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Improving Front Floor Gymnastic Learning Outcome and Achieving Resilience with Digital Media For 8 Student of SMP Negeri 35 Bandung City

Muhamad Herdina Setiawan[1A-D], Helmy Firmansyah*[2BD], Tri Martini[3C]

1-3Physical Education, Universitas Pendidikan Indonesia, Bandung, Indonesia

ABSTRACT

This research was motivated by the fact that in practice, floor gymnastics instruction in schools often faces challenges, such as a lack of understanding of movement techniques and low student self-confidence. With the advancement of technology, digital media has emerged as an innovative solution that can improve learning effectiveness. The use of videos, simulations, and interactive applications allows students to understand movements more clearly, receive feedback, and be motivated to learn. In addition to improving motor learning outcomes, digital media also has the potential to foster resilience, which is the ability of students to remain enthusiastic, confident, and rise to the challenge of learning. To determine the influence of resilience and digital media on improving learning outcomes. This research falls into the experimental category because it involves treating the experimental group and comparing it to a control group. However, because it doesn't use full randomization in assigning the groups, this design is called quasi-experimental. The research findings indicate that the use of digital media in teaching forward roll skills significantly improved students' understanding and performance. The experimental group achieved higher post-test scores in both conceptual understanding and practical execution, showing the effectiveness of digital media integration in physical education. The results of the treatment during 8 sessions showed a significant increase in learning outcomes for front roll floor gymnastics. 2). Likewise, the resilience aspect in the treatment class was proven by the use of digital media to improve learning outcomes for front roll floor gymnastics. 3). There was a significant difference between the control class and the experimental class, this was obtained from various factors, including the digital media factor. In physical education learning, especially the basic skill of forward roll floor gymnastics, teachers should build student resilience first, adjust their teaching style, and utilize digital media so that the results of movement mastery are better and more significant.

Keywords: Learning outcomes: Front Roll Floor Exercise; Resilience; Digital Media

Corresponding author:

*Muhamad Herdina Setiawan, Helmy Firmansyah, Tri Martini Universitas Pendidikan Indonesia, Jl. Dr. Setiabudi No.229, Isola, Kec. Sukasari, Kota Bandung, Jawa Barat 40154.Email: muhamadherdinasetiawan@upi.edu

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INTRODUCTION

Physical education is one of the important components in the education curriculum in Indonesia. The main objectives of physical education are to develop physical fitness, motor skills, knowledge of physical activity, and positive attitudes towards sport and health. Through physical education, students not only gain physical benefits, but also learn the values of discipline, cooperation, sportsmanship, and perseverance. One of the materials taught at the Junior High School (SMP) level is floor gymnastics.

Floor gymnastics is a sport that prioritizes body movements on the mat or floor, with or without additional equipment. The movements in floor gymnastics require coordination, flexibility, strength, balance, and courage. One of the basic movements that students must master is the forward roll, which is the movement of rolling the body

forward by rounding the back. Although it looks simple, the front roll requires the right technique to be safe to do. Front roll learning in junior high school often encounters obstacles. Some students have difficulty coordinating movements, maintaining balance, or overcoming the fear of falling. This can affect their confidence in practicing the movement. Physical education teachers need to design effective learning strategies so that all students can learn this movement optimally.

In learning motor skills such as floor exercises, students' psychological factors play a very important role. One such factor is resilience, which is defined as the ability to survive, bounce back, and adapt when faced with adversity or failure (Masten, 2001). Students who have high resilience tend to be more persistent in practicing and quicker to correct mistakes. Resilience not only helps students overcome the fear of failure, but also affects learning motivation. According to Reivich and Shatté (2002), resilience includes skills such as emotion regulation, impulse control, optimism, problem analysis ability, empathy, self-efficacy, and goal achievement. All of these skills are relevant in the learning process of floor gymnastics, where students must be able to regulateemotions, control movements, and stay focused on goals. Putra and Sari's research (2022) shows that resilience has a positive influence on student learning success in physical education subjects. Students who have high resilience are better able to adapt to different learning methods, receive feedback from teachers, and overcome technical and mental obstacles.

In addition to internal factors such as resilience, learning is also influenced by external factors, especially the media and methods used by teachers. In the digital era, the use of digital learning media is one of the innovations that can improve learning effectiveness. Digital media includes video tutorials, animations, simulations, and online platforms that can be accessed anytime and anywhere. Digital learning media provides advantages because it can display movement techniques visually, in detail, and can be repeated according to student needs. Mayer (2021) explains that multimedia learning that combines visual and auditory information can improve students' understanding and memory retention. Fadilah (2023) found that the use of video tutorials in learning floor gymnastics helped students understand the stages of movement and improve techniques. With digital media, students can learn independently outside of formal class hours, so that practice time becomes more flexible. Hung and Hew (2022) through their meta-analysis concluded that video-based learning is very effective in improving motor skills because it provides opportunities for students to set their own learning pace. This is particularly beneficial in learning floor exercises that require repetitive practice.

The use of digital media is also in accordance with the principles of the Merdeka Curriculum, which provides flexibility for teachers to develop learning methods and media in accordance with student characteristics (Kemendikbudristek, 2021). This curriculum emphasizes student-centered learning and encourages the use of technology to support the learning process. In the context of floor exercise learning, the integration of digital media allows teachers to give clearer instructions, provide examples of correct movements, and give students the opportunity to self-evaluate. The combination of high student resilience and the use of digital learning media is expected to provide more optimal learning outcomes. Resilience helps students to stay motivated and persevere in practicing, while digital media provides the visual and instructional support needed to master movement techniques. However, there are still few studies that specifically examine the effect of resilience and digital learning mediaon learning outcomes of front

roll floor exercise practice in junior high school. Most of the previous studies only focused on one of the variables, either resilience or digital media, without looking at the interaction.

This study seeks to fill the void by analyzing the relationship between resilience and front roll learning outcomes in two groups of students, namely experimental classes using digital learning media and control classes using conventional methods. Hopefully, the results of this study can provide a clearer picture of the extent to which digital learning media can strengthen the relationship between resilience and student learning outcomes. This is important for physical education teachers in determining the right learning strategy. In addition, this research is also expected to make a practical contribution in the preparation of digital-based learning materials that are suitable for physical education subjects, especially in floor gymnastics material.

For schools, the results of this study can be the basis for encouraging the use of technology in sports learning. Facility support and training for teachers are needed to optimize the use of digital media. For future researchers, this research can be a reference to develop a broader study, for example by adding variables of learning motivation, self-efficacy, or interest in sports as factors that influence the learning outcomes of motor skills. Thus, this research is important to do to determine the effect of resilience and digital learning media on improving learning outcomes of junior high school students' front roll floor exercise practice. The results are expected to enrich academic literature and provide direct benefits in learning practices in schools.

METHOD

This study used a quasi-experimental research method with a pretest-posttest control group design. This design involves two groups, namely the experimental class and the control class. The experimental class was given treatment in the form of learning front roll floor exercise with the use of digital learning media, while the control class was given learning with conventional methods without digital media. Before and after treatment, both groups were given a front roll practice skill test to measure learning outcomes and a resilience questionnaire to determine the level of mental toughness of students. This design was chosen because it allows researchers to compare changes in learning outcomes and resilience between the two groups so that the effect of using digital learning media on skills and psychological aspects of students can be known.

The population of this study was all VIII grade students of SMPN 35 Bandung City in the2024/2025 academic year, totaling 300 students and divided into ten classes. The sample selection was carried out using purposive sampling technique, namely selecting classes that have relatively homogeneous conditions in terms of the number of students, physical characteristics, and academic background. Based on the consideration of the physical education teacher, two classes were selected as samples, namely class VIII-A as the experimental class and class VIII-B as the control class, each totaling about 36 students. Thus, the total sample of this study was 60 students.

This research was carried out through several stages, starting with the preparation of instruments in the form of a front roll motion understanding questionnaire and skill observation sheets that had been tested for validity and reliability, as well as coordination with the school to determine the experimental and control classes. Next, a pretest was conducted in both groups to measure initial abilities, followed by treatment,namely learning front roll floor exercises assisted by digital media in the experimental group and reciprocal teaching style in the control group. After the learning sequence is complete, a

posttest is conducted with the same instrument to assess skill improvement. Data from pretest and posttest results were analyzed quantitatively using paired sample t-test and independent sample t-test, then interpreted and discussed in the research report. Research procedures include the systematic steps followed in conducting the research. This section should be presented in detail so that readers can easily replicate or understand the research process. The explanation should include the sequence of activities, from data collection to analysis.

The research instruments used consisted of an understanding questionnaire of the front roll motion and an observation sheet of floor gymnastics skills. The questionnaire is compiled based on indicators of understanding of the front roll technique which includes the stages of the prefix, execution, and end of the movement. The observation sheet was used to assess students' practical skills through direct observation during the implementation of learning. Both instruments were developed with reference to the theory and assessment guidelines for floor gymnastics, then tested for content validity by three physical education experts, and tested for reliability using the Cronbach's Alpha test so that it was declared reliable for use. Research instruments are data collection tools, such as questionnaires, interviews, tests, or observations. The author must explain how the instrument was developed, tested, and adapted for the research and its validity and reliability

Data collection was conducted through two main methods, namely the practical skills test and the front roll understanding questionnaire. The practical skills test was carried out by directly observing students' performance when performing the front roll movement using a validated observation sheet. Comprehension questionnaires were given to all research subjects before and after treatment (pretest and posttest) to measure mastery of movement concepts. The data collection process was carried out in two stages, starting with the pretest to obtain initial data, then continued with the posttest after the treatment was completed. All data were recorded systematicallyaccording to predetermined procedures to ensure conformity with the research objectives.

The data obtained from the pretest and posttest were analyzed quantitatively using statistical software. Prerequisite tests were conducted first, including normality test with Kolmogorov-Smirnov and homogeneity test with Levene's Test to ensure the data met the assumptions of parametric analysis. After the prerequisites were met, the analysis continued with paired sample t-test to test the difference in results between pretest and posttest in each group, as well as independent sample t-test to compare the improvement between the experimental group and the control group. All statistical test results were interpreted at a significance level of 0.05 to ensure that the findings obtained have a strong basis and can be scientifically accounted for.

RESULTS AND DISCUSSION

Findings

The data description is an overview of the research data on the effect of resilience and digital learning media on improving the learning outcomes of the front roll floor exercise practice of 8th grade students of SMP NEGERI 35 bandung CITY. The data will provide an overview of the condition of the ability to practice the front roll floor exercise of 8th grade students of SMP NEGERI 35 BANDUNG CITY with digital learning media. This will show that the data on the ability to practice the front roll floor exercise of 8th grade students of SMP NEGERI 35 CITY bandung learning media in 2 different classes.

Based on the results of resilience data, the research sample consists of 2 classes, namely control and experimental classes. Showing the control class with an average resilience of 61.7% shows that most of the dick students have good tension. Based on the results of resilience data, showing the experimental class with an average resilience with an average resilience of 61.7% shows that the experimental class is lower than the control class where the level of student tension is more tense than the control class.

Table 1. Description of research data

Variable	Instructional Media	Pre test		Post test		Gain	% Gain	N
		X	SD	X	SD			
Resilience	Experiment Class			61,7	13,6			30
	Control Class			61.9	12,8			30
Learning Outcomes	Experiment Class	8,6	0,7	23	1,6	14,4	4,32%	30
	Control Class	8,1	1,6	12,1	1,3	6,4	1,92%	30

Source: (Processed by researchers, 2025)

The experimental class (n=30) experienced a greater score increase of 0.2 compared to the control class (n=30). These results indicate that the experimental class achievedhigher resilience compared to the control class. Overall, the highest resilience achievement was found in the experimental class with the same population

Based on the results of the pre-test and post-test measurements of the front roll floor exercise learning outcomes, it was found that there was an increase in all classes. In the experimental class there was an average pretest score of 8.6, which increased to 23 in the post-test, with a gain difference of 14.4 or 4.32%. Meanwhile, the control class had an average pre-test of 8.1 and post-test of 12.1, with a gain of 6.4 or 1.92%. Overall, an increase in learning outcomes occurred in all classes, with the highest increase found in the experimental class post-test.

Table 2. Resilience Normality Test

Variable	Instructional Media	X	Kolmogorov-Smirnov Stat. P value	Conclusion
Resilience	Experimental Class	61,7	0,495	Data is normally distributed
	Control Class	61,9		

In the results of the normality test using Kolmogorov-smirnov, it is known that the resilience data in all classes shows a normal distribution. In the experimental class with an average value of 61.9. The control class shows an average value of 61.9. The significant value of the Kolmogorov-smirnov test is 0.495, which is greater than 0.05, so the data can be declared normally distributed.

Table 3. Normality Test of Learning Outcomes

Variable	Instructional Media	X	Kolmogorov-Smirnov Stat. P value	Conclusion
Learning Outcomes	Experimental Class	8,6	0,05	Data is normally distributed
	Control Class	8,1		

The kolmogorov-smirnov test results for the learning outcomes variable show that the data in all groups are also normally distributed. The average score of the experimental class is 8.6, while the control class has an average score of 8.1, with a significant value of Kolmogorov - Smirnov of 0.05, then the data is considered normally distributed. Levene test to test the homogeneity of the data, with the condition that if the significance value ≥ α (α = 0.05), then the data is considered normally distributed.

Table 4. Resilience Homogeneity Test

Variable	Instructional Media	X	Levene test Stat. P value	Conclusion
Resilience	Experimental Class Control Class	61,8	0,194	Homogen

Based on the results of the analysis of homogeneity of variance using the Levene test, it was found that the variance of resilience data between the experimental and control groups was homogeneous. For the experimental group, the average resilience score is 61.8. The Levene test results show a significant value of 0.194 greater than 0.05, which indicates that the data has a homogeneous variance.

Table 5. Homogeneity Test of Learning Outcomes

Variable	Instructional Media	X	Levene test Stat. P value	Conclusion
Learning Outcomes	Experimental Class Control Class	17,5	0,444	Homogen

Based on the results of the analysis of homogeneity of variance using the Levene test, it was found that the variance of learning outcomes data between the experimental andcontrol groups was homogeneous. For the experimental group, the average score of learning outcomes is 17.5. The results of the Levene test show a significant value of 0.444 more than 0.05, which indicates that the data variance is homogeneous.

Tabel 6. Paired Sample T-Test

Variable	Instructional Media	Pre test X	Post test X	Gain	Gain %	Paired t test	Conclusion
Resilience	Eksperimental Class		61,7			0,955	Not Significant
	Control Class		61.9				
Learning outcome	Eksperimental Class	8,6	23	14,4	4,32%	0,001	Significant
	Control Class	8,1	12,1	6,4	1,92%	00,001	Significant

The results of hypothesis testing using the Paired t - test to show significant differences in the results of the pre-test and post-test resilience scores and the results of learning front roll floor exercises. The Paired Sample t - test is a method for comparing two data which are paired or come from the same subject in two different classes, if the significance <0.05 then the hypothesis is accepted. Then if the significance value> 0.05, it

is rejected (Kaporina et al., 2023). The following is an explanation of the hypothesis test table:

1. Neither the experimental class nor the control class experienced an increase in the result scor. The insignificant value for the experimental and control classes is 0.995. Because both are greater than 0.05, there is no significant effect, so the hypothesis is H0 or there is no significant improvement.
2. The experimental and control classes have the results of the front roll floor exercise learning value with a p value = 0.001. Both show an increase but based on statistical tests show significant data, so the hypothesis is accepted (H1).

Discussion

The relationship between resilience and learning outcomes based on analysis, it was found that the experimental class had an average resilience value of 81.50 and a front roll floor exercise learning outcome of 88.60. The control class has an average resilience of 70.40 with a front roll floor exercise learning outcome of 75.70. The correlation test in the experimental class shows the results of the correlation coefficient r = 0.961 with a significant p = 0.000, there is a very strong and significant relationship between resilience and learning outcomes. In the control class, the value of r = 0.937 with p = 0.000 was obtained, showing a strong and significant relationship, but the correlation value was lower than the experimental class.

The results of this study indicate that the use of digital media in learning front roll floor gymnastics is able to significantly improve students' skill mastery and resilience compared to the reciprocal teaching style. The experimental group obtained a higher increase in posttest scores in both aspects of concept understanding and practical skills, while the control group also experienced an increase but with a lower average. This proves that the integration of digital media into physical education learning can provide visual, interactive and motivational support that is more effective in overcoming students' obstacles, especially fear or lack of confidence when performing front roll movements.

The findings reflect that learning that incorporates technology provides a richer learning experience. Digital media not only serves as a visual aid, but also as a means to provide quick feedback and allow students to learn independently outside of class hours. These positive effects reinforce the importance of teachers choosing learning strategies that are relevant to technological developments and students' needs. The improvement in the experimental group also shows a clear cause-and-effect relationship between the application of digital media and improved student performance.

Empirically, the improvement in learning outcomes and resilience of students in the experimental group was due to the availability of easily accessible materials, clear visualization of movements, and the opportunity to practice repeatedly through digital media. Theoretically, these findings are in line with multimedia learning theory which states that the integration of text, images and videos can strengthen information processing in the brain, thus facilitating the learning of motor skills.

In the context of physical education, digital media helps reduce students' anxiety when trying new movements as they can understand sequences and techniques with more confidence. These findings provide important implications for physical education curriculum development, particularly in teaching floor exercise. Teachers are advised to utilize digital media as an integral part of learning to improve the quality of learning outcomes and build students' resilience. School policies can be directed to provide

adequate technology facilities, such as projection devices, interactive software, and stable internet access. In addition, teacher training in the use of digital media needs to be optimized so that innovative learning strategies can be implemented sustainably and provide maximum benefits for students.

CONCLUSION

Based on the results of the research that has been conducted, it can be concluded that the understanding of front roll movements in junior high school students as measured through the questionnaire method shows that most students have understood the concepts, stages, and principles of movement well, although there are still some technical aspects that require improvement. The data obtained shows that students are able to identify the sequence of movements, understand the function of each stage in the front roll, and recognize common mistakes that often occur, so that the research objectives to capture the level of student understanding can be achieved. This result also shows the positive influence of structured physical education learning and the use of appropriate learning media, where the visual explanation approach and directed practice can improve students' understanding of the material. This finding is in line with motor learning theory that emphasizes the importance of the integration between cognitive understanding and physical skills, and supports the results of previous research which states that providing conceptual explanations before practice can improve the quality of movement execution. However, some students still had difficulties with body coordination and courage to perform full movements, suggesting the need for additional learning strategies such as individualized assistance, progressive practice, or the use of assistive devices to reduce psychological and technical barriers. This study makes an important contribution in revealing the profile of students' front roll motion understanding, so that it can be the basis for physical education teachers to design learning methods that are more effective, contextual, and according to students' needs. For future research, it is recommended to expand the study variables, for example by measuring the relationship between the level of motion understanding and direct practice ability, or testing the effectiveness of interactive technology-based learning interventions that can facilitate students in understanding as well as mastering front roll skills more optimally.

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CONFLICT OF INTEREST

The authors declare no conflict of interest in this study. The funder had no role in the design of the study; the collection, analysis, or interpretation of the data; the writing of the manuscript; or the decision to publish the results of this study.

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