement in the learning environment.

In the current era of education, the forms of learning media have expanded considerably. They include traditional tools such as textbooks and blackboards, which continue to be used in many classrooms, as well as digital technologies like educational software, augmented reality (AR), and virtual reality (VR) that are designed to make the learning process more engaging (Al-Ansi et al., 2023;

[Haleem et al., 2022](#)). Additionally, interactive media, such as educational games and simulations, have received growing attention due to their potential to increase student interest and participation. These types of media offer various features that can support the learning process in different ways, although each also carries its limitations. Media are no longer seen merely as tools for delivering material but also as instruments that shape how students engage with and respond to what they are learning. For teachers, the use of learning media can help present material more clearly and in a way that is easier for students to follow. As stated by [Kumbara and Rodliyah \(2021\)](#) and [Aprilia et al. \(2024\)](#), the incorporation of interactive features in learning media is crucial for helping students develop a deeper understanding of the material. When thoughtfully selected and applied, such media can encourage students to become more active and involved during learning activities.

Based on the results of observations in three junior high schools — SMP Negeri 1 Bandar, SMP Negeri 3 Timang Gajah, and SMP Negeri 7 Satu Atap Pantan Kemuning — it was found that the learning media used most frequently were textbooks, projectors, learning videos, and a small amount of other interactive media. This suggests that, despite technological advancements, many schools have not fully capitalized on the potential of interactive and innovative learning media. Additionally, some students continue to experience learning difficulties despite teachers' use of various media in the learning process. Learning difficulties can manifest in various forms, such as a lack of understanding of the material, low motivation and involvement in learning, difficulty concentrating, and the inability to apply concepts learned to real-life situations. One factor that needs to be considered is the mismatch between the learning media used and the students' learning preferences.

Student preferences refer to students' choices or tendencies towards specific learning methods, media, or styles that they find most effective or enjoyable. These preferences can be influenced by various factors such as individual learning styles, previous experiences, and specific needs in the learning process. Appropriate learning media preferences can enhance students' emotional and cognitive engagement. For example, the emotional design of multimedia learning materials (MLM) can influence students' engagement and their interpretation of knowledge ([Désiron et al., 2025](#); [Özgür & Altun, 2021](#)). The study of media preferences can help understand students' characteristics related to media, which in turn helps teachers in choosing more appropriate teaching media. If the learning media are not tailored to these preferences, then it is likely that the learning process will not occur optimally. Therefore, understanding students' preferences for learning media is a crucial first step in improving the effectiveness of the teaching and learning process.

Research on student preferences for learning media at the junior high school level remains limited, with the majority of studies focusing on the use of learning media, their effectiveness, and the development of new learning media. Research related to the use of learning media in the form of technology-based learning media, such as PBL-based Moodle web for students' technological literacy ([Laili et al., 2024](#); [Meng et al., 2023](#)), the use of interactive multimedia, such as Adobe Flash ([Possumah & Qohar, 2024](#); [Pratiwi et al., 2023](#)) and augmented reality (AR) based learning media ([Rohandi et al., 2024](#); [Vashisht & Sharma, 2024](#)) On effectiveness: in the form of research on interactive multimedia ([Possumah & Qohar, 2024](#); [Rahmat & Arnawa, 2019](#); [Sari et al., 2021](#)), mass media ([Bhuvaneswari & Christopher, 2020](#)), e-learning ([Sahasrabudhe & Kanungo, 2014](#)), and web-based learning ([Yanti et al., 2025](#)). In the development of learning media: the development of Interactive Smart Box (Kocerin) ([Buchori & Rahmawati, 2016](#)), Mobile learning applications ([Cahyana et al., 2019](#)), Previous research related to preferences has focused more on comparing preferences for certain types of media ([Alda et al., 2024](#); [Divya & Haneefa, 2020](#)).

Student preferences play a crucial role in determining effective learning strategies. This study examines these preferences across various aspects, including learning modalities, the impact of media on motivation and engagement, and students' personal experiences with different types of learning

media. The data obtained provide a basis for developing media that align with students' needs and learning characteristics, thereby fostering greater participation and improved academic outcomes. The novelty of this research lies in its focus on student media preferences at the junior high school level, an area that has received limited attention in previous studies. The main scientific contribution of this study is the empirical evidence it provides regarding how students respond to various forms of learning media, which can inform future research in the field of educational technology and instructional design. Additionally, the findings contribute to the refinement of media-based learning practices by offering insight into student-centered media planning. Practically, this study supports the implementation of more adaptive and responsive learning approaches, while also promoting stronger interaction between teachers and students in the classroom.

## METHOD

This study employs a descriptive quantitative approach, which involves a structured data collection method that yields numerical data, allowing for descriptive analysis ([Alford & Teater, 2025](#); [Sugiyono, 2016](#)). This method allows researchers to identify patterns, trends, and general tendencies among participants by using measurable indicators. The approach was selected to systematically and objectively describe and analyze students' preferences for learning media, using data obtained through the distribution of questionnaires. Through this process, the study aims to identify students' preferences in selecting learning media based on several predetermined aspects. The descriptive nature of the method also supports the clarity and comparability of the results, as it relies on standardized data points. The population in this study included all grade VIII students in the even semester of the 2024/2025 academic year from three junior high schools in Bener Meriah Regency, totaling 196 students. From this population, a sample of 93 students was selected to represent the research respondents. The selected sample was deemed adequate to provide a reliable description of student preferences across the participating schools.

The sampling technique used varies according to the population size in each school. For SMP Negeri 3 Timang Gajah and SMP Negeri 7 Satu Atap Pantan Kemuning, the saturated sampling technique was used (total sampling), or all members of the population were used as research samples. This technique was applied because the population sizes in each school were relatively small, specifically 19 students and 17 students ([Sarker & Al-Muaalemi, 2022](#)). Meanwhile, for SMP Negeri 1 Bandar, the random sampling technique was used, where each member of the population had an equal chance of being selected as a sample. Of the total 160 students in this school, 57 were randomly selected. This random selection was carried out to ensure the principle of representativeness, that the samples taken can represent the population's characteristics proportionally. The principle of representativeness in sample selection is important to ensure that the research results can be generalized and accurately reflect the conditions of the population.

Data collection in this study was conducted by distributing questionnaires to junior high school students, who served as the research respondents. The questionnaires were administered online using the Google Forms platform to facilitate accessibility and efficiency in data gathering. The research instrument used was a questionnaire that had been systematically developed to uncover students' preferences for learning media. Each item in the questionnaire was constructed to reflect specific aspects aligned with the research objectives. The instrument employed a four-point Likert scale, consisting of the following response options: Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1). This scale was selected to allow respondents to express their degree of agreement with each statement clearly. The construction of questionnaire items was guided by indicators that directly corresponded to the variables under investigation, ensuring that the data collected accurately represented students' attitudes and tendencies. The format of the instrument also

enabled uniformity in responses, which supported the subsequent process of descriptive analysis, as shown in Table 1.

**Table 1.** Indicators of Student Learning Media Preferences

| Indicator                       |
|---------------------------------|
| Learning Modalities             |
| Engagement and Motivation       |
| Effectiveness of Learning Media |
| Technology and media use        |
| Assessment preferences          |

To ensure the quality of the instrument, two stages of evaluation were conducted to verify its validity and reliability. The first stage is validation by experts, which aims to assess the clarity, appropriateness, and relevance of the items to the concept being measured (Herrera et al., 2022). The second stage involves an empirical test conducted using SPSS software to assess the validity and reliability of the instrument. The results of the validity test showed that of the 25 statement items tested, 18 items were declared valid and used in the final questionnaire. Meanwhile, the reliability test yielded a Cronbach's Alpha value, indicating that the instrument is reliable for use in this study. Data analysis was conducted using descriptive statistical techniques, which aim to compile, process, and present data in a structured and informative manner. This method enables researchers to organize findings in a structured manner and to infer patterns or inclinations in students' choices of learning media (Boudett et al., 2020).

## RESULTS AND DISCUSSION

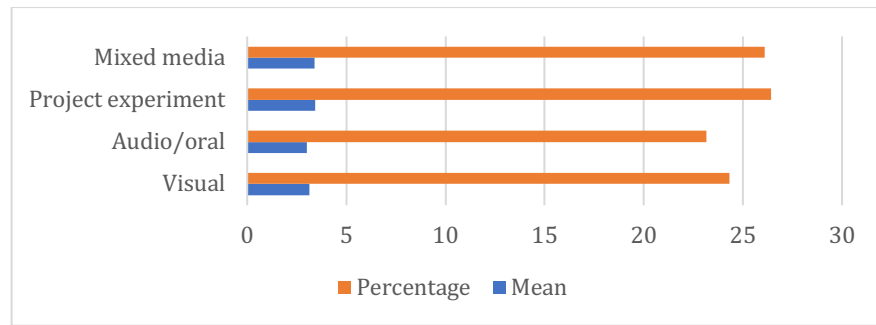
Based on the results of descriptive statistical analysis of data from 93 respondents, a picture of student preferences for learning media was obtained. These preferences were measured through five leading indicators, which were described in 18 statement items, each assessed using a four-point Likert scale. Students' tendencies in choosing and responding to various types of learning media are reflected through the percentage and mean values of each item. A detailed summary of these results is presented in Table 2.

**Table 2.** Percentage of student preferences for each item in the indicator

| Indicator                 | Item                                                                                                               | Scale (%) |      |      |      |
|---------------------------|--------------------------------------------------------------------------------------------------------------------|-----------|------|------|------|
|                           |                                                                                                                    | 1         | 2    | 3    | 4    |
| Learning Modalities       | I feel comfortable learning using visual media such as books, pictures, or videos.                                 | 5.4       | 4.3  | 60.2 | 30.1 |
|                           | I find it easier to understand the material if it is delivered verbally or through a voice recording.              | 7.5       | 12.9 | 51.6 | 28.0 |
|                           | I like learning through hands-on activities, such as experiments or projects.                                      | 1.1       | 8.6  | 37.6 | 52.7 |
|                           | I prefer to use a combination of different learning styles, such as visual, auditory, and kinesthetic.             | 3.2       | 2.2  | 48.4 | 46.2 |
| Engagement and Motivation | I am more motivated to learn if the material is delivered with the help of media such as videos, images, or sound. | 3.2       | 4.3  | 50.5 | 41.9 |
|                           | I feel more involved in learning if there are activities such as quizzes or educational games.                     | 3.2       | 15.1 | 52.7 | 29.0 |

| Indicator                       | Item                                                                                                           | Scale (%) |      |      |      |
|---------------------------------|----------------------------------------------------------------------------------------------------------------|-----------|------|------|------|
|                                 |                                                                                                                | 1         | 2    | 3    | 4    |
|                                 | I enjoy using technological devices, such as computers, tablets, and smartphones, to learn.                    | 1.1       | 4.3  | 37.6 | 57.0 |
|                                 | I focus more when studying if the material looks interesting and colorful.                                     | 3.2       | 6.5  | 48.4 | 41.9 |
|                                 | I feel online media, such as websites, social media, and videos, help me understand the lessons better.        | 1.1       | 4.3  | 59.1 | 35.5 |
| Effectiveness of Learning Media | I find both printed books and e-books effective in helping me learn.                                           | 2.2       | 7.5  | 65.6 | 24.7 |
|                                 | I feel that learning through simulations or virtual labs helps me understand concepts more clearly.            | 2.2       | 4.3  | 35.5 | 58.1 |
| Technology and Media Use        | I enjoy learning activities that are conducted through digital platforms, such as Google Classroom or Quizizz. | 2.2       | 9.7  | 49.5 | 38.7 |
|                                 | I often watch educational videos on platforms like YouTube.                                                    | 2.2       | 23.7 | 52.7 | 21.5 |
|                                 | I feel comfortable using technology to support my learning activities.                                         | 0.0       | 7.5  | 44.1 | 48.4 |
| Assessment preferences          | I prefer assessment formats that allow me to express my understanding creatively.                              | 2.2       | 7.5  | 54.8 | 35.5 |
|                                 | I felt multiple-choice questions were a fair way to measure my knowledge.                                      | 1.1       | 8.6  | 43.0 | 47.3 |
|                                 | I enjoy project assignments that require research and presentations.                                           | 3.2       | 14.0 | 53.8 | 29.0 |
|                                 | I am more interested in quizzes that are presented in an engaging and interactive manner.                      | 3.2       | 11.8 | 52.7 | 32.3 |

The results of the data analysis clearly show that students have strong and consistent preferences regarding the use of learning media. In the learning modality indicator, more than 90% of students prefer a combination of visual, auditory, and kinesthetic learning styles, indicating a clear tendency toward multimodal approaches. On the engagement and motivation indicator, the majority of students reported feeling more motivated when learning media involves technological tools such as computers, tablets, or smartphones. Regarding the effectiveness of media, students perceived that simulations and virtual laboratories significantly enhance their conceptual understanding. For the technology and media usage indicator, students expressed confidence and comfort in using digital tools to support learning. In the assessment indicator, students preferred multiple-choice formats and opportunities to express their creativity. These findings provide a direct response to the research question by indicating a clear preference among students for interactive, technology-integrated, and multimodal learning media. Visual representations of these preferences, organized by indicator, are shown in Figure 1.



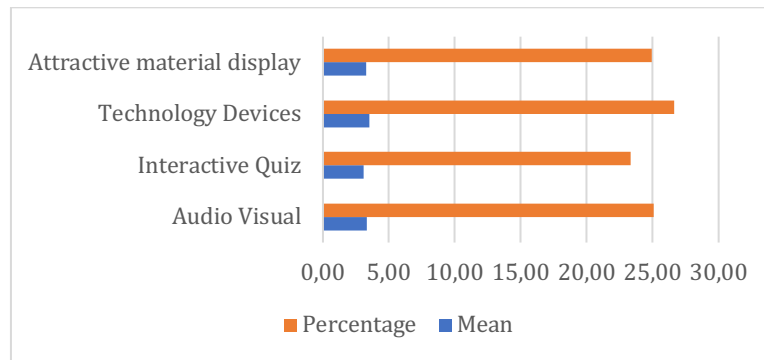
**Figure 1.** Learning Modality Indicator

In Figure 1, the analysis of the learning modality indicators reveals that the majority of students exhibit a strong preference for project-based or experimental learning, with a mean score of 3.4 and a proportion of 26.4%, followed closely by the use of mixed modalities visual, auditory, and kinesthetic with a mean of 3.4 and a percentage of 26.1%. These two modalities show a higher preference compared to visual-only learning (mean = 3.15, 24.3%) and the oral modality (mean = 3.0, 23.2%). This finding suggests a notable preference among students for active and contextual learning approaches. The novelty of this study lies in the identification of project-based learning as the most preferred modality at the junior high school level, a finding that has not been prominently highlighted in previous research. While earlier studies generally emphasize the role of digital or multimedia tools, this research provides more specific insight into students' learning style preferences. The results suggest that students are more engaged and motivated when involved in practical, real-world tasks that promote direct participation and problem-solving. This aligns with the principles of constructivist learning, where knowledge is developed through active experience (Cheng et al., 2024; Harjali, 2019; Widiastuti & Mr, 2024) and emotional involvement in the learning process supports deeper cognitive and behavioral engagement (Naibert et al., 2022).

However, the success of project-based learning is closely influenced by the quality of project design. Projects that allow students to choose topics based on their interests tend to offer greater autonomy and relevance, which can increase both engagement and learning effectiveness (Cheng et al., 2024). Nonetheless, this approach is not without challenges. The increased workload and potential stress associated with complex projects must be carefully managed to prevent student burnout. Therefore, project-based learning should be implemented in a balanced manner, complemented by conventional instructional methods to maintain sustainability and reduce pressure. These findings highlight the importance of integrating project-based learning into the selection and development of learning materials, not only to enhance mastery of academic content but also to foster essential 21st-century competencies, such as creativity, problem-solving, and collaboration. Moreover, this aligns with the objectives of the Merdeka Curriculum, which prioritizes differentiated and project-based learning as a foundation for contextual and student-centered education (Safitri et al., 2023; Shiddiqi & Setiyawan, 2024).

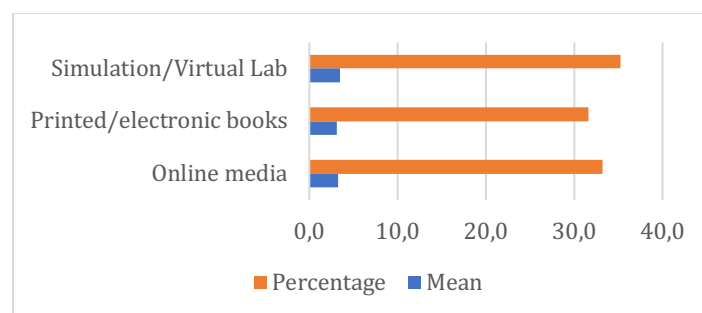
In addition, students' high preference for mixed media also shows the importance of a multimodal approach that combines visual, auditory, and kinesthetic elements to accommodate various learning styles (Cole, 2022; Sulistyanto et al., 2019). In line with previous research, this multimodal approach has been demonstrated to enhance engagement, motivation, and learning outcomes, while also making the learning process more interactive and engaging (Wu & Tai, 2016). The VARK model (Kurniawan et al., 2019) also suggests that combining various modalities can enhance understanding and retention of information. Therefore, teachers need to design diverse and flexible learning media, including the integration of interactive technology, to create an inclusive and responsive learning environment that meets students' needs (Wang et al., 2022). Meanwhile,

although visual and oral media still have a place, both are at a lower level of preference. This suggests that one-way delivery methods, without active engagement, are less effective for today's generation of learners, who are accustomed to digital and interactive environments (Gray et al., 2011). Although a mismatch between preferences, media, and learning styles is not always negative, a combination of different types of media still provides more optimal learning outcomes (Sankey et al., 2010; Yolanda et al., 2024). Student responses related to their engagement and motivation in using learning media are visually presented in Figure 2.



**Figure 2.** Engagement and Motivation Indicator

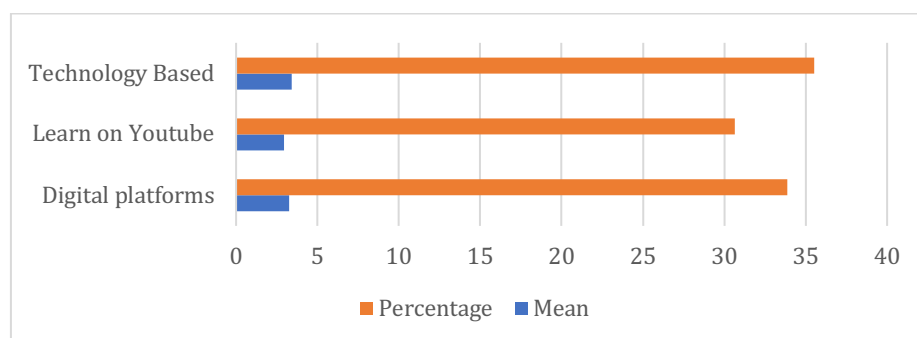
According to the engagement and motivation graph, the analysis reveals that the use of technological devices has the most significant influence on student engagement and motivation, with a mean score of 3.51 and a percentage of 26.61%. This is followed by the use of audio-visuals (mean = 3.31; 25.09%), the display of interesting materials (mean = 3.29; 24.94%), and interactive quizzes (mean = 3.08; 23.35%). These results demonstrate that students are more responsive to media that incorporate technological elements, particularly when such media can present content in an interactive, flexible, and engaging manner. This aligns with previous studies that affirm the role of technology in enhancing learning interest through multimedia integration (Alegre, 2023; Gunuc, 2023). The relatively high scores for attractive content and audio-visuals also confirm that well-designed visual and auditory stimuli are effective in capturing attention and stimulating motivation. Although interactive quizzes scored lower than other elements, their presence within technology-based platforms still contributes positively to active learning participation. These findings reinforce the idea that the strength of learning media lies not in isolated features, but in the integration of multiple elements through technology. As such, technology-based learning should be designed comprehensively to deliver engaging content alongside interactive features that collectively enhance student motivation and involvement (Das & Malaviya, 2025; Purwaningsih et al., 2023; Ragab et al., 2024). In line with the previous indicators, students' views on the effectiveness of learning media are visually represented in Figure 3.



**Figure 3.** Learning Media Effectiveness Indicator

Based on Figure 3, the effectiveness indicator reveals that simulation or virtual laboratory media received the highest mean score of 3.5 and the highest percentage of 35.2%, indicating that students perceive it as the most effective medium for supporting learning. This is followed by online-based media, such as websites, social media, and educational videos, with a mean of 3.29 and a percentage of 33.2%. Printed or electronic books rank third, with a mean of 3.1 and a percentage of 31.6%. These findings suggest that students tend to view interactive, technology-based media, particularly simulations and virtual labs, as more effective in enhancing understanding and learning outcomes than conventional media. The data support the view that virtual laboratories not only facilitate conceptual mastery but also promote higher engagement and procedural comprehension, particularly for topics that require step-by-step exploration, as confirmed by earlier studies (Widiastuti, 2015; Usman & Huda, 2021). The novelty of this study lies in its identification of virtual labs as the most preferred and effective medium at the junior high school level, providing empirical support for the growing relevance of digital simulations in secondary education. However, the successful implementation of this media depends on adequate technological infrastructure, which may still pose a challenge in several educational settings. This medium appears particularly well-suited for students with independent learning styles and for subjects that benefit from practical, experiential engagement.

In addition to simulations, online-based media such as websites, social media platforms, and educational videos also demonstrate effectiveness in facilitating student learning, particularly in cognitive and affective domains (Suyatna, 2020). These digital media offer the advantage of delivering content in visually appealing and informative formats, enabling them to accommodate various student learning preferences (Nurmalisa et al., 2023). Educational videos are especially effective in enhancing conceptual understanding, while websites and social media provide broader access to information and enable real-time interaction (Sahusilawane et al., 2024). Despite these benefits, the use of online media is often hindered by dependence on internet connectivity and the varying levels of digital competence among both students and teachers. In contrast, printed and electronic books remain a valuable resource due to their organized and comprehensive content, as well as their independence from technological requirements (Wiyono et al., 2020). These formats are generally preferred by learners who favor conventional study methods, although they are limited in terms of interactivity and engagement when compared to digital tools. The tendency of students to utilize technology and digital media that support engagement and flexibility in the learning process is depicted in Figure 4.

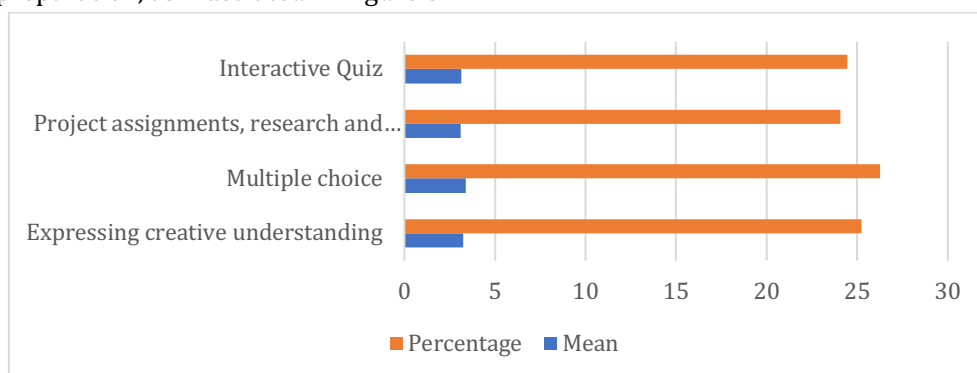


**Figure 4.** Technology and Media Use Indicator

Figure 4 indicates that students demonstrate a strong preference for technology-based learning media due to their accessibility, flexibility, and ability to support learning from diverse sources. Digital platforms, such as Google Classroom and Quizizz, are especially favored, as they facilitate the

organization of assignments, assessment processes, and enhance teacher-student interaction, all of which contribute positively to engagement and learning satisfaction (Purnamasari & Suryadarma, 2022; Subkhan et al., 2021). YouTube also ranks high among student preferences, valued for its engaging and easy-to-follow visual content. Overall, technology-based learning media are preferred over other digital tools, as they support self-directed and visually enriched learning experiences, while better aligning with students' need for flexible learning in a digital environment. Google Classroom is considered effective in promoting student autonomy through structured communication and assignment tracking (Purnamasari & Suryadarma, 2022), while Quizizz is appreciated for utilizing gamification to motivate learners and providing immediate feedback that supports evaluation.

Meanwhile, YouTube serves as an accessible platform that delivers content in an appealing format, although concerns such as inconsistent quality and ethical issues in content distribution remain (Fitri, 2025; Holmes et al., 2013). The preference for interactive digital media is also closely associated with students' motivation and learning independence. When media are tailored to their individual needs and learning styles, students tend to engage more actively in the learning process (Nikolov, 2023). Furthermore, digital media that offer various learning sources enable students to study independently and adjust materials to their specific needs (Eisenmann, 2018). These findings reinforce the need to align assessment media with student expectations, supported by sufficient teacher preparation, as illustrated in Figure 5.



**Figure 5.** Assessment Preference Indicators

Figure 5 indicates that students show the highest preference for multiple-choice assessment formats, with a mean score of 3.37 and a percentage of 26.25%. A strong interest follows this in assessments that allow for creative expression of understanding (mean = 3.24; 25.23%), interactive quizzes (mean = 3.14; 24.45%), and project-based tasks such as research and presentations (mean = 3.09; 24.07%). These findings suggest that while students value creativity in assessment, they tend to favor structured and straightforward formats. The multiple-choice format is perceived to offer clarity and fairness, enabling students to focus on individual performance and monitor their learning progress effectively. Research supports this trend, showing that both high- and low-achieving students prefer multiple-choice assessments, partly due to their lower cognitive demand compared to more complex formats (Dang et al., 2023; Newton et al., 2025). Moreover, this format is often considered objective and equitable, providing a sense of confidence and comfort during evaluation (Lindner et al., 2018). Interestingly, while students tend to favor project-based learning modalities, their preferences shift toward more practical and less cognitively demanding assessment types, highlighting a potential gap between learning experiences and assessment expectations.

However, other forms of assessment, such as creative expression, interactive quizzes, and project assignments, still received considerable appreciation. Assessments that allow students to express their understanding creatively tend to be preferred by those who have a deep learning style

and are more emotionally involved in the learning process (Maya et al., 2021). Meanwhile, interactive quizzes are considered interesting because they provide direct feedback and reduce student anxiety (Reedijk, 2024). As for project assignments, although they require more preparation, they are considered capable of developing higher analytical and application skills. The implications of these findings indicate the importance of diversifying the assessment methods used by educators. Combining various forms of assessment, both objective and creative, can not only accommodate students' diverse preferences but also encourage the optimal development of 21st-century skills.

The results of this study indicate that student preferences are primarily directed toward learning media based on digital technology and multimodal features. Media that provide interaction, flexibility, and accommodate various learning styles are considered to facilitate increased participation, motivation for learning, and a clearer understanding of the material. The high level of preference for project-based learning and virtual laboratory media demonstrates the importance of applying learning strategies that emphasize active involvement and procedural knowledge development. Nevertheless, the effectiveness of such media cannot be separated from the availability of supporting infrastructure and the readiness of educators and learners to utilize them. Limitations in technological facilities, particularly in geographically remote or under-resourced schools, continue to present considerable obstacles to implementation (Yanti et al., 2025). Additionally, variations in teacher competence in using digital media, which are often influenced by age and professional experience, have implications for the consistency of technology integration in the classroom (Agonas et al., 2024; Joseph et al., 2021).

The results of this study indicate that students highly appreciate the use of interactive digital learning media, particularly those that combine various formats, such as text, visuals, audio, and virtual laboratory-based simulation features. Most respondents stated that such media facilitates their understanding of the material because it provides an active and imaginative learning experience. This finding is also supported by Irwanto and Ramadhan (2018), who demonstrate that virtual laboratories can enhance students' critical thinking skills, conceptual understanding, and learning motivation by presenting learning in the form of visual and interactive experiments. Furthermore, Setiawan et al. (2015) also support these findings by showing that virtual laboratory-based digital media is highly effective in increasing student learning activity by up to 90.63%. Students' preference for exploration- and simulation-based learning models is also reflected in Amelia (2024), who states that digital learning modules developed with a problem-based learning approach can significantly boost student engagement and academic achievement.

In addition to learning media, student preferences in assessment methods were also identified as an important aspect in this study. Assessment methods such as interactive quizzes and project assignments were preferred over conventional written test-based assessments. Interactive quizzes were considered to provide an enjoyable experience because they included immediate feedback, while projects allowed students to express their understanding through real-world and collaborative applications. This is in line with Dassin and Belda (2017), who revealed that a project-based learning approach supported by digital media fostered students' reflective, collaborative, and analytical competencies in a cross-country postgraduate program. Meanwhile, Khan et al. (2024) developed a student-preference-based virtual laboratory approach, demonstrating that when students were given control over the learning method and pace, their learning outcomes improved by up to 75%, and their motivation to learn also increased.

Finally, the finding that students prefer digital exploration-based learning and non-conventional assessments reflects a shift in how students interact with learning. They are no longer simply recipients of information, but rather active constructors of meaning and learning experiences. This is supported by Mabrito (2012), who examined students' information preferences in virtual

worlds and found that students preferred hands-on exploration-based learning because it resulted in a more profound understanding and more specific discussions. Therefore, to address the needs and characteristics of today's students, educators need to design learning experiences that not only convey information but also foster interaction, provide freedom of expression, and integrate technology meaningfully. Diversifying media and assessment methods is not merely an add-on, but a key component in creating adaptive, inclusive, and challenging learning experiences.

This research makes a contribution to the field of educational media studies by identifying specific patterns in students' choices regarding media format, learning mode, and assessment forms. One of the distinguishing aspects of this study lies in its focus on junior high school students' preferences across five dimensions, which are rarely examined simultaneously. The preference for multiple-choice assessments despite a tendency toward active learning models suggests a disconnection between the favored learning process and assessment methods. The widespread use of digital devices in daily life may influence students' perceptions of effectiveness, raising the need for further examination of how these preferences align with actual learning achievements. While this study provides empirical insights, it remains limited by the nature of the instrument, which does not explore the reasoning behind preferences in depth. Consequently, further research involving mixed-method approaches is required to provide a more nuanced understanding. The results of this study may inform the design of learning media that are more adaptive to students' characteristics, supported by adequate teacher training and policy interventions that address infrastructure gaps.

## CONCLUSION

The findings of this study demonstrate that junior high school students exhibit a dominant preference for technology-based learning media, particularly those that integrate visual, auditory, and kinesthetic modalities, which were favored by over 90% of respondents. Devices such as computers, tablets, and smartphones are considered highly motivating, while virtual laboratories are regarded as the most effective in facilitating conceptual understanding. Students also express a strong inclination toward structured, objective forms of assessment, especially multiple-choice formats, although they still value opportunities for creative expression. These results suggest that implementing adaptive, multimodal, and technology-integrated instructional strategies is essential to enhance student engagement, learning outcomes, and motivation. Moreover, the application of these findings can support the design of instructional models that align more closely with student preferences, foster active participation, and strengthen 21st-century skills such as critical thinking and collaboration. To maximize the impact of such strategies, attention must be given to improving teacher readiness and ensuring equitable access to digital infrastructure across educational institutions. Therefore, this study not only contributes to the understanding of student media preferences but also provides practical implications for the development of inclusive and responsive learning environments supported by educational technology.

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