

Cooperative Learning Model to Improve Learning Outcomes of Grade V PE Using E-Modules

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Abstract: This research aims to develop technology-based e-modules to improve student learning outcomes in Physical Education and Health (PJOK) subjects. The method applied is the ADDIE development model, which includes the stages of needs analysis, design, development, and product evaluation. Data were collected through interviews, questionnaires, and formative test instruments, which were then validated by material, media, and design experts. The results showed that the development of an e-module-based cooperative learning model for Physical Education subjects at SDN 1 Sukaraja was very effective in improving the learning outcomes of grade V students. The application of the ADDIE approach in the development process ensures the quality of materials, media, and learning designs that are feasible and attractive, with the average feasibility assessment results reaching 87.67%, which is included in the very feasible category. The implementation of this model is proven to improve learning outcomes significantly, with the effectiveness rate increasing from 50.56% in the pretest to 91.56% in the posttest, as well as the N-Gain showing the majority of learners experienced a substantial increase in learning outcomes. The model also strengthened learners' social cooperation and skills in the learning process, in line with the characteristics of Physical Education learning. In addition, validation by experts showed that the developed e-module meets pedagogical and technological standards that can support a more interactive and enjoyable learning process.

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Introduction

Education as a structural journey is a very important process in transferring knowledge, values and social norms from one generation to the next. It aims to develop individual potential, shape character and create active and productive members of society. In this context, education planning is a key element that must be considered. According to Albab (2021), education planning is a process that involves a series of strategic decisions for future activities, with the aim of optimally achieving targets. These targets include not only economic aspects, but also socio-cultural and various other aspects relevant to education.

Physical education, which is regulated by Permendikbud No 65 of 2013, has very specific objectives, namely the development of motor skills, improvement of physical fitness, and formation of social values. Good motor skills not only contribute to physical health, but also support learners' social and emotional development. Physical Education Sports and

Health (PJOK) has a mission to integrate affective, cognitive, and psychomotor dimensions. The hope is that PJOK learning can fulfill these three aspects in a balanced manner, so that students not only gain theoretical knowledge but also practical experience that can be applied in everyday life.

In the book *Physical Education, Sports and Health* written by Badu et al. (2021), cognitive function is described as an individual's ability to receive, process, store and access sensory information. It involves a complex process in which sensory input is transformed and processed in the brain, thus allowing the individual to perform appropriate reasoning on the information. Cognitive function includes various aspects, such as attention, language, memory, and executive function that involves planning and executing tasks. In the context of learning, cognitive strategies aim to develop higher-order thinking skills and deep understanding, where learners are expected to be active, critical learners, and able to apply the concepts learned in various contexts.

Physical education has an important role in developing abilities through movement, which in turn can improve health and achieve the expected educational goals, including knowledge, skills, and attitudes. However, in practice, the application of physical education in schools often only achieves the goals of skills and attitudes. Many activities are carried out outside the classroom, so the learning process in the classroom becomes less than optimal, which ultimately leads to low learning outcomes. The low learning outcomes of students cannot be separated from the role of the teacher. The teacher's lack of ability to deliver material, the demands of a dense curriculum, learning methods that are less interesting, and facilities and infrastructure that exist but are not maximally utilized, all contribute to the low cognitive abilities of students.

Merta (2021) emphasizes that in ideal learning, learners should be given a more active role. This is important so that learners can develop higher order thinking skills, act more actively, and be able to collaborate with their peers. Kapti (2022) also suggests that physical education is a significant driving factor in learners' motor development, as well as in increasing physical activity and knowledge. Therefore, it is important for educators to design learning that not only focuses on physical aspects, but also on cognitive and affective development.

Learning today has unique characteristics and is different from before. Interactive learning models and the use of technology can have a significant impact on student learning outcomes. An effective learning model will encourage learners to actively participate in the learning process, think critically, collaborate, and provide meaningful learning experiences (Dewi, 2022). Thus, the selection of the right learning model greatly influences the achievement of the expected learning objectives. In line with this opinion, the planned learning model must have a clear impact on learning objectives. Determination of learning models in learning design is usually based on various principles or theories of knowledge (Aqwal, 2020). Gustiawati (2016) argues that the implementation of various learning models with different concepts is very beneficial for the development of students in cognitive, affective, and psychomotor aspects. Therefore, it is important for teachers to apply learning models that are in accordance with the teaching material they teach.

Physical education sports and health taught in schools has a very important role, which is to provide opportunities for students to be directly involved in various learning experiences through physical activities, sports, and health that are carried out systematically. However, a deep understanding of the concept of physical education is not enough to teach effectively. Teachers must also understand the various learning models that exist. Bruce and

Marsa (in Gustiawati, 2016) define learning model as the organization of the environment that can lead students to interact and learn. Each learner is a unique individual with different ways of learning, so the learning model applied must be diverse and adaptive.

Researcher observations at SDN 1 Sukaraja showed that although there were 45 students in class V, the percentage increase in learning achievement was still insignificant. This is reflected in the table of learning results which shows that only 31% of students reached the minimum completeness criteria (KKM) set, which is ≥ 75 . This condition shows that there are still 69% of students who have not reached these criteria, which is far from the school's expectation to reach at least 75% of complete students. In addition, the results of interviews with educators show that aspects of improving educational infrastructure, including teaching materials, have not been implemented properly. Educators still rely on teaching materials downloaded from the internet without evaluating the purpose of the teaching materials. The physical education learning process is often carried out outside the classroom, which causes a lack of learning in the classroom. Looking at these findings, it is clear that there are still many shortcomings that need to be corrected to improve the physical education learning outcomes of students at SDN 1 Sukaraja. The learning process is basically a pedagogical interaction between teachers, students, materials and the environment. The estuary of the learning process is students who learn. Therefore, the selection of the right learning model determines the achievement of learning objectives.

The cooperative learning model offers a more suitable approach to physical education learning. Johnson & Roger (2017) state that cooperative learning models are more effective than competitive models in improving learning outcomes and social relationships among learners. This model is very much in line with the characteristics of physical education which emphasizes physical activities that are often done in groups or teams. Cooperative learning not only encourages active participation of learners physically, but also in decision-making and strategy. By activating all group members, this model improves social skills, as well as fosters sportsmanship and fair play. Cooperative learning focuses on the interaction between learners and their cooperation to achieve mutual benefits (Herpratiwi, 2018). Research by Hidayati (2023) supports these findings, showing that the application of cooperative models can improve students' cooperation in physical education learning. In addition, research by Huraibi (2018) shows that cooperative models have a significant effect on students' learning motivation in physical education learning. Thus, the selection of cooperative learning models in physical education not only determines the learning objectives, but also contributes to the achievement of objectives through improving learners' cooperation, motivation, and social skills.

In addition to determining the learning model, the use of learning media is also very important in its implementation. With the development of existing learning media, teachers need to utilize various tools in the learning process, both inside and outside the classroom. Learning media is used to facilitate communication and interaction between teachers and students in the learning process (Zulbahri et al., 2020). Efforts to develop students' motor skills are influenced by various factors, including learning readiness, learning opportunities, opportunities to practice, and guidance and motivation (Golvia & Arsil, 2020). In PJOK learning, there are conventional media and technology-based learning media, such as audio and video. Conventional media includes magazines, books, newspapers, simple electronics, radio, movies, and television, whose role is adjusted to the conditions of the learning process.

With the technological revolution, innovation is needed in PJOK learning. The utilization of technology in learning at school can increase students' interest and motivation to

learn. Amini (2020) revealed that learning must be able to make students active and motivated, which is very important to foster curiosity, honesty, and self-confidence. This will enable learners to apply the concepts obtained in everyday life. Based on this, researchers are interested in developing an e-module-based cooperative learning model to improve the physical education learning outcomes of grade V students. E-modules have characteristics that are comparable to conventional modules, which include clear instructions, independent nature (can be learned without assistance), and simple use (user-friendly) (Asrial et al., 2020; Perdana et al., 2017). E-modules are able to present material comprehensively and interactively with an attractive design. The use of e-modules provides its own advantages, namely students can learn independently by using communication devices such as computers or smartphones, making it more practical and can be accessed anytime as needed. Some previous studies have shown that the application of e-modules in the learning process has a significant impact in increasing learner engagement, which can be seen from their interest and enthusiasm in using these learning resources (Sukawirya et al., 2017). Findings from other studies also note that the utilization of e-modules contributes to learners' learning independence and better learning achievement (Darmayasa et al., 2018; Hamid et al., 2021). Similar research also supports the successful use of e-module products in learning (Asrial et al., 2020; Sidiq & Najuah, 2020).

Research Method

This research, using the type of development research (Research and Development) used in this research is using the ADDIE development design model. This model is structured programmatically with a systematic sequence of activities as an effort to solve learning problems related to learning resources that are in accordance with the needs and characteristics of students. The development design of this model has five development steps, namely Analysis, Design, Development, Implementation, and Evaluation (Cahyadi, 2019). In the context of this study, the population studied was all students in the class of SDN 1 Sukaraja. In determining the sample, researchers used the simple random sampling method, which provides equal opportunities for all classes to be part of the sample. The sample taken in this study was class V students as many as 45 people. This sampling method allows researchers to obtain representative data and reduce bias. Data collection techniques used by researchers consist of interviews, observation and documentation. Data analysis researchers use N-Gain analysis.

Result and Discussion

The development of an e-module-based cooperative learning teaching model to improve physical education (PE) learning outcomes was carried out by considering the potential and conditions of PE learning at the elementary school level in Lampung, especially at SDN 1 Sukaraja. This potential is clearly seen from the results of observations made by researchers, which show that in the process of learning PE, especially short-distance running material, teachers often carry out learning outdoors. However, the methods applied in indoor learning are often not well considered, resulting in a less than optimal learning process.

Based on the results of the learning evaluation on short distance running material, only 14% of students reached the complete category. Meanwhile, as many as 31 students have not reached completeness. This condition shows that the majority of students do not understand or have not been able to apply short distance running techniques properly. This low level of completeness indicates that the learning methods applied, especially out-of-class

methods, are less effective in helping students achieve the expected competencies, especially in short-distance running material in PE subjects.

The cooperative learning model is an approach that emphasizes cooperation between learners in small groups to achieve a common goal. In this context, learners are not only responsible for their own learning, but also for the learning of their group members. The main principles in cooperative learning include active social interaction, individual and group responsibility, equal opportunity to participate, cooperation skills, and group- and individual-based evaluation. Herpratiwi (2018) argues that cooperative learning focuses on interaction among learners and cooperation to achieve mutual benefits. It fosters positive interdependence, individual and group accountability, and interpersonal skills to improve team effectiveness (Cheruvelil, 2014). Research shows that cooperative learning can improve learner achievement (Casey, 2015). Slavin (1995) adds that cooperative learning can increase students' motivation, learning activeness, and learning outcomes, especially in materials that require direct practice and cooperation, such as sports.

Some research results show that cooperative learning models have a positive impact on learning outcomes, especially in physical education subjects. Sari and Widodo (2020) in their research stated that the application of the STAD (Student Teams Achievement Division) type cooperative model in learning PJOK was able to improve basic motor skills and student cooperation. Rahayu (2018) found that the use of the Team Games Tournament (TGT) type cooperative learning model in running sports material was able to significantly improve students' motivation and learning outcomes. The cooperative learning model is very suitable to be used in physical education learning such as short-distance running, because it facilitates teamwork, social skills, and shared responsibility. The application of this model is expected to increase the level of completeness of students who were previously low.

Based on this explanation, the decline in learning outcomes in short distance running material at SDN 1 Sukaraja is caused by several factors, such as a lack of variety in learning methods, students' lack of understanding of instructions, or limited facilities and infrastructure when learning outside the classroom. Therefore, it is necessary to evaluate the learning strategies used, and consider the application of methods that are more active, interesting, and in accordance with the characteristics of the material and the needs of students. To answer these problems, researchers developed an e-module-based cooperative learning model designed to improve Physical Education learning outcomes for fifth grade students of SDN 1 Sukaraja, Lampung. This development used the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) approach, which is a systematic development model in instructional design. This model was chosen because it is able to provide a structured framework in designing and implementing learning media that suits the needs of learners. Through the development of e-modules that integrate the principles of cooperation in cooperative learning, it is expected that students can be more active, involved, and motivated in the learning process, so that their learning outcomes can improve significantly.

The development plan carried out by researchers using the ADDIE approach, as follows:

1. Analysis

The analysis stage is the first step in the ADDIE development model which aims to identify the needs, problems, and conditions that underlie the need for media development and learning models. In the context of this study, the analysis stage was carried out to determine the causes of low student learning outcomes in short distance running material

in class V SDN 1 Sukaraja, starting with 1) initial needs analysis Through observation and documentation of student learning outcomes, it was found that only 14% of students reached mastery, while 31 students were not complete. This shows that the learning applied is not optimal and students have not mastered the expected basic competencies; 2) curriculum analysis. The researcher analyzed the standards and basic competencies in the independent curriculum to ensure their suitability with the materials, core competencies, basic competencies, indicators of competency achievement (IPK), learning outcomes, and learning objectives. In this case, the analysis shows that the time allocation and core competencies set are in accordance with the learning needs; 3) analysis of learner characteristics. It was found that fifth grade students have varied learning styles and are more interested in activities that are visual, interactive, and collaborative. This is the basis for choosing a cooperative learning model that allows cooperation and social interaction between learners; 4) context and infrastructure analysis. Learning outside the classroom is limited due to the lack of adequate field facilities and learning aids. In addition, learning is still conventional and has not utilized technology to the fullest, even though almost all students have access to simple digital devices such as cellphones or tablets; 5) analysis of learning problems. The main problems identified are the low variety of teachers' teaching methods, the lack of learning media that support students' understanding, and the unoptimal utilization of technology. Therefore, a solution is needed in the form of cooperative learning-based e-module development;

2. Design

After the analysis stage is carried out and various learning needs and problems are identified, the next stage is design. This stage aims to design learning solutions that are in accordance with the needs that have been found, in this case in the form of developing an e-module-based cooperative learning model for short distance running material. The steps used in the design stage are as follows: 1) Determine learning objectives. Learning objectives are compiled based on the results of curriculum analysis, namely so that students are able to understand and practice the basic techniques of short distance running correctly and are able to work together in groups; 2) Designing a Cooperative Learning Strategy. The cooperative model chosen in this development is the picture and picture model, a method that emphasizes the use of images so that students are more interested in the material being discussed (Yanuarti, 2023); 3) preparation of instruments. Assessment instruments are designed to assess cognitive (knowledge), affective (cooperation, attitude), and psychomotor (running skills) aspects. Assessments were conducted individually and in groups;

3. Development

Development. The development stage is a real process in building or realizing the design that has been designed previously into a learning product that is intact and ready to be tested. In this study, the development stage was carried out to realize an e-module based on a cooperative learning model as a supporting medium for learning PJOK short distance running material in class V SDN 1 Sukaraja. Then the steps used at this stage include: 1) product manufacturing. The initial product developed in the form of an interactive e-module is structured based on the structure that has been designed at the design stage; 2) expert validation. Prior to implementation to students, the e-module was validated by three experts, namely material experts to assess the suitability and depth of PE learning content; media experts to evaluate technical, visual, and interactivity aspects of the media; and design experts to review layout, navigation, and design conformity with the principles of

cooperative learning based on e-modules. The purpose of this assessment is to ensure that the e-module is feasible to use and effective in improving the learning outcomes of grade V students. The results of the feasibility assessment and suggestions from experts show that the developed e-module has met the criteria of relevant material content, in accordance with the basic competencies and learning objectives of grade V physical education;

4. Implementation

The implementation stage is the process of implementing or applying the developed product (in this case, e-modules based on cooperative learning) in an actual learning situation. The purpose is to determine the effectiveness of e-modules in improving students' learning outcomes and observing students' and teachers' responses to the use of the media. The steps taken in the implementation stage include, preparation for field trials and implementation of learning. The results of the pretest and posttest of the learning implementation showed that there was a significant increase in students' understanding and skills after the application of e-modules;

5. Evaluation

The evaluation stage is a crucial component in the product development process, especially in an educational context. Evaluation aims to measure the quality, effectiveness, and efficiency of the product that has been developed, namely e-modules based on cooperative learning on short-distance running material. This evaluation process is not just about assessing the final results, but also serves as a tool to understand how well the product meets the expected educational needs.

Based on the results of the Ngain analysis of testing using the SPSS application, it was found that the average pretest score of students was 50.56%, while the average posttest score increased to 91.56%. Thus, there was an increase in learning outcomes of 41.00% after the application of the e-module-based cooperative learning model. The effectiveness analysis using the N-Gain formula showed that of the 45 students involved in the study, 41 students (80%) were in the high effectiveness category, while 4 students (20%) were in the medium effectiveness category. There were no learners in the low category. These results indicate that the development of an e-module-based cooperative learning model is very effective in improving PJOK learning outcomes in grade V students. The majority of students experience a significant increase in learning outcomes, both in terms of understanding concepts, active participation in group learning, and the ability to solve evaluation questions.

Furthermore, collaboration between learners in the cooperative learning model is also an important aspect. When learners work together in groups, they can share knowledge and experiences, which can enrich their understanding of the material. The transition between theoretical and practical learning is also key in learning PJOK. E-modules can serve as a bridge that connects these two aspects. After learning the theory about the importance of short-distance running through e-modules, learners can immediately practice it in short-distance running in the field. The results of observations during the learning process in the field. Based on the results of observations made by researchers, it was found that all students (100%) showed abilities in the excellent category after being given the learning e-module. This finding is very significant and shows that the e-module-based cooperative learning model is not only a learning tool, but also serves as a reinforcement for a deep understanding of the material being studied. In the context of modern education, where technology increasingly dominates, e-modules offer an innovative and interactive approach to the learning process.

Discussion

Cooperative learning is an approach that emphasizes the importance of cooperation among students in the learning process. In this context, the interaction between group members is not just about sharing information, but also creating positive dependency between them. Each individual in the group has the responsibility to understand the material being discussed and contribute actively so that the group can achieve the learning objectives that have been set. This is in line with the opinion of Gazali (2016) who emphasizes that the success of the group is strongly influenced by the involvement of each member. In an environment that encourages cooperation, students not only learn from the material, but also from each other, creating a dynamic and inclusive learning atmosphere.

Cooperative learning, as described by Rusman (2014), involves students in small groups of four to six people with a heterogeneous structure. This diversity in the group is very important, as it can enrich the discussion and understanding of the material. For example, if one group consists of students with various academic and social backgrounds, they can share different perspectives with each other, which in turn can enhance the collective understanding of the material being taught. In practice, this diversity can be seen when students with high academic ability help their classmates who may be having difficulties, thus creating an atmosphere of mutual support. Not only is this beneficial for the students who need help, but it also strengthens the understanding of the students providing the help, as they have to explain concepts in a way that others can understand.

One of the key aspects of cooperative learning is the creation of a learning environment that supports collaboration. In this model, students learn to work together, help each other, and support each other in the learning process. Huda (2015) explains that cooperative learning focuses not only on achieving individual learning outcomes, but also on achieving group learning outcomes. Thus, students learn to value each other's contributions and understand that their success depends on good cooperation and collaboration. For example, in a group project, each member has a different role, and if one member does not contribute, then the project may be hampered. This teaches students about responsibility and the importance of each individual in achieving a common goal.

One of the challenges in implementing cooperative learning is ensuring that all students are actively involved. Sometimes, some students may tend to be passive and only rely on other group members. To overcome this, teachers need to design activities that encourage active participation from all group members. On the other hand, cooperative learning can also help reduce deviant behavior in the classroom. When students feel connected and responsible to their group, they tend to value the learning process more and are more motivated to behave positively. An environment that supports cooperation can create a stronger sense of belonging among students, thus reducing the likelihood of negative behavior. In many cases, students involved in cooperative learning report that they feel more valued and more connected to their classmates, which in turn can promote a positive learning atmosphere.

The development of an e-module-based cooperative learning model is an innovation in Physical Education (PE) learning designed to improve the learning outcomes of grade V primary school students. This model combines two main approaches, namely cooperative learning strategies, which emphasize cooperation between students in small groups, and the use of e-modules as digital learning media that can be accessed flexibly through technological devices. The model development process is carried out through systematic stages, starting from needs analysis, model design, making e-modules that are interactive and

in accordance with the characteristics of PE subjects, to the trial stage and effectiveness evaluation. The developed e-module contains materials, instructions, illustrations, and activities that encourage active involvement of students in the learning process, both individually and in groups. For example, e-modules can include video demonstrations of sports movements that students can repeat at home, so they can learn in a more interesting and interactive way.

The cooperative approach in this model has an impact on learners to help each other, discuss, and complete tasks together in a fun and educational atmosphere. This is very relevant to the characteristics of PE learning which emphasizes aspects of cooperation, sportsmanship, and social interaction. The results of the development show that this model is able to improve students' learning outcomes in three main domains, namely cognitive (knowledge of PE materials), affective (attitudes towards sports and cooperation), and psychomotor (movement skills ability). Learners become more active, motivated, and have a better understanding of the material taught. In this context, it is important to note that improved learning outcomes are not only seen from academic grades, but also from improved social skills and the ability to collaborate between students.

The results of the model development carried out by researchers using the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) approach as a systematic framework. The analysis stage was carried out to identify the needs and problems behind the low learning outcomes of students. Through observation and documentation, it was found that the lack of variety in learning methods and learners' understanding of instructions were the main factors affecting learning outcomes. Therefore, it is necessary to evaluate the learning strategies used. At the design stage, the learning objectives were developed based on the results of the curriculum analysis. The cooperative model chosen was the picture and picture model, which emphasizes the use of pictures to attract learners' attention. This is important because visualization can help students understand more complex concepts in a simpler and more digestible way.

The development stage includes the creation of interactive e-modules containing short-distance running materials, learning videos, and competency tests. This e-module is designed to facilitate more interesting and interactive learning. Before being implemented, the e-module was validated by material, media and design experts to ensure its quality and effectiveness. The assessment results showed that the e-module met the criteria of excellent feasibility, with a score above 80%. Implementation of the e-module was conducted through a series of meetings involving cooperative learning. At each meeting, learners are divided into small groups to discuss the material and complete tasks. The teacher acts as a facilitator who observes and assists the learning process. The pretest and posttest results showed a significant increase in learners' understanding, with the average posttest score reaching 91.56%, an increase from 50.56% in the pretest. This shows that the use of e-modules in cooperative learning not only improves learning outcomes quantitatively, but also enriches students' overall learning experience.

The N-Gain analysis also showed that the majority of learners experienced a high increase in learning outcomes. Of the 45 learners involved, 80% were in the high effectiveness category. This shows that the development of an e-module-based cooperative learning model is very effective in improving physical education learning outcomes. The observation results during the learning process showed that all learners showed abilities in the excellent category after using the e-module. This finding shows that the e-module-based cooperative learning model does not only function as a learning aid, but also as a

reinforcement of a deep understanding of the material being studied. In the context of modern education, e-modules offer an innovative and interactive approach, which is highly relevant to the needs of today's learners. Thus, e-modules are not only a source of information, but also a tool that facilitates interaction and collaboration between students.

Overall, the development of an e-module-based cooperative learning model for physical education at SDN 1 Sukaraja showed positive results. The implementation of this model not only improved learners' learning outcomes but also built their social and emotional skills. The results of this study are in line with some previous findings. For example, Sani (2016) found that the implementation of Picture and Picture cooperative model significantly improved the learning outcomes of social studies students from cycle to cycle. In addition, Wahyuni et al. (2021) reported an increase in motivation and social studies learning outcomes in junior high school students with a similar model (sig. 0.000). Other results from Habibi & Adnan (2021) also show that this model can increase active participation and learning outcomes of elementary school students. Meanwhile, in the context of physical education, research by Wulandari & Febrianta (2021) who developed a PJOK e-module based on ADDIE and Flip Builder obtained an increase in learning outcomes (pre-test 64.7% to post-test 83%) as well as very good responses from students and teachers.

The e-module-based cooperative learning model can be an effective alternative to improve Physical Education learning outcomes in primary schools. E-modules provide better access to learning materials and encourage active involvement of students, so it is expected to improve the quality of physical education at the primary school level. Through this approach, students not only learn to achieve academic goals, but also develop social skills that are important for their future lives. The implementation of this model can be a step forward in creating a more inclusive learning environment that supports students' holistic development.

Conclusion

The development of e-module-based cooperative learning using the ADDIE model for fifth-grade students at SDN 1 Sukaraja proved to be highly feasible and effective in improving learning outcomes. The e-module, integrated with the Picture and Picture model, provided visual aids, videos, and evaluation activities that enhanced students' understanding of short-distance running techniques. Expert validation showed a very high feasibility level (average 87.67%), while implementation results indicated a significant improvement in students' performance, with average scores increasing from 50.56% to 91.56%, and 80% of students showing high learning gains. Moreover, the e-module successfully fostered students' motivation, activeness, independence, and social skills through group collaboration, making it a highly effective and engaging learning medium for physical education.

Recommendation

The suggestions that can be given based on the results of this study are as follows. First, for teachers, it is recommended that they use interactive e-modules based on the Picture and Picture cooperative learning model as an alternative in delivering Physical Education materials, especially on basic competencies that require visualization of movements. This model is proven to be able to improve students' understanding, active involvement, and learning outcomes. Teachers also need to continue to develop their teaching methods to suit the needs of diverse learners.

Secondly, schools are expected to support the development and implementation of digital-based learning media. This includes providing training on the use of interactive e-modules for teachers, so they can make better use of technology. The availability of supporting facilities such as projectors, tablets or computers is also very important to optimize technology-based learning. With the support from the school, the teaching and learning process will be more effective and enjoyable for students.

Third, for students, it is expected that they can utilize the e-module not only as a learning medium during learning, but also as an independent learning resource outside the classroom. Group discussion activities also need to be developed so that social skills and individual responsibility in the group are increasingly honed. Thus, students will be better prepared to face challenges in learning and daily life.

Fourth, for future research, it is recommended that researchers develop this e-module at other levels or subjects. This research is only limited to one elementary school and one subject (PJOK), so it is important to test its effectiveness with a wider experimental method so that the results are more generalizable. In addition, integration with mobile application-based technology or Learning Management System (LMS) can also be explored further. This approach will not only expand the range of e-module usage, but will also provide a richer learning experience for learners. Thus, it is hoped that this research can make a significant contribution to the development of education in the future.

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