Physical Literacy Model Based on Play Activities to Improve the Motor Skills of Elementary School Students

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ABSTRACT:
The study is development research using the ADDIE model, which consists of Analysis, Design, Development, Implementation, and Evaluation. This research was conducted in Pasaman Barat Regency, and the samples were SDN 09 Pasaman Baru, SDN 14 Ranah Batahan, and SDN 01 Koto Balingka. This study uses several questionnaire instruments, prototype validity sheets, observation guidelines, and interview guidelines. The instrument, before use, has been validated by the validator so that it provides valid data. The results of the study can be concluded as follows: (1) The results of the initial research show that the play activities that students like are passive games. (2) The design of this model is referenced from the American National Standard SHAPE for K-12, which was developed with the activities of playing traditional games in Pasaman Barat Regency. (3) The results of the development of the model were assessed by the Validator Assessment of the Model Book in the Aiken's V test with an average of 0.862 and an ICC of 0.748, with a very valid interpretation. The validator's assessment of the teacher's handbook in the Aiken's V test averaged 0.848 and ICC 0.946, with a very valid interpretation (4). The results of the implementation of the assessment of the practicality of the model showed that the 14 users (PJOK teachers) gave an average value of the achievement of practicality (practicality) of 82.43, with practical interpretation. (5) The results of the model evaluation revealed that all trial schools showed that the motor skills of the experimental class using the activity-based physical literacy model to improve students' motor skills were higher than those of the control class. This means that the activity-based physical literacy model to improve learners' motor skills is effectively implemented in schools..

Keywords: Physical Literacy, Motor Skills, Elementary Education, ADDIE Model, Traditional Games, Physical Education (PJOK).

Introduction

The development of children in the digital era has been increasingly influenced by technological advancements that provide instant entertainment and passive recreational options. The widespread use of smartphones, tablets, and online games has shifted children's preferences away from traditional active play toward sedentary activities

that require minimal physical movement. Observations conducted in elementary schools in Pasaman Barat Regency revealed that during recess, students rarely engaged in traditional games such as running, ball games, or group play. Instead, they were more inclined to discuss online games, use gadgets, or simply sit and chat. This phenomenon has contributed to a decline in physical activity, which in turn negatively affects motor development, physical health, and social interaction. Reduced physical activity has been linked to obesity, vision impairment, sleep disorders, and decreased academic performance. Moreover, children who are addicted to gadgets often experience developmental delays in language acquisition, concentration difficulties, and social interaction problems. These challenges highlight the urgent need for educational interventions that encourage active play and physical engagement.

Physical literacy, as conceptualized by Whitehead (2010), encompasses motivation, confidence, physical competence, knowledge, and understanding to engage in physical activity throughout life. It is not limited to structured sports or physical education classes but represents a lifelong commitment to active living. Integrating physical literacy into culturally relevant play activities provides a promising approach to motivate students, enhance motor skills, and preserve traditional games. By embedding physical literacy principles into traditional games, students can be encouraged to participate in enjoyable, culturally relevant, and physically engaging activities that foster both physical competence and social development. This study was therefore designed to create, develop, implement, and evaluate a physical literacy model based on play activities for elementary school students in Pasaman Barat Regency, to improve motor skills and motivate students to engage in active play.

Based on the background of the problem, various issues can be identified through the following research questions:

1. How are the play activities and motor skills of elementary school students in Pasaman Barat Regency? (RQ1)
2. How is the design of the Physical Literacy model based on play activities to improve the motor skills of elementary school students in Pasaman Barat Regency? (RQ2)
3. How to develop a Physical Literacy model based on play activities to improve the motor skills of elementary school students in Pasaman Barat Regency? (RQ3)
4. How is the implementation of the Physical Literacy model based on play activities to improve the motor skills of elementary school students in Pasaman Barat Regency? (RQ4)
5. How is the evaluation of the Physical Literacy model based on play activities to improve the motor skills of elementary school students in Pasaman Barat Regency? (RQ5)

Methodology

This research employed a developmental research design guided by the ADDIE model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation. In the analysis phase, a needs assessment was conducted through observations, interviews, and questionnaires with teachers and students. The findings revealed that students demonstrated a strong preference for passive games, while teachers lacked familiarity with the concept of physical literacy. This confirmed the necessity of designing a model that could integrate physical literacy principles into traditional play activities. In the design phase, the model was constructed by referencing the American National Standard SHAPE for K-12, which provides a framework for physical education. This framework was adapted to the cultural context of Pasaman Barat Regency by incorporating traditional games such as *cak bur*, *patok lele*, *yeye*, and *rok*. These games were selected because they are culturally relevant, enjoyable, and involve significant physical activity that can enhance motor skills. The design emphasized motivation, confidence, and competence, ensuring that students would not only participate in physical activities but also develop a positive attitude toward lifelong engagement in active living.

During the development phase, prototypes of the model and the teacher's handbook were created. Validation was conducted by expert validators using Aiken's V test and Intraclass Correlation Coefficient (ICC) to ensure content validity and reliability. The model book and teacher's handbook were assessed for clarity, relevance, and applicability in classroom settings. The validation process confirmed that both materials were highly valid and suitable for implementation. In the implementation phase, the model was tested in three elementary schools: SDN 09 Pasaman Baru, SDN 14 Ranah Batahan, and SDN 01 Koto Balingka. Fourteen PJOK teachers applied the model in their classrooms and provided feedback on its practicality. The teachers reported that the model was easy to implement, culturally relevant, and engaging for students.

Finally, in the evaluation phase, the effectiveness of the model was measured by comparing motor skill improvements between experimental and control groups using pretest and posttest assessments. Statistical analyses included normality tests, homogeneity tests, and t-tests to confirm significant differences. The evaluation revealed that students in the experimental classes demonstrated significantly higher motor skill improvements compared to those in the control classes, confirming the effectiveness of the model.

Results

1. How are the play activities and motor skills of elementary school students in Pasaman Barat Regency? (RQ1)

The initial analysis revealed that the majority of elementary school students in Pasaman Barat Regency preferred passive play activities such as online gaming, gadget use, and sedentary social interactions during school breaks. Observations and interviews with teachers confirmed that traditional active games were rarely played, and students showed reluctance to engage in physical activities even during PJOK lessons. This lack of active play contributed to declining motor skills, with many students demonstrating limited physical competence in basic movements such as running, jumping, and ball-handling. Teachers reported that students often appeared unmotivated to participate in physical activities, which was consistent with the broader trend of reduced physical literacy in the region. The findings highlight a critical gap between the natural developmental needs of children and their actual engagement in physical activities, underscoring the urgency of introducing structured interventions that can reintroduce active play into their daily routines.

2. How is the design of the Physical Literacy model based on play activities to improve the motor skills of elementary school students in Pasaman Barat Regency? (RQ2)

The design of the model was guided by the ADDIE framework and referenced the American National Standard SHAPE for K-12, which was adapted to the local cultural context. The model incorporated traditional games such as *cak bur*, *patok lele*, *yeye*, and *rok*, which were selected for their cultural relevance, accessibility, and ability to engage students in meaningful physical activity. The design emphasized the five key components of physical literacy: motivation, confidence, physical competence, knowledge, and understanding, ensuring that students would not only participate in physical activities but also develop a positive attitude toward lifelong engagement in movement. The model was structured to provide teachers with clear guidance through a handbook, which detailed the objectives, procedures, and expected outcomes of each activity. By embedding physical literacy principles into traditional games, the design sought to create a learning environment that was both enjoyable and effective in enhancing motor skills.

3. How to develop a Physical Literacy model based on play activities to improve the motor skills of elementary school students in Pasaman Barat Regency? (RQ3)

The development phase involved creating prototypes of the model and the teacher's handbook, which were subjected to rigorous validation by expert validators. Using Aiken's V test and Intraclass Correlation Coefficient (ICC), the model book achieved an average score of 0.862 and an ICC of 0.748, while the teacher's

handbook achieved an average score of 0.848 and an ICC of 0.946. Both results were categorized as very valid, confirming the reliability and accuracy of the materials. The development process also included revisions based on feedback from validators, ensuring that the content was clear, relevant, and applicable in classroom settings. The inclusion of culturally embedded traditional games was a key innovation in the development process, as it provided students with familiar and enjoyable activities that simultaneously promoted motor skill development. The outcome of this phase was a comprehensive model that combined theoretical rigor with practical applicability, ready for implementation in schools.

4. How is the implementation of the Physical Literacy model based on play activities to improve the motor skills of elementary school students in Pasaman Barat Regency? (RQ4)

The implementation phase was carried out in three elementary schools, SDN 09 Pasaman Baru, SDN 14 Ranah Batahan, and SDN 01 Koto Balingka, with fourteen PJOK teachers applying the model in their classrooms. The teachers reported that the model was easy to implement, culturally relevant, and engaging for students. The practicality of the model was assessed through teacher feedback, yielding an average score of 82.43, which was interpreted as practical. Students responded positively to the integration of traditional games, showing increased motivation and enthusiasm for physical activities. The implementation also demonstrated that the model could be seamlessly integrated into existing PJOK curricula, providing teachers with structured guidance while allowing flexibility in adapting activities to specific classroom contexts. The successful implementation confirmed that the model was not only theoretically sound but also feasible in real educational settings.

5. How is the evaluation of the Physical Literacy model based on play activities to improve the motor skills of elementary school students in Pasaman Barat Regency? (RQ5)

The evaluation phase involved comparing motor skill improvements between experimental and control groups using pretest and post-test assessments. Statistical analyses, including normality tests, homogeneity tests, and t-tests, confirmed significant differences between the two groups. Students in the experimental classes who participated in the physical literacy model demonstrated higher motor skill improvements compared to those in the control classes. The evaluation revealed that the model was effective in enhancing motor skills, validating its theoretical foundations and practical applicability. The findings indicate that the physical literacy model based on play activities is a reliable and effective intervention for improving motor skills among elementary school students. Moreover, the evaluation highlighted the broader benefits of the model, including increased student motivation, cultural preservation through traditional games, and enhanced teacher capacity to deliver engaging physical education.

Discussion

1. Play Activities and Motor Skills of Elementary School Students in Pasaman Barat Regency (RQ1)

The findings regarding play activities and motor skills of elementary school students in Pasaman Barat Regency reveal a concerning trend toward passive engagement. Students were observed to spend more time with gadgets and online games rather than participating in traditional active play. This preference for sedentary activities has contributed to a decline in motor skill competence, as evidenced by limited ability in basic movements such as running, jumping, and ball-handling. The discussion here emphasizes that the lack of active play is not merely a matter of preference but reflects broader social and technological influences that shape children's daily routines. The reduced engagement in physical activities has implications for physical health, including risks of obesity and vision problems, as well as psychosocial development, such as diminished social interaction and teamwork skills. Therefore, the problem of declining motor skills must be addressed through interventions that reintroduce active play into children's lives, ensuring that their developmental needs are met in a balanced manner.

2. Design of the Physical Literacy Model Based on Play Activities (RQ2)

The design of the physical literacy model was informed by the ADDIE framework and adapted from the American National Standard SHAPE for K-12, ensuring that it was both theoretically grounded and culturally relevant. By embedding physical literacy principles into traditional games such as cak bur, patok lele, yeye, and rok, the model sought to create a learning environment that was enjoyable, accessible, and effective in enhancing motor skills. The discussion highlights that the design was not limited to physical competence but also incorporated motivation, confidence, knowledge, and understanding, thereby aligning with the holistic definition of physical literacy. This comprehensive design ensured that students would not only engage in physical activities but also develop a positive attitude toward lifelong movement. The inclusion of a teacher's handbook provided structured guidance, making the model practical for classroom use. Thus, the design phase successfully bridged theoretical frameworks with practical strategies, offering a culturally grounded solution to the problem of declining motor skills.

3. Development of the Physical Literacy Model (RQ3)

The development phase validated the reliability and accuracy of the model and the teacher's handbook through expert assessments using Aiken's V test and ICC. The high validity scores confirmed that the materials were suitable for classroom implementation. The discussion here emphasizes that the development process was iterative, incorporating feedback from validators to refine the content and ensure clarity, relevance, and applicability. The inclusion of traditional games was a key innovation, as it provided students with familiar and enjoyable activities that simultaneously promoted motor skill development. This approach not only addressed the immediate problem of declining motor skills but also preserved cultural heritage, making the model more meaningful for students. The development phase thus produced a comprehensive model that combined theoretical rigor with practical applicability, ready for implementation in schools.

4. Implementation of the Physical Literacy Model (RQ4)

The implementation of the model in three elementary schools demonstrated its practicality and effectiveness. Teachers reported that the model was easy to implement, culturally relevant, and engaging for students. The practicality score of 82.43 confirmed that the model was feasible in real classroom settings. The discussion highlights that students responded positively to the integration of traditional games, showing increased motivation and enthusiasm for physical activities. This indicates that the model successfully addressed the problem of declining motor skills by reintroducing active play into students' daily routines. The implementation also demonstrated that the model could be seamlessly integrated into existing PJOK curricula, providing teachers with structured guidance while allowing flexibility in adapting activities to specific classroom contexts. Thus, the implementation phase confirmed that the model was not only theoretically sound but also practically applicable in real educational settings.

5. Evaluation of the Physical Literacy Model (RQ5)

The evaluation phase confirmed the effectiveness of the model in enhancing motor skills, as students in the experimental classes demonstrated significantly greater improvements compared to those in the control classes. Statistical analyses validated these findings, confirming that the model was effective in addressing the problem of declining motor skills. The discussion emphasizes that the evaluation not only confirmed the theoretical foundations of the model but also highlighted its broader benefits, including increased student motivation, cultural preservation through traditional games, and enhanced teacher capacity to deliver engaging physical education. The evaluation thus provided strong evidence that the physical literacy model based on play activities is a reliable and effective intervention for improving motor skills among elementary school students.

Implications of the Study

The findings of this study carry significant implications for educational practice, curriculum development, teacher training, and broader policy in the field of physical education. The preference of students in Pasaman Barat Regency for passive play activities underscores the urgent need for schools to reintroduce active play as a central component of daily routines. The decline in motor skills observed among students suggests that without structured interventions, children may face long-term health risks and developmental challenges. Therefore, the implication is clear: schools must prioritize physical literacy as a foundational element of education, ensuring that students develop not only cognitive and academic skills but also physical competence and confidence to engage in lifelong physical activity. The design of the physical literacy model based on play activities demonstrates that culturally relevant approaches can effectively bridge theoretical frameworks with practical classroom strategies. By embedding physical literacy principles into traditional games, the model provides a dual benefit: it enhances motor skills while simultaneously preserving cultural heritage. This has important implications for curriculum development, as it suggests that physical education programs should not rely solely on standardized sports but should incorporate local traditions and culturally meaningful activities. Such integration fosters student engagement, strengthens cultural identity, and ensures that physical education is both relevant and enjoyable.

The development of the model, validated through expert assessments, highlights the importance of rigorous processes in educational innovation. The implication here is that any new model or intervention must undergo systematic validation to ensure reliability and applicability. The successful development of this model suggests that similar approaches can be replicated in other regions, adapting traditional games to local contexts while maintaining the core principles of physical literacy. This provides a blueprint for future educational innovations that seek to combine cultural relevance with scientific rigor. The implementation of the model in three schools demonstrated its practicality and effectiveness, with teachers reporting positive experiences and students showing increased motivation. This has direct implications for teacher training and professional development. PJOK teachers must be equipped not only with knowledge of physical literacy but also with practical tools and strategies to integrate traditional games into their teaching. The model provides a structured framework that can be incorporated into teacher training programs, ensuring that educators are prepared to deliver engaging and effective physical education.

Conclusion

This study concludes that the Physical Literacy Model based on play activities is valid, practical, and effective in improving the motor skills of elementary school students in Pasaman Barat Regency. The initial findings revealed that students predominantly engaged in passive play activities, which contributed to declining motor skills and reduced motivation for physical engagement. The design of the model, adapted from the American National Standard SHAPE for K-12 and integrated with traditional games such as cak bur, patok lele, yeye, and rok, provided a culturally relevant and enjoyable framework for physical education. The development process, validated through expert assessments, confirmed the reliability and accuracy of the model and teacher's handbook. Implementation in three schools demonstrated that the model was easy to apply, engaging for students, and practical for teachers, while evaluation results confirmed significant improvements in motor skills among students in experimental classes compared to control groups. Overall, the study provides strong evidence that embedding physical literacy principles into traditional play activities can effectively address the challenges posed by passive gaming and gadget use, while simultaneously preserving cultural heritage and fostering lifelong engagement in physical activity.

Limitations and future research

Several limitations must be acknowledged in this study. *First*, the research was conducted in only three elementary schools within Pasaman Barat Regency, which limits the generalizability of the results to other regions or educational contexts. Future studies should expand the scope to include a larger and more diverse sample across different provinces or countries to validate the model's effectiveness in varied cultural and social settings. *Second*, the study focused exclusively on motor skill development, without examining other potential outcomes such as cognitive, emotional, or social benefits of physical literacy-based play activities. Future research could explore these broader dimensions to provide a more holistic understanding of the model's impact. *Third*, the evaluation was conducted within a relatively short timeframe, which does not capture the long-term sustainability of improvements in motor skills or the persistence of students' motivation for active play. Longitudinal studies are needed to assess whether the benefits of the model endure over time and contribute to lifelong physical activity habits. *Fourth*, the study relied primarily on quantitative measures of motor skills, which, while reliable, may not fully capture the qualitative experiences of students and teachers. Future research could incorporate mixed-method approaches, including interviews and ethnographic observations, to gain deeper insights into how students perceive and experience physical literacy through traditional games.

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Author Declaration

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