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Needs Analysis for the Development of Interactive Infographic Media on Painting Materials in Cultural Arts Subjects for Grade IX Junior High School

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A B S T R A C T

Painting instruction in Cultural Arts subjects is inherently visual and procedural, requiring interactive and contextual media to effectively support students' creative development. However, learning practices at the junior high school level are still largely dominated by conventional approaches that inadequately visualize technical processes. This study aimed to analyze the need for developing interactive infographic media for Grade IX painting materials at SMP Negeri 1 Jirak Jaya. A descriptive quantitative method was employed using a survey involving 32 students and 2 Cultural Arts teachers. Data were collected through questionnaires addressing learning experiences, difficulties, media preferences, resource accessibility, teacher readiness, and evaluation needs. The results show that 87.5% of students prefer visual-interactive media, and 81.3% favor hands-on practice supported by digital visualization. However, 68.8% experience difficulties mastering techniques independently, and 62.5% report limited access to structured online resources. Teachers demonstrate positive acceptance of interactive infographic media, emphasizing user-friendly design and integrated formative evaluation features. In conclusion, there is a clear gap between procedural learning demands and existing instructional support, indicating the need to develop scaffolded, visually structured, and evaluation-integrated interactive infographic media to enhance Grade IX Cultural Arts learning.

1. Introduction

The rapid development of digital technology has transformed educational practices, including Cultural Arts subjects. The integration of information technology in content delivery and classroom interaction has shifted the learning paradigm from teacher-centered approaches toward more participatory, adaptive, student-centered models. Digital media have been shown to enhance student engagement and create

opportunities for pedagogical innovation at the junior high school level, making learning more contextual and responsive to students' needs (Ningtyas et al., 2024; Adiba et al., 2023). In line with 21st-century learning demands, instructional media no longer serve merely as tools for transmitting information but also function as platforms for developing critical thinking, creativity, collaboration, and communication skills through structured interactive content (Hafiz et al., 2025; Rusdi, 2025).

For junior high school students, the selection of instructional media must align with their cognitive development stage and visual learning tendencies. Visual-based digital media can effectively bridge abstract concepts and increase students' motivation and comprehension (Widiastari, 2024). However, the effectiveness of visual media largely depends on the suitability of its design to the characteristics of the subject matter and the learning context. In Cultural Arts subjects, particularly painting, visualization needs are not merely illustrative but also procedural and sequential. Students need structured guidance to understand artistic elements, techniques, and creative processes. Therefore, technology integration in painting instruction must be contextually designed to support students' creative development rather than simply digitizing conventional materials.

Painting instruction aims to develop students' appreciation, analytical ability, and creative competence through observation, experimentation, and artistic exploration (Pautina, 2025). Students are required to master visual art elements such as line, shape, color, and composition, as well as understand the principles underlying artwork creation (Fahmansyah, 2025). However, instructional practices at the junior high school level remain conventional, relying on textbooks and verbal explanations (Zuhro, 2025). Such approaches limit systematic visualization of the painting process and reduce opportunities for active student engagement, leading to suboptimal competency achievement (Syakira, 2024). This condition reflects a mismatch between the visual-procedural nature of painting materials and instructional strategies employed in classrooms.

Previous studies indicate that visual and interactive media can significantly improve conceptual understanding and student participation (Aulia, 2024). In the context of skill development, the use of interactive media has been proven to significantly improve student learning activities and creative output (Sartika et al., 2024). Effective instructional media do not only present information but also visualize processes and conceptual relationships in a structured manner (Simanjuntak, 2016; Wahidin, 2025). Furthermore, interactivity increases motivation and active engagement (Utomo, 2023). Nevertheless, most studies focus on testing media effectiveness after development, while the needs analysis stage an essential foundation for contextual design has received limited attention, particularly in junior high school painting instruction. Without systematic needs analysis, developed media risk lacking relevance to actual classroom challenges.

One promising medium for development is interactive infographic media. Interactive infographics integrate visual elements, concise text, and interactive features into structured and meaningful information presentation (Paramita,

Harmawati, & Sa'diah, 2023). The shift towards electronic-based instructional materials (E-materials) has shown success in simplifying complex procedures for junior high school students (Fardinelly et al., 2024). In the context of painting instruction, interactive infographics can visually represent step-by-step artistic processes, enabling students to better understand workflow, technique application, and conceptual relationships. Research indicates that visually appealing and interactive media enhance students' attention, motivation, and comprehension (Sijabat, 2024). However, studies specifically examining the development of interactive infographic media for Grade IX junior high school painting materials based on empirical needs analysis remain limited. Existing research largely focuses on science subjects or different educational levels (Tania, Raharjo, & Susanti, 2025).

The absence of comprehensive needs analysis increases the risk of producing media that do not align with student characteristics, subject complexity, and school conditions (Kurniasih, 2024). Structured needs analysis is a crucial initial stage in digital media development to ensure alignment with real classroom contexts and practical constraints (Susnita et al., 2023). Media developed without empirical foundations often fail to address authentic instructional challenges (Raharjo, 2024; Rahmawati, 2023). This gap is particularly critical in painting instruction, which requires gradual visualization of creative processes and systematic procedural guidance.

Grade IX Cultural Arts learning presents higher complexity compared to lower grades, as students must integrate art analysis with creative mastery of painting techniques (Kurniasih, 2024). At the same time, Grade IX students belong to the digital-native generation, accustomed to interactive visual environments (Khaeranda, Mansur, & Salim, 2024). This situation creates both opportunities and challenges: opportunities due to students' digital readiness, and challenges because existing instructional media have not optimally utilized interactive digital formats. Research mapping development needs from both student and teacher perspectives simultaneously remains scarce (Raharjo et al., 2024; Dewanti et al., 2025). This gap highlights the urgency of conducting a comprehensive needs analysis as the foundation for contextual and applicable media design.

Preliminary observations at SMP Negeri 1 Jirak Jaya indicate that painting instruction is still dominated by conventional methods with minimal use of interactive digital media. The stages of the painting process are not systematically visualized, causing students difficulty in understanding the overall creative workflow. Discussions with teachers also reveal limited availability of media aligned with material characteristics and student preferences. These findings suggest that the core issue lies not only in limited technological integration but in the absence of contextually designed media that support the procedural and visual nature of painting instruction.

Based on these considerations, this study aims to analyze the needs for developing interactive infographic media for Grade IX painting materials. The research maps material characteristics, student preferences, teacher readiness, and instructional

constraints as the basis for contextual media design. The novelty of this study lies in its specific focus on Grade IX painting materials, its dual-perspective needs analysis approach involving students and teachers, and its emphasis on procedural visualization and integrated evaluation features in interactive infographic design. By providing an empirical foundation for development, this study contributes to strengthening digital learning theory while offering practical guidance for designing relevant instructional media in junior high school Cultural Arts education.

2. Methodology

This study employed a descriptive qualitative approach supported by quantitative data. This approach was selected to obtain a comprehensive overview of the needs for developing interactive infographic media for painting materials in the Grade IX Cultural Arts subject at the junior high school level. The analysis focused on students, ongoing instructional practices, teacher readiness, the availability of instructional media, and related supporting factors. A descriptive approach was used because it allows the researcher to portray learning conditions factually and naturally without intervention, ensuring that the findings serve as a valid empirical foundation for instructional media development. Data collection techniques included questionnaires, interviews, and observations.

The students' needs analysis was systematically structured into several key aspects, including pedagogical, technical, cognitive, aesthetic, socio-cultural, and evaluation dimensions, each of which was further elaborated through specific indicators and corresponding questionnaire item numbers, as presented in Table 1.

Table 1. Students' Needs Analysis Blueprint

No.	Aspect	Indicators	Item Numbers
I	Pedagogical	a) Learning Style	1,2,3
		b) Learning Process	
2	Technical	c) Accessibility	4, 5, 6
3	Cognitive	d) Understanding Ability	7,8,9
		information Absorption	
4	Aesthetic	e) Preference	19, 20, 10, 11, 12
		Visual Appearance	
5	Socio-Cultural	f) Relevance	13, 14, 15
6	Evaluation	g) Measurement of Understanding	16
		Feedback	17, 18

The teachers' needs analysis was systematically structured into several key dimensions, namely pedagogical readiness, technical support, cognitive competence, aesthetic considerations, socio-cultural integration, and evaluation mechanisms. Each dimension represents a fundamental component in the development of interactive infographic-based learning media. Pedagogical readiness encompasses teachers' training background and instructional strategies, while technical support addresses infrastructure availability and affordability. Cognitive competence refers to teachers' mastery of subject matter and conceptual understanding. The aesthetic dimension emphasizes design quality and alignment

with learning objectives, whereas socio-cultural integration and evaluation mechanisms ensure contextual relevance and systematic assessment.

Table 2. Teachers' Needs Analysis Blueprint

No.	Aspect	Indicators	Item Numbers
I	Pedagogical	a) Training Teaching Methods	1, 2 3, 4
2	Technical	b) Infrastructure Affordability	5, 6 7, 8
3	Cognitive	c) Competence Understanding	9, 10 11, 12
4	Aesthetic	d) Design Alignment	13, 14 15
5	Socio-Cultural	e) Integration Cultural Representation	16 17
6	Evaluation	f) Internal Evaluation Tools Reports and Data	18, 19 20

$$P\% = \frac{Total\ score\ obtained}{Total\ Score\ Maksimal}\ x\ 100\%$$

Since percentages were employed as the primary basis for determining the level of need, a systematic classification framework was developed to facilitate accurate interpretation of the findings. This approach enables the quantitative results to be translated into meaningful qualitative categories. By converting numerical scores into defined levels, the analysis becomes clearer and more comprehensible. The classification system ensures consistency in interpreting the degree of necessity for the proposed learning media. Furthermore, it provides a standardized reference for evaluating the overall results. The detailed criteria for categorizing the percentage ranges are presented in Table 3.

Table 3. Needs Analysis Criteria

Percentage	Category
81% – 100%	Very High / Strongly Needed
61% – 80%	High / Needed
41% – 60%	Moderate / Fairly Needed
21% – 40%	Low
0% – 20%	Very Low

Table 3 presents the criteria used to classify the results of the needs analysis into specific percentage ranges. Scores between 81%–100% are categorized as Very High or Strongly Needed, indicating an urgent and significant need for development. Percentages of 61%–80% are classified as High or Needed, reflecting a substantial level of necessity. Scores within 41%–60% fall under the Moderate or Fairly Needed category, suggesting a reasonable level of demand. Meanwhile, 21%–40% are considered Low, and 0%–20% are categorized as Very Low, indicating minimal need. These criteria serve as the foundation for interpreting the level of need for developing interactive infographic learning media based on teachers' perceptions, students' characteristics, and the learning conditions of painting instruction at SMP Negeri 1 Jirak Jaya.

3. Result and Discussion

Result

This section presents the results of the needs analysis obtained through the distribution of questionnaires to elementary school students. All statements were measured using a 1–5 Likert scale and subsequently converted into percentages to provide a more comprehensive overview of students' response tendencies. The results of the students' needs analysis for the first aspect are presented in Figure 1.

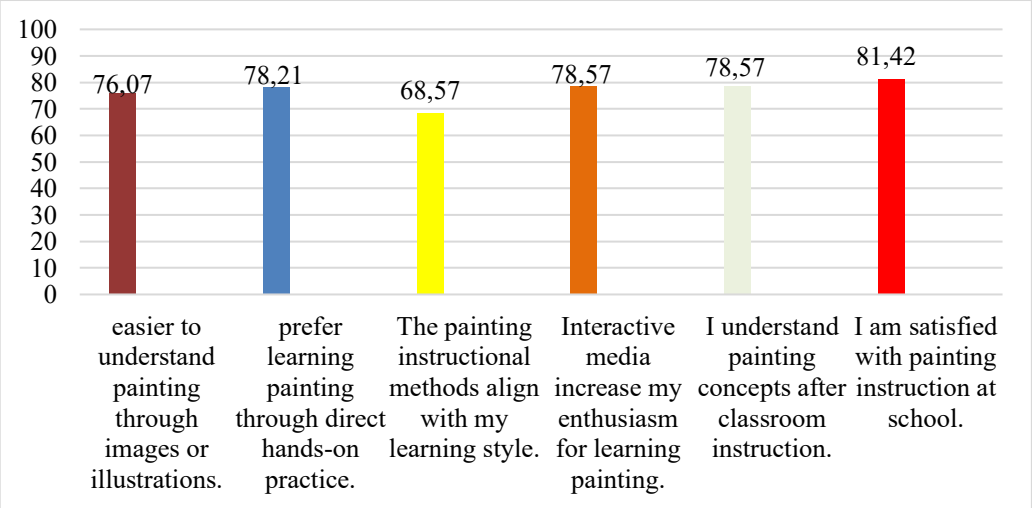

Figure 1. Results of Students' Needs Analysis

Students' learning experiences demonstrate a strong tendency toward visual, practical, and interactive painting instruction. A total of 78.21% of students prefer direct practice, 78.57% feel that interactive media increase their learning enthusiasm, and 76.07% find it easier to understand material through images or illustrations, with overall learning satisfaction reaching 81.42%. Analytically, these data not only indicate preferences but also suggest a correlation between the visual-interactive characteristics of media and increased intrinsic motivation and learning satisfaction. The high percentages across these three indicators show that multisensory and participatory learning experiences directly contribute to students' cognitive and affective engagement. These findings align with Prasetya et al. (2024), titled Student Perceptions of the Use of Interactive Digital Media in Improving Learning Motivation, which reports that more than 80% of students perceive interactive media-based learning as enhancing motivation and learning experience. Thus, the need for visual-interactive media in painting instruction is not merely a technical preference, but a representation of pedagogical needs oriented toward engagement and experiential learning.

Regarding learning difficulties, although learning experiences are generally positive, the alignment between instructional methods and students' learning styles falls within the moderate to high category at 68.57%. When associated with the high preference for direct practice and visualization, this percentage indicates a gap between visual-procedural learning needs and classroom instructional methods. In

other words, when instruction does not provide systematic step-by-step representation, students encounter obstacles in independently constructing technical understanding. This finding is consistent with Yasminda and Komalasari (2024), titled Strategies for Using Interactive Media to Maximize the Learning Process, which found that students struggle to understand procedural material when learning is not supported by systematic visual media. Therefore, limitations in visual scaffolding directly contribute to difficulties in mastering painting techniques.

In terms of media preference, 78.57% of students state that interactive media increase learning motivation. When synthesized with previous data, a consistent pattern emerges: motivation, ease of understanding, and learning satisfaction cluster within visual-interactive learning. This demonstrates a functional relationship between media design, student engagement, and learning outcomes. These findings align with Setyawan et al. (2023), titled Students' View of Interactive Multimedia in Learning, reporting that 80.7% of students are more interested in interactive multimedia-based learning because it is more engaging and easier to understand. Thus, preference for digital media is not merely a trend but a logical consequence of visual-procedural learning needs in painting.

Regarding access and learning resources, despite high interest in interactive media, limitations remain in access to online learning resources and digital media. Comparative analysis reveals a paradox: the need for digital media is high, yet access availability is not fully supportive. This condition risks widening the gap between learning motivation and the realization of optimal digital learning. These findings are consistent with Arifin et al. (2023), titled Digital Learning Access and Equity in Secondary Schools, which concludes that limited devices and internet connectivity are primary obstacles in utilizing digital media at the secondary school level. The implication is that developed media must adhere to accessibility principles to avoid reinforcing access disparities.

In terms of teacher readiness, the dominance of conventional methods indicates the need to enhance teachers' capacity in utilizing interactive media. When linked to students' needs for visual scaffolding and interactive evaluation, teacher readiness becomes a mediating variable determining successful implementation. Without adequate digital pedagogical competence, the potential of interactive media will not be optimally realized. These findings align with Rahmawati et al. (2022), titled Teacher Readiness in Integrating Digital Media in Art Learning, which states that teachers hold positive attitudes toward digital media use but still require technical and pedagogical training.

Regarding evaluation, students require interactive assessment with immediate feedback. This indicates that students' needs extend beyond content delivery to mechanisms of reflection and reinforcement of understanding. In other words, effective media must integrate instructional and evaluative functions simultaneously. These findings align with Sari and Nugroho (2023), titled Formative Assessment in Interactive Digital Learning Media, which found that interactive formative evaluation enhances student engagement and understanding.

Further analysis related to access, media usage, and learning resources in painting instruction is illustrated in Figure 2.

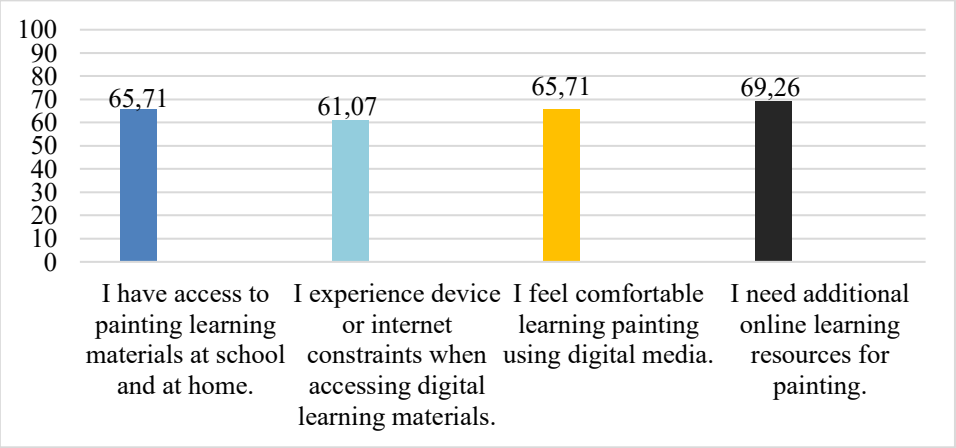

Figure 2. Access, Media, and Learning Resources in Painting

The analysis of Aspect 2 indicates that access to and utilization of painting learning media fall within a moderately good category. The percentages for access to materials and comfort in digital learning are each 65.71%, while device or internet constraints reach 61.07%, and the need for additional learning resources is 69.26%. When related to the previously identified high need for practice and feedback, limited access potentially hinders independent skill reinforcement. Thus, digital access is not merely a technical factor but a direct determinant of sustained practice and exploration outside the classroom.

These findings are reinforced by Ayu Raihani and Mahliati (2024), titled The Influence of Internet Access Availability on Student Participation in Online Learning in Aceh Province, which demonstrates a positive correlation between internet quality and student participation and engagement. Therefore, digital access limitations in this study function as a moderating variable affecting the effectiveness of interactive media in improving painting skills. The analysis of students' mastery of techniques and their need for structured learning support is presented in Figure 3.

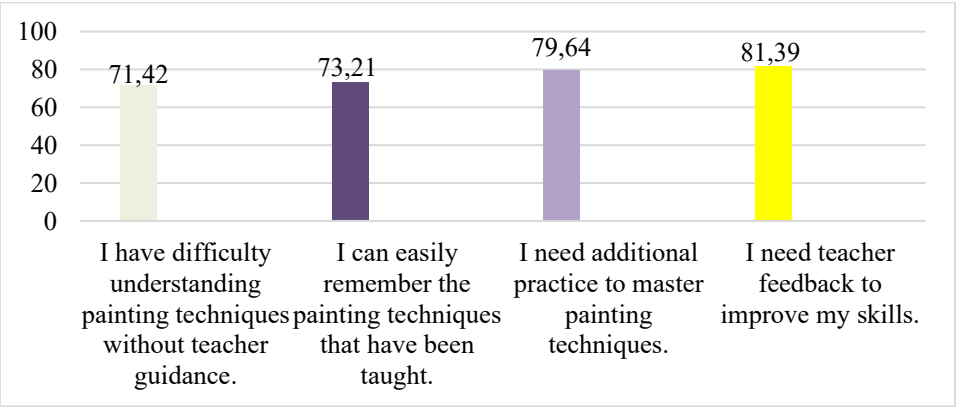

Figure 3. Mastery of Techniques and the Need for Learning Support

The percentage of difficulty understanding techniques without teacher guidance reaches 71.42%, while the need for additional practice is 79.64%, and the need for feedback is 81.39%. These three indicators form an interconnected pattern: technical difficulty drives the need for practice, and practice requires feedback as reinforcement. In other words, a causal relationship exists between limited visual scaffolding, practice intensity, and monitoring needs. The ability to recall techniques at 73.21% indicates that foundational understanding has been established but is insufficient for achieving independent skill mastery. This suggests the need for media providing sequential visual guidance, adaptive practice, and automated feedback to bridge the gap between conceptual understanding and procedural skills. An overview of students' appreciation, creativity, and cultural understanding in painting is presented in Figure 4.

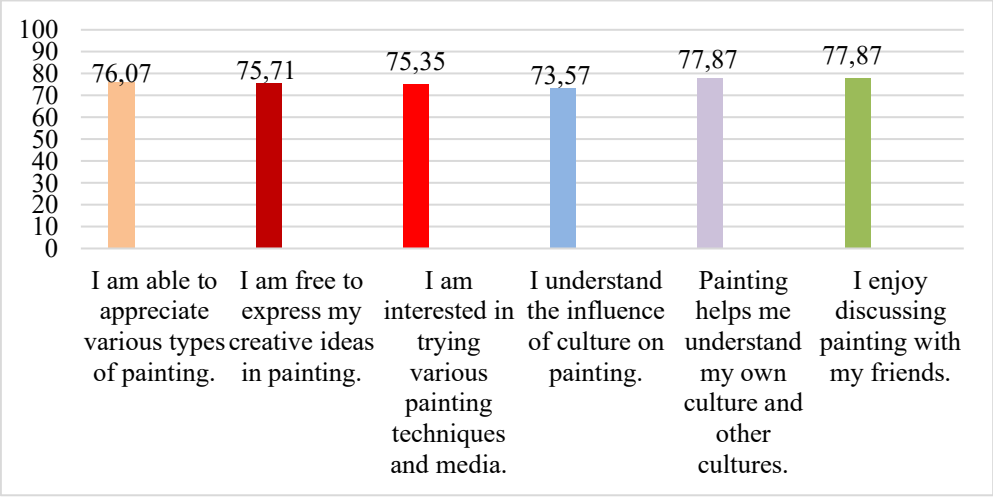

Figure 4. Appreciation, Creativity, and Cultural Understanding in Painting

Percentages for appreciation at 76.07%, freedom of expression at 75.71%, technique exploration at 75.35%, and cultural understanding ranging from 73.57% to 77.87% indicate positive attitudes toward painting. However, when associated with access limitations and technical support needs, students' creative potential has not been fully facilitated by the existing learning system. This suggests that while interest and positive attitudes are present, the learning ecosystem has not yet optimally supported creative actualization. The analysis of teacher competence and readiness in utilizing digital media is presented in Figure 5.

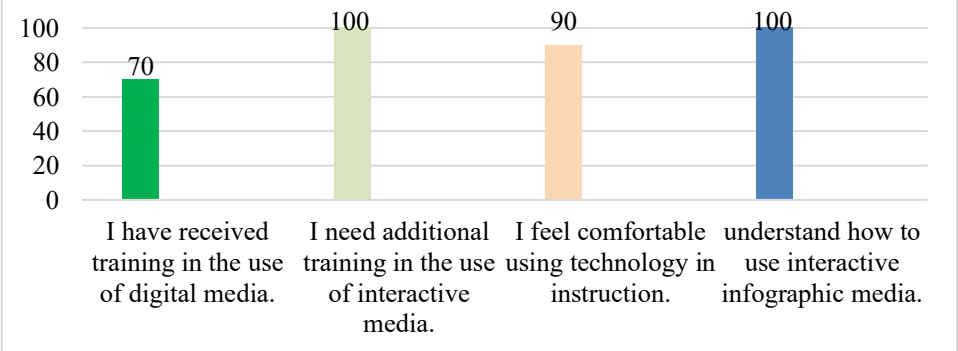

Figure 5. Teacher Competence and Readiness

The analysis of teacher needs in digital media utilization indicates very high acceptance and readiness levels, accompanied by the need for competency strengthening. The statement regarding prior training in digital media use received 70%, while the need for additional interactive media training reached 100%, with comfort in using technology at 90%. Analytically, a gap exists between initial experience using digital media at 70% and the need for further strengthening at 100%. This indicates that teacher readiness is at a basic operational level but has not fully reached an integrative-pedagogical level. In other words, teachers can use technology but have not fully optimized it as an instrument for transforming visual-procedural painting instruction.

When linked to students' needs for visual scaffolding and interactive feedback, teacher competence becomes the key variable bridging media effectiveness. Without strengthening digital-based pedagogical content knowledge, interactive infographic media risk functioning merely as presentation tools rather than adaptive and reflective learning systems. Therefore, the 100% training need represents not a formality but a systemic requirement to ensure alignment between technical readiness and pedagogical implementation quality. The relationship between instructional strategies and the perceived effectiveness of interactive media is illustrated in Figure 6**.**

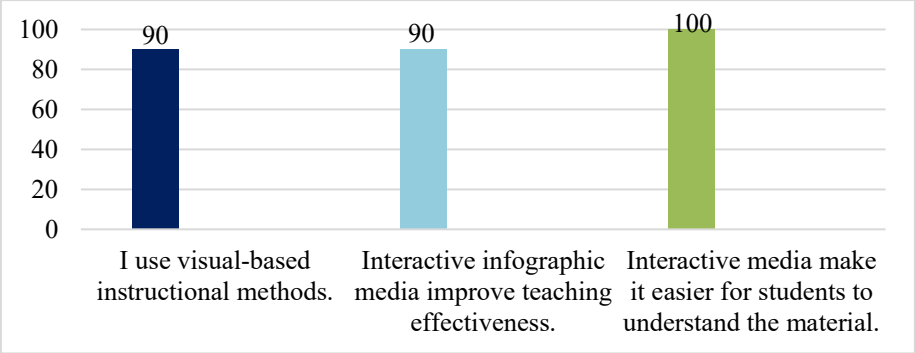

Figure 6. Instructional Strategies and Media Effectiveness

Visual-based instructional methods received 90%, perceptions that interactive infographic media enhance teaching effectiveness reached 90%, and beliefs that interactive media facilitate student understanding reached 100%. These data indicate coherence between teachers' pedagogical strategies and students' learning preferences. If earlier findings showed that 78% of students understand material more easily through visuals, the 90–100% teacher responses indicate strong pedagogical alignment. This alignment constitutes significant institutional capital for media development, as implementation resistance is relatively low. However, perceived effectiveness must be positioned as potential rather than final outcome. Media effectiveness will only materialize if visual strategies are systematic, sequential, and integrated with formative evaluation. In other words, visual strategy without monitoring systems may produce engaging learning but not necessarily sustained procedural skill improvement. The condition of facilities, infrastructure, and technical support that may influence media implementation is presented in Figure 7**.**

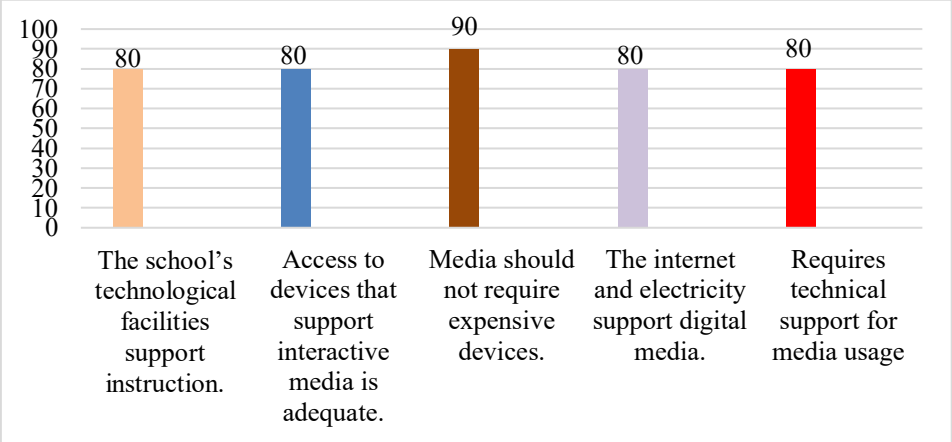

Figure 7. Facilities, Infrastructure, and Technical Support

Technology facilities and device access each received 80%, internet and electricity support 80%, technical support needs 80%, and expectations that media should not require expensive devices 90%. Structurally, the 80% figure indicates infrastructure is moderately supportive but not yet optimal. This means interactive media implementation is feasible but remains vulnerable to technical obstacles. When associated with student access limitations at 61.07%, there is a risk of disparity between school readiness and students' actual learning experiences. These findings indicate that media design must adhere to low-resource principles, being lightweight, cross-device compatible, and not dependent on high bandwidth. Without this approach, interactive media risk reinforcing previously identified access disparities. The aspects of media design and cultural integration that support inclusive and contextual learning are illustrated in Figure 8**.**

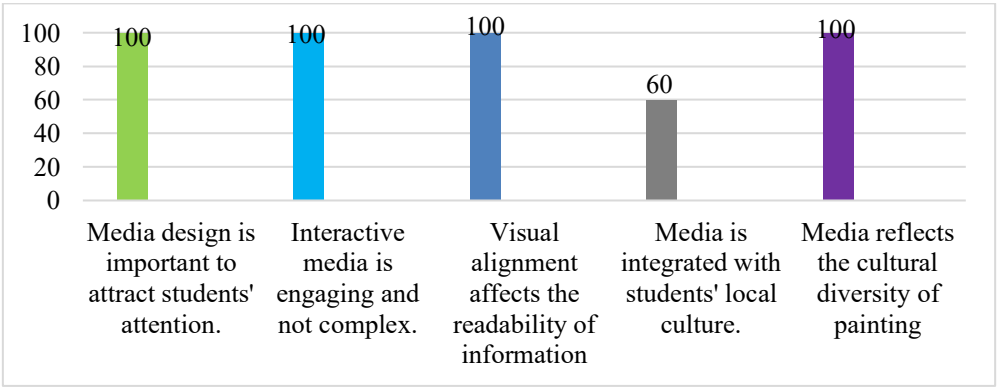

Figure 8. Media Design and Cultural Integration

All respondents at 100% state that media design is important in attracting students' attention and must be visually appealing yet not complex. Alignment of colors, text, and visual elements also reached 100%. Integration of cultural diversity in painting reached 100%, while local cultural integration stood at 60%. The 100% percentage in design aspects indicates teachers recognize painting as a visual discipline requiring aesthetic quality in material presentation. Thus, media design is not merely technical but part of the artistic experience itself. Media failing to meet visual aesthetic principles may contradict the essence of art instruction. However,

the 60% integration of local culture indicates room for contextual strengthening. While teachers support cultural diversity generally, translating students' local culture into learning media has not become a primary priority. Strengthening local context has the potential to enhance relevance, cultural identity, and students' emotional engagement in painting instruction. The aspects related to evaluation and learning monitoring within the proposed media framework are presented in Figure 9.

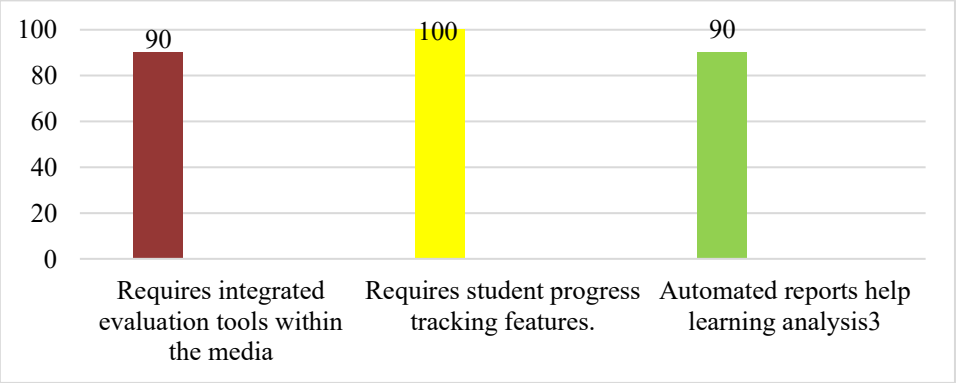

Figure 9. Evaluation and Learning Monitoring

The need for integrated evaluation within media reached 90%, the need for learning progress tracking features 100%, and automated reports assisting instructional analysis 90%. When linked to students' needs for feedback at 81.39% and additional practice at 79.64%, there is strong consistency between student and teacher perspectives regarding the importance of formative evaluation. Both parties recognize that painting instruction cannot rely solely on demonstration but requires a continuous cycle of practice, feedback, and reflection. The high need for monitoring at 100% emphasizes teachers' requirement for longitudinal skill development data rather than mere final product assessment. Therefore, interactive infographic media should ideally function not only as content delivery tools but also as adaptive evaluation systems capable of recording progress, providing automated feedback, and supporting data-driven pedagogical decision-making.

Discussion

This needs analysis study aims to identify the urgency of developing interactive infographic media for painting material in Grade IX Cultural Arts subjects at the junior high school level. The findings indicate that both students and teachers demonstrate a strong need for learning that is visual, interactive, contextual, and supported by an integrated evaluation system. These findings are not only contextually relevant but also aligned with various theoretical and empirical studies in educational technology and art education. However, the primary contribution of this study goes beyond theoretical confirmation; it lies in mapping specific needs within the context of Grade IX junior high school painting instruction, which has not been extensively examined in focused studies on interactive infographic-based media development.

Students' preferences for visual learning, hands-on practice, and interactive media reinforce multimedia learning theory proposed by Mayer (2024), which states that learning becomes more effective when information is presented through well-organized combinations of text, images, and visuals. In the context of painting, which is inherently visual and procedural, the use of interactive infographic media is highly relevant because it can concretely represent concepts, techniques, and artistic processes. This study strengthens the view that visual arts instruction cannot be separated from strong visualization, making conventional text-based media less optimal, consistent with findings by Sumarsono et al. (2024). Although previous studies have confirmed the general effectiveness of multimedia in learning, limited research has specifically mapped visual-procedural needs in junior high school painting techniques. Thus, this study fills an empirical gap by demonstrating that at the Grade IX level, the need extends beyond conceptual visualization to sequential visualization of technical steps that support practical skill mastery. The importance of using dynamic visual media to bridge this gap is further evidenced by (Tonda et al., 2024), who showed that video-assisted learning models are more effective in improving student learning outcomes in complex subjects compared to traditional methods.

The high level of student interest in hands-on practice and active engagement aligns with constructivist approaches emphasizing that knowledge is built through direct experience and interaction with learning objects (Wibowo, Wangid, & Firdaus, 2025). Vygotsky's social constructivist theory highlights the importance of scaffolding in assisting learners in mastering new skills, particularly in psychomotor learning contexts such as painting, as structured guidance from teachers or more knowledgeable others supports learning within the zone of proximal development (ZPD) (Sun, Kangas, Ruokamo, & Siklander, 2023). Therefore, the finding that students still struggle to understand techniques without teacher guidance indicates that existing learning media have not fully supported independent learning. As noted by (Rahman & Purnamaningsih, 2024), structured instructional guidance is crucial for mastering basic technical abilities, especially in subjects requiring physical coordination. This makes the development of interactive infographic media providing systematic visual scaffolding highly urgent. The contribution of this study lies in identifying the specific form of scaffolding required, namely step-by-step visual guidance integrated with practice and feedback, rather than merely presenting static visual material. This offers more precise design direction compared to previous research that broadly addresses multimedia without elaborating procedural needs in painting.

Regarding access and learning resources, findings indicate initial student readiness in using digital media, accompanied by technical constraints and limited online resources. This condition aligns with discussions of the digital divide in education, which emphasize that successful implementation of learning technology depends on accessibility, digital infrastructure quality, and students' digital literacy skills (Elliyani, Edwita, & Nurhasanah, 2025). Therefore, interactive infographic media development must consider low-bandwidth principles and flexible access to ensure pedagogical innovation is also technically inclusive. These findings reinforce the urgency of development research grounded in real classroom needs rather than

normative technology adoption (Widiasanti et al., 2025). The identified research gap concerns the limited development of painting media explicitly designed to adapt to infrastructure constraints in regional junior high schools. This study contributes by emphasizing that media innovation must align with actual infrastructure conditions, ensuring contextual and applicable design rather than idealized solutions.

The aspects of appreciation, creativity, and cultural understanding indicate that students possess high potential in developing aesthetic and cultural awareness through painting instruction. These findings align with research showing that interactive multimedia in cultural arts learning enhances creativity and students' understanding of cultural expression and artistic aesthetics (Sumarsono, Sabri, & Suryandoko, 2024). Furthermore, studies on intercultural creativity development in junior high school art education emphasize that integrating local and cross-cultural elements enriches students' learning experiences and broadens creative perspectives (Ndun et al., 2024). However, the needs analysis results reveal that local cultural integration remains suboptimal, indicating a gap between the pedagogical potential of art education and the currently used learning media. Consequently, developing interactive infographic media that contextually incorporates local cultural elements becomes highly urgent to ensure painting instruction is meaningful and relevant to students' cultural environments (Peng, 2025). This approach is consistent with the development of local wisdom-based digital modules by Suparmin et al., (2024), which demonstrates that contextual learning resources significantly enhance students' engagement and critical thinking. The novel contribution of this study lies in emphasizing that interactive infographic media for painting serve not only as technical instructional tools but also as media representing local cultural identity. This perspective expands the function of media from purely instructional instruments to vehicles for strengthening cultural literacy in junior high school art education.

From the teacher perspective, high readiness and acceptance of interactive infographic media reinforce the Technological Pedagogical Content Knowledge (TPACK) framework, which emphasizes that technology-based instructional effectiveness depends on teachers' ability to integrate technology, pedagogy, and content. The finding that teachers still require further training indicates that media development should be accompanied by user-friendly design supporting authentic classroom practice, consistent with findings that enhanced TPACK competence positively affects teachers' digital instructional skills (Silvester et al., 2024). This suggests that interactive infographic media development is not only a student need but also a professional development need for teachers in improving painting instruction quality. The identified research gap concerns the limited studies integrating student and teacher needs analysis simultaneously as a foundation for painting media design. This study contributes by presenting a dual-perspective needs analysis, providing stronger empirical legitimacy for subsequent media design.

Furthermore, teachers' needs for integrated evaluation features, learning progress tracking, and automated reports align with assessment for learning and data-driven

instruction approaches, which emphasize that evaluation functions not only as outcome measurement but also as a basis for reflection and instructional improvement. This approach enables systematic use of learning data to enhance teaching strategies and student outcomes (Wahidin & Hulbat, 2025). The findings indicate that existing painting learning media do not yet fully support these evaluative functions, making the development of interactive infographic media integrated with evaluation systems highly urgent. The specific contribution of this study is the emphasis that at the junior high school level, evaluation needs extend beyond final artwork assessment to continuous monitoring of process and skill progression. This perspective enriches discourse on art education evaluation, which has traditionally focused primarily on final products.

Overall, the alignment between research findings and theoretical and external studies demonstrates that the urgency of developing interactive infographic media for Grade IX junior high school painting materials has strong empirical and theoretical foundations. This needs analysis not only reveals current instructional conditions but also identifies a gap between 21st-century art learning demands and available instructional media. Explicitly, the identified research gaps include: (1) suboptimal procedural visualization of painting techniques based on digital scaffolding, (2) limited integration of local culture in junior high school art media, (3) lack of integration of formative evaluation systems and progress monitoring in painting media, and (4) limited studies combining student and teacher needs analysis as a foundation for media design. Therefore, this study provides strong scientific justification and structured design direction for subsequent development research on interactive infographic media as an effort to enhance Cultural Arts instruction that is more visual, interactive, contextual, and sustainable.

4. Conclusion

This study was conducted to identify the needs for developing interactive infographic media for Grade IX painting instruction at SMP Negeri 1 Jirak Jaya. The findings confirm that existing instructional practices have not fully accommodated the visual and procedural nature of painting materials. There is a clear need for learning media that systematically visualizes technical steps, supports independent practice, and integrates formative evaluation to strengthen students' skill development. From the students' perspective, painting instruction requires structured visual scaffolding that bridges conceptual understanding and procedural mastery.

From the teachers' perspective, there is readiness to adopt digital media, accompanied by the need for pedagogically aligned, user-friendly, and evaluative design features. These findings demonstrate that the research objective has been successfully achieved, as the study has mapped the multidimensional needs pedagogical, technical, cognitive, and evaluative that must inform media development. Overall, this needs analysis provides a structured empirical foundation for the design of interactive infographic media tailored to the specific characteristics of junior high school painting instruction. The study contributes by

clarifying contextual design directions and establishing a clear basis for subsequent development and implementation research aimed at enhancing effective, inclusive, and sustainable Cultural Arts learning.

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