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EFEKTIVITAS MEDIA VIDEO ANIMASI DALAM MENUMBUHKAN KEBUGARAN JASMANI SISWA SEKOLAH DASAR

THE EFFECTIVENESS OF ANIMATED VIDEO LEARNING MEDIA IN ENHANCING THE PHYSICAL FITNESS OF ELEMENTARY SCHOOL STUDENTS

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Abstrak

Kemajuan teknologi data menuntut guru Pendidikan Jasmani, Olahraga, dan Kesehatan (PJOK) untuk memanfaatkan media pembelajaran yang lebih kreatif dan inovatif guna menunjang peningkatan kebugaran jasmani peserta didik secara optimal. Studi ini diarahkan untuk merancang serta mengevaluasi level efektivitas media video pembelajaran berbasis animasi pada materi kebugaran jasmani yang diterapkan kepada siswa kelas V di SDN Gunung Gedangan 1 Kota Mojokerto. Studi ini menerapkan pendekatan Research and Development (R&D) dengan melibatkan 29 siswa sebagai subjek Studi yang dipilih menerapkan teknik total sampling. Pengumpulan data diterapkan melalui kegiatan observasi, penyebaran angket, serta pelaksanaan pretest dan posttest. Pengujian efektivitas media diterapkan dengan menerapkan Paired Sample t-Test yang dianalisis melalui perangkat lunak SPSS versi 23. Hasil pengolahan data mengindikasikan bahwasannya nilai t-hitung sebesar 82,990 melampaui t-tabel sebesar 1,6507, dengan level signifikansi 0,001 yang lebih kecil dari 0,05. Temuan ini mengindikasikan adanya perbedaan yang bermakna antara hasil pretest dan posttest. Nilai rata-rata peserta didik pada tahap pretest tercatat sebesar 69,43, kemudian mengalami peningkatan menjadi 79,96 pada pelaksanaan posttest. Hasil tersebut memperkuat temuan bahwasannya penggunaan media video berbasis animasi mampu menyediakan dampak positif atas peningkatan kebugaran jasmani siswa. Dengan demikian, video pembelajaran animasi dinilai memiliki kelayakan untuk dijadikan sebagai salah satu media pembelajaran inovatif dalam pelaksanaan pembelajaran PJOK di level sekolah dasar.

Kata kunci: media, video animasi, kebugaran jasmani, siswa, sekolah dasar

Abstract

Advances in data technology require Physical Education, Sports, and Health (PJOK) teachers to utilize more creative and innovative learning media to optimally support the improvement of students' physical fitness. This study aims to design and evaluate the effectiveness of animation-based video learning media on physical fitness material applied to fifth-grade students at SDN Gunung Gedangan 1 Elementary School in Mojokerto City. This study applied a Research and Development (R&D) approach involving 29 students as subjects selected using total sampling technique. Data collection was carried out through observation, questionnaire distribution, and pretest and posttest implementation. Media effectiveness testing was applied using Paired Sample t-Test analyzed using SPSS software version 23. The results of data processing indicate that the t-count value of 82.990 exceeds the t-table value of 1.6507, with a significance level of 0.001, which is less than 0.05. These findings indicate a significant difference between the pretest and posttest results. The average score of students in the pretest stage was 69.43, then increased to 79.96 in the

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posttest. These results reinforce the finding that the use of animation-based video media can have a positive impact on improving students' physical fitness. Thus, animated learning videos are considered feasible to be used as one of the innovative learning media in the implementation of PJOK learning at the elementary school level.
***Keywords**: media, animated videos, physical fitness, students, elementary school*

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INTRODUCTION

With the rapid advancement of technology in the contemporary era, educators in Physical Education, Sports, and Health (PJOK) are required to develop more creative and innovative learning approaches in the implementation of teaching and learning activities. (Haris Akbar Mahasiswa S- et al., 2015) and Kristiyandaru (2010:33) Physical education is seen as an integral part of the overall education system, which focuses on physical activity and healthy lifestyle habits to support the balanced development of students, covering physical, psychological, social, and emotional aspects. Additionally, the subject of Physical Education, Sports, and Health (PJOK) plays a strategic role as one of the main components in the elementary school education curriculum (Sastro Desmianto Ginting, 2022). (Mustafa & Winarno, 2020) add that physical education contributes to optimizing students' potential to achieve educational goals, including improving knowledge, skills, attitudes, and health. In addition, physical education serves as a refreshing medium in the learning process at school, minimizing student boredom during learning activities (Bayu et al., 2015). Salahudin & Rusdin (2020) and (Cindy Pratiwi, 2023) emphasize that physical education plays an important role in maintaining health and physical fitness, while also providing positive effects on the psychological and social abilities of students.

The importance of PJOK learning is also emphasized by (Syarifuddin Gholy & Rentika Hadi, 2021), who state that Physical Education, Sports, and Health (PJOK) are integral components of the overall education system, aimed at optimizing the physical functions of students through planned and systematic physical activities. Feng, Lu, Yin, Qi, and (Batez et al., 2021) argue that the integration of sports and physical fitness activities into the learning curriculum plays a strategic role, not only in maintaining physical health but also in supporting the physical growth and development of students. Physical fitness itself is an important aspect in efforts to improve health, which is implemented through programmed physical activities with the aim of increasing the fitness level of students at the elementary school level. (Kamal Firdaus 2020 in (Ananda et al., 2023).

An optimal level of physical fitness is expected to support students in participating in the learning process to the fullest, increase productivity and effectiveness in activities, and strengthen the body's resistance to various diseases, while also fostering higher motivation and enthusiasm for learning (Putu Dwi Sucita Dartini et al., 2020). (Gandang Eka Prayoga, 2020) states that physical fitness can be defined as a person's physical capacity to perform various daily activities optimally without causing excessive fatigue. (Prastyawan & Pulungan, 2022). (Wildhan Nur Wahid, 2023) adds that the level of physical fitness of elementary school students is a fundamental factor in supporting their growth and development. Therefore, the involvement and strategic role of physical education teachers are essential in efforts to improve students' physical fitness (Wildhan Nur Wahid, 2023). Physical fitness according to Lengkana & Muhtar (2021) Physical fitness reflects an individual's physical ability to carry out various activities and daily tasks without causing excessive fatigue, so that the body still has reserve

energy to carry out subsequent activities. For students, a good level of physical fitness provides benefits in the form of improved academic ability, which is believed to have a positive impact on their learning process and outcomes (Ananda et al., 2023).

In the implementation of the Merdeka Curriculum, learning outcomes at the elementary school level require students to be able to develop and apply various basic movement patterns and physical fitness training programs based on an accurate and correct understanding of knowledge (Permendikbud, 2022). For the first phase, a preliminary study was conducted in SDN Gunung Gedangan 1 elementary school of Mojokerto City by interviewing fifth-grade physical education teachers. It was shown in the interview that the physical fitness among some of the students were still low with moderate level of physical fitness (fair). The researcher also administered a physical fitness test including various aspects (cardiorespiratory endurance, muscle strength and flexibility).

From these discoveries, it may be inferred that low levels of physical fitness affect the concentration in learning of students, their motivation to participate in PA, health status and academic achievement. This condition emphasizes the need to strengthen the implementation of PJOK learning using appropriate and effective learning media. According to (Nurul et al., 2018), educators in the 21st century is required to be able to create interactive and innovative communication with students. Nussbaum et al. (2021) emphasize that 21st-century skills are very important in a modern knowledge-based society. (Wulandari et al., 2023) stated that the use of learning media can stimulate students' interest and motivation to learn. (Aini & Kemala, 2021) also explained that technology-based learning media can foster interest in physical education and make learning more efficient ((Jeong & So, 2020). (Haruto, 2023) adds that physical fitness is an important indicator of health and quality of life. (Hermawan et al., 2022) explains in his study that students who have a good level of physical fitness tend to be able to maintain their concentration for longer periods of time during the learning process.

(Hasan et al., 2020) explain that learning media are tools that contain various forms of data, messages, and knowledge that are instructional in nature and designed to support the learning process. The use of learning media in the context of education means the use of tools by teachers as intermediaries to convey learning materials and data to students more effectively. ((Fitriyana et al., 2020). Learning media acts as a means of conveying messages that can stimulate the cognitive, affective, and motivational aspects of students, to the extent that it can support the creation of an effective and optimal learning process. (Lutfi et al., 2021). The results of the study indicate that the application of learning media can contribute effectively to supporting the learning process. In addition, other findings indicate that the use of learning media has a significant effect on improving student learning outcomes. (Qomariyah & Qalbi, 2021). Using learning media, teachers can present learning materials or messages more effectively, stimulate the cognitive, emotional, attention, and abilities of students, and support the smooth implementation of the teaching and learning process.

Currently, the development of video-based PJOK learning media has been widely applied in the form of video tutorials and digital applications (Wati et al., 2022). (Maudri Lestari et al., 2023) Findings from various previous studies indicate that the use of video media can foster students' understanding of the material and motivation to learn in physical education. Based on a preliminary study at SDN Gunung Gedangan 1 Mojokerto City found that the fitness level of students such as cardiorespiratory endurance, muscle strength and flexibility still belongs to adequate category. This situation has consequences such as low stimulation of activities, vulnerable to easy tiredness and illness, decrease in student's learning achievement. In addition, to date, the school has not yet developed animation-based physical fitness learning media as a means of supporting PJOK learning.

In line with the implementation of the Merdeka Curriculum, which provides space for teachers to design learning flexibly according to the characteristics and conditions of the school,

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and considering the limitations of available facilities, this study is directed at developing animation-based video learning media as an effort to foster the physical fitness of students at SDN Gunung Gedangan 1 Kota Mojokerto.

METHOD

This study applies a Research and Development (R&D) approach. The study and development method is used with the aim of creating a learning product while also testing the effectiveness level of the product that has been developed (Sugiyono, 2015: 407). The researh was held at SDN Gunung Gedangan 1 in Mojokerto City started from November 10 until November 24,2025. All 29 fifth graders were included as the study subjects. Since the population was not very large and could be sampled in its entirety, total sampling technique was use where the entire members of the study population were selected as sample. It was also very important to collect the data as it was that there was information required such as the focus and purpose of the research. Data collection procedures Data collection methods are systematic processes to gather data for an investigation. In this study, data were obtained through observation and questionnaires. Observation was used to collect qualitative data through direct observation of learning activities and conditions in the field, while questionnaires were used to obtain quantitative data related to the level of suitability of the learning media developed.

In this study, observation activities were carried out through interviews with teachers and direct observation of the implementation of PJOK learning on physical fitness material, with the aim of obtaining an overview of the learning process and conditions that took place. Meanwhile, questionnaires were used as an indirect data collection technique, compiled in the form of written statements or questions and filled out by respondents. In addition, this study applied pre-tests and post-tests as instruments for measuring learning outcomes. Pre-tests were given to students before the application of animation-based learning videos on physical fitness material, which aimed to identify students' initial abilities in PJOK learning. Furthermore, post-tests were conducted after students participated in learning by applying animation-based video media. The posttest results were then analyzed and compared with the pretest scores to determine whether there were any changes in learning outcomes. If the differences obtained were significant, then the animated video learning media was declared effective in improving student learning outcomes.

RESULTS

Product Effectiveness Test Results

At this stage, an evaluation was conducted to measure the level of effectiveness of the development of animation-based Physical Education, Sports, and Health (PJOK) learning videos on physical fitness material for fifth-grade students. The process of measuring the effectiveness was done through a paired sample t-test between the average pretest and posttest results, The data were analyzed using IBM SPSS version 23 Software with means of Paired Sample T-Test statistical test. The results of the statistical test show a t-value equal to 82.990 that is greater than the t-table at level (df = 176) being 1.6507 and with significance level of 0.001 < 0.05. This difference in pretest and posttest is statistically significant. The average score at the pretest stage was 69.43, then increased to 79.96 after the treatment was given. This difference indicates an increase in the physical fitness level of students after the application of animation-based video media. Thus, based on the results of the Paired Sample T-Test analysis, it can be concluded that animation-based PJOK learning videos on physical fitness material are proven to be effective in improving the physical fitness of fifth-grade students.

Normality Test Results

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Data normality testing in this study was applied using the *Shapiro–Wilk* method. Normality testing in each analysis group was carried out using SPSS version 23.0 *for Windows* software, applying a significance level of 5% (0.05). A summary of the test results is presented in Table 13 as follows:

Table 1. Normality Test

Group	Significance	Description
Preetest	0.61	Normal
Posttest	0.200	Normal

Based on the results of the normality test analysis using the *Kolmogorov–Smirnov* method presented in Table 1, a significance value of p > 0.05 was obtained for both the pretest and posttest data. These results indicate that the study data meets the assumption of normal distribution.

Homogeneity Test Results

The homogeneity test aims to determine the similarity of variance between the *pretest* and *posttest* data. In this study, the homogeneity test was applied using *the Levene Test*. A summary of the homogeneity test results is presented in Table 14 as follows:

Table 2. Homogeneity Test

Levene Statistic	Df1	Df2	Sig.
.331	1	354	.565

Based on the results of the homogeneity test analysis using the *Levene Test* shown in Table 2, a significance value of 0.565 was obtained, which is greater than 0.05. This finding indicates that the data in the Study group has uniform or homogeneous variance. Thus, it can be concluded that the Study population meets the assumption of variance equality.

T-test Results

The t-test was used to identify an increase in students' physical fitness in physical fitness material after the application of animation-based learning media. Effectiveness testing was applied through a t-test with a significance level of 5%. The study results were declared significant if the t-count value was greater than the t-table and the significance value (Sig) was less than 0.05.

Table 3. T-test

Data	Mean	Calculated t	T-table	Improvement
Preetest	69.43	82.990	1.6507	25
Posttest	76.96			

Based on the t-test results presented in the table, the t-value is 82.990, which is greater than the t-table value at a degree of freedom (df = 176) of 1.6507, with a significance level of 0.001, which is less than 0.05. This result indicates a significant difference between the pretest and posttest scores. The average pretest score of the students was 69.43, while after participating in learning using animation-based PJOK videos on physical fitness material, the average posttest score increased to 76.96. Based on these findings, it can be concluded that the use of animation-based PJOK learning videos can significantly improve the physical fitness level of fifth-grade students.

DISCUSSION

The results of the effectiveness test in this study revealed a significant increase in the

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physical fitness level of students after learning was carried out using animation-based video media. A comparison between the pretest and posttest data indicated a meaningful difference in scores, which signified that the use of this media played a positive role in supporting the achievement of learning objectives. This increase in learning achievement indicates that animated videos can provide optimal visual and auditory stimuli, helping students understand the concepts of movement, exercise stages, and the benefits of physical fitness activities more effectively.

In addition, the use of animation-based video media provides opportunities for students to apply learning independently outside of face-to-face learning time, repeat material that has not been fully understood, and observe each stage of movement in more detail according to the instructions displayed. The benefit of such media is that it can presented the learning materials in a realistic, interesting and adaptive manner to the complexity of student's learning style such as visual, auditory or kinesthetic. Thus, animated video media does not only contribute to the conceptual understanding, but also students culminate practical skills needed in learning of Physical Education, Sports and Health (PJOK). The results validate the application of learning technology, especially those through animated video can significantly enhance the quality of the learning process and student achievement.

Based on the results of the analysis that has been applied, it can be concluded that animation-based PJOK learning video media on physical fitness material has a good level of feasibility for use as a learning tool. This media has been proven to be able to foster learning effectiveness while encouraging innovation in the implementation of the teaching and learning process. The advantages of using animated videos in physical fitness learning include (a) Attractive appearance and easy to operate. The media is designed with attractive visuals, easy to use independently, and can be accessed anytime and anywhere. (b) Varied and innovative content. The presentation of material combines text, images, videos, and animations with explanations that are easy to understand. (c) Equipped with learning evaluations. The media provides evaluation instruments relevant to the material to measure the achievement of learning objectives.

The use of video media in learning needs to be adapted to the dynamics of scientific and technological developments. In the era of Society 5.0, teachers are required to have the ability to design and implement digital learning media that are relevant to the characteristics and needs of students. Animation-based learning media is a strategic alternative in overcoming learning resource limitations, encouraging independent learning, and creating a more interactive and engaging learning atmosphere. The results of this study are in line with the findings of Machmud et al. (2023), which reveal that the use of Android-based video media can significantly increase students' interest, attention, and motivation to learn. (Cholik & Umaroh, 2023) also reported that students responded positively to the effectiveness of animated videos as learning media.

Furthermore, Muyaroah & Fajartia (2017) mention that several studies indicate that the use of digital learning media has been proven effective in improving learning outcomes. Harlis and Buadiarti (2018) argue that mobile learning has a high level of efficiency and helps educators deliver learning materials more easily. Furthermore, Jan et al. (2016) stated that mobile learning-based learning provides better effectiveness compared to conventional learning approaches. Meanwhile, Hidayati and Astuti (2020) emphasized that this media can foster learning flexibility because it allows access to material anytime and anywhere according to the needs of students.

The learning implications of using animated videos are expected to help teachers respond to the challenges of developments in educational technology, while also making the learning process more interesting, flexible, and in line with the characteristics of the learners. This media

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not only serves as a learning support tool but also as a means of transformation towards more innovative and adaptive learning practices. The application of animated media in PJOK learning has the potential to create an active, creative, and enjoyable learning atmosphere, which in turn can foster learning motivation and learning outcomes for students.

Its flexibility in use, both through online and offline learning, allows this media to reach students with diverse conditions and backgrounds. These advantages are strategic in responding to educational challenges in the digital age, especially in PJOK learning, which requires mastery of concepts and motor skills simultaneously. Based on the results of this study, which are reinforced by the findings of various previous studies, it can be concluded that animation-based video media has the potential to be further developed and applied more widely in learning practices. This media contributes significantly to supporting the creation of a quality learning process that is interesting and oriented towards the needs and characteristics of students.

CONCLUSION

From the results of testing for effectiveness of applying developed strategy by Paired Sample T-Test using IBM SPSS version 23, it was found that t-value obtained was 82.990 and this value was greater than t-table at degree of freedom (df=176) =1.6507, since p-value =0.001(<0.05). These results show that the scores between before and after the treatment are significantly different. The average score was 69.43 before and grew to 79.96 for the students after intervention. This increase indicates an improvement in students' physical fitness levels because of the implementation of animation-based video learning media. Thus, it can be concluded that animation-based PJOK learning videos on physical fitness material are effective in improving the physical fitness of fifth-grade students.

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