

"The Scientific Method: A Strategic Approach to Improving Underhand Passing Skills in Volleyball"

Eri firmansyah¹, Andi Taufan Bayu Alsaudi², Ihsan Hasani³,
¹ SDN Puspanegara 07 Kabupaten Bogor, Indonesia
^{2,3} Sport Education Study Program, STKIP Kusuma Negara, Jakarta, Indonesia
*erifirmansyahciteureup@gmail.com

Abstract

This research applied the Classroom Action Research (CAR) method, conducted collaboratively in three cycles. The aim of the study was to improve the underhand volleyball passing skills of sixth-grade students at SD Negeri Puspanegara 07 Citeureup, Bogor, through the implementation of the scientific learning method. The participants were 36 students from class VI during the second semester of the 2024/2025 academic year. The study measured improvement in student learning outcomes across pre-cycle, Cycle I, Cycle II, and Cycle III stages. In the pre-cycle phase, only 22.22% (8 students) reached the expected level of competence. After implementing the scientific learning method in Cycle I, the number of students achieving the target increased to 41.66% (15 students). This improvement continued in Cycle II, with 72.22% (26 students) meeting the target. By Cycle III, 94.44% (34 students) successfully met the learning objectives, leaving only 5.56% (2 students) below the expected level. These results indicate a consistent and significant improvement in students' underhand volleyball passing performance. It can be concluded that the scientific learning method effectively enhances both the technical skills and overall learning outcomes in physical education. Additionally, this method helps students apply these skills meaningfully in daily life activities.

Keywords: Scientific learning method, underhand volleyball passing, Classroom Action Research (CAR).

1 INTRODUCTION

Physical Education, Sports, and Health are an integral part of overall education, aiming to develop aspects of physical fitness, motor skills, critical thinking skills, social skills, reasoning, emotional stability, moral actions, healthy lifestyle habits, and awareness of a clean environment through selected physical, sports, and health activities that are systematically planned in order to achieve the goals of national education. Physical education is defined as an effort aimed at improving human performance through selected physical activities. It includes the development of motor skills as well as the instillation of moral values and positive character in students. Thus, physical education does not only focus on physical aspects but also on the mental and social development of students.

In physical education learning activities, especially in volleyball game instruction, most teachers tend to fully deliver instructions and explanations during the learning process, resulting in students mostly following the teacher's directions. This limits student activity and creativity, which can, in turn, affect the development of their skills. Law Number 11 of 2022 concerning Sports is a regulation enacted on March 16, 2022. This law aims to align the management of sports in Indonesia with current developments, improve the quality of achievements, and strengthen the sports industry in a sustainable manner.

Dalam proses penulisan artikel ilmiah, penting untuk menjelaskan secara jelas tujuan penelitian. Tujuan ini berperan penting dalam menunjukkan arah dan kontribusi penelitian. Penulis juga perlu menguraikan alasan urgensi penelitian, merujuk pada hasil-hasil penelitian terdahulu, serta menjelaskan secara singkat gagasan utama yang diajukan. Selain menyusun naskah secara substansial, penulis juga dianjurkan untuk mengikuti format dan ketentuan yang telah ditetapkan dalam *template* yang disediakan Volleyball is a type of major ball sport played by two teams, each consisting of six players, positioned

on opposite sides of a court that is divided by a net. Volleyball is a team sport that requires players to work together and support one another, which is essential for building a strong and cohesive team. Each team is composed of six players, and the objective of the game is to strike or direct the ball into the opponent's court so that it lands on the ground within that area.

Currently, the variety of volleyball training drills is considered insufficient. As a result, students' basic underhand passing skills remain underdeveloped. Therefore, it is necessary to implement training methods that are engaging and not monotonous, so that students remain enthusiastic and motivated when participating in volleyball extracurricular activities. Ultimately, this is expected to lead to an improvement in students' motor skills in playing volleyball, especially in mastering the basic techniques effectively.

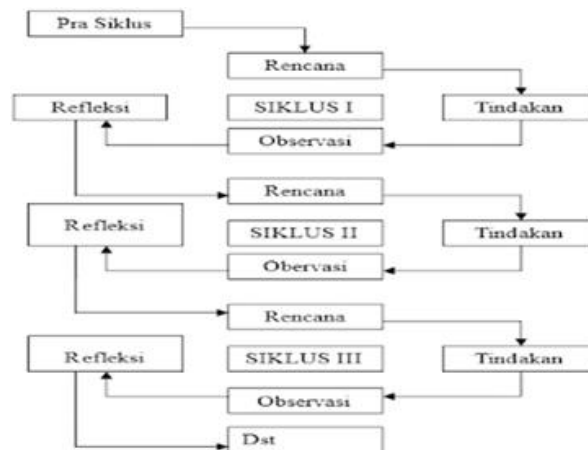
2 RESEARCH METHODS

The procedure for this classroom action research will be carried out by addressing issues that arise in the field or in the classroom, where the teacher serves as a guide for students based on their own experiences.

Through the implementation of this classroom action, it is expected that the quality of learning will be improved and enhanced, and that it will help empower teachers to solve instructional problems encountered at school. This classroom action research can also improve teaching practices, increase the relevance and quality of education, and enhance the efficiency of educational management.

The reason the researcher uses this model is because it is well-known for its cyclical spiral process of self-reflection, which begins with Planning, Action, Observation, Reflection, and then Replanning, forming the foundation for a problem-solving approach.

According to Kemmis and McTaggart, Classroom Action Research (CAR) can be described as follows:



The implementation of this research is a process that takes place within a single cycle. This study is also planned according to research procedures and will be conducted in three cycles. The research is designed so that if the pre-cycle does not yield satisfactory results, it will proceed to Cycle I. If Cycle I still does not produce good results, then it will continue to Cycle II. Should there be no improvement in Cycle II, the research will move forward to Cycle III.

3 RESULT AND DISCUSSION

Regarding the results of the research conducted on Grade VI students at SD Negeri Puspanegara 07, Citeureup Bogor, the study was carried out in three cycles, starting with a pre-cycle. Before beginning the first cycle, the observation showed that students enjoyed playing volleyball but had not yet fully mastered volleyball techniques, especially the underhand passing technique, among both male and female students.

Based on initial observations of Grade VI students at SD Negeri Puspanegara 07, efforts to improve underhand passing skills using the scientific learning method showed very good and optimal progress.

3.1 Results

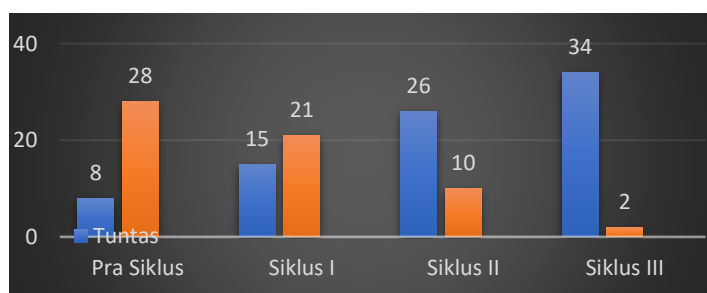
Table 1. Assessment Rubric Results – Student Percentage in the Pre-Cycle Stage

Criteria	Number of Students	Percentage
Achieved	8	22.22%
Not Achieved	28	77.78%
Total	36	100%

The implementation of the Classroom Action at the pre-cycle stage, within the subject of Physical Education and Sports, was conducted in Grade VI of SD Negeri Puspanegara 07 on Monday, May 5, 2025. The initial condition was measured through field observations and data obtained from the physical education teacher. In the pre-cycle phase, the condition of students at SD Negeri.

Criteria	Number of Students	Percentage
Achieved	34	94.44%
Not Achieved	2	5.56%
Total Students	36	100%

Based on the table showing the improvement in student learning outcomes above, the data can be illustrated in a bar chart for clearer visualization, as follows:



Based on the diagram above, a considerable number of students achieved the Minimum Competency Criteria (KKM) by performing the underhand volleyball pass well. However, regular practice is still necessary, as can be seen from the students' learning outcomes in the diagram.

Regarding the research conducted on Grade VI students at SD Negeri Puspanegara 07 Citeureup Bogor, the study was carried out in three cycles, beginning with a pre-cycle. Before starting the first cycle, the observation showed that students enjoyed playing volleyball but had not yet fully mastered volleyball techniques, especially the underhand pass, among both male and female students.

From the initial observations of Grade VI students at SD Negeri Puspanegara 07, the efforts to improve underhand volleyball passing skills using the scientific learning method showed very good and optimal progress.

3.1.1 Subsection of Sub-Result 1

The researcher collected data by conducting a pre-test before the assessment process. Then, a passing-under test in volleyball was administered to evaluate the students' skills and analyze the extent to which the students had mastered the underhand passing technique. The assessment technique used by the researcher was adapted from the book by Ihsan Hasani, M.Pd, utilizing a scoring rubric.

3.1.2 Discussion Results

The researcher conducted the study in Grade VI at SD Negeri Puspanegara 07, Citeureup, Bogor Regency, over the course of 4 meetings. Assessments were carried out at each meeting, and the students showed progress with each session.

3.2 Discussion

Based on the observations in Cycle III, it can be concluded that efforts to improve underhand volleyball passing skills using the scientific learning method were more effective compared to Cycle I, Cycle II, and the Pre-Cycle. This is evident from the data: in the Pre-Cycle, 22.22% or 8 out of 36 students reached the target. In Cycle I, 58.34% or 21 students did not reach the target, while 41.66% or 15 students met the target. Cycle II showed an improvement, with 72.22% or 26 students reaching the target and 27.78% or 10 students not meeting it. Finally, in Cycle III, 94.44% or 34 students achieved the target, and only 5.56% or 2 students did not.

With these Classroom Action Research results, it is clear that the research was successful and met the predetermined targets; therefore, there is no need for further cycles.

Table

Table Results from Each Cycle:
Assessment Results – Student Percentage in the Pre-Cycle

Criteria	Number of Students	Percentage
Achieved	8	22.22%
Not Achieved	28	77.78%
Total	36	100%

Table 1. Percentage of Student Mastery in the Pre-Cycle and Assessment Results of Student Percentage in Cycle I

Criteria	Number of Students	Percentage
Achieved	15	41.66%
Not Achieved	21	58.34%
Total Students	36	100%

Table 2. Percentage of Student Mastery in Cycle I

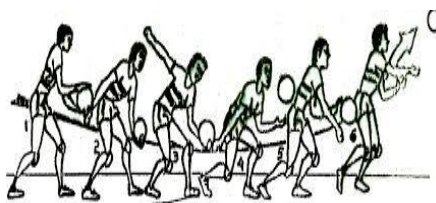
Assessment Results – Student Percentage in Cycle II

Criteria	Number of Students	Percentage
Achieved	26	72.22%
Not Achieved	10	27.78%
Total Students	36	100%

Table 3. Percentage of Student Mastery in Cycle II
Assessment Results – Student Percentage in Cycle III

Criteria	Number of Students	Percentage
Achieved	34	94.44%
Not Achieved	2	5.56%
Total Students	36	100%

3.3 Image



1 Figure 1. How to Perform the Underhand Serve Technique

The serve is a basic volleyball technique used to start the game. The serve can be done in two ways: overhand serve and underhand serve. The overhand serve is performed by tossing the ball upwards and hitting it with a swinging hand from bottom to top.

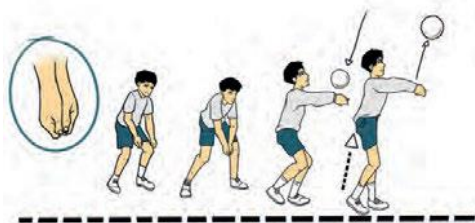


Figure 2. Underhand Passing in Volleyball

Passing is a basic volleyball technique used to pass the ball to a teammate. Passing can be done in two ways: overhand passing and underhand passing. The basic underhand passing technique involves fundamental movements such as the position of both hands, foot positioning, ball contact, and ball trajectory. Underhand passing is a fundamental movement used to build attacks and defense in volleyball.

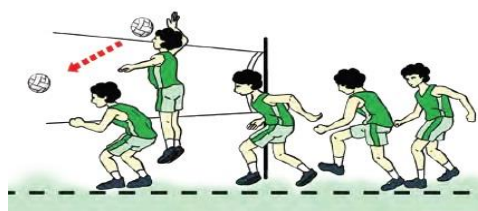


Figure 3. Smash

The smash is a hard and downward hit directed to the opponent's area. The ball moves over the net, making it difficult for the opposing team to return it. An effective smash is done by hitting the ball from above the net.



Figure 4. Block

The block is a crucial defensive move to change the direction of the opponent's hit or even directly score a point. A good block can alter and narrow the opponent's hit options, forcing them to aim for more open areas.

3.4 Equality

This article explores how the scientific method can serve as a strategic approach to improving underhand passing skills in volleyball. By applying a structured process involving observation, experimentation, and reflection, the method supports students in developing fundamental techniques in a more meaningful and effective way..

4 CONCLUSION

Based on the results of the Classroom Action Research that has been conducted, it can be concluded that the efforts to improve underhand passing skills in volleyball have successfully enhanced the skills of sixth-grade students at SD Negeri Puspanegara 07.

This research demonstrated an improvement in underhand passing skills, as reflected in the scores from Cycle I, Cycle II, and Cycle III. In the Pre-Cycle, only 22.22% or 8 out of 36 students reached the target. In Cycle I, 58.34% or 21 students did not meet the target, while 41.66% or 15 students achieved it. In Cycle II, there was a notable improvement, with 72.22% or 26 students meeting the target and 27.78% or 10 students not yet meeting it. By Cycle III, 94.44% or 34 students reached the target, and only 5.56% or 2 students had not.

Based on these findings, it can be concluded that the implementation of the Scientific Learning Method effectively improved the underhand passing skills of sixth-grade students at SD Negeri Puspanegara 07.

5 ACKNOWLEDGEMENT

With sincere gratitude, the author would like to express appreciation to all parties who have supported and contributed to the preparation of this article titled "Scientific Method: A Strategic Approach to Improving Underhand Passing Skills in Volleyball." Special thanks are extended to: The principal and teachers of SD Negeri Puspanegara 07 for their permission and support throughout the research process. The sixth-grade students who actively participated in every stage of the learning and research activities.

6 REFERENCES

- Ahmad Nizar Rangkuti (2016). Metode penelitian pendidikan pendekatan kuantitatif, kualitatif, PTK dan penelitian pengembangan (hlm. 220). Bandung: Citapustaka Media.
- Andi Taufan Bayu, M.Pd. (2021). Upaya meningkatkan hasil belajar passing bawah bola voli dengan metode latihan berpasangan. STIPK Kusuma Negara Jakarta.
- Budiarti, W.W., Hanif, A.S., & Samsudin, S. (2019). Model pembelajaran smash bola voli untuk siswa SMP. Jurnal Penelitian dan Kritikus Internasional Budapest dalam Linguistik.
- Chan, A.A.S. (2021). Pengaruh latihan passing bawah dengan dinding dan berpasangan terhadap ketepatan permainan bolavoli. In Prosiding Seminar Nasional Pendidikan STKIP Kusuma Negara III (pp. 112-118).
- Dewi Endriani. (2022). Pendampingan pemanfaatan model pembelajaran umbrella bagi guru PJOK. Loncatan Perkembangan Ilmu Keolahragaan dan Pendidikan Jasmani, 113.
- Dicky Edward Daulay & Alwi Fahruzy Nasution. (2021). Meningkatkan passing bawah bola voli melalui variasi latihan drill pada klub bola voli Asahan Jaya. Jurnal All Fields of Science (J-LAS), 1(1), 42-50.
- Endriani, D. (2023). Model pembelajaran student center learning pada permainan bola voli. Menelisik Ilmu Keolahragaan, 3.
- Ihsan Hasani. (2018). Panduan praktis penilaian hasil belajar pendidikan jasmani dan olahraga (hlm. 25). Surabaya: CV Pustaka MediaGuru.
- Lubis, B., Marpaung, D. R., Rito, S. L., Purba, V. S., Rizky, S. A., Siregar, C. M., & Syabaruddin, A. (2024). Metode latihan efektif untuk meningkatkan smash dalam bola voli. Jurnal Review Pendidikan dan Pengajaran (JRPP), 7(4), 15033-15041.
- Muhammad Isnaini, Indah Wigati, & Resti Oktari. (2016). Pengaruh penggunaan media pembelajaran torso terhadap hasil belajar siswa pada materi sistem pencernaan pada manusia di SMP Negeri 19 Palembang. Jurnal Biota, 2(1), 82-91.
- Riko Ertanto. (2021). Hubungan kekuatan otot lengan dan koordinasi mata-tangan dengan kemampuan servis bawah bola voli siswa. Gelanggang Olahraga: Jurnal Pendidikan Jasmani dan Olahraga.
- Sadzali, M. S. (2024). Analisis tingkat kemampuan passing atas permainan bola voli pada siswa kelas XII SMK PGRI Enrekang. Jurnal Dunia Pendidikan, 5(3), 809-817.
- Setia Budi, A. (2021). Pengaruh latihan passing bawah ke dinding dan berpasangan terhadap keterampilan bola voli pada siswa ekstrakurikuler di SMP Negeri 13 Tanjung Jabung Timur. Indonesian Journal of Sport Science and Coaching, 3(2), 45-52.
- Setiawan, D. (2022). Analisis keterampilan servis bola voli bagi siswa ekstrakurikuler bola voli MTs Hidayatul Islamiah Parit Kahar. Jurnal Pion, 2(2), 154-163.
- Suharsini & Arkunto. (2018). Prosedur penelitian: suatu pendekatan praktik (hlm. 330). Jakarta: Rineka Cipta.
- Undang-Undang Republik Indonesia Nomor 11 Tahun 2022 tentang Sistem Keolahragaan Nasional.