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Interactive Multimedia Learning Design: Animation-Based Interactive Multimedia to Enhance Student Engagement and Understanding in Madrasah Ibtidaiyah

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Abstract

This study examines the use of animation-based interactive multimedia in classroom learning at Madrasah Ibtidaiyah and its contribution to students' learning engagement and conceptual understanding. The research employed a qualitative case study design at MI Nurul Mun'im. The primary participants were 20 students who experienced classroom learning through animation-based interactive multimedia, while the classroom teacher served as a supporting informant. Data were collected through classroom observation, semi-structured interviews, and documentation, then analyzed through data condensation, data display, and conclusion drawing. The findings show four main patterns. First, the use of animation-based multimedia increased students' interest in learning because lessons were perceived as more attractive and less monotonous. Second, it strengthened classroom engagement, as students became more active in asking questions, responding to the teacher, and participating in guided activities. Third, the media helped students understand lesson content more easily because visual movement, sound, and sequence made abstract material more concrete. Fourth, it supported early information literacy, especially in following visual instructions, recognizing symbols, and identifying simple digital information. The study concludes that animation-based interactive multimedia contributes to a more active, enjoyable, and student-centered learning environment in Madrasah Ibtidaiyah. Theoretically, the study reinforces the relevance of multimedia learning for Islamic primary education. In practice, it underscores the importance of teachers' capacity to select and organize digital media appropriate to young learners' developmental characteristics.

Keywords

Interactive Multimedia, Animation-Based Learning, Students' Engagement, Conceptual Understanding.

INTRODUCTION

Contemporary primary education is taking place in a context shaped by digital transition, changing learner behavior, and rising expectations for more meaningful classroom interaction. In many elementary classrooms, however, the teaching process still relies heavily on verbal explanation and one-way transmission of information. This condition often creates a gap between how children learn and how lessons are delivered. Young learners generally respond more strongly to concrete, visual, and dynamic learning stimuli than to abstract explanation alone. When instructional practices do not accommodate these developmental characteristics, students may appear less attentive, less participatory, and less able to retain what they have learned.

In the context of Madrasah Ibtidaiyah, this issue deserves special attention. Islamic primary education is not only expected to transmit subject knowledge but also to cultivate active, reflective, and responsive learning habits. The challenge is therefore not simply whether digital tools are available, but whether those tools are pedagogically meaningful. Interactive multimedia based on animation offers one possible answer because it combines text, sound, movement, and guided interaction in a format that can make lessons easier to follow. Rather than functioning as decorative technology, multimedia can serve as an instructional bridge between the material being taught and children's cognitive profiles at the primary-school level.

Education is one of the most important ways to help youngsters learn better. Learning activities are the most important way to judge how well the educational process is working (Ramadani, 2025). The learning process, which is a constant interaction between students and the subject, needs to be made more engaging and fun to help students understand and become more independent in their learning. This will ensure that pupils' learning reaches its full potential (Bida(Dewi, 2017). In this digital age, students are very interested in learning materials that incorporate interactive multimedia based on animation (Rohmah, 2023). This interactive multimedia learning lets students work, read, and watch simultaneously, offering a well-rounded view that helps them learn quickly. The growth of information and communication technology has had a big impact on many areas of life, including education. One result of this progress is that interactive multimedia can now be used as a learning tool. This type of media allows users to interact directly with it by combining text, images, music, animation, and video. This makes the learning environment more dynamic and interesting (Rahmawati, 2019).

With this interactive multimedia learning, kids can do three things at once: work,

read, and watch. This gives them a full picture that helps them learn quickly. Information and communication technology has grown significantly and changed many aspects of life, including school. One outcome of this transformation is the availability of interactive multimedia as an educational resource. This kind of media lets people interact with it directly by combining text, graphics, sound, animation, and video. This makes the learning environment more dynamic and exciting (Miftah & Syamsurijal, 2024). With this interactive multimedia learning, students may accomplish all three things at once. This gives them a full picture that helps them learn quickly. The growth of information and communication technology has changed many aspects of life, including education. One result of this growth is that interactive multimedia may now be utilized to help people learn. This type of media allows users to interact with text, images, music, animation, and video simultaneously. This makes the learning environment more interesting and dynamic. It's well known that interactive multimedia with animation can make learning more engaging, but we need to delve deeper to figure out how to use these resources to keep students in Madrasah Ibtida'iyah more engaged and to help them grasp what they're learning.

Previous studies have shown that digital and interactive learning media tend to increase students' interest and participation in elementary education. Amalia et al. (2024) reported that interactive media contributed positively to students' learning interest in science learning (Amalia et al., 2024). Anggraeni et al. likewise found that interactive video-based multimedia increased elementary students' interest in classroom learning (Anggraeni et al., 2021). In a similar direction, Susilowati et al., (2025) and Zahroh et al., (2025) emphasized that animation-based digital media can make learning more engaging and effective for school-age children. These findings indicate that students are more responsive when learning materials are presented through visual, varied, and interactive media. According to Kumalasani & Yunilasari, (2022) interactive multimedia based on animation is one of the easiest and greatest ways to find out how interested students are in learning. The researcher also discovered that interactive multimedia, including animated films, serves as a tool to enhance the comprehensibility of the learning process. Learning tools that might interest and engage students help make the environment more flexible and dynamic.

Derived from comprehensive dialogues with multiple educators at the institution and field observations. This research is distinctive for its focus on the use of interactive multimedia, particularly animation, within Madrasah Ibtida'iyah, particularly at MI Nurul Mun'im, where the application of interactive digital media in education remains limited. This study underscores the use

of interactive animations specifically designed for elementary school-aged pupils, in contrast to prior multimedia, which is predominantly utilized at the senior school level or employs conventional media. This study directly investigates alterations in students' attention and comprehension using field observations.

Beyond interest and motivation, prior research has also highlighted the relationship between multimedia learning and students' understanding or literacy development. Listrianti et al., (2023) found that digital interactive media influenced literacy and numeracy skills in Madrasah Ibtidaiyah, while Faradina et al., (2023) showed that digital literacy and numeracy initiatives could strengthen students' learning interest in the madrasah context. Other studies have pointed out that animation-based media may support conceptual understanding, reading comprehension, and memory retention because information is presented in a more structured and concrete manner (Kusuma et al., 2025; Mahendra et al., 2024; Nurmayani et al., 2025). Taken together, these studies suggest that multimedia learning has both affective and cognitive potential.

Even so, the existing body of research still leaves an important gap. Much of the previous literature focuses on general elementary schools, examines the effectiveness of media through achievement scores, or treats motivation as the principal outcome. Fewer studies have qualitatively examined how animation-based interactive multimedia is actually experienced in the classroom setting of Madrasah Ibtidaiyah, especially in relation to four interrelated dimensions: learning interest, classroom engagement, conceptual understanding, and early information literacy. As a result, the everyday pedagogical meaning of multimedia use in Islamic primary education remains underexplored.

This technique is vital because teaching at the Madrasah Ibtidaiyah level must be done in a way that works for young kids who are active, enjoy playing, and are drawn to moving graphics. Interactive multimedia learning can benefit all students, but it can also help those who learn best by seeing, hearing, or doing. We need instructional technologies that can both motivate students to learn more and help them better understand what they study. For instance, multimedia that lets you interact with it and has animation. Interactive multimedia that uses animation can assist children learn in an enjoyable way and get better in speaking, listening, reading, and writing (Jannah, 2024). This is crucial to know, since teaching at the MI level needs to be done in a style that works for young children, who are active, like to play, and desire moving pictures. Interactive multimedia learning can help all students, but it can also benefit those who learn best by doing, seeing, or hearing.

Because of this, we need teaching tools that motivate students to learn more and help them better understand the subject. For instance, interactive multimedia that includes animation. Utilizing animation-driven interactive multimedia (Oktaviani et al., 2024). The goal of this study is to examine how interactive multimedia, such as animation, might increase students' interest in studying at Madrasah Ibtidaiyah.

Based on this gap, the present study investigates the use of animation-based interactive multimedia at MI Nurul Mun'im. The study seeks to answer one central question: how does animation-based interactive multimedia shape students' interest in learning, classroom engagement, conceptual understanding, and early information literacy in Madrasah Ibtidaiyah? The novelty of this study lies not in claiming that multimedia is universally effective, but in offering a context-specific qualitative account of how such media work within the learning culture of an Islamic primary school. In doing so, this article is expected to contribute to both the literature on multimedia learning and the practical development of more child-responsive instruction in Madrasah Ibtidaiyah. Because of these changes, researchers are exploring the use of interactive multimedia, such as animation, as teaching methods to make students more interested in and better grasp the topic. The goal of this study is to determine how employing interactive, animation-based multimedia as a teaching tool will help students become more interested in and better understand what they are learning. It is intended that this study will help create new ways of teaching, especially in ibtidaiyah, which still rely heavily on traditional methods.

METHOD

This study employed a qualitative case study design. A case study was chosen because the research aimed to understand in depth how animation-based interactive multimedia was implemented and experienced in one real classroom context rather than to measure its effect statistically across a large sample. The study was conducted at MI Nurul Mun'im, a Madrasah Ibtidaiyah where animation-based interactive multimedia had been introduced into classroom learning.

The primary participants were 20 students who directly participated in lessons supported by animated, interactive multimedia. In addition, the classroom teacher was involved as a supporting informant because the teacher played a central role in selecting, presenting, and guiding the use of the media. Participants were selected purposively, namely on the basis of their direct involvement

in the learning process under investigation. In this study, the object of inquiry was the classroom use of animation-based interactive multimedia and its perceived contribution to student learning.

Data were collected through three techniques. First, classroom observation was conducted to record students' responses, interaction patterns, and participation during lessons that used animation-based multimedia. Second, semi-structured interviews were undertaken with selected participants to explore how the media were perceived, what kinds of changes were observed, and how students and teacher interpreted the learning experience. Third, documentation was used to support the field data, including classroom notes, learning records, and visual documentation of classroom activities.

The data were analyzed through three interrelated stages: data condensation, data display, and conclusion drawing. In the first stage, the researcher selected and organized field materials relevant to the focus of the study. In the second stage, the findings were grouped into thematic categories so that recurring patterns could be identified more clearly. In the final stage, conclusions were drawn by connecting interview results, observation notes, and documentation into an integrated interpretation. The thematic categories that emerged from the analysis included learning interest, classroom engagement, conceptual understanding, and early information literacy.

To ensure data trustworthiness, the study applied source triangulation and technique triangulation. Statements obtained from interviews were compared with classroom observations and documentation so that the analysis did not rely on a single source alone. The research procedure consisted of preparation of the observation focus and interview guide, classroom data collection, data organization, thematic analysis, and interpretation of findings. Through this procedure, the study sought to produce an evidence-based account of how animation-based interactive multimedia functioned in the observed learning setting.

FINDINGS AND DISCUSSION

Findings

The findings of this study are organized into four thematic categories: increased learning interest, stronger student engagement, improved conceptual understanding, and enhanced early information literacy. The presentation below focuses on the empirical data derived from interviews, classroom observation, and documentation.

Because of these changes, researchers are looking at using interactive multimedia based on animation as teaching methods to get students more interested in and grasp the topic better. The aim of this study is to understand how interactive, animation-based multimedia can enhance students' interest and understanding as a pedagogical tool. This study aims to facilitate the advancement of novel teaching models, especially in ibtidaiyah tingkats that predominantly rely on traditional methodologie (Virgiando et al., 2025). Because of these changes, researchers are exploring the use of interactive multimedia, such as animation, as teaching methods to make the topic more engaging and easier for students to learn. The objective of this study is to examine how interactive, animation-based multimedia can enhance students' interest and understanding as a pedagogical tool. This study aims to foster the advancement of innovative teaching models, especially in ibtidaiyah tingkats that predominantly depend on traditional methods (Desrita, 2025).

To make the interview results clearer, the following data is presented in a simple table showing how teachers and students feel about being actively involved in learning through interactive multimedia that uses animation.

Table 1. Summary of Interview Results

Informant	Focus of Response	Key Statement
Teacher 1	Changes in student behavior after the use of multimedia	Students are more active in asking questions and responding
Teacher 2	The impact of animation media on understanding	The material is easier for students to understand
Learners A	Opinion on the use of animation	More interesting, not boring
Learners B	The influence of animation on understanding	Helping to remember the material faster

Source: Researcher Analysis

The following information is presented in a straightforward table to clarify the interview results, illustrating the sentiments of teachers and students regarding their active participation in learning using interactive multimedia with animation (Subhan et al., 2025). The data in the table makes it obvious that both teachers and students agree that employing this interactive multimedia based on animation has made them more active. The teacher said that the classroom became more lively, the students were more inclined to offer their ideas, and it was easier to learn the material. Conversely, students indicated that animations rendered studying enjoyable rather than tedious, hence increasing their desire to engage (Manurung, 2020).

Increased Learning Interest

Interview data show that students experienced the learning process as more attractive after the use of animation-based interactive multimedia. One learner described the lesson as "*more interesting, not boring*," indicating that the media changed the emotional tone of classroom learning. Observation notes supported this pattern: students paid closer attention to the screen, followed the sequence of learning activities more consistently, and appeared less passive than in teacher-centred explanation alone. The lesson documentation also suggested that animated visuals helped sustain attention, as students remained focused during the presentation and follow-up explanation. These findings indicate that the media did not merely entertain students; it created an entry point that made learners more willing to participate in the lesson.

Stronger Student Engagement

The second theme concerns classroom engagement. The teacher reported that "*students are more active in asking questions and responding*" after using multimedia. This statement was reinforced by field observations that showed more frequent student responses, shorter peer discussions, and visible interaction among the teacher, students, and media. Before the use of animation-based multimedia, classroom interaction was dominated by teacher explanations. After the media were introduced, students were more likely to respond to prompts, ask for clarification, and revisit content with the teacher. In this sense, engagement involved not only physical attention but also active participation in the learning process.

Improved Conceptual Understanding

The data also show that animation-based multimedia helped students understand lesson content more easily. Teacher 2 stated that "*the material is easier for students to understand*," while another learner explained that the media were "*helping to remember the material faster*." These statements are consistent with classroom observations indicating that students could connect visual sequences, spoken explanation, and written text more readily when the material was presented through animation. Instead of relying solely on verbal explanation, students received a more concrete representation of the lesson. This made it easier for them to recall key points, follow instructional flow, and explain the material again in simple terms. The findings therefore suggest that animation-based multimedia supported both immediate comprehension and short-term retention.

Enhanced Early Information Literacy

A fourth pattern emerged in relation to early information literacy. Observation data indicated that after using the media, students became better able to follow visual instructions, identify symbols, and extract simple information from the digital display. Compared with the earlier lesson pattern, students showed greater readiness to navigate learning sequences step by step. They were not only watching but also interpreting what appeared on the screen. Documentation further showed that students were increasingly able to relate animated representations to the learning content being discussed. Although this study did not measure information literacy through a formal test, the field data suggest that animation-based multimedia fostered early literacy practices in a practical classroom sense, especially in recognizing, selecting, and interpreting simple digital information.

Discussion

The findings demonstrate that animation-based interactive multimedia supports more than surface-level excitement in the classroom. Its contribution lies in the way it reorganizes the learning experience for children who are developmentally responsive to visual, auditory, and sequential stimuli. In the present study, increased interest emerged because lessons were no longer experienced as monotonous explanation alone. Once animation, movement, and guided interaction entered the lesson, students appeared more ready to attend, follow, and respond. This pattern confirms that learning interest is often generated not simply by the content of a lesson, but by the form in which the content is pedagogically mediated.

The study also shows that engagement should be understood as an interactional process. Students became more active not only because the media attracted them, but also because the classroom structure shifted from one-way explanation to a more dialogic pattern involving the teacher, students, and the digital medium. This finding resonates with the broader view that active learning grows when students are invited to respond, question, and revisit content rather than merely receive information. In this sense, animation-based multimedia served as a mediating tool, opening more space for participation and making the classroom less teacher-dominated.

With regard to conceptual understanding, the findings support the argument that young learners benefit from representations that make abstract content more concrete. The students' improved understanding, as observed in this study, can be interpreted through multimedia learning logic: when information is presented through coordinated visual and verbal channels, learners are

better positioned to process and retain meaning. The present findings are broadly consistent with earlier studies that reported positive effects of animation and multimedia on student interest, understanding, and classroom participation (Amalia et al., 2024; Anggraeni et al., 2021; Kusuma et al., 2025; Susilowati et al., 2025). However, this article extends the discussion by showing how those effects unfold in the specific setting of a Madrasah Ibtidaiyah through classroom interaction rather than relying solely on test scores.

The patterns in the interview data table indicate that most participants enjoyed using interactive multimedia. The patterns reveal that (1) teachers noticed more active participation when students asked and answered questions more regularly, (2) students felt it easier to learn the topic, and (3) the classroom became more lively. There were no signs of rejection or negative reactions to the use of animated media. This pattern suggests a strong connection between using animated media and getting pupils to participate. The data patterns show that all areas of learning engagement, such as attention, motivation, the courage to ask questions, and understanding concepts, improved at the same time. This shows that animated media can do more than just assist people see things; they can also make people want to study more (Maharani et al., 2025).

From an analytical point of view, the good patterns that emerged from the interviews may be seen as a normal response from students to learning that is more visual, engaging, and accessible. Animation-based learning media leverages the power of pictures to help pupils understand things better (Hukom, 2024). If you look at the interviews analytically, the good patterns that emerged may be seen as a natural response from students to a learning experience that is more visual, engaging, and accessible. Animation-based learning media leverages the power of images, facilitating students' comprehension of knowledge in (Nurhidayanti, 2025). This beneficial effect may also stem from the fact that MI students are younger and more receptive to visual and interactive resources. The pupils' increased engagement is attributable not only to a methodological shift but also to the adaptation of the learning process to the cognitive styles of elementary school students (Arrosyad et al., 2024).

The observations show that students' ability to find and use information improved after they used animated interactive multimedia. A number of students just used text to explain topics before the media was used. They weren't as proficient at locating or digesting information on their own. But after using interactive media, they get much better at following the flow of the animation, understanding visual instructions, identifying symbols, and collecting simple digital information.

Students can also better connect what they see in the animation to what they are studying. Also, observations showed that students were better able to select appropriate information, especially when asked to find learning materials on gadgets. This shows that animated media not only makes things more fun, but it also has a large impact on information literacy skills, which are particularly crucial for learning nowadays (Aisyah et al., 2023). Here is a basic graph that shows how students' information literacy skills have improved. This should help you understand the outcomes of the observation.

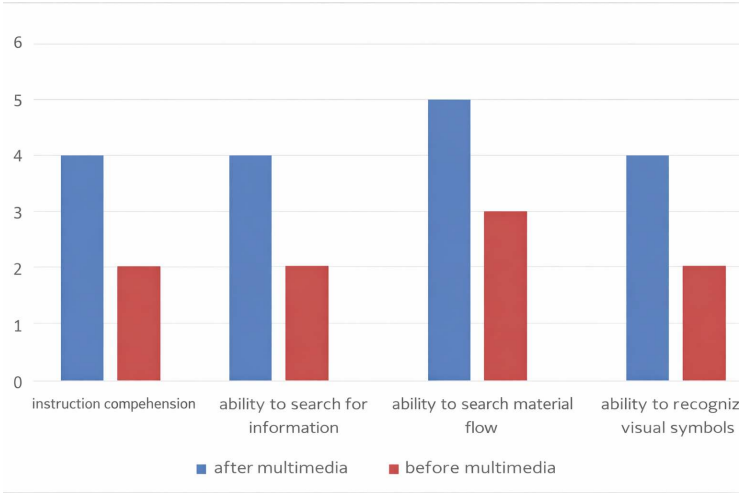

Figure 1. Increasing Students' Information Literacy
Source: Processed Researcher Data

The graph shows a significant increase in all information literacy metrics. The way this graph is set up shows that animation media consistently improves pupils' basic information literacy, especially when it comes to interpreting and processing visual information.

The graph shows that using interactive multimedia really helped students find and use knowledge more effectively. Before the media was used, scores on tests of understanding instructions, recognizing symbols, and obtaining information were low, at approximately 2–3. But once the media was in place, all of the signs went up to levels 4–5. This means that the youngsters don't just passively take in information; they can also think about it on their own. They can also follow the animation's flow, understand what the graphics signify, and get important information from the provided media. This means animated media might help Madrasah Ibtidaiyah students who aren't quite there yet with their basic information literacy skills.

The graph shows a clear trend: all of the measures of information literacy skills are getting stronger. There isn't a single signal that is staying the same or going down. This illustrates that

animated multimedia has an effect on more than one part. The data pattern shows that students learn not just how to understand visual information, but also how to access digital materials, follow animated stories, and extract the essential ideas from what they see. This suggests that animated media can assist people learn how to read, write, and think at the same time (Melati et al., 2023). This linear growth illustrates that interactive multimedia is not only pretty to look at, but it may also help learners organize their knowledge in a way that is easy to understand.

From an analytical perspective, the improvement in the graph can be explained by the idea that animated multimedia provides information that aligns with the cognitive developmental characteristics of children in the MI age group. At this point, kids understand things that are real and visual better than things that are abstract. Using animations to connect text with moving pictures can help students better understand the subject (Pradana, 2025). Animations also help people learn to read and write by offering a structured, step-by-step flow that helps them get used to following information systematically. Learners also improve because they can interact with the material directly by pressing buttons, selecting menus, or repeating actions. Animated media is an effective way for madrasah students to learn how to find and use knowledge. This is because it helps them learn how to better traverse digital material.

The students' learning style changed from passive to more active after using interactive multimedia. This is shown by the notes and images of classroom activities made after the use of interactive multimedia. Before they employed multimedia, the records show that most students just sat quietly and listened to the teacher explain things without saying much. But the documentation shows that the classroom was more active when the animations were employed. People saw students discussing, asking questions, and going over the material with the teacher. Both visual recordings and field notes show unambiguous proof of this change in behavior. This suggests that education is shifting toward a more learner-centered model that fosters engagement.

A simple sequence of photos or a flow chart can show the differences in activities before and after the introduction of animated multimedia.

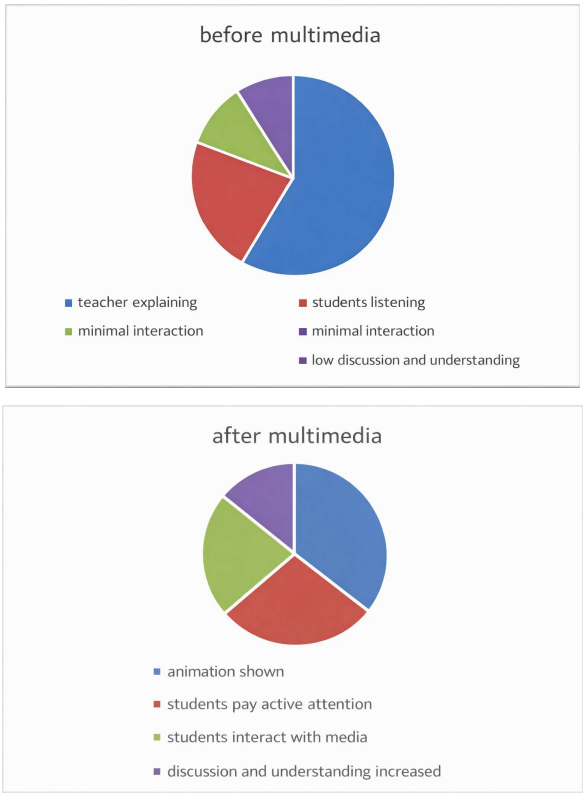

Figure 2. Flow Chart of the Shift in Learning Paradigm
Source: Processed Researcher Data

The circle figure depicts how the flow of the learning process has changed from one-way (teacher → student) to two-way (teacher ↔ student ↔ media) and even multi-way. This change in flow is a strong sign that the way people learn in the classroom has changed.

The number shows that before multimedia was employed, learning was mostly about the teacher, and students were only there to obtain information. Students are often docile and merely do what they're told without thinking critically because they don't have much touch with each other. But records show that kids are more interested when animations are used. They do things like explore on their own, answer inquiries, pay attention to media with passion, and talk about things that interest them. So, the papers support the premise that interactive animated multimedia is a significant part of transforming how kids learn so that they are more interested, work together, and are more independent (Akyuna et al., 2025).

The pattern found in the paperwork represents a significant change in how things work in the classroom. After adding animation media, more and more students became interested. Records show increased activity, involvement, patterns, and understanding. In patterns like these, it's clear that one thing leads to another. The documentation also reveals that animated media can make

pupils wish to participate on their own (Melati et al., 2023). Documentation also shows that students have more opportunities to talk to each other and express their ideas than they did in the past. This pattern illustrates that animated media actually does make a learning space that gets individuals to work together and be interested (Faiza & Wardhani, 2024).

This transition occurs because animated media can enhance two key aspects of modern learning: intrinsic motivation and active participation. Animation provides learners with visual and emotional engagement, motivating them to participate in the educational process. When kids are interested, they are more inclined to ask questions, discuss about things, or try out activities that are interactive. Another reason for paradigm shifts is that animated media lets students take charge of some parts of the learning process, such choosing menus, reviewing content, or doing interactive exercises. This can make the kids feel more in charge and sure of themselves. The shift from passive to active learning is due to both improvements in teaching methods and the fact that pupils naturally respond better to more interactive, engaging, and visually kinesthetic teaching styles that are ideal for children with different types of intelligence (Wulandari & Wardhani, 2024).

Another important contribution of this study is its attention to early information literacy. Prior discussion of digital learning tools in primary education often centers on motivation or achievement, whereas the present findings show that animation-based multimedia can also familiarize students with basic practices of interpreting visual instructions, recognizing symbols, and navigating simple digital information. This is particularly relevant in contemporary Islamic primary education, where digital exposure is increasingly part of children's everyday life. The study therefore suggests that multimedia learning is not only a delivery strategy for subject matter but also a subtle training ground for foundational digital-literacy habits.

The implications of this study are both theoretical and practical. Theoretically, the findings reinforce the relevance of multimedia learning perspectives for Islamic primary education by showing that media effectiveness depends on alignment with learner characteristics and classroom interaction. In practice, the study suggests that teachers should deliberately use animation-based multimedia, not merely as an add-on or entertainment aid. Effective use requires careful selection of content, attention to pacing, and integration with questioning and explanation strategies. For future research, a wider comparative design across grade levels, subject areas, or madrasah contexts would help clarify how consistently these patterns persist across different instructional environments.

CONCLUSION

This study concludes that animation-based interactive multimedia contributes positively to learning at MI Nurul Mun'im by increasing students' interest in learning, strengthening classroom engagement, improving conceptual understanding, and supporting early information literacy. These findings answer the main objective of the study, namely to examine how animation-based interactive multimedia shapes students' learning experience in Madrasah Ibtidaiyah. Theoretically, the study strengthens the argument that multimedia-based learning becomes more meaningful when it is aligned with the developmental characteristics of young learners and the interactional needs of the classroom. In practice, it suggests that teachers in Madrasah Ibtidaiyah should integrate digital media in a purposeful, pedagogically guided way. Future studies are recommended to examine similar practices in different subjects, grade levels, and school settings, as well as to explore more systematically the role of teachers' digital competence in determining the quality of multimedia-based learning.

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