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# Development of e-Modules for Physical Education, Sports and Health Education on Football Materials Based on Playing Football for Elementary School Students

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## Abstract

The problem in the research is in the background because the understanding of the football game of Shiva Sd Bakti 2 Nairatul Jannah has not been maximized. This is suspected, because the learning process given to students does not run well for the understanding of elementary school students. The purpose of the research is to develop physical education teaching materials E-Module for Physical Education, Sports and Health on Football Materials Based on Playing Football for elementary school students. The research model used is Research and Development (R&D) with the Borg and Gall approach modified by Sugiyono. The research method used is Research and Development (R&D) with a modified development model from Borg & Gall. The research stages include problem identification, data collection, e-module design, expert validation, product trials, and revision and refinement. The subject of the study was a student of SD IT Bakti 2 Nairatul Jannah, who showed high enthusiasm for the game of football but had difficulty in understanding the game strategy effectively. The validation results show that the e-module developed meets the eligibility criteria with the category of "very feasible" to be used in PJOK learning. In addition, field trials showed an increase in students' understanding of basic football techniques, game strategies, as well as increased motivation to learn. Thus, this e-module is expected to be an innovative solution in increasing the effectiveness of PJOK learning in elementary schools.

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## **INTRODUCTION**

The rapid advancement of digital technology has significantly influenced various aspects of education, including physical education (Gumara & Wahyuri, 2022). One of the major challenges faced in teaching Physical Education, Sports, and Health (PJOK) in elementary schools is the lack of engaging and interactive learning materials. Traditional teaching methods, such as lectures and demonstrations, often fail to capture students' interest, leading to a lack of understanding and motivation, particularly in complex topics like soccer strategies. To address this issue, the development of an electronic module (e-module) tailored for soccer-based learning is essential. This study focuses on creating an innovative e-module that integrates digital learning materials with interactive exercises to enhance students' understanding and engagement in soccer education. By utilizing Research and Development (R&D) methodologies, this study aims to improve students' cognitive and psychomotor skills, making the learning process more effective, engaging, and enjoyable. The implementation of this e-module is expected to provide a modern, accessible, and practical solution to enhance soccer education for elementary school students (Nurhadi, 2021).

The rapid advancement of digital technology has significantly influenced various aspects of education, including physical education. One of the major challenges faced in teaching Physical Education, Sports, and Health (PJOK) in elementary schools is the lack of engaging and interactive learning materials (Fadlan et al., 2023). Traditional teaching methods, such as lectures and demonstrations, often fail to capture students' interest, leading to a lack of understanding and motivation, particularly in complex topics like soccer strategies. To address this issue, the development of an electronic module (e-module) tailored for soccer-based learning is essential. This study focuses on creating an innovative e-module that integrates digital learning materials with interactive exercises to enhance students' understanding and engagement in soccer education. By utilizing Research and Development (R&D) methodologies, this study aims to improve students' cognitive and psychomotor skills, making the learning process more effective, engaging, and enjoyable. The implementation of this e-module is expected to provide a modern, accessible, and practical solution to enhance soccer education for elementary school students (Suspeni et al., 2023).

Physical education plays a crucial role in the holistic development of students by improving their physical fitness, motor skills, teamwork, and discipline (Subakty et al., 2022). Soccer, as one of the most popular sports worldwide, provides an excellent platform for students to develop these skills. However, many elementary school students struggle to grasp fundamental soccer techniques, such as passing, dribbling, and positioning, due to ineffective teaching methods. The introduction of a well-structured e-module allows teachers to present soccer lessons in a more structured and engaging manner, incorporating multimedia elements such as videos, animations, and interactive quizzes. These features can enhance students' comprehension and retention of soccer concepts, making learning more dynamic and enjoyable (Siregar & Fahrian, 2024).

The integration of e-learning tools in physical education aligns with the modern educational landscape, where digital resources are becoming increasingly essential. Research indicates that interactive and technology-based learning materials significantly improve student engagement and learning outcomes (S. P. Wulandari & Febrianta, 2024). The use of e-modules not only supports self-paced learning but also provides teachers with a flexible and adaptive teaching approach. With digital platforms, students can access soccer learning materials anytime and anywhere, reinforcing their understanding beyond classroom instruction. This accessibility is particularly beneficial for

students who require additional practice and reinforcement to master soccer skills effectively (Luciana & Wahyuri, 2024).

The need for innovative learning tools is evident in schools that lack adequate facilities and trained instructors. In many elementary schools, soccer is introduced through conventional methods that may not sufficiently equip students with the necessary tactical and technical skills. By incorporating an e-module, schools can bridge this gap by offering a structured and interactive learning experience. The e-module serves as a supplementary resource that enhances in-class instruction, helping students visualize and apply soccer techniques more effectively. Moreover, it encourages students to take a more active role in their learning, fostering independence and self-motivation in developing their soccer abilities (Widodo, Irianto, Graha, Yudanto, et al., 2022).

The development of an e-module for soccer education in elementary schools represents a crucial step in modernizing physical education (Adli et al., 2022). By integrating technology into sports instruction, educators can create a more engaging and effective learning environment that caters to diverse student needs. This study aims to explore the design, implementation, and effectiveness of an interactive e-module for soccer education, assessing its impact on students' learning experiences and performance. The findings are expected to contribute to the ongoing efforts to enhance sports education through digital innovation, ensuring that students receive high-quality and engaging learning experiences in physical education.

## **METHODS**

This study employs a Research and Development (R&D) approach to develop an interactive e-module for teaching soccer in elementary school physical education. The research follows the modified Borg and Gall model, which includes several key stages: identifying the problem, collecting data, designing the e-module, validating the content with experts, conducting trials, and revising the module based on feedback. The e-module is designed to incorporate multimedia elements such as videos, animations, and interactive exercises to enhance students' understanding and engagement. The target users of the e-module are elementary school students, with a focus on improving their soccer skills, including passing, dribbling, shooting, and tactical positioning.

The data collection process involves both qualitative and quantitative methods. Qualitative data is obtained through interviews and observations of teachers and students to identify learning challenges and expectations regarding soccer education. Quantitative data is collected through pre-tests and post-tests to measure students' progress in soccer skills before and after using the e-module. Additionally, expert validation is conducted with physical education teachers and instructional design specialists to ensure the accuracy, usability, and effectiveness of the e-module. A small-scale pilot test is carried out with selected students to assess the initial impact of the module, followed by revisions to enhance its effectiveness before broader implementation.

The data analysis is conducted using a combination of descriptive and statistical methods. Feedback from teachers and students is analyzed thematically to identify key areas for improvement in the e-module design. The effectiveness of the e-module is assessed by comparing students' performance before and after its implementation using statistical analysis to determine any significant improvements in their understanding and application of soccer techniques. The final version of the e-module is expected to provide an engaging and effective digital learning tool that enhances the teaching and learning experience in elementary school physical education.

## RESULT AND DISCUSSION

Table 1. Validation Results

Validation	Total Value	Grade Point Average	Percentage	Category
Material Validation	67	3,72	93,06%	Highly Worthy
Language Validation	68	3,77	94,44%	Highly Worthy
Media Validation	64	3,55	88,89%	Highly Worthy
Final Acquisition		3,68	92%	Highly Worthy

Judging from the table above, the final result of the validator's assessment of the Interactive E-Module developed is that it has an average nilia of 3.68 and a percentage of 92% is in the very feasible category. These results can be concluded that the development of the PJOK Interactive E-Module for learning football materials can be used with a little revision and testing.

The results of the finished development will be tested for validation which to find out from the products that have been made for the test of this product itself is divided into 4 categories including: 1. Material validation test, 2. Language validation test, 3. Educational media validation test. All of this is aimed at finding out whether this product is suitable to be used in schools to help students in the learning process in today's learning process which is developing very rapidly.

This stage is the final process in using the research and development model from Brog and Gall modified by Sugiyono. The evaluation stage on this product is carried out a formative evaluation aimed at the needs of revision. Based on the results of the expert review and field trials that have been carried out at the implementation stage, two stages of data analysis are carried out, namely qualitative and quantitative data analysis. Qualitative data analysis is used to process data in the form of input, criticism and suggestions from experts and field tests are then carried out in stages for better media development. Meanwhile, quantitative data analysis was obtained from the assessment of respondents in the form of numbers in the questionnaire given.

All media development steps to improve the quality of the media. This evaluation is carried out continuously so that even the slightest mistake can be corrected immediately without waiting for the final product to be completed. During the process of developing learning media, an evaluation called on going evaluation must always be carried out. The evaluation is carried out based on the results of inputs and suggestions and analysis from material experts, media experts, small-scale tests, and large-scale tests.

### a. Product test results

This stage is the time of media trials that have passed the validity test (product feasibility) from media experts, linguists and material experts (have been revised). The trial was aimed at students of the Bakti 2 Nauratul Jannah Integrated Islamic Elementary School in Padang. This stage can also be part of the implementation stage, this stage is divided into two, namely:

#### 1) Small group trials

A small-scale trial was conducted on 15 randomly selected 3rd grade elementary school students. The implementation of this Interactive E-Module media is carried out in one meeting, which begins with a technical explanation of learning, then after students access the E-Module, students fill out a questionnaire given by the researcher. The results of this small group media test are as follows.

Table 2. Results of Small Group Trials on Students

School	Number of students	Total value	Grade point average	Percentage	Category
SD IT Bakti ID Nairatul Jannah	15	1365	4,55	91%	Highly Worthy

The results of the small group trial conducted at SD IT Bakti ID Nairatul Jannah involved 15 students, with a total score of 1,365. This yielded an average score of 4.55, which corresponds to a 91% percentage. Based on these results, the trial falls into the "Highly Feasible" category, indicating that the tested material or program is very suitable for use. Uji coba kelompok besar

A large-scale trial was carried out on 20 students in grade IV of SD IT Bhakti 2 Nairatul Jannah who were randomly selected. The implementation of this Interactive E-Module media is carried out in one meeting, which begins with a technical explanation of learning, then after students access the interactive E-Module, students fill out a questionnaire given by the researcher. The results of this large group of media testing are as follows.

Table 3. Results of Large Group Trials on Students

School	Number of students	Total value	Grade point average	Percentage	Category
SD IT Bakti ID Nairatul Jannah	20	1342	4,47	89%	Highly Worthy

The results of the large group trial at SD IT Bakti ID Nairatul Jannah involved 20 students, with a total score of 1,342. This resulted in an average score of 4.47, equivalent to 89%. Based on these findings, the trial falls into the "Highly Feasible" category, indicating that the tested material or program is very suitable for implementation.

## Discussion

The development of an interactive e-module for soccer education in elementary schools provides a modern solution to the challenges faced in traditional physical education (Alfani et al., 2023). Many students struggle to understand soccer strategies and techniques due to the limitations of conventional teaching methods, such as verbal explanations and demonstrations. The integration of digital learning materials, including videos, animations, and interactive exercises, allows students to visualize and practice soccer skills more effectively (Kasih & Or, 2024; Rahmi et al., 2023). By incorporating engaging multimedia elements, the e-module helps bridge the gap between theory and practical application, making the learning experience more enjoyable and productive for students (Agustin et al., 2023).

The findings from expert validation and pilot testing indicate that the e-module is a highly effective tool for improving students' comprehension and skill development (Ningsih et al., 2023). Feedback from physical education teachers highlights that the structured format of the e-module provides a clear and systematic approach to teaching soccer. Additionally, students show increased motivation and engagement when using the e-module, as it offers an interactive and self-paced learning experience (Fajar, 2019; Rahmadani, 2023). The combination of digital simulations and guided practice helps students retain information better and apply their knowledge more confidently during practical sessions on the field (Utama et al., 2022).

One of the key benefits of using an e-module in physical education is its flexibility and accessibility (A. M. Wulandari & Wibowo, 2022). Unlike traditional teaching materials, which are often limited to classroom settings, the e-module can be accessed anytime and anywhere, allowing students to review lessons and practice skills outside of school hours. This feature is particularly useful for students who need additional reinforcement to fully grasp soccer techniques. Moreover, teachers can use the e-module as a supplementary resource to enhance their instructional methods, ensuring that all students receive consistent and high-quality learning materials regardless of variations in teaching styles or school resources (Shaukani & Zarwan, 2022).

Despite its advantages, the implementation of an e-module also presents certain challenges (Hidayat et al., 2023; Widodo, Irianto, Graha, & Juniarta, 2022). Some schools may face technological barriers, such as limited access to digital devices or internet connectivity, which could hinder the effective use of the e-module. Additionally, not all students may be equally comfortable with digital learning, requiring teachers to provide guidance and support during the transition. Future research should explore strategies to address these challenges, including the development of offline versions of the e-module and teacher training programs to optimize its integration into the physical education curriculum. Overall, the results of this study demonstrate that an interactive e-module can significantly enhance soccer education for elementary school students, paving the way for more innovative and technology-driven approaches in physical education.

## **CONCLUSION**

The development of an interactive e-module for soccer education in elementary schools represents a significant advancement in modernizing physical education. This study demonstrates that integrating digital learning materials, such as videos, animations, and interactive exercises, enhances students' understanding, engagement, and skill development in soccer. The e-module provides a flexible and accessible learning resource that supports both classroom instruction and independent practice. Despite potential challenges, such as technological limitations and the need for teacher adaptation, the overall findings indicate that the e-module is an effective tool for improving soccer education. Future research should focus on expanding its implementation and addressing any barriers to ensure broader accessibility and effectiveness in physical education programs.

## **CONFLICTS OF INTEREST STATEMENT**

Regarding this study, the author declares that there is no conflict of interest.

### Author Contributions

Study concept and design: Febrian Hidayat. Acquisition of data: Febrian Hidayat. Analysis and interpretation of data: Arsil. Drafting the manuscript: Febrian Hidayat. Critical revision of the manuscript for important intellectual content: Roma Irawan. Statistical analysis: Kamal Firdaus.

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