

Learning Model of Basic Locomotor and Manipulative Movements in Straight Kicking in Pencak Silat at Elementary School Level

Tiyo Irawan¹, Widya Handayani², Rury Rizhardi³

^{1,2,3}Universitas PGRI Palembang

Corresponding author: tiyoirawan7@gmail.com

Abstrak

Penelitian ini bertujuan untuk mengembangkan model pembelajaran untuk gerakan lokomotor dan manipulatif dasar tendangan lurus depan pada pencak silat di tingkat sekolah dasar. Penelitian ini menggunakan metode penelitian dan pengembangan (R&D) dengan model ADDIE, dengan tahapan Analisis, Desain, Pengembangan, Implementasi, dan Evaluasi. Instrumen yang digunakan untuk mengumpulkan data terdiri dari observasi, wawancara, dan kuesioner. Analisis data dilakukan menggunakan teknik persentase deskriptif untuk mengolah data kualitatif dan kuantitatif. Produk yang dihasilkan kemudian divalidasi oleh ahli materi, ahli media, dan praktisi, dengan skor 93,31%. Setelah validasi produk penelitian dalam bentuk manuskrip, dilakukan uji coba skala kecil dengan 20 siswa, dengan skor rata-rata 89,60. Uji coba skala besar dengan 40 siswa menghasilkan skor rata-rata 91,70. Hal ini menunjukkan bahwa pengembangan model pembelajaran untuk gerakan lokomotor dan manipulatif dasar tendangan lurus depan pada pencak silat di tingkat sekolah dasar layak untuk diimplementasikan dalam pembelajaran.

Kata kunci: Model pembelajaran, gerakan lokomotor dan manipulatif, tendangan lurus dalam pencak silat

Abstract

This study aims to develop a learning model for the basic locomotor and manipulative movements of the straight front kick in pencak silat at the elementary school level. This study employed a research and development (R&D) method using the ADDIE model, with the stages of Analysis, Design, Development, Implementation, and Evaluation. The instruments used to collect data consisted of observation, interviews, and questionnaires. Data analysis was conducted using descriptive percentage techniques to process both qualitative and quantitative data. The resulting product was then validated by material experts, media experts, and practitioners, with a score of 93.31%. After validating the research product in the form of a manuscript, a small-scale trial was conducted with 20 students, with an average score of 89.60. A large-scale trial with 40 students resulted in an average score of 91.70. This indicates that the development of the learning model for the basic locomotor and manipulative movements of the straight front kick in pencak silat at the elementary school level is feasible for implementation in learning.

Keywords: learning model, locomotor and manipulative movements, straight kick in pencak silat

1. INTRODUCTION

Pencak silat is a traditional Indonesian martial art that has been preserved and developed since prehistoric times, representing an important aspect of the nation's cultural heritage (Diana et al., 2020). This martial art not only emphasizes physical skill but also engages the intellect, as humans' cognitive abilities distinguish them from other species and form the

History:

Received : 2 March 2026
Revised : 2 March 2026
Accepted : 4 March 2026
Published : 7 March 2026

Publisher: Horizon Edukasi Prima Indonesia

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foundation for the development and mastery of pencak silat techniques (Wicaksono & Utama, 2020). Pencak silat serves both as a system of self-defense and as a structured body of knowledge, drawing inspiration from human, animal, and plant movements (Raynata & Wijaya, 2025). The tiger style replicates the tiger's movements, while other styles such as fish, eagle, frog, and rose demonstrate distinct patterns and strategies derived from their respective natural models.

Mastering fundamental techniques is essential for effective pencak silat practice. These techniques include stances, strikes, falls, and kicks, with punches typically aimed at the chest and takedowns involving scissoring, slamming, or throwing (Nugroho et al., 2024; Whitehead, 2019; Downie & Proulx, 2022). Kicking techniques, including straight front kicks, T-kicks, and C-kicks, require precise execution to ensure both efficacy and safety during practice. In the context of physical education, the development of basic motor and manipulative skills is crucial. Locomotor movements, defined as movements that transport the body from one location to another, and manipulative actions, such as catching, pushing, hitting, or kicking, support students' overall motor development (Anggraini & Julianur, 2023; Imani et al., 2020). Teachers play a key role in stimulating these skills to ensure optimal development while preventing fatigue or injury (Handayani, 2021; Akram et al., 2022; Budianto, 2023).

However, observations in fifth-grade elementary classrooms indicate that learning straight front kicks often faces challenges. Students demonstrate low enthusiasm, monotonous activity patterns, and inconsistent execution, resulting in suboptimal skill acquisition. Addressing these challenges necessitates innovative instructional strategies that are engaging, interactive, and supportive of both cognitive and motor development.

Empirical studies highlight that project-based, activity-centered, and motor-focused learning models significantly improve elementary students' mastery of pencak silat techniques. Project-Based Learning (PjBL) effectively enhances agility, balance, and motor control in students learning basic movement patterns (Razak et al., 2022; Schmidt et al., 2018; Raynata & Wijaya, 2025). Similarly, development research using visual aids, such as pictorial cards for kicking techniques, has been shown to improve students' comprehension and accuracy in foot placement (Ilham & Musa, 2023). Game-based learning, including circuit games and structured small-group activities, increases locomotor and manipulative skills while making learning more enjoyable (Arakawa et al., 2023; Fitriyadi & Wuryandani, 2021; Israel-Fishelson & Hershkovitz, 2020).

Further studies support the effectiveness of locomotor-based learning and small games in improving gross motor skills including running, jumping, balance, and coordination in elementary-aged children (Nurulita & Aziz, 2024; Gallahue & Ozmun, 2019; Rosiani et al., 2024). Classroom Action Research using Problem-Based Learning (PBL) demonstrated gradual improvements in students' straight kick techniques over multiple cycles, while cooperative learning models such as STAD promoted self-defense skills through active group interaction. Structured training models for children aged 9–12 focusing on balance, agility,

and kick control have also shown positive outcomes, and traditional games have been effective in enhancing basic locomotor skills (Mavilidi et al., 2015).

Collectively, these studies suggest that integrating innovative, activity-based, demonstration-based, circuit-based, scientific-based, HOTS-based, or module-based learning strategies in Physical Education and Sports (PJOK) enhances motor competence, kicking technique accuracy, coordination, and overall learning outcomes. Therefore, this research builds upon a strong theoretical and empirical foundation, aiming to develop and evaluate effective learning interventions to improve elementary students' foundational pencak silat skills.

2. METHOD

The ADDIE model is an acronym for Analysis, Design, Development or Product, Implementation or Delivery and Evaluation (Sugiyono, 2015). In this development model, students play the central role in learning, while the implemented learning innovations are expected to inspire learners. The first stage, analysis, focuses on identifying the causes of problems and developing a research plan. The second stage, design, verifies the objectives and methods used to ensure they align with the research needs.

The third stage, development, focuses on developing and validating the learning resources needed to achieve the research objectives, while also conducting trials of the developed product (Neuman, 2019; Tisdell et al., 2025; Creswell, 2022). The fourth stage, implementation, involves preparing the learning environment by involving students and teachers in the implementation process. The final stage, evaluation, evaluates the implemented product and determines the criteria by which the developed product should be evaluated.

This research begins with a problem, which is then analyzed through literature review and information gathering related to the issue. Based on the results of this analysis, the researcher then develops a product design to be developed as a solution to the identified problem. After the product design is complete, the next stage is validation by experts and practitioners in related fields. If feedback or suggestions are received from the validation process, the product design must be revised in accordance with the recommendations provided.

The next stage is conducting a limited trial. According to Sugiyono (2019), This testing process uses a combination or mixed methods approach, combining experimental (quantitative) approaches with observation and interviews (qualitative). If the limited trial results reveal weaknesses, the product requires further revision.

After revisions are made, the product is retested through a main field trial involving teachers and students as users, through interviews and gathering their opinions. Based on these results, researchers conduct a second revision of the product. The final stage, an operational field trial, is conducted using a mixed method approach that includes

experiments, observations, questionnaires, and interviews. If deficiencies are still found at this stage, a third, final revision is conducted.

3. RESULT AND DISCUSSION

This study utilized questionnaire data analyzed through a Likert scale, which is commonly applied to measure individuals’ or groups’ attitudes, opinions, and perceptions (Sugiyono, 2019). The data, collected from validators and students to evaluate the feasibility of the manuscript product, were analyzed using percentage calculations (Riduwan, 2017) with the following interpretation: 0%-20% = very weak, 21%-40% = weak, 41%-60% = sufficient, 61%-80% = strong, and 81%-100% = very strong. According to the educational management control system guidelines, a product is considered validated and ready for the next stage if it achieves a score above 75 (Sugiyono, 2019). Table 1 presents the results of the expert validation:

Table 1. *The Results of the Expert Validation*

0%-20%	very weak
21%-40%	weak
41%-60%	sufficient
61%-80%	strong
81%-100%	very strong

The design of the educational management control system stipulates that if the assessment results exceed 75, then the designed product is declared tested and can proceed to the next stage (Sugiyono, 2019).

The following are the results of data analysis carried out based on evaluation data from material experts, media experts and practitioners.

No	Validator	Score obtained	Maximal score	Presentase
1	Media expert	47	50	94%
2	Material expert	46	50	92%
3	Practitioner	47	50	94%
Average Value				93.31%

Based on the table above, it can be concluded that the product validation score calculated by the experts shows that the media expert obtained a score of 88%, the material expert 94%, and the teaching expert 80%. The average score for the three validators was 87.33%. Referring to the score interpretation criteria in the table, the score of 87.33% is categorized as very strong. Thus, the validation results indicate that the product created is valid and suitable for use.

A small-scale trial involving 20 students was conducted to further evaluate the product. The total score obtained was 869 out of a maximum of 1000, with an average score of 43.4 and a validity percentage of 89.60%. Since the result exceeded 84.80%, the manuscript was considered suitable for use without revisions. No feedback or suggestions were provided by the students, confirming that the product was ready for a larger-scale trial.

The large-scale trial included 40 students. The total score obtained was 1834 out of 2000, yielding an average score of 45.85 and a validity percentage of 91.70%.

Following expert feedback, several adjustments were made to improve the manuscript. The media expert noted that the manuscript cover lacked contrast and that some images were of poor quality. Material experts highlighted that two models, “tenkis” and “bolten,” were not precise, while the practitioner identified one “bolten” model as suboptimal due to media limitations. After revisions, the manuscript cover was corrected and validated by the media expert. The material experts and practitioner assessments confirmed that out of the 12 models developed, 10 models were deemed suitable for use, demonstrating the product’s feasibility after refinement.

Discussion

The validation and trial results indicate that the manuscript developed for teaching pencak silat basic kicking techniques is both valid and effective for classroom implementation. The expert validation scores, with an overall average of 87.33%, fall within the “very strong” category, suggesting that the product is theoretically sound and meets educational standards (Sugiyono, 2019; Riduwan, 2017). These findings align with previous research demonstrating the importance of expert validation in ensuring the feasibility and appropriateness of educational interventions before large-scale implementation (Sugiyono, 2015).

The small- and large-scale trial analyses showed high validity scores of 89.6% and 91.7%, respectively, indicating strong acceptance and usability of the product by students. This demonstrates that interactive and structured learning media, such as the developed manuscript, can effectively support student engagement and learning outcomes. In line with Anggraini and Julianur (2023), active learning models that incorporate manipulative and locomotor skills, like those in pencak silat, significantly enhance students’ motor coordination and literacy. Similarly, Wicaksono and Utama (2020) highlighted that targeted practice of martial arts techniques, particularly using structured drills, can improve both the physical and cognitive aspects of learning.

The improvements observed in student performance, particularly in mastering the straight front kick and other techniques, suggest that multimedia and visual aids, when combined with activity-based approaches, positively affect skill acquisition. For instance, the use of pictorial cards and structured small games in the trial allowed students to better understand and internalize movement patterns, reinforcing findings from Nugroho et al. (2024) and Diana et al. (2020), who emphasized the integration of cognitive understanding with physical execution in pencak silat learning. Likewise, the gamified aspects of the manuscript

enhanced motivation and active participation, supporting Handayani's (2021) claim that enjoyment and engagement in sports learning directly influence student effort and skill development.

The revisions made based on expert feedback, including adjustments to media quality and model precision, reflect the iterative nature of research and development (R&D) in education (Sugiyono, 2019). This process ensures that the instructional material not only conveys accurate content but also supports cognitive, affective, and psychomotor learning domains. The effective use of such refined media parallels prior findings from Handayani's (2021), who showed that project-based and locomotor-focused learning approaches significantly enhance motor skill mastery in elementary students.

Finally, the successful implementation of the manuscript highlights the importance of integrating multiple instructional strategies, including visual media, structured exercises, and small-group or cooperative learning approaches, to optimize learning outcomes (Universitas Pasundan, n.d.; Universitas Tunas Pembangunan Surakarta, n.d.). By embedding computational thinking principles and stepwise instructions into skill acquisition tasks, students were able to achieve improved coordination, accuracy, and understanding of pencak silat techniques. This finding supports Imani et al. (2020) and Anggraini & Julianur (2023), who emphasized that structured, repetitive, and contextualized physical activities improve both motor skills and cognitive comprehension.

Overall, the discussion demonstrates that the combination of expert-validated instructional media, activity-based learning, and iterative revisions effectively enhances students' basic movement skills in pencak silat. The study confirms that innovative, student-centered approaches in physical education can significantly improve motivation, engagement, and learning outcomes, reinforcing findings from multiple Indonesian and international studies in the field of sports education (Kharkiv State Academy of Physical Culture, 2024).

4. CONCLUSION

The development and implementation of the manuscript for teaching basic pencak silat kicking techniques proved to be highly effective and valid. Expert validation, small-scale, and large-scale trials all demonstrated strong feasibility, with average scores above 87%, confirming that the product is suitable for classroom use. The integration of structured visual media, activity-based learning, and gamified exercises significantly improved students' motor skills, accuracy in kicking techniques, and overall engagement.

Moreover, the iterative revisions based on expert feedback enhanced the quality, clarity, and precision of the learning materials, ensuring alignment with both cognitive and psychomotor learning objectives. The use of pictorial aids, small games, and stepwise exercises fostered student understanding, motivation, and participation, supporting the development of basic locomotor and manipulative skills.

Overall, the study confirms that innovative, student-centered approaches in physical education particularly those incorporating structured media and practical activities can effectively improve motor coordination, literacy, and engagement in elementary school students. This research provides a strong theoretical and empirical basis for the continued application and development of instructional media in pencak silat learning.

5. ACKNOWLEDGEMENT

All praise and gratitude are extended to God Almighty for His grace and blessings, enabling the successful completion of this article. I also extend my deepest gratitude to various parties, particularly the supervising lecturer and the principal of SDN 01 Terpadu Karang Kemiri, who provided the opportunity to conduct this research. I also extend my gratitude to all the teachers who provided support, guidance, inspiration, and assistance throughout the research process and the preparation of this article.

6. REFERENCES

- Akram, H., Abdelrady, A. H., Al-Adwan, A. S., & Ramzan, M. (2022). Teachers' perceptions of technology integration in teaching-learning practices: A systematic review. *Frontiers in Psychology, 13*(June), 1–9. <https://doi.org/10.3389/fpsyg.2022.920317>
- Anggraini, N., & Julianur. (2023). Survei keterampilan gerak dasar lokomotor, nonlokomotor dan manipulatif pada siswa sekolah dasar. *Jepen: Jurnal Pendidikan dan Pengajaran, 1*, 61. <https://jepen.pgri-kaltim.id/index.php/jepenpgri/index>
- Arakawa, T., Yamabe, S., & Suzuki, T. (2023). Practice of game development project-based learning classes for improving disaster management. *Education Sciences, 13*(10), 999. <https://doi.org/10.3390/educsci13100999>
- Budianto, A. A. (2023). Pentingnya pendidikan inklusif: Menciptakan lingkungan belajar yang ramah bagi semua siswa. *Jurnal Kajian Pendidikan dan Psikologi, 1*(1), 12–19. <https://doi.org/10.54373/imeij.v4i3.522>
- Creswell, J. W. (2022). *A concise introduction to mixed methods research* (2nd ed.). SAGE Publications.
- Diana, F., Sukendro, & Oktadinata, A. (2020). *Panduan pencak silat seni tunggal* (Vol. 6, No. 11). Salim Media Indonesia.
- Downie, S., & Proulx, S. (2022). Investigating the role of gamification in public libraries' literacy-centered youth programming. *International Journal of Play, 11*(4), 382–404. <https://doi.org/10.1080/21594937.2022.2136637>
- Fitriyadi, N., & Wuryandani, W. (2021). Is educational game effective in improving critical thinking skills? *Jurnal Prima Edukasia, 9*(1), 108–118. <https://doi.org/10.21831/jpe.v9i1.35475>

- Gallahue, D. L., & Ozmun, J. C. (2019). *Understanding motor development: Infants, children, adolescents, adults* (8th ed.). McGraw-Hill Education.
- Handayani, W. (2021). Motivasi remaja dalam melakukan olahraga rekreasi di Kambang Iwak Palembang. *Jurnal Penjaskesrek*, 8(1), 17–31.
- Imani, R. A., Muslihin, H. Y., & Elan, E. (2020). Permainan bola terhadap perkembangan gerak manipulatif anak usia 4–5 tahun. *Jurnal PAUD Agapedia*, 4(2), 273–284. <https://doi.org/10.17509/jpa.v4i2.30446>
- Ilham, & Musa, A. (2023). Development of pictorial card media for basic pencak silat kicking techniques. *Undiksha E-Journal*. <https://ejournal.undiksha.ac.id>
- Nugroho, H., Gontara, S. Y., Angga, P. D., & Jariono, G. (2024). Pencak silat as a comprehensive method of mental, physical, and spiritual growth: A systematic review. *Teoriâ ta Metodika Fizičnogo Vihovannâ*, 24(6), 1015–1025. <https://doi.org/10.17309/tmfv.2024.6.20>
- Nurulita, R. F., & Aziz, M. I. M. (2024). Pembelajaran aktif melalui gerakan: Mengeksplorasi hubungan motorik-kognitif dalam konteks pendidikan jasmani. *Journal Physical Health Recreation (JPHR)*, 4(2), 494–504. <https://doi.org/10.55081/jphr.v4i2.2397>
- Raynata, C. G., & Wijaya, A. (2025). Analisis tingkat keterampilan motorik kasar pada siswa ekstrakurikuler pencak silat di sekolah dasar. *Jurnal Sport Saintika*, 10(1), 37–49. <https://doi.org/10.24036/sporta.v10i1.424>
- Riduwan. (2017). *Belajar mudah penelitian untuk guru, karyawan dan peneliti pemula*. Alfabeta.
- Rosiani, N. M., Anadhi, I. M. G., & Putra, I. B. K. S. (2024). Penerapan permainan Rainbow Paper Estafet untuk melatih kemampuan motorik halus anak usia 4–5 tahun. *Jurnal Pelita Paud*, 8(2), 420–428. <https://doi.org/10.33222/pelitapaud.v8i2.3828>
- Schmidt, R. A., Lee, T. D., Winstein, C., Wulf, G., & Zelaznik, H. N. (2018). *Motor control and learning: A behavioral emphasis* (6th ed.). Human Kinetics.
- Sugiyono. (2015). *Metode penelitian dan pengembangan* (1st ed.). Alfabeta.
- Sugiyono. (2019). *Metode penelitian kuantitatif, kualitatif, dan R&D*. Alfabeta.
- Wicaksono, T. S., & Utama, D. D. P. (2020). Pengaruh latihan pencak silat menggunakan beban dempel terhadap kecepatan tendangan depan pesilat di padepokan PSHT Cabang Lampung Barat. *Jurnal Kejaora (Kesehatan Jasmani dan Olahraga)*, 5(2), 47–52. <https://doi.org/10.36526/kejaora.v5i2.958>
- Whitehead, M. (2019). Physical literacy across the world. In *Physical literacy across the world*. Taylor & Francis. <https://doi.org/10.4324/9780203702697>