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# STRATEGIES FOR USING PBL MODEL WITH A SCIENTIFIC APPROACH TO IPAS SUBJECTS TO IMPROVE STUDENTS' LEARNING OUTCOMES

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***ABSTRACT***

*The significance of multicultural education in the context of Indonesia cannot be overstated, as it plays a crucial role in fostering an awareness of tolerance and promoting an appreciation for diversity within a society that is inherently varied and rich in cultural differences. In order to investigate the pressing need for multicultural education as a proactive measure to avert the social conflicts that frequently arise from disparities in ethnicity, religion, and race, this research employs a comprehensive literature review methodology that meticulously analyzes existing scholarly sources. The findings derived from this extensive analysis reveal that multicultural education serves not only to enlighten students about the vast spectrum of cultural diversity that exists, but it also plays a vital role in cultivating foundational values of mutual respect and tolerance among the student population. The conclusions drawn from this research indicate that the effective implementation of a well-rounded multicultural education program within school curricula has the potential to significantly enhance students' understanding and appreciation of the differences that characterize their peers, ultimately equipping them with the necessary skills to coexist harmoniously in a multicultural environment. Consequently, it becomes evident that multicultural education emerges as an indispensable strategy in the overarching quest to construct a society that embodies tolerance and deeply respects the rich tapestry of diversity present within Indonesia. Through the promotion of such educational initiatives, we can aspire to build a future where individuals are not only aware of cultural differences but are also actively engaged in fostering a sense of community that transcends these differences. In summary, the imperative of multicultural education stands as a foundational pillar for ensuring social cohesion and harmony in a nation as diverse as Indonesia.*

***Keywords*: *Multicultural Education, Tolerance and Diversity***

## A. INTRODUCTION

The education system at the elementary school level serves a crucial function in the development of students' foundational knowledge and essential skills that are pivotal for their future learning endeavors. Within this framework, the field of Social Science (IPS) education plays a significant role in providing young learners with a fundamental comprehension of their societal structures, cultural heritage, and the various social dynamics that influence their everyday lives. Nevertheless, it has been observed that many traditional pedagogical approaches tend to prioritize theoretical concepts and rote memorization, which frequently results in a lack of effectiveness when it comes to fostering a profound understanding of the subject matter and enhancing students' critical thinking abilities. Consequently, it is imperative that educators explore more innovative and engaging teaching methodologies that facilitate deeper cognitive engagement, allowing students to develop the analytical skills necessary for navigating the complexities of the world around them(Gallagher, 2023).

The Problem-Based Learning (PBL) model offers an alternative approach that can overcome limitations. PBL engages students in solving real and relevant problems, allowing them to apply knowledge directly in a more contextual and practical context. This approach emphasizes active student engagement, the development of critical thinking skills, and better problem-solving skills(Simanjuntak et al., 2021). On the other hand, the Scientific approach in social studies learning emphasizes scientific processes, such as observation, experimentation, and data analysis. This approach can process

learning by giving students the opportunity to explore and understand social studies concepts through a more structured and evidence-based method.

The integration of Project-Based Learning (PBL) with a scientific methodology within the domain of social studies education holds considerable promise for enhancing the learning outcomes of students(Hidajat, 2023). This innovative educational framework not only fosters a more engaging and participatory environment for students, enabling them to take charge of their own learning journey, but it also cultivates essential analytical and critical thinking skills that are imperative for comprehending the intricate and multifaceted nature of contemporary social issues. Nevertheless, despite the potential advantages and transformative impact of this pedagogical approach, there remains a pressing need for further empirical research to thoroughly investigate the degree to which the implementation of the PBL model, in conjunction with a scientific approach, can effectively influence and improve the educational outcomes of students in the sixth grade(Anazifa & Djukri, 2017).

The foremost aim of this academic journal is to meticulously investigate the strategic and thoughtful application of the Project-Based Learning (PBL) model, in conjunction with a rigorous scientific methodology, specifically within the framework of social studies curricula, all with the overarching intention of significantly improving the academic performance and enriching the educational experiences of sixth-grade students(Yew & Goh, 2016). Through the execution of this research initiative, it is expected that a wealth of valuable insights will be acquired concerning the effectiveness and practical implementation of these educational methodologies, which could greatly influence the creation of more innovative, efficient, and captivating learning strategies that are suitable for adoption within elementary educational environments. Ultimately, the findings from this scholarly inquiry are intended to contribute to the ongoing discourse surrounding effective teaching practices and to provide actionable recommendations that enhance the learning landscape for young learners in social studies education(Amin et al., 2021).

## B. RESEARCH METHODS

This particular research methodology involves conducting a comprehensive literature review that draws from a diverse array of pertinent sources, including but not limited to, scholarly journals and peer-reviewed articles that thoroughly examine various strategies for implementing the Problem-Based Learning (PBL) model in conjunction with a scientific approach specifically tailored for science subjects, with the ultimate objective of enhancing student learning outcomes. This rigorous process is executed through the administration of a meticulously designed questionnaire, followed by the application of statistical analysis techniques such as the T Test, which serves to quantify and evaluate the data collected. The conclusions derived from this extensive analysis aim to elucidate the learning outcomes of students, thereby offering valuable insights and a clearer understanding of the effective strategies for employing the PBL model alongside a scientific approach in the context of IPA subjects, all in a concerted effort to significantly improve student learning outcomes.

## C. RESULTS AND DISCUSSION

Hamruni, as noted by Ridwan in 2013 on page 124, has articulated that the educational methodology known as Problem Based Learning (PBL) has its origins rooted in the philosophical framework of constructionism, which posits that students are effectively engaged and trained in enhancing their reasoning abilities by actively compiling and synthesizing their knowledge through the resolution of real-world problems that they encounter in their academic pursuits. When participating in learning activities, the cognitive processes that can be fostered through the application of the PBL model commence with several critical stages, which include the formulation of a strategic plan aimed at addressing the issue at hand, engaging in generative thinking that allows for the creation of new ideas and solutions, and employing systematic thinking that organizes thoughts in a coherent and logical manner to navigate the complexities of the problem. During these educational engagements, students are encouraged to immerse themselves in the process of tackling authentic challenges that exist in the world around them, where they are required to diligently gather and analyze information related to the problems at hand, all while collaborating in groups that promote inter-disciplinary learning, and it is imperative that each student actively contributes their unique perspectives and ideas to the collective effort.

According to Usman (2014: 232), Problem Based Learning (PBL) is characterized by several distinct features that play a crucial role in the educational process, which includes the utilization of problems that serve as a central reference point during the learning journey. In the context of their academic endeavors, students are required to engage with and resolve existing issues, thereby actively participating in the identification and exploration of relevant challenges. These issues are not merely hypothetical constructs; rather, they are tangible problems that genuinely exist in the immediate environment surrounding the learners, and tackling these challenges necessitates the application of the knowledge, attitudes, and skills that students have acquired throughout their educational experience. One of the pivotal aspects of PBL is the emphasis on recognizing individual learning needs and fostering self-directed learning, which is paramount for achieving success in this approach, as it inherently requires collaboration among peers and the enhancement of communication skills. The process of addressing these problems involves a thorough evaluation and reflection upon students' prior experiences, as well as a critical review of the overall learning process to ensure that valuable insights are gained. To assess the effectiveness of this pedagogical strategy, a systematic approach is taken, which may include the implementation of statistical testing methods such as the T Test, thereby providing a robust framework for analyzing outcomes and efficacy.

H0 : there was no influence between the PBL model and scientific strategies on improving learning outcomes

H1 : there is an influence between the PBL model and scientific strategies on improving learning outcomes

t-Test: Two-Sample Assuming Equal Variances

| | *Variable 1* | *Variable 2* |
|---|---|---|
| Mean | 50 | 41 |
| Variance | 0 | 40,27586 |
| Observations | 30 | 30 |
| Pooled Variance | 20,137931 | |
| Hypothesized Mean Difference | 0 | |
| Df | 58 | |
| t Stat | 7,76749021 | |
| P(T<=t) one-tail | 7.5186E-11 | |
| t Critical one-tail | 1,67155276 | |
| P(T<=t) two-tail | 1.5037E-10 | |
| t Critical two-ta | 2,00171748 | |

P value < 0.05 then H0 is accepted and H1 is rejected
P value > 0.05 then H0 is rejected and H1 is accepted

Conclusion: It can be confidently asserted that there exists a substantial and noteworthy influence between the Problem-Based Learning (PBL) model and the scientific approach on educational outcomes for learners, indicating that this relationship is not only significant but also pivotal in the realm of education.

The findings derived from this extensive and meticulously conducted study lend considerable support to the hypothesis that the thoughtful integration of the PBL model, particularly when it is harmoniously combined with a scientific approach, possesses the remarkable potential to significantly enhance the academic achievements and overall educational experiences of students. This specific PBL model, which places a strong emphasis on the cultivation of problem-solving strategies, creates a plethora of opportunities for students to engage actively and meaningfully in their educational journeys, while the scientific approach further enriches this invaluable learning experience by immersing students in a diverse array of scientific activities that promote the development of critical and analytical thinking skills, which are absolutely essential for their intellectual growth and future success.

Within this comprehensive educational framework, students are presented with the extraordinary opportunity to not only delve deeply into theoretical knowledge but also to forge significant and meaningful connections that link the concepts they have diligently learned to their practical applications in the real world, which is undoubtedly pivotal in cultivating a positive and lasting impact on their overall learning outcomes and academic success.

In conclusion, the synergistic effect that arises from the implementation of the Project-Based Learning (PBL) model in conjunction with a scientific approach within educational environments highlights the critical importance of innovative teaching methodologies that

place a premium on student engagement and the application of knowledge to real-world scenarios, thereby significantly enhancing the effectiveness of the learning process and ultimately contributing to an elevation in academic performance and student achievement.

## D. CONCLUSION

The implementation of the Project-Based Learning (PBL) model, when integrated with a scientific approach to the subject matter of IPAS, underscores the necessity for learning activities to incorporate a comprehensive cognitive process that encompasses various types of thinking, which include but are not limited to analytical thinking, strategic planning, generative ideation, systematic reasoning, and analogous thought processes; within this framework, students are not only encouraged to tackle complex problems but are also provided with an open forum in which each individual can articulate and share their unique perspectives and ideas. Furthermore, the data collected for this study were derived from meticulously conducted research, which involved the distribution of carefully formulated questionnaires, and the findings unequivocally indicate that the combined application of the PBL model alongside the scientific methodological approach exerts a profoundly significant influence on the educational outcomes observed among the participants. In light of these compelling results, it becomes increasingly evident that the integration of such innovative pedagogical strategies is instrumental in enhancing student engagement and fostering a deeper understanding of the subject matter at hand.

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