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Integrated Modules in Project-Based Learning to Improve Social Studies Learning Outcomes

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Abstract. *The purpose of this study was to see the effect of using modules with integrated Project Based Learning models to improve the learning outcomes of social science class IV SDIT Adzkia Bukittinggi. The research design used in this study was pre-test and post-test one group design. The population of this study were fourth grade students of SDIT Adzkia Bukittinggi. Sampling using Simple Random Sampling technique and obtained 21 students of class IV Banin as samples. Data were analyzed by parametric statistical analysis. with steps: mean score and standard deviation, normality test and z test. The results of the research conducted, the average Post-test score of 75.45 with a percentage of completion of 71.88% and the calculation of the Z test obtained Zcount> Ztable (2.29> 1.64) then Ho is rejected and Ha is accepted. It is concluded that the social studies learning outcomes of students using integrated modules project-based learning model in class IV SDIT Adzkia Bukittinggi significantly completed.*

Keywords: *Integrated Modules, Project-Based Learning, Social Studies*

INTRODUCTION

A teacher or lecturer has been experiencing a shift in values for a long time, from textual learning to problem-solving skills for students. From a role in learning as an intermediary to convey concepts to improving students' problem-solving skills.(Sasson et al., 2018) Problem solving is an important component of the curriculum and needs attention in learning.(Nayazik, 2017) Educators in the modern era lead to academic competence that provides a good learning atmosphere that aims to be able to solve problems. Choosing a good learning model is the role of an educator in increasing the enthusiasm and interest in learning.(Bernal-Munera, 2023) In addition to problem-based learning models, project-based learning is expected to be a solution so that students can enjoy and support the learning process. Especially in the face of post-pandemic situations, requiring teachers and students to conduct distance learning. The project-based learning process can be a medium to maximize the learning process in general and especially in the midst of a pandemic. It is a solution for students to enjoy the learning process from home or remotely.(Fini et al., 2018) For this reason, teachers must be innovative in delivering subject matter so that students enjoy learning. Teachers are advised to use appropriate learning media that can be combined with learning models.(Syahriani et al., 2023)

The form of effort that can be made is to create active learning through teaching materials. One of the challenging jobs for teachers is to provide the best teaching materials to their students who have not mastered the competencies.(Mulder et al., 2019) These teaching materials are an important element in learning. Teaching materials serve as a guide for teachers and students in the process of learning activities. By using teaching materials, learning programs can be implemented more regularly because teachers as implementers of education will get clear material guidelines.(Høgdal et al., 2021) There are a number of reasons, why teachers need to develop teaching materials. Permendiknas Number 16 of 2007 concerning

Academic Qualification and Competency Standards, explains that teachers as professional educators are expected to have the ability to develop teaching materials in accordance with existing mechanisms by taking into account the characteristics and social environment of students.(Kaldjian et al., 2019) One of the teaching materials developed in accordance with the independent curriculum is a module. Modules are subject matter that is organized and presented in writing so that readers can absorb the material themselves. In addition to the subject matter, the module also exercises questions to measure the absorption of material by students. Electronic modules or modules are learning resources that can be created by adjusting the conditions of students. Modules are modules in electronic form and can be accessed anytime, anywhere using electronic devices.

The use of modules in learning is very suitable. Teachers can determine the composition, design and concept of the module in accordance with the applicable curriculum. The independent curriculum mandates teaching and learning activities based on student centered learning. Research shows that learning with modules allows students to learn independently and freely according to the conditions of the students. In line with that, the research results show that the use of modules can improve learning outcomes. The use of online modules makes learning more interesting. The module can be inserted with pictures and video links that are expected to make students more enthusiastic about the social studies material being studied.(Putri, 2022) Research.(Hsin & Wu, 2023) found that after the use of the module, all children performed better overall and in each sub. This means that modules in learning can be effective and productive.

Learning problems that are known from the student side are low learning outcomes.(Meynishfi et al., 2021) It is known that the teaching materials used have little information related to the material and for the independent curriculum there is no module owned by the school. students who are less active during the learning process.(Khoirudin et al., 2022) Loss of learner independence, student engagement and interactivity in capturing material with details. because there is still a dependence on material that is only provided by educators so that the student center concept that is in accordance with the curriculum does not apply.(Gusrianto & Rahmi, 2022) As for the teacher, the problem found is the teacher's ability to compile and develop modules. Ideally, teachers need to compile teaching modules optimally, but in reality many teachers do not fully understand the techniques for compiling and developing teaching modules, especially in the independent learning curriculum. With modules, students can learn independently. (AlMahmoud et al., 2017) It will also change the students' view to read and consume interactively and make them comfortable, where the printed module has pictures, narratives, and graphics.

The previous research discussing project-based learning. *First*, the finding Project-based learning (PjBL) is a promising method in higher education, with studies primarily focusing on student outcomes. These include affective (perceptions and experiences) assessed via questionnaires, interviews, and reflections, and cognitive and behavioral aspects (knowledge, skills, engagement) measured using various tools such as rubrics, tests, and observations. Artifact performance is evaluated using rubrics.(Guo et al., 2020) *Second,* the finding aims to explore the impact of using project-based learning (PjBL) courses in STEM subjects on students' attitudes, major choices, and career aspirations. Involving 492 natural science and engineering students, the findings indicate that engaging in at least one project-based course during the first four semesters positively influences students' perceptions of STEM skills, understanding of the utility value of STEM courses, and STEM career aspirations. It is concluded that the effect of PjBL on STEM career aspirations is mediated by STEM skills and perceptions of course utility, while gender and underrepresented minority status do not affect this impact. These findings encourage efforts to expand the use of project-based learning in STEM education and further investigate factors influencing students' career aspirations in this field. (Beier et al., 2019)*Third,* the finding demonstrates how the interdisciplinary aspect of the project facilitated significant elements of student learning that may not have been achieved through a conventional class project. Moreover, it highlights the significance of collaborative efforts among instructors from various disciplines in crafting a project-based learning experience that encourages students to transcend disciplinary borders.(Vogler et al., 2018) *Fourth,* the finding implementation of project-based learning (PBL) in web programming courses to develop electronic modules. The author argues that PBL is an effective approach to enhance students' understanding and practical skills in web programming. The article provides an overview of the PBL process and its benefits, as well as the challenges faced during its implementation. (Prasetya, 2021) *Firth,* the finding provides valuable insights into the effectiveness of PBL in engaging students in learning and improving academic performance. It emphasizes the importance of PBL in fostering critical thinking, collaboration, and problem-solving skills among students, which are essential for success in modern careers. (Almulla, 2020)

The purpose of the research on the development of social studies learning modules based on the project-based learning model at SDIT Adzkia Bukittinggi conducted by the researcher is as a practical proof

of the theories about the effectiveness of project-based learning models in improving student learning outcomes. In line with the research objectives, this initiative aims to use integrated project-based learning modules to improve students' abilities in social studies lessons. By linking this effort to the research objectives, it is clear that the main focus is to utilise project-based learning methodology to improve student performance in social studies lessons. Through the development and implementation of these modules, this research sought to validate the hypothesis that integrating project-based learning into the curriculum positively impacts students' social studies learning outcomes at SDIT Adzkia Bukittinggi, and contribute to the wider global discourse on innovative pedagogical approaches.

METHOD

The research methodology used in this study uses a quasi-experimental approach, which does not have a comparison group.(Zheng et al., 2017) This study used a one-group pre-test and post-test design, which only consists of pre-test (O1) and post-test (O2) measurements.(Brassler & Dettmers, 2017) To select the research sample, a simple random sampling method was used, which was taken from two classes-Banin and Banat-from class IV of SDIT Adzkia Bukittinggi. In the end, 21 students from class IV Banin were selected to participate in the study. This study focused on investigating the impact of project-based learning on social studies learning outcomes at SDIT Adzkia Bukittinggi. The study identified two main variables: the independent variable, which is the project-based learning model, and the dependent variable, which relates to social studies learning outcomes. Data collection was conducted by administering a pre-test and a post-test, which consisted of 14 multiple-choice questions. These questions have gone through a rigorous validation procedure to ensure reliability, difficulty level, and differentiating power, thus improving the accuracy of the assessment. In analysing the collected data, this study used parametric statistical techniques. At first, the mean and standard deviation were calculated to understand the central tendency and spread of the data. Next, the normality of the data distribution was assessed through the chi-square test, which is essential for validating the assumptions of parametric tests. Finally, the research hypotheses were tested using the z-test formula, which provides insight into the effectiveness of the project-based learning approach in improving social studies learning outcomes at SDIT Adzkia Bukittinggi.

RESULTS AND DISCUSSION

Result

Design and Development of Integrated Modules

In designing an integrated module, systematically organised stages are key to ensuring the success of the development process. The first stage, learning needs analysis, serves as a crucial starting point in determining the direction and focus of the module. Through in-depth analysis of learning objectives and students' needs, the module can be effectively designed to meet their learning needs. After that, the module planning and design stage is the next step, which includes determining the structure, format, and content of the module. Through careful planning, the module can be organised systematically and efficiently, so that the learning process becomes more purposeful and effective.(Cantú-Ortiz, 2020)

The development of learning materials plays an important role in ensuring the quality of the module. This process involves creating relevant, interesting, and student-centred learning materials. Varied and interesting learning activities should also be designed to increase students' interest and engagement in the learning process.(Usher & Barak, 2018) Testing and revision are then conducted to ensure that the module meets the expected quality standards. Through internal testing and feedback from educational experts and practitioners, the module can be improved and refined to enhance its effectiveness. External validation is the next important stage, where the module is evaluated by relevant parties such as curriculum teams or educational experts. Feedback from external parties is then used to make final adjustments and improvements to the module before it is compiled into a final document. Finally, the preparation of documentation and guidelines for using the module, as well as training for teachers who will use it, are the last steps before the module is used in daily teaching.(Vrysouli et al., 2023)

The strategy of integrating various subject matters plays an important role in ensuring that the whole learning process is coherent and meaningful for students.(You et al., 2020) The cross-disciplinary approach is one of the main strategies used, where various subjects are brought together in an integrated learning unit. In this way, students not only learn concepts in isolation, but also see the connections between subjects and

how they can be applied in a wider context.(Lapitan et al., 2021) In addition, the use of real themes or projects is also an effective approach, as it allows students to see the relevance of the concepts in their daily lives or in real-world situations. With a theme or project as the basis for integration, students can develop a deeper understanding and strengthen the linkages between subject matter. Determining the interconnectedness of concepts between subjects is another important step in this integration strategy. By identifying connections between concepts, students can see the whole picture and link their knowledge from different subjects.(Binti Misrom et al., 2020) Finally, the development of activities or tasks that support the integration of subject matter is an affirmation of this strategy. By introducing activities that encourage students to apply their knowledge in a cross-disciplinary manner, they can strengthen their understanding and develop relevant skills to face real-world challenges.(Tupe, 2021)

Relevance and conceptual integration are very important aspects in designing integrated modules for social studies subjects in primary schools. Relevance refers to the presence of material that supports the learning objectives and central theme of the module, while conceptual integration is integrating concepts from various disciplines in social studies. For example, in the "Indonesian Culture" module for social studies subjects in elementary school, the materials of history, geography, economics, and sociology must be interrelated and well integrated to provide a holistic understanding to students.(Shah & Ahangama, 2023) The level of difficulty and complexity of the material plays an important role in adapting the module to the abilities and characteristics of students in primary school for social studies. The module must be adjusted to the level of difficulty in accordance with the social studies curriculum standards for elementary school, as well as presenting material that is in accordance with the understanding of students at the basic education level.(Klerkx et al., 2019)

The availability of resources and supporting technology is a crucial factor in supporting the implementation of integrated modules for social studies subjects in primary schools. The module must be supported by adequate resources, such as textbooks, teaching aids, and relevant information technology, related to social studies subjects at the primary level.(Kim & Park, 2022) The use of technology can also enrich the social studies learning experience in primary schools, such as the use of online learning resources and interactive learning applications that are tailored to the characteristics of primary school students. Conformity with Curriculum Standards and Learning Guidelines becomes the foundation in designing integrated modules for social studies subjects in primary school. The module must be in accordance with the competency standards and learning objectives set out in the social studies curriculum for primary schools, as well as following the applicable learning guidelines for the context of the subject at the primary school level.(Widiyatmoko & Shimizu, 2018)

In addition to these main factors, other aspects such as teachers' skills in teaching social studies in primary schools, students' motivation in learning social studies, and the support of stakeholders such as schools, parents and communities also need to be considered in the development and implementation of integrated modules of social studies subjects in primary schools. Regular evaluation and revision also need to be done to ensure the effectiveness of the module in improving student learning outcomes in primary school in the context of social studies. By considering these factors, the integrated module is expected to be an effective tool in supporting a holistic and comprehensive social studies learning process for students at the primary school level.

Implementation of Integrated Modules in Project-Based Learning

Pre-test and Post-test

The pre-test serves as an important step in assessing students' initial abilities before engaging with the integrated module project-based learning model. This pre-test consists of 14 multiple-choice questions that are carefully designed to evaluate various aspects of students' knowledge. Before being administered, these questions have gone through a rigorous validation procedure to ensure validity, reliability, appropriate difficulty level, and ability to differentiate students' ability levels. The pre-test aims to measure students' initial ability and understanding in the subject matter before they are exposed to the integrated module project-based learning approach. Table 2 provides a comprehensive overview of the pre-test scores, including the mean (x) and standard deviation (s), which provide insight into the distribution and variability of students' initial abilities.

Tabel 1: Pre-test and Post-Test PBL

Class	χ^2_{Count}	Dk
Class	Pre-test	Post-test
Minimum value	36	55
Maximum value	62	88
Average	44,42	74,36

During the culminating session, a post-test was administered to gauge the students' proficiency levels subsequent to their participation in the integrated module project-based learning model. This assessment serves the purpose of quantifying the enhancements in students' competencies following their exposure to the project-based learning methodology. Table 1 offers an elaborate compilation of the preliminary test results, encompassing key statistical metrics such as the mean (x) and standard deviation (s). These metrics offer invaluable insights into the dispersion and diversity of students' initial proficiencies, thereby furnishing a comprehensive overview of their starting points prior to engaging with the project-based learning curriculum.

Normality test

In assessing the normality of the data, a critical step is comparing the calculated chi-square value (χ2count) with the tabulated chi-square value (χ2table) at a specified significance level, typically set at α = 0.05. If the calculated χ2count is less than or equal to the tabulated χ2table, it indicates that the data follows a normal distribution. This criterion serves as a benchmark for determining the distribution pattern of the data. A summary of the outcomes of the post-test normality test computation is provided in Table 2, offering a concise overview of the distribution characteristics observed in the dataset.

Table 2. Post-test Normality Test Results

Class	χ^2_{Count}	Dk
Post-test	10,835	5

In statistical analysis, Zcount, representing the calculated Z-score, is compared against the critical Z-table value, denoted as Ztabel, to determine the significance of the results. In this scenario, with a significance level of α = 0.05, the critical Z-table value is 1.64. However, the calculated Zcount value is 2.29, exceeding the critical Z-table value of 1.64. As a result, the null hypothesis (Ho) is rejected, indicating that there is a statistically significant difference in the average social studies learning outcomes of students after the implementation of the integrated modules project-based learning model.Furthermore, the findings suggest that the average social studies learning outcomes of students, which were initially set at a minimum of 65 ($\mu \geq 65$), have been satisfactorily achieved. This implies that the application of the integrated modules project-based learning model has led to a significant improvement in the social studies learning outcomes of students in grade IV SDIT Adzkia Bukittinggi. Consequently, it can be inferred that the learning process facilitated by the integrated modules project-based learning model has effectively enhanced students' understanding and proficiency in social studies, thereby fulfilling the intended learning objectives for the course.

Table 3. Post-test Data Hypothesis Test Results

Test	ZCount	Ztable
Post- test	2,29	1,64

The research spanned 8 sessions, encompassing a pre-test, 6 sessions of learning with project-based learning integrated modules, and a concluding post-test. This structured approach aimed to assess the efficacy of project-based learning in enhancing student outcomes. Throughout the process, students were actively engaged, fostering a dynamic learning environment that encouraged participation and collaboration. By immersing students in hands-on projects aligned with real-world scenarios, project-based learning offered a departure from traditional methods, sparking enthusiasm and preventing monotony in the learning process.

The findings of the study indicated that the utilization of integrated modules positively influenced students' future-oriented thinking and broadened their perspective. Through immersive activities, students were encouraged to explore diverse viewpoints, enhancing their critical thinking skills and preparing them for the challenges of tomorrow. Moreover, the study highlighted the significance of project-based learning in equipping students with essential skills to navigate the complexities of the future effectively. By promoting self-directed learning and problem-solving, project-based learning nurtured students' abilities to adapt and thrive in an ever-evolving landscape. Project-based learning, rooted in constructivist principles, emphasizes the active construction of knowledge through meaningful experiences. In this approach, educators serve as facilitators, guiding students through inquiry-based activities and providing scaffolding as needed. By fostering a learner-centered environment, project-based learning empowers students to take ownership of their learning journey and develop a deeper understanding of concepts. Ultimately, the study underscores the transformative potential of project-based learning in shaping students' future readiness and fostering lifelong learning skills essential for success in the 21st century.

Discussion

Challenges of Integrated Modules in Project-Based Learning

Implementing integrated modules within Project-Based Learning (PBL) presents numerous advantages for students' learning outcomes. However, like any educational innovation, it comes with its own set of challenges that educators must navigate.(Lin et al., 2021) One significant limitation is the constraint of time, both for teachers and students, who may struggle to allocate sufficient time to engage with the integrated modules effectively. Additionally, resource availability poses another obstacle, as schools may lack the necessary materials and technology to support the implementation of integrated modules. Moreover, teacher readiness is crucial; educators may require training and professional development to effectively utilize integrated modules and facilitate PBL in the classroom. Similarly, student readiness cannot be overlooked; learners may need time to adjust to the PBL approach and may initially struggle to adapt to the new learning methods.(Lazer et al., 2020)

Figure 1. Integrated Learning System For School

Despite these challenges, various factors can influence the success of implementing integrated modules in PBL. School support is paramount, with strong backing from school administrators, teachers, and staff being essential for successful implementation. Adequate teacher training is also crucial, ensuring educators possess the necessary skills and knowledge to effectively implement integrated modules and guide students through PBL activities. Furthermore, resource availability is essential, and schools must invest in providing the necessary resources to support integrated module implementation. Parental involvement is another critical factor, as parental support and engagement can significantly impact students' success with integrated modules and PBL. Finally, effective assessment methods are vital for measuring student learning outcomes

accurately, requiring teachers to employ various assessment strategies tailored to the PBL context.(Wu et al., 2024)

To overcome these challenges, strategic approaches can be adopted. Effective time management strategies, such as creating clear schedules and prioritizing learning objectives, can help maximize the use of available time.(Tsybulsky & Muchnik-Rozanov, 2019) Collaborative resource development efforts, involving partnerships with external organizations or leveraging online resources, can address resource limitations and ensure access to necessary materials and technology. Additionally, ongoing teacher training and professional development programs can enhance educators' skills and confidence in implementing integrated modules and PBL. Engaging parents through regular communication and providing them with resources and guidance on supporting their children's learning journey can foster a supportive home learning environment. Lastly, employing a variety of assessment methods, including formative, summative, and authentic assessments, can provide a comprehensive understanding of student learning and inform instructional practices effectively.(Shih & Tsai, 2016)

In order to enhance the implementation of integrated modules in Project-Based Learning (PBL), a comprehensive strategy needs to be carefully designed. Several strategic steps that can be taken include training, support, inter-school collaboration, strategic partnerships, digital assessment, and development of learning applications.(Wu & Wu, 2020) Training is a crucial initial step in preparing teachers to effectively implement integrated modules and PBL. Training programs should be designed comprehensively and sustainably, covering theoretical and practical understanding of integrated modules and PBL, module implementation in classrooms, as well as development and adaptation of modules according to local contexts. High-quality training materials that are easy to understand and relevant to teachers' needs should be provided.(Spikol et al., 2018)

Support is also key in maintaining the continuity of implementing integrated modules and PBL. Systems for mentoring and coaching teachers can be established through individual mentoring and coaching by experts and experienced teachers. Additionally, communities of learning among teachers can be formed to share experiences and best practices. The presence of online platforms providing access to resources, discussion forums, and consultations with experts will also facilitate teachers in obtaining support.(Shen et al., 2018) Inter-school collaboration is essential in expanding the implementation of integrated modules and PBL. Collaboration among schools can be encouraged to develop and share contextual and high-quality integrated modules. Moreover, joint activities among schools can be organized to enhance teacher capacity and form solid learning communities.(Basilotta Gómez-Pablos et al., 2017)

Strategic partnerships with the government and educational organizations also need to be strengthened.(Mutakinati et al., 2018) Through these partnerships, policy support and funding can be obtained, integrated modules and teacher training programs can be developed, and awareness and advocacy regarding the importance of integrated modules and PBL can be increased. The utilization of innovative technology is also a determining factor in the success of implementing integrated modules and PBL. Online learning can be developed to provide access to integrated modules, learning resources, and discussion forums. Digital assessment tools that are in line with the characteristics of PBL and integrated modules also need to be developed to effectively measure student learning outcomes and provide constructive feedback. Additionally, engaging learning applications can be designed to assist students in learning integrated module materials, completing PBL tasks interactively, and collaborating with classmates and teachers.

CONCLUSIONS AND SUGGESTIONS

The results of this study showed that the average post-test score was 74.36 with a passing percentage of 71.42%, and the results of the Z test calculation showed that Zcount> Ztable (2.29> 1.64), so Ho was rejected and Ha was accepted. Thus, it can be concluded that the social studies learning outcomes of students using an integrated project-based learning model in class IV SDIT Adzkia Bukittinggi have improved significantly. In addition to confirming the research findings, it is also important to answer the research objectives. In this case, the research objective to examine the effectiveness of an integrated project-based learning model in improving social studies learning outcomes has been fulfilled. However, there are some aspects that need to be considered for future research. For future research, it is recommended to conduct a follow-up study that involves long-

term measurement of student learning outcomes. In addition, research comparing the effectiveness of project-based learning models with conventional approaches may also provide valuable insights. It is important to note that there is still ongoing research to further explore the potential and application of the project-based learning model. As such, collaboration between researchers and educational practitioners can continue to be enhanced to further our understanding of innovative and effective learning approaches.

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