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Research Article

Improvement of Learning Outcomes Using the Scramble Model with Interactive Video Media

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Scramble Model, Interactive Video, Learning Outcomes, Classroom Action Research.

Abstract

The integration of active learning strategies with digital media has become increasingly essential in higher education to enhance student learning outcomes. This classroom action research investigated the effectiveness of the Scramble learning model supported by interactive video media in improving student achievement in the English Language Education Department at Universitas Negeri Makassar. The study was conducted in two cycles, each consisting of planning, action, observation, and reflection. A total of 32 undergraduate students participated, selected through purposive sampling. Data collection employed tests, observations, and reflective notes, while data analysis combined descriptive statistics with normalized gain (N-gain) to evaluate improvements in learning outcomes. The findings showed consistent progress across cycles. Average student performance improved significantly from the baseline measurement to the second cycle, demonstrating that the instructional strategy effectively supported knowledge acquisition. Moreover, the integration of Scramble activities with interactive video fostered greater classroom engagement, collaboration, and motivation. Students responded positively to the use of multimedia-based tasks, which provided a more dynamic and student-centered learning environment. The study concludes that the Scramble model, when combined with interactive video media, is a highly effective approach to improving learning outcomes in teacher education courses. Beyond raising academic achievement, this model also contributes to enhancing students' critical thinking, active participation, and collaborative learning. These findings highlight the potential of technology-enhanced active learning models to address challenges in higher education and provide meaningful benefits for both teaching practice and student development.

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Introduction

The rapid development of digital technology has profoundly transformed the landscape of education, demanding more innovative, interactive, and student-centered peThis study adopted a Classroom Action Research (CAR) design, which was chosen because it allows researchers and educators to systematically

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investigate and improve the teaching and learning process within an authentic classroom setting. CAR emphasizes a cyclical and reflective approach, enabling the researcher to identify existing problems, implement targeted interventions, observe their impact, and refine strategies for better outcomes. The design is highly relevant to educational contexts as it not only seeks to improve student achievement but also enhances professional teaching practices [1], [2].

The research was carried out over two cycles, with each cycle consisting of four stages: (1) planning, where lesson plans, instructional media, and assessment instruments were developed; (2) action, in which the Scramble learning model integrated with interactive video media was implemented during classroom sessions; (3) observation, which involved collecting both quantitative and qualitative data on students' learning outcomes, engagement, and classroom participation; and (4) reflection, where the results were analyzed, weaknesses were identified, and strategies were adjusted for the following cycle [3], [4].

The Scramble learning model was selected because of its potential to foster collaboration, problem-solving, and critical thinking skills by engaging students in rearranging and reconstructing information presented in scrambled form [5], [6]. Meanwhile, the use of interactive video media provided a dynamic and multimodal learning environment that stimulated students' attention, supported conceptual understanding, and increased motivation [7], [8]. By combining these two approaches, the research design sought to create a more engaging, student-centered learning process that could lead to measurable improvements in learning outcomes [9].

In summary, the classroom action research design provided a systematic framework to iteratively test, evaluate, and refine the integration of the Scramble learning model with interactive video media [10]. This methodological choice ensured that the study was not only intervention-oriented but also reflective and sustainable, offering both practical benefits for classroom teaching and theoretical contributions to the field of technology-enhanced active learning [8], [11]. Dialogical strategies. In higher education, particularly in teacher training programs, lecturers are expected to not only deliver content effectively but also to model effective teaching approaches that can be replicated in future classroom practices [7], [9]. However, conventional lecture-based methods often result in low student engagement, limited collaboration, and suboptimal learning outcomes. These challenges highlight the need for integrating active learning models with technology-enhanced media to create more dynamic and meaningful learning experiences [10].

The Scramble learning model, a form of cooperative learning, emphasizes problem-solving, teamwork, and active student participation through activities that require reordering, analyzing, and reconstructing information. This model encourages students to think critically and collaborate in solving academic tasks, which aligns with constructivist learning principles. Nevertheless, the effectiveness of the Scramble model can be maximized when supported by engaging instructional media [5], [7]. Interactive video media provides multimodal content that combines visual, auditory, and textual elements, enabling students to visualize abstract concepts and engage with the learning material more deeply. Previous research has shown that the integration of multimedia resources increases students' motivation,

attention, and comprehension. Yet, empirical studies combining the Scramble model with interactive video in higher education, particularly within teacher education programs, remain limited [10], [11].

Given this gap, the present study seeks to investigate whether the integration of the Scramble learning model with interactive video media can effectively improve student learning outcomes and engagement in the context of the English Language Education Department at Universitas Negeri Makassar. The study employs a classroom action research design, allowing for iterative refinement of the instructional approach while observing its impact on students' cognitive and behavioral performance. Accordingly, this study is guided by the following research questions:

1. How does the implementation of the Scramble learning model with interactive video media affect students' learning outcomes?
2. In what ways does the integration of Scramble and interactive video enhance students' learning activities and engagement during the instructional process?

By addressing these questions, the study contributes to both the theoretical discourse on active and technology-mediated learning as well as the practical development of innovative teaching strategies in teacher education programs.

Methodology

A. Research Design

This study adopted a Classroom Action Research (CAR) design, which was chosen because it allows researchers and educators to systematically investigate and improve the teaching and learning process within an authentic classroom setting. CAR emphasizes a cyclical and reflective approach, enabling the researcher to identify existing problems, implement targeted interventions, observe their impact, and refine strategies for better outcomes [12]. The design is highly relevant to educational contexts as it not only seeks to improve student achievement but also enhances professional teaching practices. Figure 1 presents the classroom action research procedure

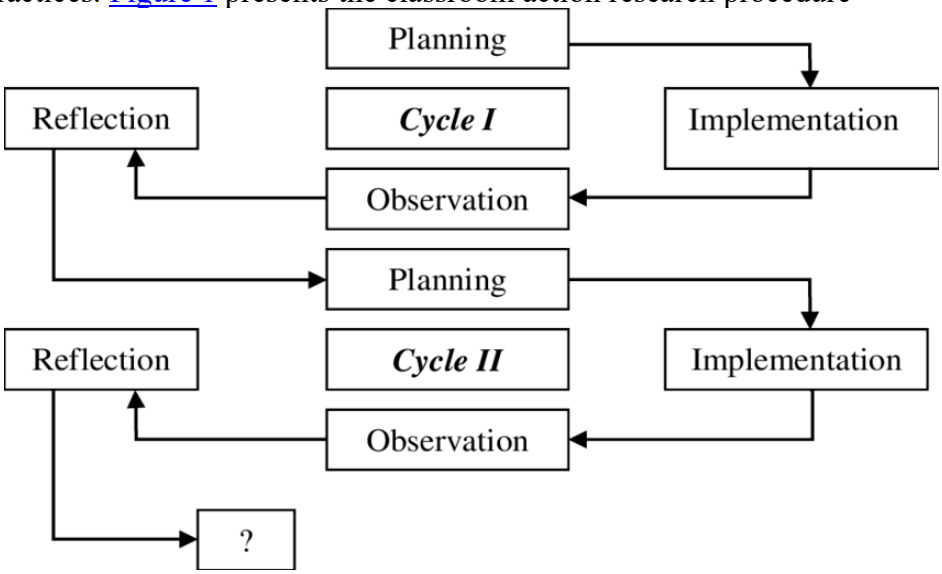

Figure 1. Classroom Action Research Design

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In summary, the classroom action research design provided a systematic framework to iteratively test, evaluate, and refine the integration of the Scramble learning model with interactive video media. This methodological choice ensured that the study was not only intervention-oriented but also reflective and sustainable, offering both practical benefits for classroom teaching and theoretical contributions to the field of technology-enhanced active learning.

B. Participants

The study was conducted in the English Language Education Department at Universitas Negeri Makassar during the 2025/2026 academic year. The participants consisted of 32 undergraduate students enrolled in the Educational Psychology course. A purposive sampling technique was applied, as these students were directly involved in the target course and represented the relevant population for this study. The demographic characteristics of the participants are presented in Table 1.

Table 1. Demographic Characteristics of the Participants

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	12	37.5
	Female	20	62.5
Age Range	18–19 years	9	28.1
	20–21 years	17	53.1
	≥ 22 years	6	18.8
Academic Background	Senior High School	21	65.6
	Vocational School	11	34.4

The data indicate that most participants were female and aged between 20 and 21 years. Most students entered the program from a senior high school background, while a smaller proportion had previously attended vocational schools. This demographic composition reflects the typical profile of undergraduate students in teacher education programs at the university.

Ethical considerations were observed in the study. Participation was voluntary, informed consent was obtained from all students, and confidentiality of responses was maintained.

C. Data Analysis Techniques

The data collected consisted of quantitative data (students' learning outcomes) and qualitative data (student engagement and classroom dynamics).

1. Learning Outcomes Test

Student achievement was measured through a test administered at the end of each cycle. The level of mastery was calculated using the following formula:

$$\text{Learning Outcome (\%)} = \frac{\text{Score Obtained}}{\text{Maximum Score}} \times 100$$

The class mean score was determined by:

$$\bar{X} = \frac{\sum X}{N}$$

where:
X = mean score,
$\sum X$ = total score of all students,
N = number of students.

The percentage of students achieving the Minimum Mastery Criterion (KKM) was calculated using:

$$P = \frac{n}{N} \times 100$$

where:
P = percentage of students achieving mastery,
n = number of students achieving KKM,
N = total number of students.

2. Observation of Learning Activities

Student activities were assessed using an observation sheet covering aspects such as group activeness, discussion participation, attention to video media, and enthusiasm in tasks. The observation score was analyzed using:

$$P = \frac{f}{N} \times 100$$

where:
P = percentage of observed behavior,
f = frequency of students showing the behavior,
N = total number of students observed.

3. Qualitative Analysis

Qualitative data obtained from field notes and reflective journals were analyzed thematically. The process involved coding, categorization, and interpretation to identify patterns of student behavior, challenges, and improvements across cycles.

Results and Discussion

This classroom action research was conducted in two cycles with a total of 32 students from the English Language Education Department, Universitas Negeri Makassar, in the 2025/2026 academic year. The research focused on improving students' learning outcomes in the Educational Psychology course through the implementation of the Scramble learning model integrated with interactive video media. Data was collected through test results, observation sheets, and field notes.

A. Students' Learning Outcomes

Learning outcomes were measured using a written test consisting of 20 multiple-choice and 5 short-answer questions, administered at the end of each cycle. The results are presented in Table 2.

Table 2. Students' Learning Outcomes Across Cycles

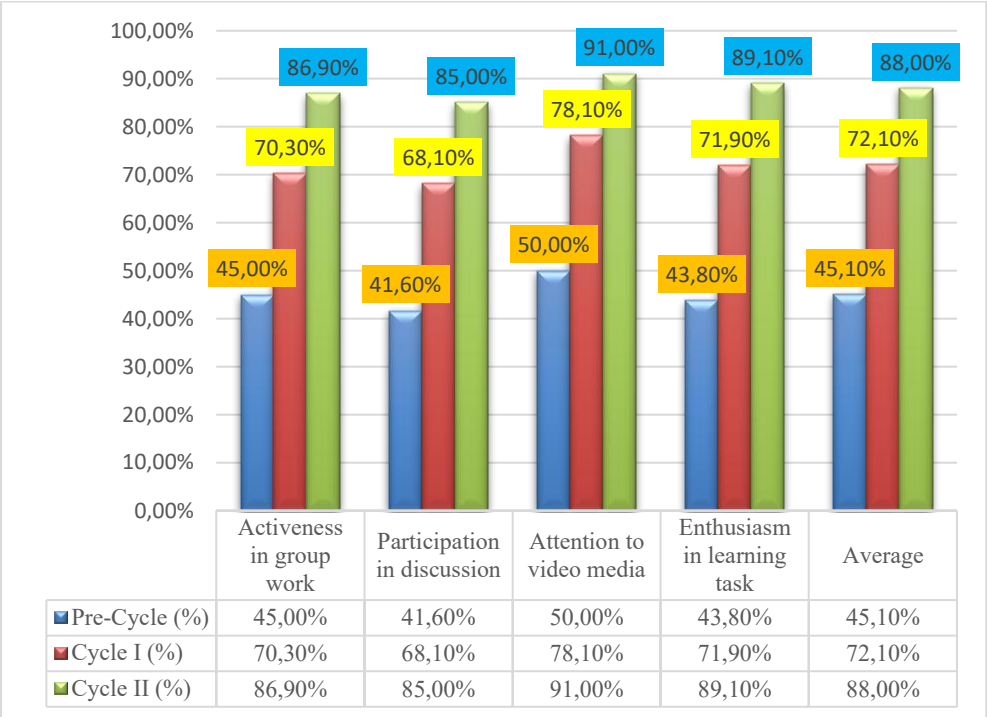
Cycle	Number of Students	Mean Score	Students Achieving ≥ 75 (%)	Category
Pre-Cycle	32	64.38	9 (28.1%)	Low
Cycle I	32	74.06	20 (62.5%)	Moderate
Cycle II	32	83.44	28 (87.5%)	High

As shown in Table 2, there was a significant increase in students' learning outcomes. During the pre-cycle, the average score was 64.38, and only 28.1% of students achieved the minimum mastery criterion (≥ 75). After implementing the Scramble model with interactive video in Cycle I, the average score rose to 74.06, with 62.5% of students achieving mastery. The intervention was further refined in Cycle II, leading to an average score of 83.44 and mastery achievement of 87.5%.

This improvement indicates that the combination of interactive video media and the Scramble model effectively enhanced students' comprehension of course material, encouraged active involvement in problem-solving, and supported collaborative learning.

B. Observation of Students' Learning Activities

In addition to test results, observations of student learning activities were conducted in each cycle. The aspects observed included activeness in group work, participation in discussions, attention to video-based materials, and enthusiasm in completing tasks. The results are summarized in Figure 2.



	Activeness in group work	Participation in discussion	Attention to video media	Enthusiasm in learning task	Average
Pre-Cycle (%)	45,00%	41,60%	50,00%	43,80%	45,10%
Cycle I (%)	70,30%	68,10%	78,10%	71,90%	72,10%
Cycle II (%)	86,90%	85,00%	91,00%	89,10%	88,00%

Figure 2. Observation of Students' Learning Activities

The data reveals a steady and significant increase in student activity levels. Prior to the intervention, the average level of active engagement was 45.1%. After implementing the Scramble learning model with video support in Cycle I, this increased to 72.1%, and by Cycle II, it reached 88.0%. The highest gain was observed in students' attention to interactive video media, which increased from 50.0% on the pre-cycle to 91.0% on Cycle II.

C. Qualitative Observations

Field notes provided qualitative insights supporting the quantitative findings. In the pre-cycle, students appeared passive and tended to wait for instructions, with limited motivation to participate in discussions. In Cycle I, once interactive videos were introduced, students showed greater curiosity and interest, but some still required guidance in understanding the rules of the Scramble learning model. By Cycle II, the learning process became more dynamic: students actively discussed answers, collaborated in teams, and showed enthusiasm in rearranging the scrambled concepts presented in the videos.

D. Comparative Analysis

The results of this study align with previous findings which suggest that the Scramble learning model enhances problem-solving and teamwork skills by stimulating cognitive activity and critical thinking. Moreover, integrating interactive video media has been shown to improve visual engagement and conceptual understanding. Studies by international scholars have also emphasized that active learning strategies supported by multimedia significantly improve learning outcomes compared to traditional lecture-based methods.

E. Discussion

The findings of this classroom action research demonstrate that the implementation of the Scramble learning model supported by interactive video media significantly improved students' learning outcomes and learning engagement in the English Language Education Department, Universitas Negeri Makassar. The progressive increase in the mean scores from 64.38 in the pre-cycle to 83.44 in Cycle II, accompanied by a rise in mastery achievement from 28.1% to 87.5%, highlights the effectiveness of this instructional strategy.

The positive trend in students' participation rising from an average of 45.1% in the pre-cycle to 88.0% in Cycle II indicates that the intervention not only enhanced cognitive performance but also stimulated affective and behavioral engagement. Students' increased attention to interactive video media (from 50% to 91%) further supports the argument that technology-mediated learning fosters motivation, focus, and enjoyment in the learning process.

These results are consistent with constructivist learning theories, which emphasize that knowledge is best acquired when learners are actively engaged in constructing meaning through interaction, collaboration, and problem-solving. The Scramble model, by requiring students to rearrange and analyze information, promotes higher-order thinking and strengthens conceptual understanding. When combined with interactive videos, which provide multimodal representations of concepts, students are better able to visualize abstract ideas and apply them in practice [8], [10], [11].

The findings are also aligned with previous international studies. For instance, active learning approaches such as Scramble have been shown to improve collaboration, communication, and problem-solving skills. Similarly, research on multimedia-assisted learning confirms that videos enhance retention, comprehension, and student motivation compared to traditional text-based instruction. This study contributes to the growing body of evidence supporting the integration of active learning strategies with digital media to achieve meaningful learning outcomes in higher education [6], [7], [8].

The progression between cycles suggests that refinement in instructional strategies plays a crucial role in maximizing the benefits of the model. Adjustments made in Cycle II, including clearer instructions, structured time management, and scaffolding in group work, led to a more effective implementation. This highlights the importance of continuous evaluation and adaptation in action research to achieve sustainable improvement [10], [11].

From a practical perspective, the combination of the Scramble model and interactive video media provides an innovative alternative to traditional lecture-based methods in teacher education programs. It not only enhances students' academic achievement but also equips them with collaborative and critical thinking skills, which are essential for their future roles as educators. Furthermore, the study demonstrates that integrating simple, yet interactive

digital media can bridge the gap between theory and practice, particularly in courses that require conceptual understanding [8], [9].

In conclusion, the discussion underscores that the success of the Scramble model with interactive video lies in its ability to create a student-centered, active, and engaging learning environment. This research not only validates the model's effectiveness in the local context of Indonesian higher education but also offers implications for broader application across disciplines and learning environments where student participation and cognitive engagement are critical.

Conclusion

This classroom action research investigated the use of the Scramble learning model combined with interactive video media to enhance learning outcomes in the English Language Education Department, Universitas Negeri Makassar. The findings show a clear improvement in students' academic achievement as well as their engagement throughout the learning process. Students demonstrated greater enthusiasm, stronger participation, and more focused attention when interactive videos were integrated with collaborative scramble activities. The research confirms that the Scramble model, supported by interactive video, is effective in creating a more dynamic, student-centered learning environment. The interactive videos helped students to better understand abstract concepts, while the scramble activities fostered problem-solving, critical thinking, and teamwork. Together, these strategies significantly contributed to the improvement of both cognitive and affective learning outcomes. From a theoretical standpoint, this study reinforces constructivist principles by illustrating how active learning strategies combined with multimedia can optimize knowledge construction. In practical terms, it offers an alternative instructional design that can be applied in teacher education programs and other higher education settings to promote more engaging and meaningful learning experiences. In conclusion, the integration of Scramble learning and interactive video media can be considered an innovative and effective pedagogical approach for improving learning outcomes. Future research is encouraged to apply this model across diverse disciplines and educational contexts, as well as to examine its long-term impact on students' critical thinking, collaboration, and professional readiness.

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Author Contributions

Eko Pujianto: conceptualization; formal analysis; data curation; methodology, writing-review and editing. Ridho Surya Kusuma: analysis; data curation; methodology; writing-review and editing.

Availability of data and materials

All data is available from the authors.

Competing interests

The authors declare no competing interest.

Additional information

No additional information from the authors.

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