Vol. 6 No. 1, Juni 2025
e-ISSN: 2775-6254
p-ISSN: 2716-1900
SPORT-MU: JURNAL PENDIDIKAN OLAHRAGA
https://ejurnal.unmuhjember.ac.id/index.php/sportmu/index
DOI: 10.32528/sport-mu.v6i1.3489

Teaching Factory: An Effective Learning Innovation for Mastering Rhythmic Gymnastics in Vocational Schools

Teaching Factory: Inovasi Pembelajaran yang Efektif untuk Menguasai Senam Ritmik di Sekolah Kejuruan

Arif Afandi[1], Mashud[2]
[1,2]*Pendidikan Jasmani, Program Pascasarjana, Universitas Lambung Mangkurat, Indonesia*
**corressponding author:* 2420129310015@mhs.ulm.ac.id

Abstract

This research is motivated by the low ability of class XI MPLB students of SMKN 1 Sungai Pinang in designing and practicing rhythmic gymnastics movement variations, with an average pre-action score of 7.93 (designing) and 7.59 (practicing), which is still below standard. To overcome this, the Teaching Factory model is used which systematically integrates theory and practice and encourages authentic experiences and teamwork. This research is a Classroom Action Research (CAR) with the Kurt Lewin model consisting of planning, action, observation, and reflection stages. The subjects of the research were 29 class XI MPLB students. Data collection was carried out through performance assessments in pre-action, Cycle I, and Cycle II. Data analysis used the Kolmogorov-Smirnov normality test and One-Way Repeated Measures ANOVA. The results of the study showed a significant increase: the ability to practice increased by +3.52 points (pre-test to Cycle I) and +2.22 points (Cycle I to II), while the ability to design increased by +2.67 points and +1.00 points. These results indicate that the Teaching Factory model is effective in improving students' skills in rhythmic gymnastics learning.

Keywords: PJOK; Rhythmic Gymnastics; Teaching Factory; Learning Innovation

INTRODUCTION

According to the National Education System Law (Article 37) and the curriculum explanation, the subject of Physical Education, Sports, and Health (PJOK) is intended to "encourage the physical growth of motor skills, and foster a sense of sportsmanship" (Republic of Indonesia, 2003). This means that students are expected to be able to demonstrate physical education personnel who are physically and mentally healthy, creative, and have adequate motor skills (Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia, 2018). In the context of rhythmic gymnastics, this means that vocational high school students are ideally able to design (create) variations of rhythmic gymnastics movements according to musical patterns and practice them with good coordination and aesthetics. In other words, the PJOK curriculum demands the development of students' movement creativity and motor skills (Mashud et al., 2022), including the ability to combine variations of rhythmic gymnastics movements. Physical education experts emphasize that rhythmic gymnastics activities combine elements of art and sport, thus encouraging gymnasts' creativity in designing routines.(Lewankey & Matitaputy, 2020). Likewise, according to William H. Freeman, (2015) PJOK uses physical activity to improve the physical, mental and emotional quality of students as a whole.(Ahwan et al., 2023)(Mashud, 2015). Therefore, in terms of regulation and pedagogy, students' ability to design and practice rhythmic gymnastics movement variations should be optimally developed in PJOK learning, in line with the goal of forming students' motor skills and creativity.(Mashud et al., 2022).

In reality, many vocational high schools face obstacles in learning PJOK. The survey results show that sports facilities and infrastructure in vocational schools are inadequate: sports equipment is often lacking, sports fields or spaces are limited, and the types of sports activities that can be carried out are very limited.(Hendriadi, 2021). The condition of inadequate facilities has a direct impact on the learning process, so that students have difficulty doing various physical activities optimally. This also requires teachers to have good pedagogical skills in learning.(Mashud et al., 2023). As a result, learning objectives such as improving physical fitness and developing motor skills are difficult to achieve.(Captain & Winarno, 2022). In such situations, variations in rhythmic gymnastics movements that require creativity and continuous practice tend to be neglected. Several classroom action studies and teacher reports show that gymnastics learning in many vocational schools is still minimalist: teachers apply more demonstration methods without developing students' movement creativity in depth.(Maulana et al., 2025)(Mashud et al., 2023). This condition is reflected in the students' abilities which are generally still limited to standard movements without rich variation innovations. In short, the real reality in schools shows a gap between the ideal demands for the development of rhythmic gymnastics movement variations and the results achieved by students today.

From the description above, it can be seen that there is a gap between the expected ideal and the reality in the field. Ideally, the curriculum and laws urge the formation of healthy character and complete motor skills in students (Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia, 2018). However, in reality, limited facilities and less innovative learning methods mean that students' ability to design and practice rhythmic gymnastics movement variations has not developed as expected. As a result, the creativity and coordination aspects of students' movements are not optimal. This gap is what raises the research problem: how to improve the ability of vocational high school students to design and implement rhythmic gymnastics movement variations so that they are in accordance with physical learning objectives?

As an answer to this problem, this study proposes the application of the Teaching Factory (TEFA) learning model in rhythmic gymnastics learning.The Teaching Factory (TeFa) model adapts industrial workflows into a learning environment.(Cahyani & Miyono, 2024). The learning process is divided into several "divisions" that reflect the stages of real production, such as planning, design, production, and distribution. Through this model, students gain direct experience of industrial operations and have the opportunity to develop skills relevant to the demands of the job market.Teaching Factory is a vocational learning model designed based on industry and business standards, aiming to prepare graduates to be ready for work or entrepreneurship.(Faizah, 2022). In the context of vocational schools, TEFA emphasizes learning based on production/service practices according to industry standards, where students are directly involved in the practical process with an atmosphere like in the workplace.(Firdaus et al., 2021). The application of TEFA to rhythmic gymnastics learning means creating a gymnastics laboratory that provides real practical experiences: for example, students are encouraged to design gymnastics choreography like producing creative "products", work together in groups like a production team, and assess the results according to the standards of beauty and movement techniques. The advantages of the TEFA model are very relevant to addressing the gap above. First, TEFA improves the quality of learning by ensuring that sports activities are carried out following higher procedures and standards, so that learning output is more measurable.(Fitriani et al., 2022). Second, TEFA develops

DOI: 10.32528/sport-mu.v6i1.3489

students' hard skills and soft skills at the same time; students not only learn movement (hard skills), but are also trained in creativity, cooperation, and discipline (soft skills) according to the needs of the world of work.(Sutianah, 2021). Third, TEFA facilitates direct practical experience (real projects) so that students gain real experience in designing and implementing rhythmic gymnastics programs.(A & , Arif Rohman Hakim, 2023). By learning in a production scheme (for example designing a gymnastics event or competition), students' motivation and independence increase. Fourth, TEFA opens up opportunities for collaboration with industry (for example gymnastics coaches/professionals) so that the rhythmic gymnastics curriculum becomes more relevant and based on contemporary movement beauty standards. Based on these principles, the application of TEFA in vocational schools has the potential to close the gap between theory and practice, thereby increasing students' ability to design and practice rhythmic gymnastics movement variations.(Maulana et al., 2025)(Rizqien & Mujianto, 2025).

Based on the preliminary description, the formulation of the problem of this PTK is: How can the application of the Teaching Factory learning model improve the ability of vocational high school students in designing and practicing rhythmic gymnastics movement variations. The explicit purpose of this classroom action research is to improve the ability of vocational high school students in designing and practicing rhythmic gymnastics movement variations through the application of the Teaching Factory learning model. With this formulation, this PTK will examine the effectiveness of TEFA in the context of rhythmic gymnastics, so that the results can provide concrete solutions to learning gaps in the field.

METHOD

The type of research conducted was Classroom Action Research (CAR) using Kurt Lewin's model where the cycle consists of four steps: (1) Planning (2) Action or Action (3) Observation and (4) Reflection.(Kemmis and McTaggart, 2007):

DOI: 10.32528/sport-mu.v6i1.3489

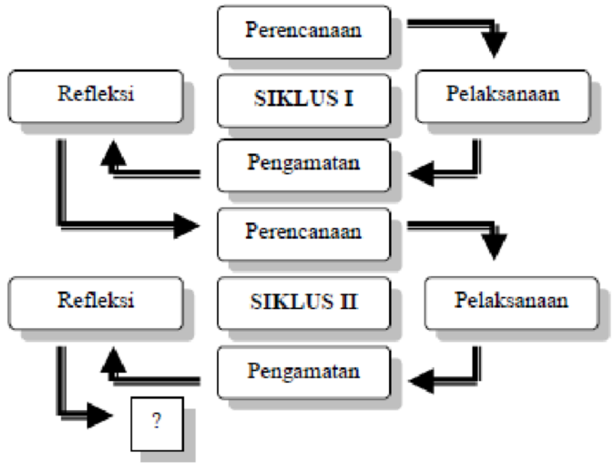

Figure 1 PTK Model Kemmis and McTaggart

Subject: 27 students of class XI MPLB SMKN 1 Sungai Pinang. Time: Even Semester of Academic Year 2024/2025 in the school sports hall. The study was conducted in the 2nd week of April 2025 to the second week of May 2025.

This study uses the PTK design model of Kemmis and McTaggart: pre-action, two cycles of action, and post-action. The following is the research flow:

a. **Preparation Stage (Pre-Action)**

At this stage, problem identification is carried out through initial observation of students' abilities in designing and practicing rhythmic gymnastics.(Utomo et al., 2024). In addition, a literature study was conducted on the Teaching Factory model and rhythmic gymnastics learning. Based on this, the research problems and objectives were formulated, and the implementation scenarios for cycle I and cycle II were designed. The research instruments prepared included observation sheets, performance tests, motivation questionnaires, teacher journals, and video documentation.(Machali, 2022).

b. **Cycle I**

i. **Planning:** Designing a Learning Implementation Plan (RPP) that integrates five (5) Teaching Factory divisions (Preparation, Demonstration, Guided Practice, Independent Production, Quality Control (QC),

DOI: 10.32528/sport-mu.v6i1.3489

Reflection). Compiling observation sheets for movement techniques and creativity.(Nurhasanah et al., 2022).

ii. **Implementation:**

- Preparation: Orientation of material, objectives, and Occupational Safety and Health (K3) for rhythmic gymnastics.
- Demonstration: The teacher practices variations of basic movements.
- Guided Practice: Students are formed into groups according to division 1. Planning, 2. Logistics, 3. Production 4. Quality Control, 5. Marketing and carry out tasks according to division.
- Independent Production: Students design a series of 8–16 counts of free-themed movements and collaborate across divisions to create rhythmic gymnastics movements and prepare to create a video product.
- *Quality Control*(QC): Peer review using rubric.
- Reflection: Group discussion on obstacles & solutions.

iii. **Observation & Data Collection:**Observations were conducted by teachers and assistants in each division. Performance tests (movement practice) and motion design analysis were conducted, as well as distributing student response questionnaires to the model.

iv. **Reflection:**Analyze indicator achievement data (technique, creativity, synchronization between divisions). Identify strengths & weaknesses of implementation, and revise RPP & instruments for Cycle II.

c. **Cycle II**

i. **Planning:**Improve the RPP based on the results of Cycle I reflection, by emphasizing the time of each division, adding variations of themes, and feedback formats. Perfecting the assessment rubric and teacher journal sheets.

ii. **Implementation:**Repeating the six Teaching Factory divisions with modifications, such as adding faster tempo challenges, emphasizing movement creativity analysis, and video documentation of each group.

DOI: 10.32528/sport-mu.v6i1.3489

iii. **Observation & Data Collection:**Observations focused on improving technique & creativity. A second performance and movement design assessment was conducted, as well as a short student interview about changes in motivation.

iv. **Reflection:**Comparing Cycle I data with Cycle II to see the percentage increase in practice & design scores. Conclude the effectiveness of the Teaching Factory Model.

1. **Instrument**
   a. Motion design observation sheet (score 1–4 per indicator).
   b. Gymnastics practical performance test sheet (score 1–4).
   c. Motivational questionnaire and teacher journal.
   The data was collected, then analyzed statistically using Kolgomorov-Smirnov for the normality test, then continued with***One-Way Repeated Measures ANOVA***to see the improvement in average scores.
2. **Procedure**
   a. **Pre-action (Pre-Test)**: Initial observations of design and practice without intervention.
   b. **Cycle I**: Implementation of the Teaching Factory RPP (6 divisions), data collection, reflection, and revision.

Cycle II: Implementation of refined RPP, data collection, and final reflection.

RESULTS

The analysis of the results of this classroom action research focused on improving students' abilities in designing and practicing variations of rhythmic gymnastics movements, as well as the development of aspects of creativity and cooperation through the application of the Teaching Factory model.(Dewi et al., 2023). Quantitative data in the form of scores and qualitative data in the form of implementation notes are analyzed descriptively to provide an in-depth and meaningful picture of the changes that have occurred.(Waruwu et al., 2025). The following are the

DOI: 10.32528/sport-mu.v6i1.3489

results of the Kolgomorov-Smirnov statistical test to measure whether the data is normally distributed or not:

Table 1. Kolgomorov-Smirnov distribution test

Variable	Mean	Std Dev	KS Statistics	p-value	Normal?
Pre_Practice	7,9259	2,1649	0.153	0.5039	Yes
Pre_Designing	7,5926	2,2746	0.1697	0.376	Yes
Cycle1_Practicing	11,4444	2,2418	0.1341	0.6672	Yes
Cycle1_Designing	10,2593	2,0865	0.142	0.5976	Yes
Cycle2_Practicing	13,6667	2,572	0.1442	0.5792	Yes
Cycle2_Designing	11,8889	1.9805	0.1279	0.7213	Yes

All variables (pre-test, cycle 1, cycle 2 for the ability to practice and design) have a p-value > 0.05 in the Kolmogorov–Smirnov test. This means that all data distributions are quite close to the normal distribution. Because the data is normally distributed, the further test uses one way repeated measure anova. The following are the results of One-Way Repeated Measures ANOVA:

1. **Ability to Practice Movement**

Table 2. One way repeated measure Anava 1 test

Source	**F Value**	**DF Number**	**The DF**	**Pr > F**
Treatment	4,4997	2	52	0.0158

Interpretation:

- $F(2, 52) = 4.4997$, $p = 0.0158 < 0.05$
- There was a significant difference in the average scores of movement practice ability between Pre-test, Cycle 1, and Cycle 2.

2. **Ability to Design Motion**

Table 2. One way repeated measure Anava 2 test

Source	**F Value**	**DF Number**	**The DF**	**Pr > F**
Treatment	4,4997	2	52	0.0158

DOI: 10.32528/sport-mu.v6i1.3489

Interpretation:

- $F(2, 52) = 4.4997$, $p = 0.0158 < 0.05$
- There was a significant difference in the average scores of motion design ability between Pre-test, Cycle 1, and Cycle 2.

DISCUSSION

Before testing the effectiveness of the Teaching Factory model in rhythmic gymnastics learning, a normality test was conducted on student score data using the Kolmogorov–Smirnov test. This test aims to ensure that the score data for the ability to design and practice rhythmic gymnastics movements are normally distributed, so that parametric statistical analysis such as One-Way Repeated Measures ANOVA can be used validly.

The test results show that all variables at three measurement points (Pre-test, Cycle 1, Cycle 2) have a p value > 0.05, which means there is no significant difference between the data distribution and the standard normal distribution. Thus, the data can be considered normally distributed and meets the important assumptions in this repeated variance analysis.

The average score of the ability to practice rhythmic gymnastics movements increased significantly from the Pre-test (7.93) to Cycle 1 (11.44) and continued to increase in Cycle 2 (13.67). This increase shows that the Teaching Factory model which places students as active actors in the learning process has succeeded in increasing the mastery of basic techniques and movement variations gradually. This increase also reflects a continuous learning process and is supported by feedback and teacher guidance, so that motor skills are increasingly honed.

The ability to design movement also showed a parallel increase. From a relatively low initial value (7.59), there was a significant increase in Cycle 1 (10.26) and Cycle 2 (11.89). The decrease in standard deviation from 2.27 to 1.98 indicated that students' abilities became more evenly distributed, indicating that almost all students succeeded in developing creativity in designing movement variations. This indicates the

DOI: 10.32528/sport-mu.v6i1.3489

success of the Teaching Factory model in providing space for exploration and collaboration between students.

Repeated ANOVA analysis showed $F(2, 52) = 4.4997$ with $p = 0.0158$ for both aspects of the ability to practice and design movements. The p value <0.05 indicates that the difference in the average score between measurement periods is statistically significant. In other words, the increase in students' abilities is not a coincidence, but a real effect of the Teaching Factory model intervention. This model allows students to learn actively and creatively, not only by imitating, but also by creating and perfecting movements collaboratively.

Quantitative data showing improved scores were supported by qualitative observations during the learning process. In Cycle 1, students worked in small teams to design movements, exchange ideas, and practice in turns. Cycle 2 featured more intensive practice with presentations, feedback, and refinement of movement designs. This process not only improved technical skills, but also built self-confidence, creativity, and collaboration skills that are essential in the context of vocational learning.

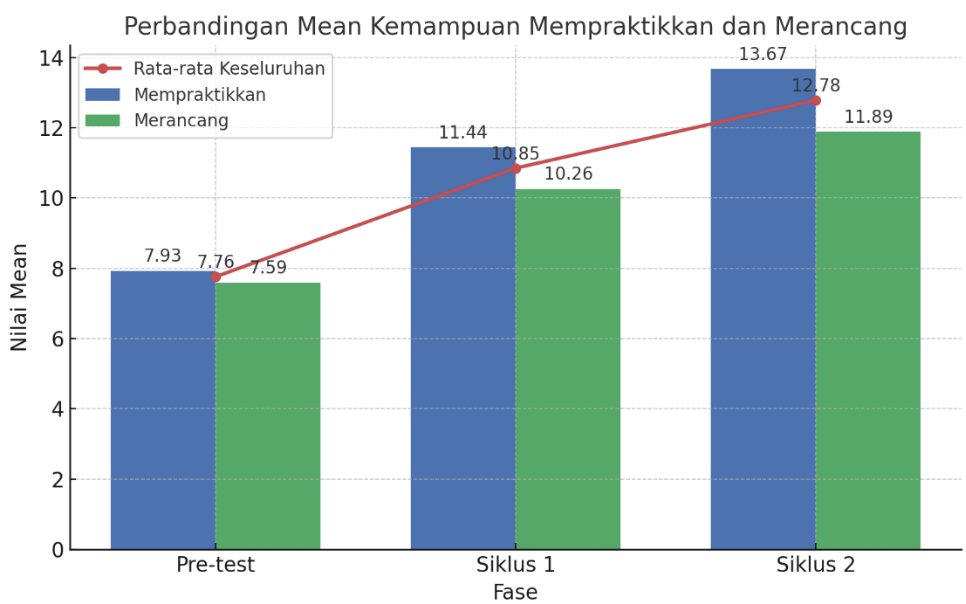

Figure 2. Mean score graph

DOI: 10.32528/sport-mu.v6i1.3489

Implications

The Teaching Factory model successfully changed the role of students into active and innovative learning centers, reducing the dominance of teachers as the sole source of knowledge. Significant improvements in cognitive (designing movements) and psychomotor (practicing movements) aspects indicate the balance achieved between creativity and motor skills. The validity of the results supported by normality tests and ANOVA provides confidence that this model is effective and worthy of being widely adopted in learning motor skills in vocational schools.(Mashud, 2024).The application of the Teaching Factory model in rhythmic gymnastics learning provides implications that learning that is oriented towards real processes and products, and involves students actively in every stage of "production", can improve not only psychomotor aspects (movement skills) but also cognitive aspects (ability to design and analyze) and affective (cooperation, creativity, responsibility)(Prasetia et al., 2024). This model can be an alternative approach to PJOK learning that is more contextual and relevant to the development of 21st century competencies.(Falentina et al., 2021), as expected in Phase F Learning Outcomes.

Recommendation

Vocational High School PJOK teachers should start adapting and applying the Teaching Factory model to other learning materials by adjusting the division and workflow according to the characteristics of the material. For this reason, further improvements need to be made to the time allocation in each division so that all stages run optimally. The duration of each stage must also be considered so that students have enough time to explore and practice in depth. In addition, the application of this model can be expanded across vocations to encourage collaboration between expertise programs in vocational schools. Finally, for the success of the implementation, adequate support for facilities and infrastructure is needed, for example documentation equipment such as cameras and audio, as well as a representative practice room.

For further research, it is necessary to study more deeply by conducting Research and development related to the implementation of Teaching Factory in PJOK

DOI: 10.32528/sport-mu.v6i1.3489

so as to add to the scientific knowledge in the implementation of PJOK learning, so that national education goals can be achieved. This can also strengthen collaboration between the world of education and the world of industry and produce graduates who are ready to enter the world of work. With further research, it is hoped that it can improve the quality of PJOK learning and create new innovations in more effective and efficient teaching methods. In addition, the implementation of Teaching Factory can also provide direct experience to students in applying the theories learned in school to the real world.

Descriptive-Empirical Conclusion

Overall, the innovation of rhythmic gymnastics learning through the Teaching Factory model has proven effective in improving students' abilities in designing and practicing movement variations. The increase in the average score and the narrowing of the standard deviation illustrate the success of this method in accommodating almost all students. Qualitative data support strengthens the conclusion that this model not only improves technical aspects, but also builds an attitude of initiative and collaboration that is important in vocational education.

This discussion integrates statistical results with the learning context, explaining scientifically but still easy to understand how the Teaching Factory model has a positive impact on rhythmic gymnastics learning. The Kolmogorov–Smirnov normality test ensures the validity of the analysis, while ANOVA confirms the significance of changes in student abilities.Based on the results of data analysis and discussion that have been described, it can be concluded that the implementation of the Teaching Factory model can significantly improve the ability to Design and Practice rhythmic gymnastics movement variations in Class XI MPLB students of SMKN 1 Sungai Pinang. This improvement can be seen from the results of the Pre-Action, Cycle I, and Cycle II assessments, both in terms of design ability (movement diversity, series structure, counting compliance, creativity) and practice ability (technique accuracy, movement transition, expression, discipline, cooperation). The Teaching Factory model with a systematic division flow (Preparation, Demonstration, Guided Practice, Independent

Production, Quality Control, Reflection) is able to create an active, collaborative, and result-oriented learning atmosphere, so that it is effective in achieving the expected learning objectives.

Thank-you note

With great respect, the author would like to express his deepest gratitude to Dr. Mashud, S.Pd., M.Pd., as the Supervisor and Head of the Postgraduate Study Program of Physical Education, Lambung Mangkurat University, for his guidance, direction, and continuous support during the process of compiling this Classroom Action Research. The expertise, patience, and motivation that you have provided have greatly helped the author in formulating concepts, carrying out data collection, and compiling the final research report. Hopefully all the knowledge and experience that you have shared will be valuable provisions for the author's academic and professional development in the future.

Thus the author conveys his gratitude, hopefully what you have given can become a charity and inspiration for other generations of educators.

BIBLIOGRAPHY

A, A. M. B. A., & , Arif Rohman Hakim, S. (2023). Survei Kebugaran Jasmani Siswa Putrakelas Xi Usia 16-19 Tahun Di. *Jurnal Ilmiah Penjas, 9*(2), 231–242.

Ahwan, M. T. R., Basuki, S., & Mashud. (2023). Meningkatkan Keterampilan Kolaborasi Siswa melalui Aktivitas Kebugaran Jasmani Menggunakan Model Project Based Learning (PjBL) SMA Negeri 3 Banjarbaru. *Jurnal Pendidikan Kesehatan Rekreasi*, *9*(1), 106–119.

Cahyani, D. R. S., & Miyono, N. (2024). Evaluasi Program Teaching Factory dalam Membentuk Budaya Mutu di SMK. *Jurnal Inovasi Pembelajaran Di Sekolah*, *5*(1), 062–070. https://doi.org/10.51874/jips.v5i1.221

Dewi, A. S., Amalia, D., & Hidayat, A. (2023). Implementasi Manajemen Pembelajaran Teaching Factory dalam Mengimplementasikan Kewirausahaan SMK. *Jurnal Pendidikan Tambusai*, *7*(2), 13003–13011.

https://www.jptam.org/index.php/jptam/article/view/8456

Faizah. (2022). Manajemen Model Pembelajaran TEFA Pada Kompetensi Keahlian Tata Busana Untuk Menumbuhkan Sikap Kewirausahaan Peserta Didik di SMKN 2 Godean Sleman Yogyakarta. *Ust*, *11*(1), 1–12. http://link.springer.com/10.1007/978-3-319-59379-1%0Ahttp://dx.doi.org/10.1016/B978-0-12-420070-8.00002-7%0Ahttp://dx.doi.org/10.1016/j.ab.2015.03.024%0Ahttps://doi.org/10.1080/07352689.2018.1441103%0Ahttp://www.chile.bmw-motorrad.cl/sync/showroom/lam/es/

Falentina, A. R., Saptasari, M., & Indriwati, S. E. (2021). Keterampilan Berpikir Kritis melalui Penerapan Model Pembelajaran Inkuiri Terbimbing di Kelas XI IPA. *Jurnal Pendidikan: Teori, Penelitian, Dan Pengembangan*, *5*(10), 1397. https://doi.org/10.17977/jptpp.v5i10.14100

Firdaus, S., Mulyawan, F. D., & Fajriana, M. (2021). Pengaruh Teaching Factory Terhadap Kreatifitas, Kompetensi, serta Inovasi Siswa Sekolah Menengah Kejuruan. *Inovasi Kurikulum*, *18*(1), 95–103. https://doi.org/10.17509/jik.v18i1.42672

Fitriani, N. L., Bukit, M., & Mujdalipah, S. (2022). Manajemen Pembelajaran Teaching Factory untuk Meningkatkan Kualitas Pembelajaran di Program Studi APHP SMK PPN Lembang. *Edufortech*, *7*(1), 62–84. https://doi.org/10.17509/edufortech.v7i1.44980

Hendriadi, I. G. O. (2021). Ketersediaan Sarana dan Prasarana Pendidikan Jasmani, Olahraga dan Kesehatan. *Jurnal Ilmu Keolahragaan Undiksha*, *9*(2), 68. https://doi.org/10.23887/jiku.v9i2.30878

Ihwanto, N., Warni, H., & Mashud, M. (2022). Upaya meningkatkan keterampilan kolaborasi dan hasil belajar siswa dengan menggunakan model teams games tournament. *Jurnal Maenpo: Jurnal Pendidikan Jasmani Kesehatan Dan Rekreasi*, *12*(2), 191–205. https://jurnal.unsur.ac.id/maenpo

Kapti, J., & Winarno, M. E. (2022). Hubungan Kebugaran Jasmani dan Motivasi Belajar Terhadap Hasil Belajar Penjas SMP: Literature Review. *Sport Science and Health*, *4*(3), 258–267. https://doi.org/10.17977/um062v4i32022p258-267

Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi Republik Indonesia. (2018). Permendikbudristek Nomor 45 Tahun 2018 tentang Kurikulum Tingkat Satuan Pendidikan untuk SMA/SMK.

Lewankey, D., & Matitaputy, J. (2020). Meningkatkan Kemampuan Belajar Senam Aerobik Melalui Penerapan Metode Komando Pada Siswa Kelas Xi Sma Negeri 7 Ambon. *MANGGUREBE: Journal Physical Education, Health and Recreation*, *1*(1), 27–31. https://doi.org/10.30598/manggurebevol1no1page27-31

Machali, I. (2022). Bagaimana Melakukan Penelitian Tindakan Kelas Bagi Guru? *Indonesian Journal of Action Research*, *1*(2), 315–327. https://doi.org/10.14421/ijar.2022.12-21

Mashud. (2015). Pendekatan pembelajaran pendidikan jasmani olahraga dan kesehatan di Era abad 21. *Jurnal Multilateral*, *14*(2), 89–114.

Mashud. (2024). *MULTILATERAL : Jurnal Pendidikan Jasmani dan Olahraga Inovasi pembelajaran pendidikan jasmani berbasis teaching factory model Innovation in physical education learning based on the teaching factory model Universitas Lambung Mangkurat , Indonesia Pendidika*. *23*(4), 446–459.

Mashud, M., Muhammad, R., Mu'arifin, M., Didik, P., Afri, T., & Wulandari, A. (2022). Model Pembelajaran Pendidikan Jasmani Untuk Meningkatkan Kecakapan Kolaborasi Siswa di Indonesia: Article Review. *Jendela Olahraga*, *7*(2), 78–94. https://doi.org/10.26877/jo.v7i2.11973

Mashud, Warni, H., Rinaldy, Y. D., Baidillah, Athar, Mulhim, M., Hamid, A., Rahman, A., & Wulandari, A. (2023). Penguatan Kompetensi Pedagogy Guru Dalam Mewujudkan Kecakapan Kolaborasi Siswa Berbasis Cooperatif Models Di SDN 02 Bangkal Kota Banjarbaru. *Jurnal Pengabdian Kepada Masyarakat*, *2*(8), 873–879.

Maulana, B., Wulandari, B., Nugroho, B. T., & Perdana, C. P. (2025). *Model Pembelajaran PJBL (Project Based Learning) terhadap Peningkatan Senam Irama pada Mata Pelajaran PJOK*.

Nurhasanah, N., Ahman, E., & Yusuf, S. (2022). Pengembangan Model Pembelajaran Teaching Factory. *Jurnal Basicedu*, *6*(5), 7986–7993. https://doi.org/10.31004/basicedu.v6i5.3723

Prasetia, A., Warni, H., Mashud, M., & Fadillah, M. (2024). The analysis of 21st century skills-based lesson plans for physical education in elementary schools. *Jurnal Maenpo : Jurnal Pendidikan Jasmani Kesehatan Dan Rekreasi*, *14*(1), 1. https://doi.org/10.35194/jm.v14i1.3975

Republik Indonesia. (2003). Undang-Undang Republik Indonesia No. 20 Tahun 2003 tentang Sistem Pendidikan Nasional. Lembaran Negara Republik Indonesia Tahun 2003 Nomor 78.

Rizqien, N., & Mujianto, G. (2025). *PENERAPAN METODE PENGAJARAN AUDIOVISUAL PADA*. *21*, 58–71.

Sutianah, C. (2021). Peningkatan kompetensi kerja berbasis integrasi soft skills, hard skills dan entrepreneur skills program keahlian kuliner melalui penerapan teaching factory smk. *Jurnal Ekonomi, Sosial & Humaniora*, *2*(08), 152–167. https://jurnalintelektiva.com/index.php/jurnal/article/view/596

Utomo, P., Asvio, N., & Prayogi, F. (2024). Metode Penelitian Tindakan Kelas (PTK): Panduan Praktis untuk Guru dan Mahasiswa di Institusi Pendidikan. *Pubmedia Jurnal Penelitian Tindakan Kelas Indonesia*, *1*(4), 19. https://doi.org/10.47134/ptk.v1i4.821

Waruwu, M., Natijatul, S., Utami, P. R., & Yanti, E. (2025). *Metode Penelitian Kuantitatif : Konsep , Jenis , Tahapan dan Kelebihan*. *10*, 917–932.