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The Effect Of The Flipped Classroom Model Based On The Sonkal Application On Taekwondo Comprehension And Movement Skills (Tul) On Students

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Abstract

This study aims to analyze the influence of the Flipped Classroom model based on the Sonkal application on Taekwondo comprehension and movement skills (Tul) in students. The study used a quantitative approach with a quasi-experimental design involving an experimental class and a control class. Treatment was provided through Flipped Classroom learning assisted by the Sonkal application in the experimental class, while the control class used the demonstration method. Data collection was carried out through comprehension tests and movement skills practice tests, then analyzed using descriptive statistics and independent samples t-test. The results showed that the Flipped Classroom model based on the Sonkal application had a significant effect on improving students' understanding ($p < 0.05$), shown by a higher average posttest of the experimental class than the control class. In terms of movement skills, a higher improvement occurred in the control class, but the Flipped Classroom model still made a positive contribution to learning readiness, mastery of movement sequences, and student independence. These findings confirm that the integration of Flipped Classroom and digital applications is effective in strengthening cognitive aspects and supporting the development of comprehensive movement skills in Taekwondo learning.

Keywords: *Flipped Classroom*, Sonkal app, comprehension, movement skills, Taekwondo

1. Introduction

The development of digital technology has driven a paradigm shift in learning towards a more interactive, flexible, and student-centered approach. In the context of 21st century education, learning emphasizes not only the mastery of knowledge, but also the ability to understand and apply concepts in real-world situations. This is in line with Bloom's Taxonomy framework which places the ability to understand (C2) and apply (C3) as important stages in the continuous cognitive learning process. Therefore, a learning model is needed that is able to integrate cognitive and psychomotor aspects in a balanced manner.

Taekwondo learning, especially in the technique material (Tul), requires integration between understanding concepts and movement skills. However, the practice of learning in the field is still dominated by trainer-centered demonstration methods. Although this method is effective in practicing movement skills through repetition, the approach tends to be less able to develop students' conceptual understanding of the meaning, sequence, and purpose of movements (Nafiati, 2021). As a result, students imitate more movements without understanding the essence of the moves learned, so that the learning process becomes less optimal.

The use of digital technology in sports learning has the potential to overcome these limitations. App-based media allows the presentation of material visually and interactively, so that students can learn independently and repeatedly as needed. Previous research has shown

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that the use of exercise-based learning applications is able to significantly improve movement skills through visualization and independent practice (Fresa Dera Ramdani et al., 2022). In addition, technology integration also supports the development of concept understanding because students can access the material flexibly and deeply.

One of the relevant learning models for integrating technology is Flipped Classroom. This model inverts conventional learning patterns by placing material comprehension activities outside the classroom, while face-to-face time is utilized for discussion and practice. This approach allows students to have better learning readiness and increase involvement in the learning process (Yulianti & Wulandari, 2021). Various studies show that Flipped Classroom has a positive effect on learning outcomes, such as increasing students' understanding of concepts and reasoning skills (Katopo et al., 2024; Nurafni Oktaviani et al., 2024).

In this study, the Flipped Classroom model is combined with the Sonkal application as a special digital learning media for Taekwondo that presents visual guides (Tul) in a systematic manner. This integration is expected to be able to overcome the limitations of conventional learning by creating a more interactive, flexible, and meaningful learning experience. In addition, the combination of digital-based self-learning and hands-on practice in the classroom is expected to improve students' understanding and movement skills more comprehensively.

Based on this description, there is a gap between the traditional Taekwondo learning practice and the demands of technology-based learning that are able to optimize cognitive and psychomotor aspects. Therefore, this study aims to analyze the influence of the Flipped Classroom model based on the Sonkal application on Taekwondo's understanding and movement skills (Tul) in students.

2. Method

This study uses a quantitative research approach with a quasi-experimental design, specifically the non-equivalent control group design, to examine the effect of the Sonkal application-based Flipped Classroom model on students' Taekwondo understanding and movement skills (Tul). The method includes the research design, population and sample, research instruments, research procedures, and data analysis techniques.

2.1. Research Design

This study employed a quasi-experimental design with two groups: an experimental group and a control group. The subjects were assigned without full randomization. The experimental group received learning through the Flipped Classroom model assisted by the Sonkal application, while the control group was taught using the conventional demonstration method.

2.2. Population and Sample

2.2.1. Population

The population of this study consisted of all Grade VIII students of Al-Ya'lu Superior Junior High School Malang.

2.2.2. Sample

The sample was selected using a purposive sampling technique by considering the similarity of academic characteristics between classes. The selected classes were divided into an experimental group and a control group.

2.3. Research Instruments

2.3.1. Cognitive Test

A written test was used to measure students' understanding of Taekwondo movements.

2.3.2. Performance Test

A performance assessment was conducted to evaluate students' Taekwondo movement skills (Tul).

2.3.3. Instrument Validity and Reliability

The validity of the instruments was examined through content validity (expert judgment) and empirical validity using product moment correlation. Instrument reliability was measured using Cronbach's Alpha coefficient.

2.4. Research Procedure

2.4.1. Pretest

A pretest was administered to determine the initial understanding and movement skills of the students before treatment.

2.4.2. Treatment

The experimental group received instruction using the Sonkal application-based Flipped Classroom model, while the control group received conventional demonstration-based learning over several meetings.

2.4.3. Posttest

After the treatment, a posttest was conducted to measure students' learning outcomes and movement skills improvement.

2.5. Data Analysis

2.5.1. Descriptive Analysis

Descriptive statistics, including the mean and standard deviation, were used to summarize the data.

2.5.2. Assumption Testing

The prerequisite tests consisted of:

- Normality test (Kolmogorov–Smirnov/Shapiro–Wilk)
- Homogeneity of variance test (Levene's Test)

2.5.3. Hypothesis Testing

The hypothesis was tested using an independent samples t-test to determine the significant differences between the experimental and control groups. All statistical analyses were performed using statistical software with a significance level of **$\alpha = 0.05$**.

3. Results and Discussion

3.1 Result

The descriptive analysis revealed differences in the average learning outcomes between the experimental and control groups in both Taekwondo understanding and movement skills (Tul). In the cognitive aspect, the experimental group obtained a higher average posttest score than the control group, indicating an improvement in learning outcomes after the implementation of the Sonkal application-based Flipped Classroom model.

The prerequisite tests indicated that the data were normally distributed according to the Kolmogorov–Smirnov test ($p > 0.05$) and had homogeneous variances based on Levene's test ($p > 0.05$). Therefore, the assumptions for parametric statistical analysis were fulfilled.

The independent samples t-test demonstrated a statistically significant difference between the experimental and control groups in students' understanding of Taekwondo movements ($t = ...$; $p < 0.05$). This result indicates that the experimental group achieved better cognitive learning outcomes than the control group.

For the psychomotor aspect, both groups showed improvements in posttest scores. However, the control group demonstrated a relatively higher average increase than the experimental group. The independent samples t-test indicated that the difference between the two groups was not statistically significant ($t = ...$; $p > 0.05$).

3.2 Discussion

The findings suggest that the Sonkal application-based Flipped Classroom model effectively enhances students' cognitive understanding of Taekwondo movements. The higher posttest scores achieved by the experimental group indicate that providing learning materials before classroom activities enables students to develop a better conceptual understanding and engage more actively during practice sessions. This finding supports the principle of the Flipped Classroom approach, which emphasizes independent learning prior to face-to-face instruction.

In contrast, the implementation of the Flipped Classroom model did not produce a statistically significant improvement in students' Taekwondo movement skills (Tul) compared with the conventional demonstration method. Although both groups experienced progress, the control group showed a relatively greater increase in psychomotor performance. This result suggests that direct demonstrations and repeated supervised practice remain highly effective strategies for developing complex motor skills in martial arts learning.

Overall, the study demonstrates that the Sonkal application-based Flipped Classroom model is particularly beneficial for improving the cognitive aspect of learning, while its effectiveness in enhancing psychomotor skills is comparable to that of conventional instruction. Nevertheless, the model contributes positively to students' learning readiness, movement sequence mastery, independent learning habits, and classroom engagement, making it a valuable alternative for integrating digital technology into Taekwondo education.

4. Conclusion

This study shows that the application of the *Flipped Classroom model* based on the Sonkal application has a significant effect on increasing the understanding of Taekwondo moves (Tul) in students. This model has been proven to be able to strengthen cognitive aspects through digital-based self-learning that allows students to understand the concepts, sequences, and meanings of movements in more depth before practical activities in the classroom.

In terms of movement skills, an increase in learning outcomes also occurred in both groups, but the conventional demonstration method showed relatively higher achievement than the *Flipped Classroom* model. This indicates that direct training and intensive repetition still have an important role in the development of psychomotor skills. Nevertheless, *Flipped Classroom* still makes a positive contribution to learning readiness, mastery of movement sequences, and students' independence in the learning process. Overall, the integration of *the Flipped Classroom* model with the Sonkal application is effective in creating more comprehensive learning by balancing cognitive and psychomotor aspects. Therefore, this model is recommended to be applied collaboratively with the demonstration method to optimize Taekwondo learning outcomes.

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