

SPEED TEACHING INNOVATION IN ELEMENTARY SCHOOLS: USING TECHNOLOGY TO IMPROVE LEARNERS' UNDERSTANDING

Kinanti Dyah Nur Islami¹, Maya Nurdianti², Elyna Aprillia³

^{1,2,3}Elementary School Teacher Education, University Lampung, Indonesia

Kinantidyah25@gmail.com¹, mayandianti@gmail.com², elynaaprilia98@gmail.com

Abstract

This research intends to investigate the efficacy of employing animated video media in the instruction of the concept of speed among sixth-grade elementary school students. The topic of speed is frequently perceived as abstract by students, leading to challenges in comprehension. Consequently, visual-based educational media, such as animated videos, can facilitate a more tangible and engaging representation of the concept of speed. This research adopts a qualitative methodology, utilizing observation and interview techniques conducted at SDN 7 Metro Selatan. The findings indicate that the incorporation of animated videos in speed education considerably enhances students' comprehension. Furthermore, animated videos also serve to elevate students' motivation to learn, despite facing challenges such as limited infrastructure and the potential for technology dependency. Therefore, animated video media can serve as an effective instrument in imparting abstract concepts like speed, provided it is utilized with appropriate management.

Article History

Sent: 29 June 2025

Accepted: 21 February 2026

Published: 30 April 2026

Keywords: *Animated Video, Math Learning, Learning Media,*

A. INTRODUCTION

The comprehension of the mathematical concept of speed, particularly within the realm of elementary education, is frequently deemed a challenging endeavor for students to fully grasp and internalize. This challenge arises primarily from the fact that speed is an inherently abstract notion that quantifies the variations in distance over specified intervals of time, which can prove to be particularly elusive for young learners to visualize and conceptualize, especially when they are at the formative stages of their educational journey. The difficulties faced in comprehending these fundamental concepts can significantly hinder their capability to apply the acquired knowledge practically in their everyday lives, which is an essential aspect of education.

In the contemporary landscape characterized by rapid technological advancements, traditional pedagogical approaches that predominantly rely on verbal explanations and mathematical equations often fall short in effectiveness. It is increasingly evident that students require more tangible and visually engaging resources to gain a profound understanding of the intricacies of speed. A particularly promising innovation that can be employed in this context is the use of animated videos. This educational medium provides dynamic and interactive visual representations that allow learners to

observe and engage with the relationships among distance, time, and speed in a more tangible and comprehensible manner (J. M. Clark & Paivio, 1991). The incorporation of animated videos not only facilitates a deeper comprehension of the concept of speed but also significantly enhances students' motivation to engage with the learning material (Rika Widianita, 2023). This particular research study was conducted at SDN 7 Metro Selatan, specifically targeting sixth-grade students, with the primary aim of evaluating the effectiveness of animated video media in fostering a better understanding of the concept of speed.

The overarching objective of this research is to investigate the degree to which animated video media can enhance the comprehension of the concept of speed among students. Furthermore, this study seeks to discern both the advantages and disadvantages associated with the utilization of animated video media in the educational context, particularly within elementary schools. Consequently, it is anticipated that the findings of this research will contribute valuable insights toward the development of more effective and engaging instructional strategies that align with the evolving demands of modern education.

The focus of this study is to conduct a thorough analysis of how effectively animated video media can improve the comprehension of the concept of speed among sixth-grade students at SDN 7 Metro Selatan. Additionally, this research aims to systematically identify both the advantages and disadvantages linked to the use of animated video media as a tool for teaching speed in elementary educational settings. The central research question guiding this investigation is: What specific advantages and disadvantages can be identified in the use of animated video media for enhancing the understanding of the concept of speed among sixth-grade students at SDN 7 Metro Selatan?

B. RESEARCH METHODS

This research endeavor employs a qualitative methodology, specifically utilizing a case study approach to gain in-depth insights into the subject matter at hand. The investigation was meticulously carried out at SDN 7 Metro Selatan, focusing on a sample group consisting of 6th grade students, who are at a pivotal stage in their educational journey. To gather comprehensive data, the research team engaged in direct observation of the learning process, particularly while utilizing animated video media, alongside conducting interviews with both educators and students to delve into their unique experiences while employing this innovative media. The intricate process of data collection unfolded in several systematic stages, which are outlined as follows:

Initially, the observation phase involved meticulously monitoring the learning activities that incorporated animated videos designed to effectively convey the concept of speed. The observations were specifically directed towards understanding how students grasp and respond to the concept of speed as it is presented through the engaging medium of animated video. Following this, semi-structured interviews were conducted with teachers to capture their perspectives on the overall effectiveness of animated videos in enhancing students' comprehension of the subject matter. Moreover, similar interviews were also executed with students to ascertain the degree to which the animated videos facilitated their understanding of the material presented during lessons.

In terms of data analysis, a comprehensive approach was adopted, encompassing data reduction, systematic presentation of the findings, and drawing well-founded conclusions. The data obtained from both observations and interviews underwent a thorough analysis to identify and elucidate patterns in students' responses to the animated video media, while also assessing the advantages and disadvantages of this approach concerning the learning of speed concepts. Through this meticulous process, the study aimed to contribute valuable insights into the effectiveness of animated media in educational settings, particularly in the realm of science education.

C. RESULTS AND DISCUSSION

This research endeavor successfully managed to gather a substantial amount of data through meticulous observations and in-depth interviews conducted at the educational institution known as SDN 7 Metro Selatan. Upon thorough analysis of the collected data, several significant findings emerged that pertain to the efficacy and impact of utilizing animated video media in the pedagogical process of imparting knowledge about the concept of speed.

1. Improved understanding of the concept of speed

Enhanced comprehension of the concept of speed was a notable outcome, as a majority of the learners conveyed that the animated videos significantly aided them in grasping the intricacies of speed in a more profound manner. During the course of the observation sessions, it became evident that students exhibited a marked increase in their active participation during discussions immediately following the viewing of the video content. A multitude of students expressed that the visual representation provided by the videos facilitated their understanding of the direct correlation that exists between distance, time, and speed in a way that was previously inaccessible to them. In fact, one student articulated their experience by stating, "After watching the video, I find that I can calculate the speed with considerably more ease than before."

2. Increased Motivation to Learn

3. Furthermore, the incorporation of animated videos has proven to not only enhance comprehension but also significantly ignite students' interest and motivation to engage in the learning process. Insights gained from interviews conducted with teachers revealed that the classroom environment became notably more dynamic and filled with enthusiasm following the integration of animated video content into the lessons. One teacher passionately remarked, "The children exhibit a heightened level of excitement towards learning mathematics. They no longer experience feelings of boredom or disinterest during our sessions."(Rika Widianita, 2023)."

4. **Advantages of Using Animated Videos**

Advantages identified during the study include:

- **Engaging Visualization:** Animated videos offer a more engaging way to convey material compared to traditional methods.
- **Interactivity:** Learners can see a variety of real-life situations that illustrate the concept of speed, increasing the appeal of the material
- **Accessibility:** Learners can access videos at home, allowing them to learn independently.

5. **Challenges in the Use of Animated Videos**

While there are many benefits, the study also identified several challenges, including:

- **Infrastructure Limitations:** Some classes do not have adequate access to technological devices, such as projectors or the internet.
- **Dependence on Technology:** There is concern that learners may become overly dependent on digital media and lack the ability to think critically independently(Packy Laverty et al., 2011).

Based on the results of this study, it can be concluded that the use of animated videos in learning the concept of speed at SDN 7 Metro Selatan showed positive results, both in terms of understanding the material and learning motivation of students.

Discussion

The findings derived from the comprehensive study conducted at SDN 7 Metro Selatan clearly indicated that the incorporation of animated videos into the educational framework for teaching the concept of speed had a remarkably significant and positive effect on both the comprehension levels of the students as well as their overall motivation towards learning. These insightful results are strongly aligned with existing academic research, which consistently suggests that the utilization of visual media serves to enhance the understanding of complex and abstract mathematical concepts, as evidenced (R. C. Clark & Mayer, 2012).

1. The enhanced comprehension regarding the intricate concept of speed is notably evident among students who engage with animated videos, as they find themselves able to relate this crucial concept to real-life scenarios that they encounter on a daily basis, including the movements of vehicles on the road or the dynamics of sports activities, as highlighted in the research conducted (Jafarzadeh et al., 2011). The dynamic visualization that animated videos provide is instrumental in allowing students to concretely perceive the interconnections between distance, time, and speed, which reinforces their learning experience (Jafarzadeh et al., 2011). This aligns perfectly with the principles of constructivism, a learning theory that posits that the most effective learning takes place when individuals can construct and build new knowledge upon the foundation of their relevant and meaningful experiences.
2. In addition to significantly enhancing understanding, animated videos play a pivotal role in igniting students' interest and motivation towards their studies. This surge in motivation holds particular importance, especially within the framework of primary education, where a child's engagement with the teaching materials can profoundly influence their overall academic success and learning outcomes. The observation that interactive media have the capacity to transform traditional classrooms into more dynamic and enjoyable environments further underscores the critical role of learning motivation in facilitating improved academic performance and achievements among students.
3. The advantages that were identified, including engaging visualizations and the accessibility of animated videos, strongly advocate for their adoption as a valuable alternative teaching method. However, it is equally essential to acknowledge the challenges that accompany this approach, such as the limitations posed by inadequate infrastructure and the potential risk of students becoming overly reliant on technology as their primary learning resource (Packy Laverty et al., 2011). Consequently, it is imperative for educational institutions to consider making strategic investments in technological infrastructure and providing comprehensive training for teachers, thereby ensuring that the effectiveness of animated videos can be maximized. Furthermore, the study emphasizes the necessity of employing a diverse array of teaching methods, indicating that animated videos should serve as supplementary tools rather than outright replacements for traditional pedagogical approaches. By incorporating a variety of media, educators can better cater to the diverse learning preferences and needs of their students.

4. In light of these compelling findings, it is highly recommended that educational institutions, particularly those located in regions with limited technological infrastructure, devise thoughtful strategies aimed at enhancing access to essential educational technology. Additionally, prioritizing training programs for teachers in the effective utilization of digital media should be an essential focus to ensure that the delivery of education is both effective and comprehensive (Mpuangnan, 2024).

Therefore, it is evident that animated videos possess the potential to be an exceptionally valuable instructional tool in the teaching of abstract concepts such as speed, provided that their integration into the existing curriculum is executed with careful planning and is adequately supported by the necessary technological infrastructure.

D. CONCLUSION

This comprehensive study meticulously examined the efficacy of incorporating animated videos as a pedagogical tool for elucidating the concept of speed among students at SDN 7 Metro Selatan, and the findings of the research unequivocally indicated that this innovative medium not only significantly enhanced the students' comprehension of the subject matter but also substantially elevated their motivation and enthusiasm towards learning. By employing captivating and interactive visual representations, animated videos enable learners to draw connections between the theoretical notion of speed and practical, real-world scenarios, thereby transforming abstract concepts into more tangible and easily graspable information, as supported by the research of (Betrancourt & Mayer, 2005).

In spite of the existence of various obstacles, such as inadequate infrastructure and the potential for an over-reliance on technological resources, as highlighted (Packy Lavery et al., 2011), the outcomes of this particular study compellingly demonstrate that the utilization of animated videos serves as a highly effective alternative methodology for teaching mathematics, particularly concerning the intricate concept of speed. The myriad advantages associated with employing this dynamic medium include not only an increased engagement and interest in the learning process but also a notable enhancement in the active participation of students during instructional activities.

Consequently, it is strongly advised that educational institutions give serious consideration to the integration of animated videos into their existing curriculum frameworks and also invest in comprehensive training programs for educators to optimize the full potential of this dynamic teaching medium, as suggested (Mpuangnan, 2024). With an appropriately structured approach, animated videos possess the remarkable capability to make a profound

contribution to the overall enhancement of educational quality at the elementary level, especially in the context of facilitating a deeper understanding of complex mathematical concepts, as emphasized (Pekdağ, 2010).

E. REFERENCES

- Betrancourt, M., & Mayer, R. E. (2005). The Animation And Interactivity Principles In Multimedia Learning. *The Cambridge Handbook Of Multimedia Learning*, 287–295.
[Http://Steinhardtapps.Es.lts.Nyu.Edu/Create/Courses/2015/Reading/Betrancourt.Pdf](http://steinhardtapps.es.lts.nyu.edu/create/courses/2015/reading/betrancourt.pdf)
- Clark, J. M., & Paivio, A. (1991). Dual Coding Theory And Education. *Educational Psychology Review*, 3(3), 149–210. <https://doi.org/10.1007/Bf01320076>
- Clark, R. C., & Mayer, R. E. (2012). E-Learning And The Science Of Instruction: Proven Guidelines For Consumers And Designers Of Multimedia Learning: Third Edition. *E-Learning And The Science Of Instruction: Proven Guidelines For Consumers And Designers Of Multimedia Learning: Third Edition*, 42(5), 41–43. <https://doi.org/10.1002/9781118255971>
- Jafarzadeh, B., Hajari, A., Alishahi, M. M., & Akbari, M. H. (2011). The Flow Simulation Of A Low-Specific-Speed High-Speed Centrifugal Pump. *Applied Mathematical Modelling*, 35(1), 242–249. <https://doi.org/10.1016/j.apm.2010.05.021>
- Moreno, R., & Mayer, R. E. (2000). A Coherence Effect In Multimedia Learning: The Case For Minimizing Irrelevant Sounds In The Design Of Multimedia Instructional Messages. *Journal Of Educational Psychology*, 92(1), 117–125. <https://doi.org/10.1037/0022-0663.92.1.117>
- Mpuangnan, K. N. (2024). Teacher Preparedness And Professional Development Needs For Successful Technology Integration In Teacher Education. *Cogent Education*, 11(1). <https://doi.org/10.1080/2331186x.2024.2408837>
- Packy Laverty, J., Morris University David Wood, R., & Morris University John Turcheck, R. (2011). *Information Systems Education Journal Implementing A Dynamic Driven Course Using Lamp*. 9(7). [www.Aitp-Edsig.Org](http://www.aip-edsig.org)
- Pekdağ, B. (2010). Kimya Öğreniminde Alternatif Yollar: Animasyon, Simülasyon, Video Ve Multimedya Ile Öğrenme. *Journal Of Turkish Science Education*, 7(2), 79–110.
- Rika Widianita, D. (2023). Inovasi Media Pembelajaran Interaktif Untuk Meningkatkan Efektivitas Pembelajaran Era Digital Di Sekolah Dasar. *At-Tawassuth: Jurnal Ekonomi Islam*, VIII(1), 1–19.