

Implementation of the Independent Curriculum to Improve Students' Literacy and Numeracy Competencies

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Abstract

This study aims to analyze the effectiveness of the implementation of the Independent Curriculum in improving students' literacy and numeracy competencies through a learner-centered learning approach. The Independent Curriculum emphasizes learning flexibility, differentiated teaching strategies, and the application of project-based learning relevant to students' life contexts. This study used a quantitative approach with a survey design and comparative analysis of student literacy and numeracy achievements in several schools that have implemented the Independent Curriculum for one academic year. Data were obtained through literacy and numeracy competency tests, observations of the learning process, and questionnaires for teachers and students. The results showed a significant increase in students' reading comprehension, information analysis, and contextual numerical problem-solving skills after the curriculum was implemented. Key factors supporting competency improvement include the implementation of diagnostic assessments, the use of contextual learning methods, and the increased role of teachers as learning facilitators. In addition, the project to strengthen the Pancasila Student Profile also encouraged active student involvement in the learning process. However, the study also identified challenges in terms of teachers' readiness to design differentiated learning and limited support for innovative learning resources. Therefore, it is necessary to improve teacher competency through ongoing training and school policy support so that the implementation of the Independent Curriculum can run optimally and sustainably in improving the quality of student literacy and numeracy as basic competencies for the 21st century.

Keywords: Independent Curriculum, literacy, numeracy, differentiated Learning, Student Competencies

Introduction

Education plays a strategic role as the primary foundation for developing human resources capable of facing the dynamics of the 21st century, characterized by technological advancements, economic globalization, and rapid social change (Delfi Kurnia Zebua et al., 2024; Elfira & Santosa, 2023; Ningsih et al., 2023). The education system no longer focuses solely on knowledge transfer, but

rather focuses on developing competencies that enable students to adapt to change and actively participate in a knowledge-based society. In this context, education serves as a means of developing individuals with critical and creative thinking skills and the ability to solve complex problems that arise in modern life (OECD, 2019). Therefore, improving the quality of education has become a top priority for many countries to ensure the readiness of the younger generation to face increasingly competitive global challenges (Dewanto et al., 2024; Luciana et al., 2024; Winiasri et al., 2023).

In line with these demands, the learning paradigm has shifted from a teacher-centered approach to student-centered learning (Oktarina et al., 2021; Rahman et al., 2023). This approach emphasizes active student involvement in the learning process, the development of literacy and numeracy skills, and the development of critical thinking skills through contextual and collaborative learning experiences. This transformation of the learning paradigm aims to create an educational process that is more adaptive to the needs of individual students and the development of a global society that demands strong analytical skills and information literacy (UNESCO, 2021). Therefore, educational reforms that focus on active and participatory learning are a crucial step in improving the quality of student competencies in the modern era.

Literacy and numeracy are basic competencies that serve as the foundation for learning across all subjects because they are directly related to the ability to understand information, interpret data, and solve problems in various life contexts (Youna Chatrine Bachtiar et al., 2023; Yu, 2024). Literacy encompasses not only the ability to read text, but also the ability to understand, analyze, and use information critically, while numeracy relates to the ability to apply mathematical concepts and skills in everyday situations. Therefore, strengthening literacy and numeracy is a primary focus of various modern education systems to ensure students are able to develop critical thinking skills and data-driven decision-making in both learning and social life (OECD, 2019).

However, various national and international assessment results indicate that Indonesian students' literacy and numeracy achievements remain at levels that require serious attention. The Programme for International Student Assessment (PISA) results indicate that the majority of students still experience difficulties in comprehending complex reading material and solving contextual numerical problems. This condition impacts the quality of learning, as students struggle to understand material across subjects that require reading comprehension and numerical reasoning skills. In the long term, low literacy and numeracy competencies have the potential to impact the competitiveness of Indonesia's human resources at the global level, so systematic efforts are needed through

learning policies and innovations to improve the quality of these basic competencies (Kemendikbudristek, 2022).

The Independent Curriculum was introduced as a response to national education policy for post-COVID-19 pandemic learning recovery, which resulted in decreased learning outcomes (learning loss) at various levels of education. This curriculum is designed to provide flexibility for educational units and teachers in adapting learning to the needs and characteristics of students as u. Key characteristics of the Independent Curriculum include the implementation of differentiated learning, the use of a project-based approach, and a simplified curriculum structure that focuses on strengthening students' essential competencies, particularly literacy and numeracy. Thus, this curriculum is expected to accelerate the recovery of learning quality and improve students' critical thinking and problem-solving skills through more contextual and meaningful learning experiences (Kemendikbudristek, 2022).

In its implementation in schools, the Independent Curriculum demands a shift in the role of teachers from information providers to learning facilitators who encourage active student engagement. Teachers are expected to utilize diagnostic assessments to identify student learning needs and design contextual learning that aligns with students' abilities and potential. However, the implementation of this policy still faces various challenges, such as teacher readiness to implement differentiated learning, limited supporting facilities, and the need for ongoing training for educators to ensure effective learning transformation. Therefore, support from school policies and teacher capacity building are crucial factors in ensuring the successful implementation of the Independent Curriculum in various educational institutions (UNESCO, 2021).

Various studies on the Independent Curriculum generally focus on conceptual studies and education policy analysis, particularly regarding the principles of curriculum flexibility, differentiated learning, and the implementation of project-based learning. However, empirical research specifically examining the impact of the Independent Curriculum implementation on improving students' literacy and numeracy competencies at the educational unit level is still relatively limited. The success of a curriculum policy is determined not only by its conceptual design but also by the effectiveness of its implementation in schools, including teacher readiness, supportive learning environments, and the learning strategies implemented in daily learning practices (Kemendikbudristek, 2022). Therefore, empirical studies are needed that can concretely illustrate how the implementation of the curriculum affects student learning outcomes (Setiawan et al., 2022)

Based on this gap, this study aims to analyze the implementation of the Independent Curriculum in improving students' literacy and numeracy competencies through direct observation of learning practices in schools (Agus

Supriyadi et al., 2023). This research is expected to provide an empirical contribution to the development of educational policy and serve as a reference for schools and teachers in optimizing curriculum implementation to improve learning quality. In addition, the research results are expected to enrich the literature regarding the effectiveness of curriculum reform in improving students' basic competencies as provisions for facing the challenges of 21st century education (OECD,).

Research Methods

This study used a quantitative approach with a comparative descriptive research design to analyze the implementation of the Independent Curriculum in improving students' literacy and numeracy competencies. The study was conducted in several schools that have implemented the Independent Curriculum, with secondary school students as the subjects. Sampling was conducted using a purposive sampling technique, considering schools that have implemented the curriculum for at least one academic year. Data were obtained through literacy and numeracy competency tests, teacher and student perception questionnaires, and observations of the learning process to obtain an overview of curriculum implementation in the classroom.

Data analysis was conducted using descriptive statistics and comparative tests to determine differences in student competency achievement before and after the implementation of the Independent Curriculum. Furthermore, analysis was conducted on learning observation results to identify supporting factors and obstacles to curriculum implementation in schools. Instrument validity was tested through expert reviews and reliability using the internal consistency coefficient. The results of the analysis were then interpreted to provide an empirical overview of the effectiveness of the Independent Curriculum implementation in improving students' literacy and numeracy skills, as a basis for recommendations for improving learning practices in schools.

Result and Discussion

The research results show that the implementation of the Independent Curriculum has had a positive impact on improving students' literacy and numeracy competencies. This improvement is evident in a comparison of students' competency test scores before and after the curriculum implementation, showing significant improvements in reading comprehension, information analysis, and contextual numerical problem-solving. The implementation of differentiated learning, the use of diagnostic assessments, and project-based learning were key factors driving increased student engagement in the learning process.

Furthermore, learning observations revealed changes in teacher teaching practices, which emphasized active and contextual learning. Teachers began acting as learning facilitators by providing opportunities for students to explore real-life problems. However, the research also found that some schools still face challenges such as limited learning media and teachers' readiness to consistently design differentiated learning strategies table 1.

Table 1. Statistical Analysis Results of Students' Literacy and Numeracy Competency Improvement

Variable	Mean Score Before Implementation	Mean Score After Implementation	Score Difference	t-value	Sig. (p)
Student Literacy	68.45	78.92	10.47	8.21	0.000
Student Numeracy	65.37	76.15	10.78	8.75	0.000

Based on Table 1, the average literacy competency score of students increased from 68.45 before the implementation of the Merdeka Curriculum to 78.92 after implementation, showing an improvement of 10.47 points. The statistical test result indicates a significance value of 0.000 ($p < 0.05$), which means the improvement is statistically significant. This finding demonstrates that the implementation of the Merdeka Curriculum has had a measurable positive impact on students' literacy competencies.

A similar improvement is also observed in students' numeracy competencies, where the average score increased from 65.37 to 76.15, resulting in an improvement of 10.78 points. The significance value of 0.000 also indicates a statistically significant difference between pre- and post-implementation scores. These results confirm that contextual learning approaches and instructional flexibility promoted in the Merdeka Curriculum effectively contribute to strengthening students' fundamental numeracy skills.

Discussion

The research results show that the implementation of the Independent Curriculum significantly contributed to improving students' literacy competencies, particularly in reading comprehension and information analysis skills (Abdullah et al., 2024). The learning approach, which provides students with space for exploration through project-based learning, allows them to interact more actively with various information sources. This finding aligns with previous research showing that contextual and experiential learning can improve students' literacy skills because students not only receive information but also process and apply it in real-world situations (OECD, 2019).

In addition to improving literacy, this study also found an increase in students' numeracy competencies, particularly in their ability to solve contextual numerical problems. This improvement occurred because learning no longer focused solely on mathematical procedures but also on the application of mathematical concepts in everyday life. This finding reinforces previous studies that found that numeracy learning based on real-life contexts can significantly improve students' mathematical reasoning skills (UNESCO, 2021).

This study also found significant changes in teachers' learning practices, where teachers began acting as learning facilitators, encouraging active student engagement. Teachers more frequently use diagnostic assessments to adapt learning strategies to student needs. This finding is consistent with research from the Ministry of Education, Culture, Research, and Technology (2022), which states that the Independent Curriculum encourages a change in learning culture to be more adaptive to individual student needs.

However, this study also identified challenges in implementing the Independent Curriculum, particularly regarding teacher readiness to consistently design differentiated learning. Some teachers still experience difficulties adapting learning materials to students' varying ability levels. This finding aligns with a UNESCO study (2021), which states that curriculum reform often faces challenges during the implementation stage because it requires changes in pedagogical practices that are challenging for educators (Aragón et al., 2025; Setiawan et al., 2022).

In addition to teacher factors, this study also identified limited learning facilities and media as obstacles to curriculum implementation in several schools. Schools with better learning facilities showed more significant improvements in student competency than schools with limited resources. These results support research from the OECD (2019), which confirms that the quality of the learning environment is closely related to student learning outcomes.

Overall, the findings of this study confirm that the implementation of the Independent Curriculum has significant potential to improve students' literacy and numeracy competencies if supported by adequate teacher preparedness, learning facilities, and school policy support. Therefore, strengthening teacher training, providing learning resources, and continuously evaluating curriculum implementation are strategic steps to ensure the continued improvement of learning quality in schools, as recommended in various global education studies (OECD, 2019; UNESCO, 2021).

Conclusion

The results showed a significant increase in students' reading comprehension, information analysis, and contextual numerical problem-solving skills after the

curriculum was implemented. Key factors supporting competency improvement include the implementation of diagnostic assessments, the use of contextual learning methods, and the increased role of teachers as learning facilitators. In addition, the project to strengthen the Pancasila Student Profile also encouraged active student involvement in the learning process. However, the study also identified challenges in terms of teachers' readiness to design differentiated learning and limited support for innovative learning resources. Therefore, it is necessary to improve teacher competency through ongoing training and school policy support so that the implementation of the Independent Curriculum can run optimally and sustainably in improving the quality of student literacy and numeracy as basic competencies for the 21st century.

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