



## **Comparison of the Use of Animated and Non Animated Video Media on Students' Cognitive Performance on Health Materials**

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### **Keywords**

Video Media;  
Animated Video;  
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### **Abstract**

Video media serves as a powerful instructional tool, effectively presenting materials through an integration of visual and auditory elements that enhance student engagement and retention. This study aims to assess the impact of animated versus non animated video media on the cognitive learning outcomes of Grade XI students at MAN 1 Bekasi. Employing a quasi experimental design utilizing a Two Groups Pretest Posttest approach, the research conducted cluster sampling across eight classes. Data were gathered through a validated multiple-choice. The statistical analysis demonstrated that both animated ( $Z = -7.711$ ,  $p < 0.05$ ) and non-animated ( $Z = -9.813$ ,  $p < 0.05$ ) videos significantly improved student learning outcomes. However, the Mann-Whitney U test ( $U = 33525.500$ ,  $p = 0.763 > 0.05$ ) indicated no significant difference in effectiveness between the two media types. Consequently, both animated and non-animated videos are equally effective in enhancing cognitive achievement. This finding suggests that educators have the flexibility to utilize either format to achieve comparable pedagogical results in physical education

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## INTRODUCTION

Education is not merely a process of transferring knowledge; it is a vital catalyst for transforming human resources into dynamic contributors to society (Murtiningsih & Press, 2024). In our increasingly complex and interconnected world, a flexible and responsive education system is crucial. Such a system must be designed to equip individuals with the ability to absorb, analyze, and apply information effectively, enabling them to address real-world challenges with innovative solutions. This includes fostering not only critical thinking but also strong moral character, which is essential for ethical decision-making (Ghosh et al., 2025). Reforming the educational paradigm is more than just an option; it is a strategic imperative for achieving sustainable national progress. A well-rounded education empowers individuals by developing their competencies—be they cognitive, social, or emotional. These skills are fundamental in preparing citizens who can thrive in diverse environments and contribute positively to their communities (Rahayu, 2025). Moreover, investing in educational reform lays the groundwork for an inclusive and equitable society where opportunities are accessible to all, regardless of background. This inclusivity promotes social cohesion and stability, which are crucial for long-term development. In this way, education becomes a cornerstone of not only individual growth but also national advancement, fostering a sustainable future where everyone has the chance to succeed. Education, therefore, is a transformative force that shapes not just the individual but society as a whole (Freire, 2020).

Within this transformative framework of education, Physical Education holds a significant position in shaping not only students' intellectual growth but also their physical health and character. Physical Education also plays a vital role in developing students' physical skills and overall health. This subject promotes physical activity, instills important life values such as teamwork and resilience, and educates students about health. For example, the dangers of smoking, highlight its effects on lung health and overall fitness (Jahrir et al., 2024).

Learning outcomes are key to evaluating the effectiveness of education, reflecting students' understanding and engagement. Optimal outcomes should encompass cognitive, affective, and psychomotor domains, as these elements work together to produce well-rounded individuals prepared for real-life challenges (Putra et al., 2024).

To enhance learning outcomes, educational strategies must evolve with the times. Traditional approaches are insufficient in the digital era. Therefore, integrating technology into learning is essential. This aligns with Information Processing Theory, which highlights the stages of attention, meaning processing, storage, and retrieval (Haqi et al., 2023). Well-designed digital media can enhance attention and retention, making technology-based learning a vital component of an efficient, future-oriented education system.

Innovation in learning highlights the effectiveness of instructional media, particularly video. It enhances student understanding by engaging both visual and auditory senses, making it easier for the brain to absorb and retain information (Mayer, 2024). Video activates iconic and echoic memory, reinforcing retention while variations in speed, color, and narration simplify complex concepts (Syatriana & Mallapiang, 2024).

Despite the widespread use of digital media, empirical evidence comparing the efficacy of animated versus non-animated videos in high school health education remains scarce. This study aims to fill that gap by evaluating which medium better enhances students' cognitive performance, moving beyond anecdotal observations from the field to a more rigorous scientific analysis. This study will compare animated and non-animated videos for teaching in health. Animated videos are ideal for abstract concepts, while non-animated (live action) videos work well for practical demonstrations. Identifying the more effective medium will help educators craft engaging learning experiences, ultimately improving student outcomes. This research responds to inquiries from the PE teacher at MAN 1 Bekasi about the best media for presenting health materials, titled: Comparison of the Use of Animated and Non-Animated Video Media on Students' Cognitive Performance on Health Materials (Case Study: Phase F Students of MAN 1 BEKASI in 2026).

## METHODS

The type of research used is a quasi-experimental design, which is an experimental study that does not employ full randomization in grouping. The objective of this research is to determine the effect of treatments on learning outcomes by comparing two groups that receive different treatments (Reichardt, 2019).

The research design utilized is the Two-Groups Pretest-Posttest Design. In this design, both groups are given a pretest ( $O_1$ ) to assess their initial abilities. Each group then receives a different treatment: the first group is exposed to animated video media ( $X_1$ ), while the second group is exposed to non-animated video media ( $X_2$ ). Finally, both groups take a posttest ( $O_2$ ) to measure any improvement in their learning outcomes (Huang et al., 2023). Group assignment is conducted using a matching technique based on the average scores of the PAT (Penilaian Akhir Semester), following an ABBA pattern to maintain equivalence in initial abilities across the groups.

In quasi-experimental educational research, the effectiveness of a learning intervention can be evaluated by comparing pretest and posttest scores from a single learning session, even if that session is conducted only once (Stratton, 2019). This method is commonly used to assess immediate learning outcomes or the short-term effects of a learning media treatment, as long as the outcome measurements are systematically taken before and after the intervention.

Studies that utilize a single-session pretest-posttest design have demonstrated that significant changes in learning scores indicate that the treatment has an impact on student learning outcomes. For example, an increase in posttest scores compared to pretest scores suggests that the intervention was effective, even though it was conducted in just one centralized session (Solehuddin et al., 2025). This aligns with the prevalent practice in educational intervention research, which evaluates the effectiveness of specific media, strategies, or methods by comparing outcomes directly after the treatment is administered.

The study involved eight out of ten eleventh-grade classes at MAN 1 Bekasi, as these were the only classes available for participation during the research period. A cluster sampling technique was used, where entire groups were selected as research samples. This meant that a total of eight selected classes participated in this study, which included 522 students. Four classes were designated to receive treatment with animated video media, while the other four classes were treated using non-animated video media.

A research instrument is a tool used to measure natural or social phenomena. In educational research, tests are often utilized to evaluate learning outcomes, specifically in the cognitive and psychomotor domains. A measurement tool that systematically collects data on learners' abilities, performance, or achievements. In this study, the research instrument was a multiple-choice test that was validated by Hijrah Maulidiah Afifah, M.Pd., an expert in the health sector at Universitas Negeri Semarang. Recent methodological studies highlight the importance of having empirical evidence of validity and reliability for instruments used in experimental research to ensure the credibility of the findings (Zahfa et al., 2025). Data analysis involves processing information so that it can be organized and presented systematically. For quantitative research, data analysis can be conducted using statistical formulas or software tools such as SPSS or S-PLUS. Although this study employed an experimental design to examine cause-and-effect relationships using pretest and posttest data, the statistical analysis was conducted using non-parametric tests. Parametric tests such as the paired sample t-test and independent sample t-test require assumptions of normal distribution and homogeneity of variance. Based on the normality test results, the data did not meet the assumption of normality. Therefore, non-parametric tests were applied. The Wilcoxon Signed-Rank Test was used to analyze differences within groups, while the Mann-Whitney U Test was used to compare differences between groups. Non-parametric tests are recommended when normality assumptions are violated or when sample sizes are limited, as they are more robust under such conditions (Smeeton et al., 2025).

## RESULTS AND DISCUSSION

On the article written from research, then in the early part of the results and a discussion on research be preceded by a description of the implementation, namely (1) a description of the time of the research, (2) the duration of the implementation of the research, (3) the informant or responden obtained, and (4) concludes with a description of the things that will be described in the be-how a paragraph afterwards.

Systematics of the writing section or sequence results and discussion can be written based on the research questions posed, the findings of the research, or according to the procedure of research done, especially when the research in the form of development, for example using a model Research & Development (R & D). Information in the form table without a direct number, preceded by a description of the table. According to **table 1**.

**Table 1. Test of Normality**

| Group                         | Sig. value |
|-------------------------------|------------|
| <b>Pre-test Animated</b>      | .000       |
| <b>Post-test Animated</b>     | .000       |
| <b>Pre-test Non-Animated</b>  | .000       |
| <b>Post-test Non-Animated</b> | .000       |

The results of the Kolmogorov–Smirnov test indicated that all groups obtained p-values less than 0.001 ( $p < .001$ ), indicating that the pre-test and post test data for both the animated and non-animated groups were not normally distributed.

A homogeneity test using Levene's test was also conducted to assess the equality of variances between the two groups. The results showed that the Levene statistic ranged from 6.135 to 6.311 with  $p < .001$ , indicating unequal variances across groups.

**Table 2. Test of Homogeneity of Variance**

|                                         | Levene Statistic | df1 | df2      | Sig. |
|-----------------------------------------|------------------|-----|----------|------|
| <b>Based on Mean</b>                    | 6.245            | 3   | 1040     | .000 |
| <b>Based on Median</b>                  | 6.135            | 3   | 1040     | .000 |
| <b>Based on Median with adjusted df</b> | 6.135            | 3   | 1030.425 | .000 |
| <b>Based on trimmed mean</b>            | 6.311            | 3   | 1040     | .000 |

Because the assumption of normality was violated, non parametric tests were employed. The Wilcoxon Signed Rank Test was used to analyze pre post differences within each group, while the Mann Whitney U test was applied to compare differences between the animated and non-animated groups.

### Hypothesis Testing

Because the assumption of normality was violated, non-parametric tests were employed. The Wilcoxon Signed Rank Test was used to analyze pre–post differences within each group, while the Mann Whitney test was applied to compare differences between the animated and non-animated groups.

**Table 3. Table of Hypothesis**

| Group                                               | Asymp. Sig. (2-tailed) |
|-----------------------------------------------------|------------------------|
| <b>Post test animated pre test animated</b>         | .000                   |
| <b>Post test non animated pre test non animated</b> | .000                   |

The Wilcoxon Signed Rank Test showed that the animated video group obtained  $p < .005$ , indicating a significant difference between pre test and post test scores. Similarly, the non animated video group obtained  $p < .005$ , also indicating a significant improvement in learning outcomes.

**Table 4.** Mann-Whitney U test

| Group                 | N   | Mean Rank | Sum of Ranks |
|-----------------------|-----|-----------|--------------|
| Post test animated    | 255 | 259.47    | 66165.50     |
| Post test no animated | 267 | 263.44    | 70337.50     |
| Total                 | 522 |           |              |

To compare effectiveness between groups, the Mann-Whitney U Test was conducted. The results showed  $U = 33525.500$ ,  $Z = -0.301$ ,  $p = .763$ . Since  $p > .05$ , there was no statistically significant difference between the animated and non-animated video groups. Therefore, although both instructional media significantly improved students' cognitive learning outcomes, there was no significant difference in effectiveness between animated and non-animated video media among Grade XI students of MAN 1 Bekasi.

After analyzing the results, several conclusions were drawn regarding the effectiveness of using video as a learning medium to improve the cognitive abilities of 11th-grade students at MAN 1 Bekasi following the treatment. The findings of the research are as follows:

#### **Effectiveness of Using Animated Video Media**

The results of the Wilcoxon Signed-Rank Test for the group using animated video media revealed a Z-score of -7.711 and a significance value (Asymp. Sig., 2-tailed) of 0.000 ( $p < 0.05$ ). These findings indicate a significant difference between the pre-test and post-test scores for this class. Consequently, it can be concluded that the use of animated video media effectively improves students' cognitive learning outcomes in health topics.

This improvement suggests that dynamic visualizations, which combine moving images, text, and audio, help students grasp health concepts more concretely and systematically. Animated media facilitates a clearer presentation of abstract material, thereby enhancing students' conceptual understanding.

#### **Effectiveness of Using Non Animated Video Media**

The results of the Wilcoxon Signed-Rank Test for the group utilizing non-animated video media revealed a Z-score of -9.813 with a significance level of 0.000 ( $p < 0.05$ ). This finding demonstrates a significant difference between the pre-test and post-test scores for the class that employed non-animated video media.

This outcome suggests that non animated video media is effective in enhancing students' cognitive learning outcomes. Even in the absence of animation, video presentations still deliver valuable visual and auditory stimuli that aid students in grasping health related material. Non animated videos enable a systematic and contextual approach to information delivery, thereby positively influencing the improvement of learning outcomes.

#### **Differences in Learning Outcome Improvement between Animated and Non Animated Video Media**

To investigate the differential effectiveness of animated versus non-animated video media on student learning outcomes, a Mann-Whitney U test was employed. The analysis yielded a Mann-Whitney U value of 33,525.500, a Z-value of -0.301, and a significance level of 0.763 ( $p > 0.05$ ). Since the significance value exceeds 0.05, it can be concluded that there is no statistically significant difference in the learning outcomes for students utilizing either animated or non-animated video media. The mean rank for the animation class was 259.47, which accounts for approximately 49.62% of the total average ranking. In comparison, the mean rank for the non-animation class was 263.44, or about 50.38%. The difference in average rankings between the two groups was only around 0.76%, suggesting a very small disparity.

Consequently, one may conclude that both forms of media exhibit relatively equal effectiveness in enhancing the cognitive learning outcomes of 11th-grade students at MAN 1 Bekasi on health related topics. While both groups demonstrated notable improvements in their individual performances (as determined by the Wilcoxon test), these enhancements did not yield a statistically significant difference when comparing outcomes across groups.

This evidence suggests that the success of learning is not solely contingent upon the presence of animation within video media, but is also dependent on factors such as the quality

of the educational content, clarity of the information presented, and the level of student engagement throughout the learning experience. Therefore, both animated and non animated video media serve as viable alternative learning strategies for improving cognitive outcomes in educational contexts.

## CONCLUSION

The research results indicate that animated video media effectively improves the cognitive learning outcomes of class XI students at MAN 1 Bekasi on health material, as shown by significant differences in pre-test and post test scores. Non animated video media also demonstrated effectiveness, with similar improvements noted. However, inter group comparisons revealed no significant differences between the effectiveness of the two media types. Therefore, both animated and non-animated video-based learning media have a comparable impact on enhancing students' cognitive outcomes. Video media is considered an effective alternative learning strategy to enhance students' cognitive learning outcomes, especially in health related subjects. Teachers should make the most of video media by tailoring it to the specific characteristics of the material and the needs of their students. Additionally, schools need to support the development and use of technology based learning resources to improve the overall quality of the learning process.

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