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Healthy Living Behaviors: Application of the Project Based Learning Model in Grade IV Students of Physical Education Subjects

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Abstract

Healthy living habits are critical for optimal quality of life, yet schools often fall short in instilling these practices effectively. This study investigates the impact of the Project-Based Learning (PjBL) model on enhancing healthy living behaviors among fourth-grade students in physical education classes. This study employed Classroom Action Research (CAR) and was conducted over two cycles, each comprising the phases of planning, action, observation, and reflection, involving 27 students from Sungai Ulin State Elementary School 5. The data were collected through student worksheets, interviews, observations, and performance tests, focusing on essential healthy habits: physical activity, balanced nutrition, rest, and productive use of free time. Findings indicate a substantial improvement, with 70% of students meeting criteria in cycle I, escalating to 89% by cycle II. The study concludes that integrating the PjBL model in physical education subjects significantly fosters students' healthy living behaviors, demonstrating that active, project-based approaches can effectively instill essential health practices from an early age.

Keywords: Healthy Living Behavior; Project Based Learning; Elementary School

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INTRODUCTION

Health is one of the important factors in achieving an optimal quality of life. Everyone has the hope of living with a strong and fit body, because health is a priceless wealth. Healthy living behaviors are one of the main keys to maintaining health (Maharwati & Dinatha, 2023). Health plays a central role in the journey of life in terms of physical or mental aspects where health is the most important investment to live life (Saputra et al., 2021; Kurdi et al., 2023). Healthy living behaviors can be instilled and formed from an early age in the school environment. School is not only used as a forum for the learning process but can also be used as a forum to introduce positive behavior (Nurhidayah et al., 2021).

Education plays an important role in improving knowledge, attitudes, and practices of healthy living behaviors in students (Aminah et al., 2021). Efforts within the scope of schools that are often carried out to instill healthy living behavior patterns are through the school health services program known as the Health-Promoting Schools (HPS) program. Schools are one of the elementary targets of health-promoting schools, as explained by the Ministry of Health educational institutions are the elementary targets of health-promoting schools covering all

aspects of health holistically (Bajri et al., 2022). Health-promoting schools is a behavior that is practiced with awareness resulting from learning and applying a healthy paradigm that allows individuals, families, and community groups to be independent in terms of health with the aim of improving, maintaining, and protecting health (Nurmala et al., 2018). Based on the results of a preliminary study conducted in the Sungai Ulin State Elementary School 5, the results of observation and observation stated that the health-promoting school implementation process was relatively low or did not run optimally.

The low implementation of health-promoting schools at Sungai Ulin State Elementary School 5 is caused by several factors, namely incomplete supporting infrastructure, knowledge of students and teachers who are still not qualified due to lack of training or lack of education, and lack of support from the school environment. Nurhidayah et al. (2021) knowledge and attitudes are vital components of health-promoting school implementation, along with supporting elements and support available in schools. The limited time needed to deliver health-promoting school material is also a problem. The school health services program is not the main subject in school, so the person in charge of school health services faces limitations in delivering health-promoting school material effectively. The same problem is also addressed in the research of Aminah et al. (2021) with the research titled School Health Services to Improve Clean and Healthy Living Behavior of Elementary School Students, The results of the research by Khairunnisa et al. (2022) show that School Health Services is not a scheduled subject in schools; there are no adequate supporting facilities; the implementation of health-promoting schools can only be done through good examples from teachers; and there are not enough teachers trained on good health promoting schools practices. Failure to implement health-promoting schools, especially for elementary school-age children, can affect their own health and have significant consequences. It is essential to make efforts to promote a person's physical and mental growth and development, as well as to develop a healthy and fit lifestyle throughout life (Husnan et al., 2023).

A solution that can be applied to improve the implementation of health-promoting schools at Sungai Ulin State Elementary School 5 is to integrate health-promoting school materials into physical education learning. In this way, students can learn about the importance of personal and environmental hygiene, balanced nutrition, the use of leisure time, and sufficient physical activity through physical education materials. This integration will provide learners with the knowledge and skills they need to live a healthy lifestyle. In addition, this integration can also help overcome time limitations in delivering health-promoting school

material, because the material can be taught as part of physical education lessons. Physical education learning of healthy living behavior materials is relatively the same as health-promoting schools, related to healthy living behavior patterns, such as the need for physical activity, rest, filling up free time, and choosing nutritious and balanced foods (Nurfadillah, 2020; Erdian et al., 2023). However, in physical education learning, based on the initial observation test conducted with students, several problems were identified. Students faced difficulties in applying the knowledge they learned to their daily lives. For instance, although they understand that nutritious food is important, they do not know how to make healthy food choices due to a lack of habit. Additionally, many students tend to spend their free time playing online games, rarely engage in physical activities because they lack knowledge about them, and often have their rest disrupted by excessive time spent on online games (Prasetiyo, Yunarta, et al., 2023). Moreover, students lack the critical thinking skills necessary to evaluate health-related information and make informed decisions.

Overcoming the problem of low implementation of health-promoting schools and healthy living behaviors by students through physical education learning in the healthy living behavior pattern material, an active and creative, contextual learning approach, actively involving students, increasing student motivation, and emphasizing more learning materials with daily life can be used. Therefore, the Project-based Learning (PjBL) learning model can be tested as a solution to problems because it is most relevant to the problem. This is based on research by Mashud et al. (2024), showing that the internalization of an active lifestyle through project-based physical literacy awareness provides an increase in physical fitness and physical fitness, this research is also related to individual behaviors that are initially less sedentary and finally with project-based learning, their physical activity and fitness increase. Furthermore, Mashud (2021), the Project Based Learning model is a learning model that involves students actively participating in solving problems in groups or independently through scientific stages that are poured into real products that can be applied in real life. In line with the opinion of Iskandar et al. (2022), the PjBL model emphasizes direct projects and active participation, so that students' cognitive abilities and learning activities can be significantly improved. Strengthened by the opinions of Aziz & Nurachadijat (2023), the PjBL model shows the active involvement of students in solving real problems and producing relevant solutions or products. In addition, the advantages of the PjBL Model can also improve critical, creative, and communicative thinking skills (Undari et al., 2023). From the activities or projects carried out, it provides a lot of stimulus to students (Prasetiyo, Synthiawati, et al., 2023; Zoki & Prasetiyo, 2023). The

learning steps in the Project-Based Learning (PjBL) model according to Mashud (2021) consist of several stages. First, it involves determining the fundamental questions that will guide the project. Second, it includes designing the product planning, which outlines the steps required to achieve the desired outcome. Third, it requires preparing the initial schedule for product creation or the project timeline. Fourth, it focuses on monitoring the activities and progress of the project to ensure everything runs smoothly. Fifth, it involves testing the results obtained, and finally, sixth, evaluating the learning experience to assess the overall effectiveness of the project.

In addition, the integration of health-promoting school material with healthy living behavior material is carried out which emphasizes material in the form of the need for physical activity, rest, replenishment of free time, and choosing nutritious and balanced food in accordance with the independent curriculum. The purpose of this study is to analyze the impact of implementing the Project-Based Learning (PjBL) model in enhancing healthy living behaviors among fourth-grade students in physical education classes. This research aims to measure the effectiveness of a project-based approach in instilling healthy habits, such as physical activity, balanced nutrition, adequate rest, and productive use of free time, as part of efforts to improve students' quality of life from an early age.

METHOD

This research is classroom action research, which is a type of research that focuses on problem solving or improvement and is carried out by educators as part of their responsibilities (Fertiara & Yuhanna, 2023). The procedure for implementing CAR uses the Kurt Lewin model in each cycle which consists of four main steps, namely planning, action, observation, and reflection (Widana et al., 2019; Fertiara & Yuhanna, 2023). The procedure of this research is conducted in several stages, including: (1) conducting initial observations to gather baseline data; (2) developing a learning plan; (3) implementing actions through multiple cycles until the learning objectives are achieved; and (4) observing the implementation of actions in learning, which is carried out twice in each cycle. This research began in April, with each cycle consisting of two meetings. The research was conducted at Sungai Ulin State Elementary School 5, North Banjarbaru District, Banjarbaru, South Kalimantan.

The research subjects were selected based on the alignment between the taught material and the focus of the study related to the application of learning. In this study, the subjects involved are fourth-grade students at Sungai Ulin State Elementary School 5, totaling 27 students,

consisting of 13 boys and 14 girls. This class was chosen because the material taught aligns with the objectives of the research.

The data collection techniques used in this study were observation and tests. The data sources comprised the researcher, classroom teachers, structured observation results, and the students' learning sheet test results. The analysis was conducted by comparing the initial test scores, test scores after cycle 1, and test scores after cycle 2. Several formulas were applied in this analysis, including those for calculating healthy living behavior scores, the percentage of learning mastery, and the average score.

$$\textit{Skill Score} = \frac{\textit{Obtained Score}}{\textit{Maximum Score}} \times 100\ \%$$

The observation process specifically examined students' healthy living behavior, learning interactions, and task completion during the implementation of the Project-Based Learning (PjBL) model. The observations were carried out by the researcher in collaboration with classroom teachers to ensure objectivity and accuracy. The instruments used for observation included structured observation sheets, which contained predefined indicators for assessing students' healthy living behavior and engagement in the learning process. These were supplemented with detailed field notes to capture additional qualitative data. The validity and reliability of the instruments were ensured through expert validation prior to the study. For the test data, the students' learning outcomes were assessed using standardized worksheets, which were analyzed with the aforementioned formulas to measure their performance effectively.

The indicator of the success of classical learning completeness is determined if the average class obtained is above the Minimum Mastery Criteria (MMC) and at least 75% of the number of students who get a score of 75. The results obtained from the calculation of each cycle are then described according to the criteria for viewing table 1.

Table 1. Assessment Criteria for the Utilization of Students' Movement

Value Description	**Criterion**
90-100	Very good
80-89	Good
70-79	Sufficient
≤ 70	Poor

Source: (Raaiyatini et al., 2024)

RESULT

Based on the results of initial observations and interview tests conducted on the implementation of the healthy living behavior program among fourth-grade students, this study involved a total of 27 students, comprising 13 boys and 14 girls. The initial observations aimed to assess the extent of students' knowledge and application of healthy living principles, covering essential aspects such as regular physical activity, sufficient rest, productive use of free time, and nutritious food choices. Through this preliminary data collection, the researcher sought to identify the behaviors and habits that have already formed among the students, reflecting their understanding of the importance of maintaining health from an early age.

This observational data serves as a foundational reference for evaluating the effectiveness of the healthy living behavior program implemented in the classroom environment. With detailed data presented in Table 2 below, each indicator of students' habits and behaviors related to maintaining a healthy lifestyle can be observed more clearly, facilitating comparisons in later stages of the study. This data will not only be used to measure the increase in students' knowledge but also to understand changes in their lifestyle patterns resulting from the program. Through this comparison, this study aims to provide deeper insights into the impact of educating students on healthy living behaviors, contributing to an improved quality of life for children from an early age.

Table 2. Initial Observation Results of Healthy Living Behavior

Learning Completeness	Number of Learners	Persentase	Success Indicators
Completed	10	37%	75%
Not Completed	17	63%	
Total	27	100%	

Cycle I Data Presentation

The first cycle of the study was conducted over two sessions. During the first session, the researcher implemented the Project-Based Learning (PjBL) model, following the phases or syntax of the PjBL framework. In Phase 1: Defining essential questions, students were invited to observe a video on healthy living behaviors (physical activity, rest, productive use of free time, and selecting nutritious, balanced meals). Following the video, students engaged in exploration through a guided question-and-answer session facilitated by the teacher. In Phase 2: Designing the project plan, the teacher explained the steps for project execution and collaborated with students to agree on the project structure outlined in the student worksheets.

In Phase 3: Scheduling project activities, the teacher worked with students to organize a two-week project timeline, incorporating discussions on healthy living behaviors based on the video, printed teaching materials, and other resources. During Phase 4: Monitoring project activities, the teacher created a Google Drive folder for students to document their activities at home, including evidence of their progress. Students were encouraged to present their healthy living behaviors and receive constructive feedback to ensure these behaviors were performed appropriately.

In Phase 5: Testing the project results, all students were interviewed about their physical activities, rest habits, use of free time, and dietary choices. Students also demonstrated the physical activities they had completed based on the student worksheets. Finally, in Phase 6: Evaluating learning outcomes, the learning experiences of each student in adopting healthy living behaviors were analyzed.

The observations conducted during the first cycle involved both the teacher and students, focusing on the implementation of the Project-Based Learning model. The detailed results of these observations are presented in Table 3 and 4.

Table 3. Observation Results of Educator Activities in Cycle I

No	Aspect	Educator Activities in Cycle I
1	Introduction Activity	75
2	Start With the Essential Question	75
3	Design a Plan for the Project	80
4	Create a Schedule	75
5	Monitor the Students and the Progress of the Project	80
6	Assess the Outcome	75
7	Evaluate and Experience	75
8	Closing Activities	75
Average		76,25

Table 3 shows that the teacher's activity during the implementation of the Project-Based Learning model is categorized as sufficient. The average score of 76.25 indicates that the educator have been quite effectively facilitated the learning process by guiding students through all the essential steps of project-based learning.

The observation results of student activities during Cycle I are presented in Table 4. This data illustrates the level of student engagement in the learning process using the Project-Based Learning model.

Table 4. Observation Results of Student Activities in Cycle I

No	Aspect	Student Activities in Cycle I
1	Participating in Introduction Activities	70
2	Responding to and Discussing Essential Questions	70
3	Contributing to Designing the Project Plan	65
4	Following the Established Schedule	70
5	Participating in Monitoring Progress	70
6	Engaging in Assessing the Project Outcomes	70
7	Evaluating and Reflecting on the Experience	70
8	Participating in Closing Activities	70
Average		69,37

Based on the observation results in Table 4, student activities show an average score of 69.37, which is categorized as poor. This score indicates that the activities have not yet achieved the determined success indicators.

Furthermore, in the first cycle of the second meeting, the researcher observed learning outcomes or Summative assessments by assessing the performance of healthy living behaviors, the exposure to the data of the first cycle was as follows:

Table 5. Results of Healthy Living Behavior Implementation in Cycle I

Learning Completeness	Number of Learners	Persentase	Success Indicators
Completed	19	70%	75%
Not Completed	8	30%	
Total	27	100%	

Based on the observation results of the test for the use of healthy living behavior movements using interview tests and analyzing the student worksheet project in classroom action research, unsatisfactory results were seen. And it does not meet the minimum completeness standard that the researcher has set at 75%. From the observation data, it can also be seen that the learning in cycle one in the first and second meetings is also seen. The results of the students' observations in cycle one are; 1) It can be seen that some students have not been able to implement healthy living behaviors. 2) When the material is delivered and the assignment is demonstrated, there are still many students who are not focused and do not pay attention, 3) During learning, there are still many students joking. The results of the educator's observation carried out directly by the principal, the results of the first cycle of learning are as follows; The learning phase has been well prepared but has not been maximized in terms of delivery and classroom management has not been very good.

Based on the learning outcomes from the first cycle, which did not meet the minimum expected completeness, as well as the qualitative findings from observations, several notes and evaluations have been made regarding the learning plan. Consequently, the researcher has

identified key areas for improvement in the subsequent cycle. The elementary focus for enhancing the learning process includes: 1) Improving the delivery of material by educators to ensure it is more effective and engaging; 2) Streamlining and simplifying the assignment of structured tasks, particularly the student worksheet, to make them clearer and more manageable for students; 3) Ensuring that educators maintain a strong focus during the learning process to enhance classroom management and create a more conducive learning environment.

These improvements are designed to address the gaps identified in the first cycle and to build on the strengths observed. Based on the evaluations and feedback collected, the classroom action research will continue into the second cycle. This phase will incorporate reflections on the previous cycle's outcomes and implement the necessary learning enhancements. Additionally, a revised learning tool plan will be developed for the second cycle to better support the educational objectives and improve overall student performance. This ongoing process of reflection and adjustment aims to achieve the desired learning outcomes.

Cycle II Data Presentation

The second cycle consisted of two meetings. During the first meeting in this cycle, the researcher implemented a learning process that incorporated improvements based on the findings and feedback obtained from the first cycle. These enhancements focused on optimizing student engagement, refining teacher facilitation, and addressing any observed challenges in implementing the Project-Based Learning (PjBL) model. Observations conducted during this cycle revealed an increase in both teacher and student activities. The implementation of the PjBL model demonstrated a more structured approach and improved student participation, reflecting a positive response to the adjustments made. Detailed data regarding the teacher and student activities during the second cycle are presented in Table 6 and 7.

Table 6. Observation Results of Educator in Cycle II

No	Aspect	Educator Activities in Cycle II
1	Introduction Activity	85
2	Start With the Essential Question	85
3	Design a Plan for the Project	90
4	Create a Schedule	88
5	Monitor the Students and the Progress of the Project	90
6	Assess the Outcome	85
7	Evaluate and Experience	88
8	Closing Activities	85
Average		87

Table 6 shows that the teacher's activity during the implementation of the Project-Based Learning model in Cycle II is categorized as good. The average score of 87 indicates that the educator has effectively facilitated the learning process, guiding students through all the essential steps of project-based learning.

Table 7. Observation Results of Student Activities in Cycle II

No	Aspect	Student Activities in Cycle II
1	Participating in Introduction Activities	85
2	Responding to and Discussing Essential Questions	90
3	Contributing to Designing the Project Plan	90
4	Following the Established Schedule	85
5	Participating in Monitoring Progress	85
6	Engaging in Assessing the Project Outcomes	85
7	Evaluating and Reflecting on the Experience	80
8	Participating in Closing Activities	90
Average		86,25

Based on the observation results in Table 7, student activities show an average score of 86.25, which is categorized as good. This score indicates that the activities have successfully met the determined success indicators.

Furthermore, the second meeting in the second cycle was observed for the performance test of the utilization of movement of healthy living behavior students in students. The results of the observation of the second cycle of the researcher are described as follows.

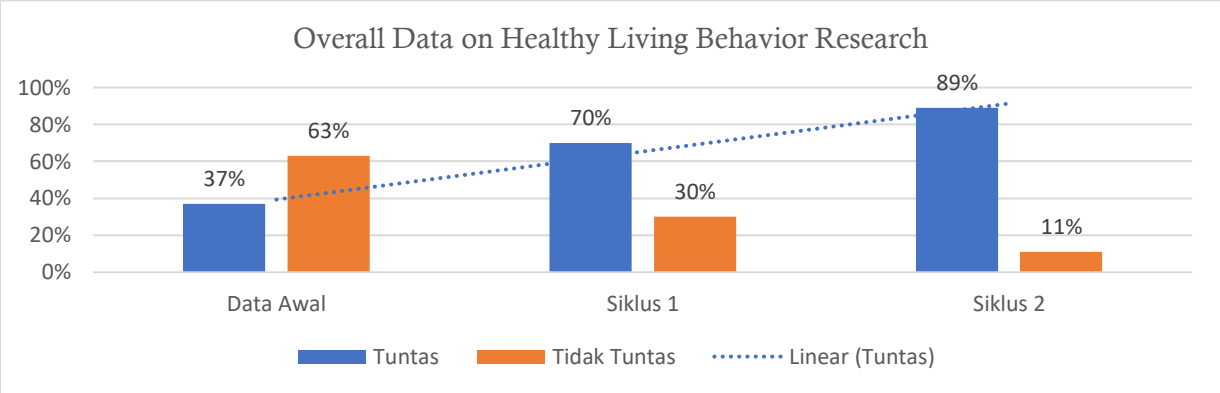
Tabel 8. Results of Healthy Living Behavior Implementation in Cycle II

Learning Completeness	Number of Learners	Persentase	Success Indicators
Completed	24	89%	75%
Not Completed	3	11%	
Total	27	100%	

Based on the data in table 8 above, it shows that the utilization of healthy living behavior patterns of grade IV students has increased and exceeded the minimum limit of the set standard, which is 75%. For the results of the observation of cycle II of the use of healthy living behavior patterns using the Project Based Learning model, the researcher explained the following: 1) Students can understand healthy living behavior patterns and apply them well. 2) When the material is delivered, students pay attention and focus and do not joke, 3) When doing assignments, students can do well. The results of the educators' observations during the second cycle of learning are; 1) The delivery of material is clear, 2) Classroom management is carried out well, 3) Educators carry out learning according to stages/phases with excellent delivery.
The learning outcomes in Cycle II demonstrate that the minimum completeness criteria set by the researcher have been achieved, supported by qualitative observation findings. Therefore,

the researcher concludes that the Project-Based Learning model for healthy living behavior has successfully met the criteria, and a third cycle is unnecessary. The comparison of healthy living behavior scores across the initial data, Cycle I, and Cycle II is presented in the following graph.

Figure 1. Comparison of Assessment Results on the Implementation of Movement for Healthy Living Behavior



DISCUSSION

This research ended in cycle 2. In each cycle, in the learning process, observe student activities through a student worksheet and observations in the field (school) and carry out a work test to measure the utilization of students' movement for healthy living behavior using a test of questions for critical thinking skills. From the results of the research, the application of the two-cycle PjBl learning model for 4 meetings succeeded in increasing the utilization of healthy living behavior students' movements in grade IV. The difficulties and problems that arise during the learning of healthy living behavior and health-promoting schools before the action research is carried out have found a solution. With the use of the right learning model based on the phases applied, it will realize learning success. Where teachers outline their strengths into teaching methods that enhance the learning process and allow students to be creative, demonstrating their learning in a style they like (Tamim & Grant, 2013; Permanasari et al., 2022).

Based on relevant research, Nuriawati (2023), shows that the Project Based Learning learning model is effective in improving students' attitudes to a healthy lifestyle. The study has similarities in learning materials with those carried out by the researcher, where this study uses learning materials for students' healthy lifestyles. Based on the results of research by Undari et al. (2023), it shows that the use of the PjBL model can improve 21st century skills which include critical thinking skills, communication, creativity, and collaboration. Based on the results of the research by Alfasina et al. (2023) with the research title "Effectiveness of Project Based Learning Model in Physical Education Learning: Systematic Literature Review", it was

concluded that project-based learning (PjBL) is very effective in physical education learning and has many benefits. The PjBL model makes learning more relevant to life, improves learners' social skills, increases their desire to participate in learning, and encourages active learning. According to the research of Fathonah et al. (2023) entitled "The Role of Project-Based Learning (PjBL) in Improving Elementary School Students", the results of the study stated that the project-based learning model can improve the learning outcomes of elementary school students. Various studies summarized by Thomas (2000) in Sutisnawati et al. (2022) show that the implementation of project-based learning has an impact, namely: 1) improving student achievement, 2) improving students' problem-solving skills, 3) increasing students' understanding of the subject matter, 4) students' understanding of the material, their understanding of project skills and strategies, 5) developing group work and work culture. Based on the conclusions of the research conducted by Ernawati (2022), the advantages of PjBL are able to guide students into a generation that is able to think critically, creatively, independently, communicatively, and collaboratively. Another research is Shima et al. (2021) with the title "The Application of Online PjBL (Project Based Learning) to Improve Student Learning Outcomes during the Covid-19 Pandemic" Classroom action research using the PjBL model can be said to be successful and effective applied to online learning, during the COVID-19 pandemic students can still improve their learning outcomes if learning is carried out online or distance learning. This proves that the Project Based Learning learning model is also effective in applying even though it is not through direct learning. Learning by implementing innovative learning is not only about using technology but also about changing learning approaches and cultures.

Research that has been conducted shows that the systematic and gradual application of the Project Based Learning (PBL) learning model has a significant impact on increasing student involvement in the learning process. By following each phase or syntax that has been determined, students not only become more active, but also more motivated to complete tasks related to movement or physical activity. The activeness and enthusiasm shown by students in completing these tasks is an important indicator of the effectiveness of the PjBL method. Furthermore, the success of students in carrying out movement tasks not only increases their curiosity, but also builds confidence and the desire to continue learning (Gitatenia & Lasmawan, 2022; Yu & Yu, 2023). This positive experience encourages students to be more courageous in facing new challenges and exploring other learning projects. Thus, the PjBL model not only facilitates academic learning, but also develops social and emotional skills that

are essential for students' personal growth (Launuru et al., 2021; Verinita & Yanti, 2022; Asman et al., 2022). In the context of physical education, the application of PjBL can be very valuable because it invites students to be actively involved in planning, implementing, and evaluating their own movement tasks. This creates a dynamic learning environment where students can experience first-hand health and fitness concepts, as well as understanding the importance of physical activity for general well-being. Finally, this approach can help students develop better healthy living behaviors, which is the main goal of this study.

The next research recommendation can be focused on physical activity or physical literacy for elementary school students, because in living a healthy life it is necessary to be accompanied by good physical activity. In addition, it is explained by the fact that being inactive in physical activity today can contribute to an increased proportion of deaths and disabilities worldwide and is associated with significant healthcare costs and lost productivity.

In its implementation, the researcher wants to show the difficulty of conveying learning messages, controlling the reciprocity of the process, and evaluating and following up on learning. Not infrequently, obstacles such as ineffective weather and time do not reduce students' enthusiasm and learning outcomes. Researchers say that as an educator, you must continue to apply learning models that can improve students' abilities and learning outcomes to achieve educational goals.

CONCLUSIONS

Based on the results and discussion of the research, it was found that the learning objectives to improve healthy living behavior have been successfully achieved by using a project-based learning model. Students in grade IV with two cycles, each of which consists of two meetings per cycle. Suggestions that researchers can convey to educators should be to use the Project Based Learning learning model as a learning model choice to improve students' skills or use students' movements in physical education learning.

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