

Empowering Learning Community Through Educational Technology Engagement Initiative to Strengthen The Teachers' Literacy and Numeracy Competency

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Abstract

Based on the 2023 education report card data, 76 elementary and junior high school levels in Banjarmasin still need to strengthen literacy and numeracy competencies. In order to support the improvement of the quality of education, especially in Banjarmasin, through educational technology outreach and involvement initiatives, the Educational Technology Study Program carries out community learning assistance activities to strengthen literacy and numeracy. Assistance is carried out with an inquiry cycle consisting of 4 stages: reflection, planning, implementation, and evaluation. The reflection stage produces notes on efforts to improve student's literacy and numeracy competencies that have been implemented. Then, at the planning stage, a strategy is prepared to improve literacy and numeracy competencies with a focus on understanding literacy concepts, multimodal texts, literacy-rich environments, strengthening literacy in learning, understanding numeracy concepts, developing a growing mindset, numeracy discussions, and numeracy strengthening practices in learning. At the implementation stage, educational units implement the strategies that have been prepared. At the evaluation stage, the strategies that have been completed are re-evaluated and followed up on in the subsequent learning community activities. This inquiry cycle is implemented to ensure the quality of learning and improve teacher competency sustainably. By comparing reflection data before and after participating in mentoring, it is known that there has been an increase in teacher understanding of the concept of learning communities increasing from 16% to 96.5%, for the implementation of literacy strengthening from 9.5% to 84%, and numeracy from 14.75% to 83%. In general, the average increase was 74.4%; from these data, it can be concluded that the learning community mentoring strategy implemented has an impact on improving the literacy and numeracy competencies of Elementary School teachers.

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INTRODUCTION

Based on basic education data in Banjarmasin, there are 259 elementary schools grouped into 25 clusters. The policy of Banjarmasin City Education Department has implemented a strategy to enhance teacher competency, particularly at the elementary school level. This approach involves grouping teachers into clusters and facilitating their professional

development through Teacher Working Groups (KKG). Beyond KKG, the Banjarmasin City Education Department has actively engaged in diverse training initiatives. These programs are conducted by the department and in collaboration with external organizations such as the South Kalimantan Province Education Quality Assurance Center (BPMP) and the South Kalimantan Province Teacher Leader Center (BGP). Although various programs have been implemented, the results of the 2023 education report for Banjarmasin revealed the fact that as many as 76 elementary and junior high schools, or equivalent to 24% of the total schools, still need assistance to improve student's literacy and numeracy competency ([Ainun et al., 2023](#)).

This data implies that the efforts have not improved the quality of learning and learning outcomes. Different teacher capacity improvement strategies are needed for educational institutions with specific criteria. This opinion is in line with research findings related to the use of literacy and numeracy modules, which state that policies related to efforts to improve the quality of learning should be developed with a scientific development mechanism through general stages, including needs analysis, competency mapping, framework preparation, development, trials, reviews and revisions, and at the dissemination stage, the existence of teacher working groups must first be identified to determine different dissemination strategies for each teacher working group or what is now known as learning community ([Sufyadi et al., 2022](#)).

To improve the quality of learning, teachers need to consider the characteristics of students and educational institutions. This task is a difficult task if carried out by teachers individually; therefore, teachers are required to carry out collaboration and continuous competency improvement. To address these challenges and enhance the quality of learning, educators must adapt their teaching methods to their student's unique needs and characteristics and the specific context of their school. Furthermore, collaborative efforts with fellow teachers are essential for effective instruction. Continuous competency improvement is also key in dealing with the complexity of implementing the *Kurikulum Merdeka Belajar* ([Rosfiani et al., 2023](#)). To support these evolving needs, recent Indonesian Minister of Education and Culture government regulations mandate the participation of all teachers in learning communities. These communities serve as platforms for knowledge sharing, collaborative work, and ongoing professional development. The ultimate objective is to enhance the quality of classroom instruction and maximize student learning outcomes ([Perdirjen GTK Kemendikbudristek Number 4141 / B / HK.06 / 2023](#)).

Learning communities are formed due to social interactions between teachers. They communicate, discuss, and share experiences with each other so that a close relationship is formed. Through this relationship, they can work together to achieve their goals ([Yuzianah et al., 2023](#)). The main purpose of a learning community is to unite teachers to achieve common goals. This is in line with the sociological view, which states that communities are formed through social interactions between members to achieve collective goals ([Rahayuningsih et al., 2023](#)). Teachers gain a deeper understanding of learning problems through the discussion process, both in the school environment and outside of the school. This allows them to develop best practices that can be adopted by members of the learning community ([Ramly, 2021](#)). Based on the explanation above, this report aims to describe the implementation of community service by mentoring the learning community through the Educational Technology Study Program to strengthen the teacher literacy and numeracy competencies of elementary schools in Banjarmasin.

METHODS

The Educational Technology Study Program at Universitas Lambung Mangkurat (ULM) conducted a three-week community service project from August 12th to September 3rd, 2024. This project involved mentoring teachers within learning communities. Due to limited resources, from a total of 76 educational institutions that were targeted, the number of target schools for mentoring was 25; the selection of target schools was determined randomly, representing five sub-districts in Banjarmasin. In implementing the activities, the Educational Technology Study Program Team collaborated with the PDM 10 Team within the Directorate General of Early Childhood, Primary, and Secondary Education at the Ministry of Education and Culture and the Education Department of Banjarmasin. Figure 1 illustrates the division of responsibilities among the three parties.



Figure 1 Task division scheme in implementing learning community mentoring

Figure 1 illustrates that the initial step undertaken by the Educational Technology Study Program team was to coordinate with the PDM 10 team. Subsequently, they coordinated with the Banjarmasin City Education Department. The Educational Technology Study Program team received support from the PDM 10 team, including providing necessary supplies, instructional materials, and data on target schools. These schools were identified based on an analysis of education report card data from the Banjarmasin area, explicitly focusing on schools with literacy and numeracy competency with low levels categorized as 1 and 2. Meanwhile, support from the Banjarmasin City Education Department, encompassing the issuance of necessary permits, logistical facilitation for activity implementation, technical guidance from their team, and assistance in developing follow-up plans based on the mentoring outcomes. The mentoring approach utilizes an inquiry-based cycle encompassing four stages: reflection, planning, implementation, and evaluation. The implementation of this inquiry cycle and its corresponding timeline are detailed in Figure 2 (Maut, 2022).



Figure 2 Inquiry cycle in organizing learning communities

RESULTS AND DISCUSSION

The Initial Reflection stage commenced with a meeting held on August 12, 2024, at Banjarmasin International Hotel (HBI). The head of the Banjarmasin City Education Department inaugurated the meeting and brought together 50 participants. This diverse group included 25 school principals, supervisors, and representatives from the BGP, 25 teachers from the designated target schools, and a regional facilitator team of four members from the BPMP. The initial reflection activity can be visualized in Figure 3, which produces reflection notes as a reference in learning planning that will be prepared for subsequent activities.



Figure 3 Inaugural meeting for the learning community mentoring program and initial reflection stage

The planning stage was carried out on August 19, 2024, at the Harper Hotel, Banjarmasin, as seen in the activity documentation in Figure 4. Participants produced a draft learning strategy from this activity that teachers would implement to strengthen literacy and numeracy competency. In addition to the draft strategy for strengthening literacy and numeracy, participants were asked to prepare a follow-up plan for implementing the learning community in their respective educational institutions. The purpose of compiling this Follow-up Plan is to ensure the sustainability of implementing the learning community in educational units ([Hasanah et al., 2023](#)).



Figure 4 Implementing mentoring for planning to enhance teacher literacy and numeracy competency

The implementation stage was carried out in each educational unit for approximately two weeks, from 20 to 31 August 2024, as visualized in Figure 5. At this stage, the principal and teachers who participated in the mentoring implement the literacy and numeracy strengthening strategy plan prepared in the planning activity. To assist educational institutions, the Educational Technology Study Program team takes turns visiting several educational institutions while collecting data to identify the effectiveness of the literacy and numeracy-strengthening strategies implemented ([Waruwu et al., 2022](#)).



Figure 5 Implementing literacy and numeracy enhancement strategies in 25 schools

The evaluation stage was carried out on September 3, 2024. In this activity, the principal and teachers who had implemented the literacy and numeracy strengthening strategy submitted a report on the implementation results to be then reflected together to get feedback for planning the implementation of the next activity. Thus this learning community cycle is expected to continue to ensure the quality of learning and improve teacher competence sustainably ([Mardiana et al., 2023](#)). The initial response of the mentoring participants' understanding of numeracy was still limited to counting skills. They did not fully understand that numeracy includes broader abilities, namely the ability to think logically and solve mathematical problems in various contexts. Based on the research of Cockroft (1992), as referenced by [Yulaikah and Taufikurrizal \(2022\)](#), numeracy is a reflection of literacy. Numeracy includes two main things: the ability to use mathematics in everyday life and understand information related to mathematics. Literacy

and numeracy are the basis for the Minimum Competency Assessment, a new evaluation system that replaces the National Examination to measure students' abilities more comprehensively. According to [Rohim et al. \(2021\)](#), literacy includes a person's ability to communicate effectively using language. This involves the ability to read, write, speak, and listen. In short, literacy can be interpreted as the ability to read and write. Digital literacy, as part of overall literacy, plays an important role in developing individuals' critical and creative thinking skills.

The mentoring activities successfully achieved the objectives and fulfilled the plan outlined in ULM's Educational Technology Study Program community service program. This community service initiative garnered positive feedback from the head of the Banjarmasin City Education Department, school principals, and teachers at the target institutions. The initial reflection revealed that participants' initial understanding of key concepts, including the learning community framework, literacy enhancement, and numeracy strengthening, was inadequate. Data from the initial reflection indicated that the level of understanding regarding the learning community concept was 16%, while understanding of literacy and numeracy strengthening stood at 9.5% and 14.75%, respectively. Referring to the results of the initial reflection, in the next stage, namely planning, the principal was given reinforcement of understanding and was assisted in developing strategies for strengthening literacy and numeracy that would be implemented in their respective educational institutions. Strengthening literacy strategies focuses on understanding literacy concepts, multimodal texts, literacy-rich environments, and learning that strengthens literacy, while numeracy competencies focus on understanding numeracy concepts, developing numeracy thinking patterns, numeracy conversations, numeracy-rich environments, and learning practices that enhance numeracy ([Rachman et al., 2021](#)).

At the implementation stage, the educational institutions implement the strategies that have been developed. At the evaluation stage, the strategies that have been implemented are re-evaluated and reflected on to be followed up in the subsequent learning community activities. This inquiry cycle is carried out. In addition to identifying the effectiveness of the implementation of literacy and numeracy-strengthening strategies, reflection on the understanding of the principal and target teachers is also carried out at the evaluation stage. The results of the reflection after participating in the mentoring identified an average increase of 74.4%, with details: an increase in teacher understanding of the learning community from 16% to 96.5%, for the implementation of literacy strengthening from 9.5% to 84%, and numeracy from 14.75% to 83%. This data shows that mentoring the implemented learning community can strengthen literacy and numeracy competencies. The data from this mentoring strengthens the results of previous research regarding the effectiveness of socialization and technical guidance programs in assisting related parties, such as teachers, schools, or other educational institutions, to implement the *Kurikulum Merdeka Belajar* ([Mansur et al., 2024](#)). Studies on strengthening teachers' literacy and numeracy are very important because literacy and numeracy are the abilities to read, write, and use mathematics, which has become an important part of our lives. These skills are important for learning in school and facing challenges in the real world. Students with good literacy and numeracy will be better able to think critically and solve problems ([Tasrif & Syaifullah, 2022](#)). The successful implementation of this community service activity has fostered a collaborative environment involving the Banjarmasin City Education Department and other relevant partners. This collaboration is crucial for ensuring the long-term sustainability of learning communities as a vital mechanism for improving the quality of education and advancing teacher professional development.

This community service activity has succeeded in attracting interest and enthusiasm not only from the Banjarmasin City Education Department but also from various other related key parties, such as the PDM 10 team, KKG, and external organizations such as the BPMP, and the BGP to support the sustainability of the learning community. This community plays an important role in sustainably improving the quality of learning and teacher competence. The study's results show the positive influence of differentiation learning strategies on teacher performance and school culture, further strengthening the importance of this collaborative effort ([Salim et al., 2023](#)). However, further research is still needed to optimize the implementation of differentiation strategies to improve student learning quality significantly.

CONCLUSION

Previous research emphasizes the necessity of a scientifically rigorous and systematic approach to developing policies to improve learning quality. Aligned with this principle, the community service program implemented by the Educational Technology Study Program team leverages an inquiry cycle comprising four stages: reflection, planning, implementation, and evaluation. Comprehensive data and documentation are meticulously collected at each stage to inform and guide subsequent stages. This data-driven approach ensures the program's effectiveness by facilitating informed decision-making and enabling the measurable assessment of program outcomes. Referring to the materials prepared by the PDM 10 team, the Educational Technology Study Program team identified the focus of the literacy and numeracy strengthening strategy based on the results of the initial reflection. Thus, not all materials were delivered, and the educational institutions received different interventions according to their needs. This strategy has proven effective in optimizing the time and resources available.

A significant indicator of the mentoring program's effectiveness lies in the substantial increase in understanding demonstrated by school principals and target teachers regarding learning communities and strategies for strengthening literacy and numeracy. This increase averaged 74.4%. To ensure the long-term sustainability of learning communities and the ongoing enhancement of literacy and numeracy skills, it is recommended that the inquiry cycle be consistently utilized. Alternatively, if other scientifically sound methodologies are deemed more suitable, their effectiveness should be continuously evaluated.

Schools may require external support to implement literacy and numeracy enhancement programs effectively. Collaboration with the Educational Technology Study Program Team, Banjarmasin City Education Department, and other key stakeholders is crucial. To effectively support these efforts, schools have identified several key needs, particularly for enriching the learning environment. These include access to high-quality reading materials, diverse multimodal texts, and various numeracy tools. Hopefully, This mentoring program will significantly improve the overall quality of education within the Banjarmasin region.

CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest.

AUTHOR CONTRIBUTIONS STATEMENT

SS: Coordinating team and partners, designing the schedule for training and mentoring, ensuring the community service program aligns with the established plan, verifying that the program's objectives and output targets are met, coordinating the entire range of community service activities, and delegating tasks to team members involved in the

community service program. AHU: Manage and control the administrative needs and finances of the community engagement team, implement learning community mentoring, and conduct evaluations of the implementation of learning community mentoring. Q: Participating in a Training of Trainers (ToT) focused on facilitating learning communities. To design a schedule and coordinate the implementation of training on the utilization of quality reading materials to strengthen literacy and numeracy and to evaluate the implementation of training on the utilization of quality reading materials. SR: Participating in a ToT focused on facilitating learning communities. These steps outline the process of becoming a coach for learning communities. First, the coach undergoes training to develop her coaching skills. She then planned and organized coaching sessions for specific groups. Next, they deliver these coaching sessions, providing guidance and support to the large groups. Lastly, the coach evaluates the impact of their coaching and the overall progress of the learning communities.

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