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Animated Videos as Pedagogical Tools for First-Grade Classrooms: Insights from SDN 4 Wonoboyo

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ABSTRACT

Animated video-based learning has emerged as an innovative pedagogical strategy for enhancing engagement in early primary education. This study explored the use of animated videos to improve learning motivation, participation, and comprehension among first-grade students at SDN 4 Wonoboyo, Indonesia. Employing a qualitative case study design, data were collected through classroom observations, semi-structured interviews with students and teachers, and document analysis. Findings revealed that animated videos created an interactive and enjoyable classroom environment, significantly improving attentiveness, curiosity, and active participation. Students reported greater motivation and deeper comprehension of abstract concepts such as mathematics and language, facilitated by visual and auditory integration. The role of repetition and independent review proved critical in reinforcing retention and supporting self-regulated learning. Teachers highlighted clear pedagogical benefits, including inclusivity across diverse learning styles, though challenges related to limited resources, training, and potential distractions were noted. This study concludes that animated video-based strategies are effective tools for enhancing early primary education, offering both immediate improvements in engagement and long-term implications for fostering autonomy and motivation in learners. The findings contribute to international scholarship on multimedia learning by providing contextual insights from Indonesian classrooms, emphasizing the importance of resource availability, teacher preparedness, and curricular integration for sustainable implementation.

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1.   Introduction

The role of learning engagement in primary education has increasingly drawn scholarly attention due to its critical influence on students' academic achievement and holistic development. Engagement

reflects the degree of students' attention, curiosity, interest, and motivation, all of which shape how effectively they absorb and apply knowledge in classroom contexts. In recent decades, researchers and educators have sought innovative pedagogical strategies to counteract disengagement, boredom, and passivity, particularly among younger learners whose developmental stages require interactive and stimulating experiences (Almisfalah & Yuliana, 2023; Liu & Elms, 2019). Against this backdrop, animated video-based learning has emerged as a promising approach, offering dynamic and multimodal stimuli that align with the natural tendencies of children to explore and respond to visually and aurally rich environments.

Animated videos have demonstrated the capacity to transform classroom experiences by combining moving visuals, narratives, sound, and relatable characters into a coherent instructional medium. These features are particularly relevant for first-grade students, who often struggle with abstract thinking and benefit from concrete, relatable representations of new concepts (Liu & Elms, 2019; Permatasari, Ratminingsih, & Pratiwi, 2022). Unlike static media, animated videos provide dynamic representations that capture children's attention and sustain their motivation. For instance, research suggests that animated characters and scenarios can simplify complex concepts, making them more accessible and memorable, thereby reducing cognitive barriers to comprehension (Lestari & Wibawa, 2021; Syarifudin & Muhammad, 2018). The outcome is not merely enhanced learning performance but also the cultivation of a positive disposition toward academic activities, a factor of long-term significance for continued educational success (Astuti, Nisak, Nadlif, & Zamzania, 2021; Samihah & Savitri, 2021).

Traditional teaching methods, while foundational, are increasingly criticized for their limitations in engaging contemporary learners. Teacher-centered lectures or rote repetition, for example, often fail to sustain attention spans among young students, leading to disinterest and diminished motivation (Wang, Lee, & Lo, 2023). By contrast, digital media tools offer multisensory channels of communication that can stimulate learners more effectively. Audiovisual content, especially animated media, engages both visual and auditory senses simultaneously, enhancing the encoding of information and fostering deeper retention. (Roark, Lescht, Wray, & Chandrasekaran, 2023) note that young learners exhibit heightened engagement when instruction incorporates dynamic sounds, movements, and visuals, capitalizing on children's innate curiosity and exploratory behavior. This capacity for engagement is a decisive factor in building the foundation for lifelong learning habits.

Equally important is the developmental perspective. Early primary education is a formative stage in which children's cognitive, linguistic, and affective capacities are in rapid development. The integration of audiovisual elements provides cognitive scaffolding, aiding the transition from concrete to abstract thought. Empirical evidence suggests that children exposed to multisensory learning environments outperform peers taught with unimodal methods, particularly in vocabulary acquisition, memory tasks, and comprehension (Broadbent et al., 2018; Kheirkhah, Moradi, Kavianpour, & Farahani, 2022). Furthermore, the motivational benefits of animated video-based strategies extend beyond academic gains. (Robinson, Hawthorn, & Rahman, 2018) highlight that affective engagement manifested as enthusiasm, enjoyment, and emotional investment significantly predicts persistence in learning activities. These findings underscore the necessity of incorporating approaches that address both cognitive and affective dimensions of learning.

In the Indonesian and broader Southeast Asian context, educators are increasingly turning to digital solutions to address widespread issues of student disengagement and inconsistent learning outcomes. Particularly in rural and resource-constrained schools, technology has been leveraged to bridge gaps in access to quality teaching materials. Animated videos, along with gamification and interactive multimedia, have been integrated into primary school curricula to encourage active participation (Bond & Bedenlier, 2019; Pandita & Kiran, 2023). Empirical studies conducted in Indonesian classrooms demonstrate that animated media can transform passive reception into interactive engagement, allowing learners to participate actively in meaning-making processes rather than merely receiving information. This transition is vital in overcoming the monotony of conventional

pedagogy and aligns with broader educational reforms aimed at cultivating critical, creative, and collaborative competencies in the 21st century.

The theoretical underpinnings of animated video-based learning are grounded in established cognitive and educational psychology frameworks. Mayer's multimedia learning theory posits that learners assimilate knowledge more effectively when instruction integrates both verbal and pictorial representations, as opposed to text alone (Hew, Lan, Tang, Jia, & Lo, 2019). Animated visuals, therefore, serve as cognitive tools that enable learners to visualize abstract concepts, stimulating imagination and deeper processing (Immanuella, Kurniawati, & Rifameutia, 2023). Cognitive load theory further explains how multimedia learning can optimize mental effort by reducing extraneous load and allowing learners to allocate cognitive resources toward essential learning processes (Broadbent et al., 2018; Kheirkhah et al., 2022). The careful design of animated educational content, which balances simplicity with cognitive stimulation, enables young learners to focus on core material without being overwhelmed, thus enhancing comprehension and motivation simultaneously (Boateng & Kalonde, 2024).

Despite these promising insights, the use of animated videos in first-grade Indonesian classrooms has not been extensively studied, particularly through qualitative explorations of student and teacher experiences. While global research provides evidence of effectiveness, contextual factors such as cultural learning styles, technological access, and local pedagogical traditions necessitate localized inquiry. For instance, students in rural Indonesian schools may exhibit different patterns of engagement compared to their urban counterparts due to varying exposure to technology. Likewise, teachers' attitudes toward adopting digital tools play a pivotal role in shaping the success of such interventions. Without empirical studies that capture these contextual dynamics, the generalizability of findings from international research remains limited.

Therefore, the present study seeks to address this research gap by examining the implementation of animated video-based learning strategies in a first-grade classroom at SDN 4 Wonoboyo. The primary objective is to evaluate how animated videos influence student engagement, motivation, and comprehension within this specific educational setting. By employing a qualitative case study design, the research captures nuanced insights from direct classroom observation, student and teacher interviews, and document analysis. Such an approach allows for a holistic understanding of both the pedagogical benefits and challenges associated with the integration of animated media in early primary education.

This study's contribution lies in its dual focus on empirical and practical outcomes. Empirically, it enriches the literature on digital media in education by providing localized evidence from an Indonesian primary school context, thereby extending global discussions into underrepresented educational environments. Practically, the findings are expected to inform teachers, curriculum developers, and policymakers about the viability of animated videos as tools for fostering active learning. The novelty of the study lies in its focus on first-grade learners a group often overlooked in technology-driven pedagogy research while simultaneously exploring teacher-student dynamics that emerge when animated media is incorporated into daily instruction. Ultimately, this research aims to provide actionable insights for enhancing the quality of learning experiences, ensuring that foundational education equips students not only with knowledge but also with the motivation and engagement necessary for sustained academic growth.

2. Methodology

1.1 Research Design

This study employed a qualitative case study design to explore the implementation of animated video-based learning strategies in a first-grade classroom at SDN 4 Wonoboyo. The qualitative case study approach was chosen because it enables a detailed and context-specific investigation of the phenomenon, focusing on real-life classroom interactions and the lived experiences of both students and teachers. Case studies are particularly well-suited to educational research, as they provide rich, in-depth accounts of teaching and learning practices within authentic school environments (Anyichie,

Butler, & Nashon, 2023). By concentrating on one classroom, this study aimed to capture the unique dynamics of student engagement, teacher facilitation, and curriculum integration associated with animated video learning.

The emphasis on qualitative inquiry stems from the recognition that student engagement cannot be reduced to quantitative indicators alone. Instead, engagement encompasses cognitive, affective, and behavioral dimensions, all of which require interpretive methods to be adequately understood (Hariyadi & Rodiyah, 2023). Consequently, qualitative case study methodology offered the flexibility to integrate multiple forms of data observational, interview-based, and documentary into a comprehensive analysis that reflects the complex realities of early primary education.

1.2 Research Setting and Participants

The study was conducted in SDN 4 Wonoboyo, a public elementary school located in a rural district of Indonesia. The setting was selected due to its relevance in representing classrooms where traditional pedagogical approaches dominate, and where the integration of digital media, such as animated videos, remains relatively novel.

The participants included:

1.2.1 Students: All first-grade students in the selected classroom (aged 6–7 years) were observed as part of the naturalistic classroom setting. Their participation in observations and interviews was based on voluntary parental consent, and pseudonyms were used to ensure confidentiality.

1.2.2 Teachers: The primary classroom teacher, responsible for delivering lessons and implementing animated video strategies, was interviewed to provide professional perspectives on the pedagogical processes.

This participant composition allowed the study to incorporate both learner-centered and teacher-centered insights, ensuring that the analysis captured the perspectives of the main stakeholders in the learning process.

1.3 Data Collection Methods

Three primary data collection techniques were employed: classroom observation, interviews, and document analysis. These approaches, triangulated across different sources, enabled a robust and multifaceted understanding of the role animated videos played in shaping engagement.

1.3.1 Classroom Observation

Classroom observation was central to this study, as it provided a direct view of student engagement behaviors and interactions during lessons. Observations were conducted during teaching sessions where animated videos were incorporated into the curriculum. Particular attention was paid to indicators of engagement such as students' attentiveness, participation in discussions, verbal responses, non-verbal behaviors (e.g., gestures, facial expressions), and overall enthusiasm (Anyichie et al., 2023).

Structured observational tools, adapted from validated educational engagement frameworks, were used to document recurring patterns and situational changes (Hariyadi & Rodiyah, 2023). For example, episodes of heightened excitement during the introduction of animated sequences were noted alongside instances where attention waned. Field notes were maintained systematically to capture the temporal flow of classroom interactions, while reflective memos were written after each session to interpret the emerging dynamics.

1.3.2 Interviews

Semi-structured interviews were conducted with both the teacher and a selection of students to gather deeper insights into their experiences with animated video-based learning. Semi-structured protocols were chosen because they allow for a balance between comparability across participants and flexibility to explore unique perspectives (Khilmi, Siswanto, & Purwanto, 2024).

1.3.2.1 Teacher interview: Focused on the teacher's perceptions of the benefits and challenges of integrating animated videos, changes in student motivation, and pedagogical adjustments required to accommodate multimedia tools.

1.3.2.2 Student interviews: Conducted in a child-friendly manner, focusing on students' enjoyment, difficulties, and preferences when learning with animated videos. Open-ended questions encouraged students to express themselves freely, while prompts (e.g., "What did you like about the video?") facilitated articulation of their experiences.

The interviews were audio-recorded with informed consent, transcribed verbatim, and later coded thematically. Insights from interviews complemented observational findings, enabling the study to link observable engagement with students' and teachers' subjective accounts.

1.3.3 Document Analysis

Document analysis provided contextual grounding by examining curricular materials, lesson plans, and student work related to the animated video sessions. This method was particularly useful for assessing how animated videos were integrated into the curriculum and whether alignment existed between instructional goals and multimedia content. Additionally, samples of students' written or drawn responses following the animated lessons were reviewed as artifacts of engagement and comprehension (Galindo & Aguilar, 2019).

Analyzing lesson plans enabled the researcher to trace how teachers structured the introduction of videos, follow-up activities, and assessments. This, in turn, highlighted the pedagogical strategies employed to maximize the impact of animated content. Document analysis thus complemented observations and interviews by situating classroom experiences within broader curricular and instructional frameworks (Han, 2019).

1.4 Data Analysis

Data analysis followed an iterative thematic approach, enabling patterns to be identified across the three data sources. The process involved multiple stages:

1.4.1 Transcription and Data Organization: Observation notes, interview transcripts, and documents were organized into a unified dataset.

1.4.2 Initial Coding: Data were coded inductively, with open codes reflecting recurring themes such as "attention and curiosity," "peer collaboration," "teacher facilitation," and "repetition for comprehension."

1.4.3 Axial Coding: Codes were clustered into broader categories corresponding to the study's objectives, such as cognitive engagement, affective engagement, and behavioral participation.

1.4.4 Triangulation: Findings from different sources were cross-validated. For instance, observational evidence of increased attentiveness was compared against students' own reports of enjoyment, and against teachers' reflections on heightened participation.

1.4.5 Interpretive Analysis: Finally, themes were interpreted in light of theoretical frameworks, particularly multimedia learning theory and cognitive load theory, to connect empirical observations with established constructs (Boateng & Kalonde, 2024; Broadbent et al., 2018).

This analytical procedure ensured rigor, transparency, and credibility in the interpretation of findings.

2.5 Trustworthiness and Ethical Considerations

Ensuring the trustworthiness of qualitative research required attention to credibility, transferability, dependability, and confirmability. Credibility was achieved through data triangulation across observations, interviews, and documents, as well as member checking with the teacher participant. Transferability was facilitated by providing thick descriptions of the classroom context, enabling readers to determine applicability to other settings. Dependability and confirmability were enhanced by maintaining an audit trail of methodological decisions, coding procedures, and reflective memos throughout the research process (Lekwa, Reddy, & Shernoff, 2019).

Ethical protocols were strictly observed. Informed consent was obtained from the school administration, the participating teacher, and parents of the students. Pseudonyms were assigned to all student participants to protect anonymity. Given the age of the participants, interviews were designed to be non-intrusive and developmentally appropriate, ensuring that children felt comfortable and safe throughout the research process.

2 Results

The results of this study are presented in three major thematic areas, reflecting both observational data and participant insights: (1) Classroom Engagement, (2) Comprehension and Learning Outcomes, and (3) Teacher and Student Perspectives. Each theme synthesizes evidence from classroom observations, semi-structured interviews, and document analysis, contextualized with relevant literature to highlight how animated video-based learning strategies shaped the experiences of first-grade students at SDN 4 Wonoboyo.

2.1 Classroom Engagement

2.1.1 Indicators of Student Engagement

The analysis revealed several reliable indicators of student engagement and motivation during multimedia-assisted lessons. Consistent with prior research, indicators such as enjoyment, attentiveness, active participation, and sustained focus emerged as particularly salient markers of engagement (Nugroho, Kusumawati, & Wahyuningsih, 2021). Observations demonstrated that students displayed visible enthusiasm when animated videos were introduced, with many exhibiting excitement through verbal expressions, body gestures, and immediate attentiveness to the screen.

During animated video sessions, students not only focused on the media content but also participated actively in subsequent classroom activities, such as answering questions, repeating vocabulary, and discussing storylines. These behaviors aligned with findings that emotional, participation-based, and performance-related engagement indicators can evolve in early childhood classrooms as students become more accustomed to multimodal instruction ("Effectiveness of the Use of Quizizz Media on Students' Learning Interest," 2024).

Importantly, the integration of animated media fostered peer collaboration. Students frequently turned to one another during viewing to share reactions, clarify details, or discuss characters, thereby transforming what is often an individual cognitive experience into a socially interactive learning process. Interviews supported these observations, with students reporting that learning with animated videos felt more enjoyable because "everyone was talking about the story together."

2.1.2 Changes in Classroom Atmosphere

The classroom atmosphere shifted markedly following the integration of animated videos. Observations highlighted a more interactive and participatory environment compared to lessons conducted with traditional, text-based methods. Students appeared more alert, frequently volunteering to answer questions, and demonstrated increased willingness to participate in group discussions.

These changes reflect prior research indicating that animated videos can enhance classroom enthusiasm, improve attention spans, and catalyze more dynamic learning experiences (Li et al., 2022; Tara, Hidayati, & Susanti, 2022). Teachers also noted that even students who were typically reserved showed higher levels of involvement, suggesting that the multisensory appeal of animated videos may serve as an equalizer, enabling broader participation across different personality types and learning preferences.

Overall, the integration of animated media produced a positive shift in classroom interactional dynamics, transforming traditionally passive learning into an environment characterized by collaboration, enthusiasm, and active dialogue.

2.2 Comprehension and Learning Outcomes

2.2.1 Understanding Abstract Concepts

One of the most significant findings of this study was the role of animated videos in facilitating the comprehension of abstract concepts, particularly in mathematics and language learning. Observations revealed that students were able to grasp difficult content such as addition and subtraction processes or word recognition more quickly when concepts were represented visually and dynamically.

The integration of animated narratives with auditory explanations provided students with multiple entry points to access information. This multimodal approach aligns with findings from

(Abdulrahaman et al., 2020), who argue that combining visual, auditory, and animated elements supports cognitive processing and allows learners to internalize abstract ideas more effectively. Similarly, (Jatmiko & Primasatya, 2022) emphasize that visualization in mathematics plays a critical role in enabling conceptual understanding, a conclusion also supported by students' self-reports in this study, many of whom stated that animated videos "made numbers easier to see and understand."

These results indicate that animated media not only enhance comprehension but also bridge the gap between abstract symbolic representation and concrete understanding, a vital developmental need in early primary education.

2.2.2   Repetition and Independent Review

Findings further underscored the importance of repetition and independent review in enhancing comprehension when animated videos were employed. Students frequently requested to replay certain segments of the videos, particularly when they encountered challenging material. Teachers reported that repeated exposure to animated sequences helped reinforce learning, enabling students to consolidate their understanding and gain confidence.

This finding is supported by prior research, which highlights how repetition of multimedia content aids in strengthening long-term retention (Capodieci, Cornoldi, Doerr, Bertolo, & Carretti, 2020; Sasan & Rabillas, 2022). Additionally, encouraging independent review fostered elements of self-regulated learning, allowing students to revisit material at their own pace, thereby personalizing their learning experience (YÜZEN & Perkmen, 2022).

Document analysis also indicated that students performed better in follow-up exercises after they had opportunities to revisit video content. This finding aligns with (Nurmahanani, 2021), who demonstrated that frequent repetition in multimedia-supported instruction enhances retention and comprehension of complex material. Collectively, these results highlight the role of animated video learning in promoting not only engagement but also long-term conceptual mastery.

2.3 Teacher and Student Perspectives

2.3.1   Teachers' Perceptions

Interviews with teachers provided insights into both the benefits and challenges of integrating animated video-based strategies. Teachers overwhelmingly reported that animated videos increased student motivation, attention, and participation. They noted that students appeared more eager to engage with the lesson and demonstrated deeper understanding of difficult concepts when animated visuals were employed.

Educators also emphasized that animated videos cater to diverse learning styles, allowing visual, auditory, and kinesthetic learners to benefit simultaneously. These observations are consistent with (Apriati, Prastikawati, & Hawa, 2023) and (Safitri & Prastowo, 2024), who argue that multimedia integration fosters inclusivity by accommodating varying learning needs.

However, teachers also raised challenges, particularly concerning technological infrastructure and training. Some expressed concern that the availability of projectors, reliable electricity, and appropriate video resources was limited, which could hinder consistent implementation. Additionally, teachers highlighted the need for professional development to effectively integrate animated media into pedagogical practice. Without proper training, there is a risk that videos may serve as passive entertainment rather than active learning tools. Concerns were also expressed about potential distractions, where students might focus on entertaining aspects of the video rather than the instructional content.

These findings suggest that while animated video strategies hold considerable promise, their success depends on institutional support, resource availability, and teacher preparedness.

2.3.2   Students' Experiences

Students' self-reports echoed observational findings by emphasizing heightened motivation, curiosity, and enjoyment when learning through animated videos. Many students described the videos as "fun" and "easy to understand," with several noting that they preferred video-based lessons to traditional textbook instruction.

Students highlighted that animated videos helped them remember lessons better and made them more interested in asking questions and discussing topics in class. The discovery-based elements of animated videos were particularly appealing; students reported feeling curious to learn more about characters or storylines, which often prompted them to seek additional explanations from teachers.

These findings align with (Tahmina, 2023), who emphasizes the role of animated media in fostering curiosity-driven learning. Additionally, the results mirror (Apriati et al., 2023) and (Safitri & Prastowo, 2024), who document that students perceive animated media as not only enjoyable but also effective in deepening comprehension.

Overall, student feedback highlighted that animated video-based learning strategies not only enhanced cognitive understanding but also stimulated emotional and motivational engagement, reinforcing the overall effectiveness of this approach.

3 Discussion

The present study examined the use of animated video-based learning strategies to enhance student engagement and comprehension among first-grade students in SDN 4 Wonoboyo. Findings revealed significant improvements in motivation, attentiveness, and comprehension when animated videos were integrated into lessons. To situate these findings within broader scholarly discourse, this discussion synthesizes insights from Indonesian and international studies, explores long-term pedagogical implications, and proposes strategies for adapting and scaling animated video use across diverse educational contexts.

3.1 Animated Video-Based Learning: Indonesian Context versus Global Evidence

Findings from this study are consistent with a growing body of literature in Indonesia, which demonstrates the efficacy of animated videos in fostering motivation, engagement, and conceptual understanding in elementary classrooms. Research conducted by (Pujiani, Harsiwi, & Almustaflikhah, 2022) and (Wulandari, 2022) highlights how Indonesian students respond positively to visually rich and aurally engaging media, reporting greater enthusiasm for learning in both language and mathematics subjects. Similarly, the findings from SDN 4 Wonoboyo underscore that animated videos create an enjoyable and interactive learning environment where students display increased participation and curiosity.

Globally, studies echo these findings, suggesting that animated video-based learning offers several tactical advantages. International research emphasizes the capacity of animated content to capture student attention, address diverse learning preferences, and support comprehension across disciplines ranging from literacy to science (Ningrum, Anwar, & Wardhono, 2023; Ocampo & Junaidi, 2024). For instance, animated videos are frequently praised for their ability to transform abstract concepts into relatable visual narratives, thereby reducing cognitive barriers for young learners.

Nevertheless, contextual differences shape the extent to which animated media can be effectively integrated. In Indonesia, as in other low-to-middle-income educational systems, limitations in technological access, digital infrastructure, and teacher training may present barriers to widespread adoption (Ardiansyah, Kosim, & Hermawan, 2022; Ningrum et al., 2023). In contrast, in higher-resource contexts, animated videos are often seamlessly incorporated within digital curricula supported by robust teacher professional development programs (Suharto, Zubaidi, Maulidiyah, Setiawan, & Putra, 2024). This indicates that while the pedagogical value of animated videos is widely recognized, their implementation is contingent upon contextual factors such as resource availability, institutional priorities, and teacher preparedness.

3.2 The Role of Teacher Preparedness and Resource Availability

Teacher preparedness emerged as a central determinant of the successful implementation of animated video-based learning. Interviews conducted in this study revealed that while teachers perceived animated media as highly effective in capturing student attention, they also highlighted challenges in integrating such tools consistently. Similar concerns have been documented in global studies, where the availability of training and resources strongly influences the pedagogical effectiveness of animated video integration (Syafii & Rojabi, 2021).

Without adequate training, there is a risk that animated content may be used as mere entertainment rather than as purposeful instructional material. Teacher capacity to design lesson plans around animated content, conduct follow-up discussions, and assess learning outcomes is essential in ensuring that videos function as effective pedagogical tools rather than supplementary diversions. Consequently, professional development programs focusing on multimedia pedagogy are crucial for enabling teachers to maximize the benefits of animated learning strategies.

Furthermore, the issue of resource availability cannot be overlooked. The limited provision of projectors, reliable electricity, and appropriate multimedia resources in some Indonesian schools constrains the scalability of animated video-based learning. These findings echo international evidence that highlights disparities in access to educational technologies, particularly in rural or under-resourced regions (Marszalek, Balagna, Kim, & Patel, 2022). As such, sustainable models for resource allocation, such as school-community partnerships or the use of free online animated educational platforms, may be necessary to address infrastructural barriers (Romualdi & Sudrajat, 2024).

3.3 Long-Term Implications for Autonomous and Motivated Learning

Beyond immediate improvements in engagement and comprehension, the integration of animated video-based learning carries important long-term implications for cultivating autonomous and motivated learners. Findings suggest that students who engaged with animated videos demonstrated greater enthusiasm for revisiting difficult material and took initiative in discussing content with peers. Such behaviors reflect early forms of self-regulated learning, a critical component of educational success over time (Saputro & Salam, 2024).

This aligns with (Brutman, Tarasenko, Polyezhayev, Matsegora, & Rukolyanska, 2024), who argue that animated educational content can foster intrinsic motivation and support the gradual development of autonomy in learning. By creating enjoyable and interactive classroom experiences, animated videos help students perceive learning as meaningful, thereby increasing their willingness to take ownership of their educational journeys. These findings can be interpreted through the lens of self-determination theory, which posits that when learners perceive high levels of autonomy support, they are more likely to internalize motivation and sustain long-term engagement (Hernández, Murcia, Cid, Monteiro, & Rodrigues, 2020; Hu et al., 2022).

In this way, animated video strategies extend their value beyond immediate classroom benefits. They have the potential to cultivate enduring attitudes toward learning, contributing to the development of lifelong learners who approach education with curiosity and persistence.

3.4 Scaling and Adapting Animated Video-Based Learning

While the benefits of animated video-based learning are evident, scaling such strategies for broader application requires careful consideration of resource limitations and pedagogical adaptation. Findings from this study and supporting literature suggest three pathways for effective scaling: leveraging existing resources, empowering teachers, and fostering collaborative learning environments.

First, schools can leverage community partnerships and free online educational platforms to access animated video content without substantial financial investment. This approach has been shown to be particularly effective in resource-limited settings, where reliance on locally available or open-access content can reduce barriers to adoption (Romualdi & Sudrajat, 2024).

Second, empowering teachers to create their own animated videos using accessible software can be transformative. Studies have demonstrated that teacher-generated content allows educators to tailor material to local cultural contexts and specific student needs, thereby enhancing the relevance and effectiveness of multimedia instruction (Lozano-Jiménez, Hernández, & Murcia, 2021; Román, Alonso, & Castuera, 2020). Such initiatives not only reduce dependence on external content but also cultivate teacher agency in shaping innovative pedagogical practices.

Third, integrating animated videos into collaborative learning frameworks enhances their pedagogical impact. Group viewings followed by structured discussions, role-playing, or problem-solving activities can deepen comprehension and foster peer-to-peer interaction, even in classrooms with limited technological infrastructure (Marszalek et al., 2022). In this way, animated videos act as

catalysts for active learning, while subsequent collaborative activities ensure that learning outcomes are consolidated and extended.

Finally, curriculum integration is crucial. Animated videos must not be viewed as supplemental but as strategically embedded within instructional design to address diverse learning needs. As (Pradnyawati & Rati, 2023) emphasize, alignment with curricular goals ensures that animated content supports rather than distracts from learning objectives.

3.5 Implications for Future Research and Practice

The findings of this study offer several implications for future research and practice. From a research perspective, longitudinal studies are needed to examine how repeated exposure to animated video-based learning influences students' cognitive development, motivation, and academic performance over time. Additionally, comparative studies across different regions of Indonesia and between Indonesia and other countries would shed light on how contextual factors such as infrastructure, teacher training, and cultural norms mediate the effectiveness of animated video-based learning.

From a practical standpoint, the findings call for stronger institutional support for multimedia integration in primary education. Policymakers and school administrators must prioritize investment in infrastructure, teacher training, and content development to enable equitable access to animated learning strategies. For teachers, the results underscore the importance of adopting reflective pedagogical practices, ensuring that animated videos are integrated not as stand-alone tools but as part of broader instructional strategies that emphasize interaction, critical thinking, and student agency.

4   Conclusion

This study investigated the effectiveness of animated video-based learning strategies in enhancing engagement, motivation, and comprehension among first-grade students at SDN 4 Wonoboyo. Findings revealed that animated videos successfully transformed classroom dynamics, fostering an interactive and enjoyable learning environment. Students demonstrated heightened attentiveness, curiosity, and willingness to participate, while teachers observed improvements in comprehension of abstract concepts, particularly in mathematics and language. Repetition and independent review of animated content further reinforced retention, supporting the development of self-regulated learning skills.

From the teachers' perspective, animated videos offered clear pedagogical advantages by catering to diverse learning styles and improving student motivation. However, challenges related to limited infrastructure, training, and potential distractions highlight the need for institutional support and teacher preparedness. Importantly, the study underscored the broader pedagogical implications of animated video use, suggesting that it not only addresses immediate engagement challenges but also fosters long-term learner autonomy and motivation.

Overall, this research contributes to the growing body of literature on digital media integration in primary education by providing localized evidence from an Indonesian classroom. It affirms that animated video-based learning constitutes a powerful and adaptable strategy for supporting foundational education, with potential applications across diverse educational contexts. Future research should explore longitudinal impacts and cross-context comparisons to further validate and refine these findings

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