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IMPROVING LEARNING QUALITY AND STUDENT NUMERACY THROUGH DATA DRIVEN PLANNING AT SMAIT MA'HAD RABBANI

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ABSTRACTS

This research was conducted to improve the quality of learning and numeracy skills of students at SMAIT Ma'had Rabbani Central Bengkulu through the implementation of data-based planning. The background of this research is the results of the 2023 SMAIT Ma'had Rabbani Education Report Card, which shows that the learning quality and numeracy indicators have the lowest scores, 56.72 and 35.48 respectively, while the Diversity Climate indicator achieves the highest score, 64.54. This research uses a supervisory action design using the data-based planning method with four main steps: identification, reflection, improve planning, and improve implementation. The results showed that the implementation of data-based planning had a significant impact on improving the indicators studied. The quality of learning increased by 11.97%, with the achievement reaching 68.69 in 2024. Meanwhile, numeracy skills experienced a very significant increase of 50.88%, with a score of 86.36 in the same year, making it the indicator with the best achievement. This research proves that the systematic implementation of data-based planning strategies is effective in driving improvements in the quality of education, especially in improving the quality of learning and students' numeracy skills. This strategy can serve as a model for other educational institutions in their efforts to improve educational outcomes through a data-driven and resultsoriented approach.

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A. INTRODUCTION

The Education Report Card is a crucial instrument that serves as a tool for evaluating and mapping the quality of education services in every educational institution. Through this document, schools can see a comprehensive picture of the actual condition of education covering various important aspects, ranging from academic to non academic capabilities (Musakirawati dkk., 2023). As an evaluative document, the Education Report Card helps schools to understand their position and performance in meeting established education standards, both locally and nationally. This data-driven evaluation has proven effective in improving accountability and decision-making in education.

One of the strengths of the Education Report Card is its broad scope, covering key indicators such as literacy, numeracy, strengthening student character, climate of safety, climate of diversity and quality of learning. It provides an in-depth picture of the elements that influence the success of the education process. For example, literacy and numeracy are important markers of student success in academics, while indicators such as safety climate and diversity show how well the school environment supports comfort and diversity. Ganimian & Murnane (2016), state that data collection based on these indicators is a strategic step to ensure the success of education policies.

More than just a measurement tool, the Education Report Card also serves as a strategic guide in developing policies and programs for overall quality improvement. The data presented allows schools to design specific and relevant improvement measures, ranging from developing learning methods to increasing the capacity of educators. Using data as a basis for decision-making significantly increases the effectiveness of education policy implementation. Other research shows that integrating information technology into data-driven evaluation can help schools conduct more accurate analysis and accelerate improvement. (Musakirawati dkk., 2023)

The benefits of the education report card are also seen at the macro policy level. Structured analysis allows governments to evaluate the success of education programs nationally and identify areas or schools that require greater attention. For example, Integrating Formative and Summative Assessment (2011), emphasizes that clear and measurable indicators in documents such as the education report card can improve transparency, accountability and the effectiveness of education interventions in various contexts.

The implementation of comprehensive data-based policies has been proven in various countries to be a key tool in improving the quality of education services. For example, research by Luyten dkk., (2005), showed that countries with good data-based education evaluation systems, such as Finland and South Korea, succeeded in creating a more inclusive and globally competitive education environment. Based on this, it is important for educational institutions in Indonesia to make maximum use of the Education Report Card in designing strategies to improve the quality of education in a sustainable manner.

SMAIT Ma'had Rabbani has a vision to provide quality education services that are able to produce superior generations in academics and character. However, the challenges in achieving this vision became increasingly apparent after analysis of the Education Report Card data in 2023 showed a decrease in the majority of achievements compared to 2022. This decline is a major concern, given the importance of the

indicators in the Education Report Card as a reflection of the quality of school education. The following table presents a comparison of the overall Education Report Card results between 2023 and 2022:

Table 1. Education Report Card of Ma'had Rabbani IT High School in 2022 and 2023

No	Priority Indicator	Score 2022	Score 2023	Delta Score	Achievement	Rank in Province (% quintile)
1.	Literacy	88,89	67,74	Decrea sed 23,79%	Moderate (67,74% of students have reached minimum competency)	Upper middle rank (21-40%)
2.	Numeracy	53,33	35,48	Decrea sed 33,47%	Poor (35,48% of students have reached the minimum competency)	Middle rank (41-60%)
3.	Character	64,87	52,23	Decrea sed 19,49%	Good	Lower middle rank (61-80%)
4.	School safety climate	78,6	61,49	Decrea sed 21,77%	Good	Lower middle rank (61-80%)
5.	Diversity climate	62,73	64,54	Ascend ing 2,89%	Good	Middle rank (41-60%)
6.	Learning quality	66,44	56,72	Decrea sed 14,63%	Poor	Lower rank (81-100%)

Source: Education Report Card Data for 2022 and 2023

From the table above, it can be seen that among all achievements in 2023, Climate of Diversity is the indicator with the highest achievement with a score of 64.54, an increase of 2.89% from the previous year. This increase reflects the strengthening of diversity values in schools, such as tolerance, respect for differences, and inclusion in the learning environment. On the other hand, learning quality and numeracy were the lowest-achieving indicators, indicating significant challenges in these aspects.

Quality of learning, for example, recorded a score of 56.72, which represents a decline of 14.63% compared to the previous year with a score of 66.44. This decline indicates that classroom management, the application of interactive learning methods, and the adaptation of learning strategies to student needs have not been optimal. Several studies have shown that data based interactive and adaptive learning can have a positive impact on student learning outcomes (Hattie, 2012). This decline emphasizes the need for deep reflection on the learning methods and strategies used, including the use of technology and collaborative approaches in the classroom.

In addition, the numeracy score reached 35.48, which shows a drastic decrease of 33.47% compared to the previous year with a score of 53.33. This score indicates that students' ability to use math concepts to solve everyday problems is still at a concerning level. Low numeracy skills reflect the lack of integration of mathematical concepts in the context of students' daily lives. This is in line with research findings which state that low numeracy is often caused by the lack of learning experiences relevant to the real world Darling-Hammond dkk., (2020) Therefore, measurable and comprehensive improvement strategies are needed, such as the implementation of data-driven planning through IRBB (Identify, Reflect, Improve Planning, and Improve Implementation), which is designed to address specific and sustainable problems. This strategy has been proven to improve learning outcomes in various educational contexts (Budi Teguh Harianto, 2023).

B. METHODS

The research method used in this study is supervisory Action Research by implementing a data-driven planning strategy. This approach refers to a framework consisting of four main steps: Identify, Reflect, Improve Planning, and Improve Implementation (M.AP & Haeriyah, 2024). The methodology is designed to optimally utilize data in the decision-making process. In the Identification stage, the school collects various data from the education report card achievements. The data is then analyzed to determine the main problems faced, both in academic aspects, school management, and student character development. After that, an exploration is conducted to explore the main causes of the problems that have been identified, resulting in a strong basis for designing relevant improvement measures.

The next stage is Reflection, where the school evaluates the data and identification results to ensure a deeper understanding of the problems and opportunities for improvement. This process involves discussions with various stakeholders, including teachers, students, principals and parents, to gain diverse perspectives. In addition, literature analysis and benchmarking with best practices from other schools facing similar challenges were conducted. The results of this reflection were then formulated into initial recommendations to guide the planning.

In the Improve Planning stage, schools design data-based solutions with a primary focus on the relevance of the planned programs and strategies to the needs and problems of the school. The steps taken include the preparation of learning organization and learning planning, mapping the need to improve the competence of educators and education personnel, compiling programs in the form of school activity plans and school activity and budget plans.

The last stage is Benahi Implementation, which is the implementation of plans that have been prepared with the continuous use of data. The programs designed are implemented gradually by involving all elements of the school. Monitoring and evaluation are conducted regularly to monitor the progress of the program and provide feedback that can be used to improve implementation in the field. If obstacles or suboptimal results are found, revisions are made based on the latest data to ensure the program remains relevant and effective. Overall, this strategy is expected to improve the quality of education at SMAIT Ma'had Rabbani in a sustainable and systematic manner.

C. RESULTS AND DISCUSSION

Findings

In an effort to effectively improve the quality of learning and numeracy skills of students, the implementation of data-based planning through IRBB Plus is a significant strategy. This process is designed to systematically utilize data in every stage of learning planning and implementation. IRBB Plus, which is an acronym for Identify, Reflect, Improve Planning, and Improve Implementation, presents a comprehensive approach that enables optimal management of data-driven learning.

The first stage is identification, which is a process for schools to understand the achievements and processes that have gone well and identify those that still need to be improved, including the factors that influence them (Mundaryati, 2022). In the 2023 education report card, the main problem identified is the low quality of learning and students' numeracy skills, as shown below.

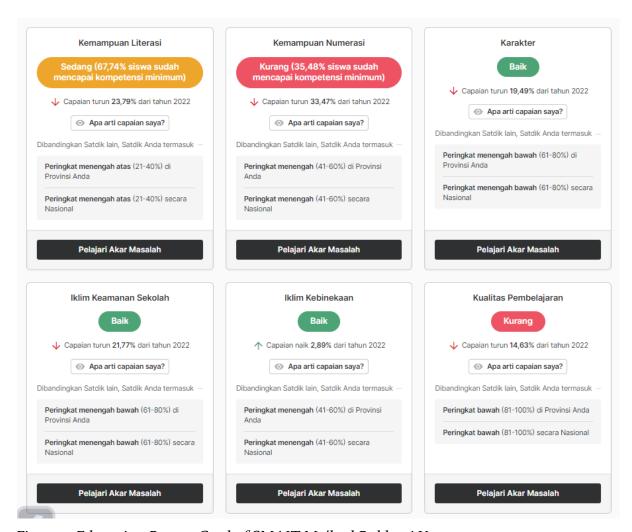


Figure 1. Education Report Card of SMAIT Ma'had Rabbani Year 2023

The second stage is reflection, which is a systematic effort by school members to identify areas that require improvement and enhancement of service quality (Kristiawan, 2023). From the results of the 2023 education report card, data on sub-indicators that affect the quality of learning and numeracy are obtained as in the diagram below.





Diagram 1. Sub indicators affecting learning quality and numeracy

The results of reflection and data analysis of the 2023 education report card show that the low quality of learning is caused by suboptimal learning methods, with a score of 51.14, due to the lack of interactive learning practices that are in accordance with the objectives and needs of students. Meanwhile, students' low numeracy achievement is caused by students' weak ability to manage data and uncertainty, with a score of 48.4, which shows students' difficulty in using mathematical concepts and tools to solve everyday problems. Therefore, the application of interactive learning methods and students' habituation in processing data and uncertainty are priority indicators that must be improved.

After determining the priority indicators that need to be improved, the third step is to improve the planning. To ensure the implementation of interactive learning methods and student habituation in processing data and uncertainty, it is necessary to develop effective planning. The steps we have taken include designing a learning organization that includes intracurricular, co-curricular, and extracurricular learning as shown below.



Figure 2: Learning Organization of SMAIT Ma'had Rabbani

The next step is to map the competency improvement needs of educators and education personnel (PTK) in order to implement the designed learning. This process includes identifying the role of the PTK, the learning needs of the PTK, and the learning resources required, such as training and participation in learning communities. Next is developing an improvement program in the form of an Annual Activity Plan (RKT) and School Activity and Budget Plan (RKAS).

After developing the improvement plan, the next step is to fix the implementation. Program implementation is closely related to planning because good implementation always rests on the established plan. At this stage of implementation there are four stages that we have done, namely: developing a timeline for the implementation of learning, communicating timelines and roles of each school community through teacher meetings, implementation according to timelines and roles, and monitoring and evaluation (money) to ensure that all programs run according to objectives.

The implementation of data-based planning through IRBB has had a significant positive impact. Based on the 2024 Education Report Card data, there is a clear improvement. Several sub-indicators that are at the root of the problem of low learning quality and student numeracy skills have shown improvement, as seen in the diagram below.

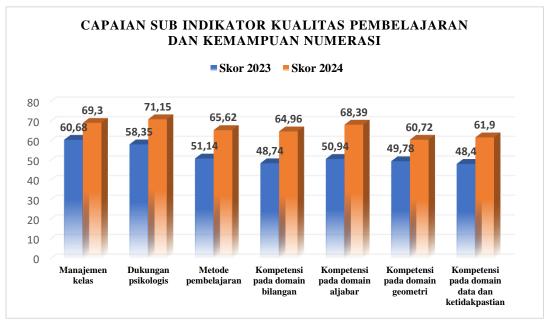


Diagram 2. Sub indicators of Learning Quality and Numeracy Skills

Based on the diagram above, all sub-indicators that contributed to the improvement of learning quality and students' numeracy skills showed a significant positive trend. The average learning quality increased by 11.97%, while students' numeracy skills experienced a surge with an average increase of 50.88%. This data illustrates that the implementation of interactive learning practices designed in accordance with learning objectives, student characteristics, and learner competencies in understanding and applying mathematical concepts, procedures, facts, and tools has been effective.

This success reflects the results of the implementation of learning strategies that are oriented towards strengthening analytical skills and the application of mathematical concepts in real contexts. The improvements that have occurred not only show progress in the learning process, but also have a direct impact on overall educational achievements, as reflected in the 2024 education report card results (Kaputama dkk., 2023) As illustrated in the diagram,



Diagram 3. Sub indicators of learning quality and students numeracy skills

From the diagram above, it can be seen that all indicators of achievement in 2024 have increased. Learning quality increased by 11.97% compared to 2023, with an achievement of 68.69. This is due to an average increase of 11.97% in the sub-indicators that support learning quality compared to the previous year. Meanwhile, numeracy recorded a significant increase of 50.88%, reaching 86.36 in 2024, making it the best indicator, with the average numeracy sub-indicator up 14.5% from the previous year.

Analysis / Discussion

The first stage of IRBB (Identification, Reflection, Improve Planning, Improve Implementation) is Identification, which focuses on collecting and analyzing data to identify challenges and potentials in the learning process. This stage is an important foundation because the quality of the data collected will determine the accuracy of the analysis and the effectiveness of the steps to be taken next. The data collected includes various sources, such as student assessment results, direct observation of the teaching-learning process, and input from various stakeholders, including teachers, students and parents.

In this study, we used the 2023 Education Report Card as the main data source. The Education Report Card was chosen because it provides a comprehensive picture of the actual conditions in schools, including academic and non-academic achievements, such as literacy, numeracy, diversity climate and learning quality. This data is considered more accurate and reliable because it is based on measurable indicators that

have been determined nationally. By analyzing this data, schools can identify which aspects need special attention and which areas have the potential for further improvement (Wardana, 2024).

The importance of using data in educational decision-making is also supported by various studies. The study conducted by Mintrop & Trujillo (2007), shows that the use of accurate and evidence-based data can increase the effectiveness of learning interventions by up to 30%. Data helps schools to design more specific and measurable policies that address real problems in the field. For example, if the data shows that students' numeracy skills have decreased significantly, then interventions focused on improving math teaching methods or strengthening basic numeracy concepts can be implemented in a more targeted manner. Thus, a thorough identification process through the collection of relevant data is a crucial step in ensuring the success of efforts to improve the quality of education in schools.

The second stage of IRBB is Reflection, where the data that has been collected in the identification stage is analyzed in depth to evaluate the existing strengths, weaknesses, opportunities and challenges. This reflection process not only aims to understand the actual conditions, but also to identify the root causes that hinder the improvement of learning quality. By systematically analyzing the data, the school can gain deeper insights into the effectiveness of the learning strategies that have been implemented as well as the factors that contribute to students' low achievement in various indicators (Hartmann dkk., 2023).

In this study, reflection on the Education Report Card data revealed two main problems that need to be addressed immediately. First, the low quality of learning as reflected in the score of 51.14. This is caused by less than optimal learning methods, especially the lack of interactive learning practices that are in line with learning objectives and student needs. Conventional methods cause students to be less actively involved in the learning process, so that learning objectives are not achieved optimally. Secondly, the reflection also found that students' low numeracy achievement was caused by their weak ability to manage data and deal with uncertainty, with a score of 48.4. This data shows that many students have difficulty in using mathematical concepts and tools to solve problems in everyday life.

This finding is reinforced by research conducted by Lefebvre dkk., (2023) which states that data-based reflection is a crucial step in understanding the factors that influence student learning outcomes. With reflection that focuses on in-depth analysis of data, teachers and education leaders can identify areas that need intervention and devise more targeted improvement measures. For example, if reflection shows that teaching methods are not interactive enough, schools can encourage the implementation of discussion-based learning methods, projects or other practical approaches that engage students more. Similarly, with weaknesses in numeracy, this reflection can be the basis for developing more applicable learning strategies, such as contextual learning that involves solving real problems. Thus, data-based reflection becomes an important milestone in formulating systematic improvement steps that have a positive impact on the quality of learning and students' abilities.

The third stage of IRBB is Benahi Perencanaan, which focuses on developing more effective lesson plans based on the results of identification and reflection. This stage is key in ensuring that the problems identified are addressed through structured and systematic steps (Mundaryati, 2022). Benahi Perencanaan starts by designing a learning organization that covers various dimensions, such as intracurricular, co-curricular and extracurricular learning. This strategy is designed to make learning run in an integrated and comprehensive manner to increase student engagement in various educational activities. For example, co-curricular programs such as math clubs or project-based extracurricular activities can be used to address students' difficulties in numeracy.

The next step in this stage is to map the need to improve the competence of educators and education personnel (PTK). This is done so that educators have adequate capacity and skills to implement the lesson plans that have been designed. The mapping process includes identifying the role of PTK, learning needs, and learning resources required. These needs can be met through various forms of professional development, such as training, workshops, and participation in learning communities or teacher forums. Thus, educators are expected to be able to adopt more interactive, contextual and student-centered learning methods, so as to answer the challenges identified in the reflection stage.

In addition, this stage also involves developing concrete improvement programs in the form of Annual Activity Plans (RKT) and School Activity and Budget Plans (RKAS). This ensures that all programs designed have a clear and measurable basis for implementation and budgeting. With this approach, efforts to improve the quality of learning and numeracy can be more targeted and sustainable. In line with the findings of Darling-Hammond dkk., (2020), data-driven planning creates learning that is more personalized and tailored to students' needs, thus significantly improving students' competencies, including numeracy. With good and sustainable planning, schools are able to create an effective learning environment and focus on improving the quality of educational outcomes.

In this research, the last stage discussed is Fix Implementation, which aims to ensure that the plans that have been developed are implemented consistently and in accordance with the goals that have been set. At the implementation stage, the process involves four main steps, namely the preparation of a timeline for the implementation of learning, communication of the timeline and roles of each school member through teacher meetings, implementation according to the timeline and roles, and monitoring and evaluation (money) to monitor the progress and effectiveness of the program. This approach is in line with Kiriana dan Widiasih (2023) view, which states that continuous use of data throughout the implementation process can strengthen learning effectiveness and increase student participation. The emphasis on monitoring and evaluation serves to ensure that the program runs according to the expected goals.

With the IRBB approach, data-driven planning not only improves the efficiency of learning management, but also supports the development of students' numeracy skills significantly. This strategy allows for more adaptive, evidence-based and oriented learning to improve the overall quality of education.

D.CONCLUSION

The systematic implementation of data-based planning involving the stages of identification, reflection, improved planning, and improved implementation has had a significant positive impact on improving the quality of learning and student numeracy skills. This improvement is reflected in the data that shows a striking change in all achievement indicators from 2023 to 2024. The quality of learning increased by 11.97%, with the final achievement reaching 68.69. This increase was also followed by an average increase of 11.97% in the sub-indicators supporting learning quality, indicating that the data-based planning approach is able to strengthen various aspects of learning as a whole.

Meanwhile, students' numeracy skills recorded the most significant increase of 50.88%, reaching 86.36 in 2024. Numeracy is the most prominent indicator, supported by an average increase of 14.5% in all sub-indicators. This indicates that the data-based planning strategy is not only effective in improving the quality of learning in general, but also highly optimized in encouraging the mastery of specific competencies such as numeracy.

Thus, this study provides empirical evidence that data-driven planning can be a strategic approach in improving the effectiveness of learning processes and student outcomes. This approach also has the potential to be applied more widely, both in other subjects and at different levels of education, to achieve more optimal results in the education system as a whole.

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