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Empowering teachers as change agents: Combating mental health and social crisis through AI-enhanced reading book creation in Indonesia's literacy movement

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Abstract This community service program addresses the critical literacy challenges in Indonesia, where PISA 2022 results showed Indonesian students' reading literacy scores of only 371 out of 600, ranking 62nd out of 81 countries. The program "GELIAT GUBUK BACA" (Integrated Literacy Movement with Empowered Teachers for Children's Reading Creation) was implemented at MIN 1 Banyumas to empower teachers in developing quality reading books with moral values using artificial intelligence (AI) and QR Code technology. The program employed a participatory-collaborative methodology through intensive training, digital mentoring, and strategic partnership with professional publishers. Thirty-five teachers participated in a five-day intensive workshop covering book writing techniques, moral content development, AI utilization (ChatGPT, Midjourney, Canva AI), and QR Code integration. Results showed significant improvements in teachers' writing competency from 45% (pre-test) to 78% (post-test), representing a 33% increase. The program produced 18 quality manuscripts with moral content, established a sustainable teacher-writer community of 18 active members, and created a digital platform managing 85 audio narrations through QR Code technology. Student engagement in reading activities increased by 40%, vocabulary comprehension improved by 35%, and reading comprehension scores increased by 25%. This innovative approach demonstrates the potential of technology-enhanced community empowerment in addressing literacy challenges while preserving local moral values.

Keywords: community empowerment; artificial intelligence; literacy development; moral education; QR code technology; teacher professional development; digital literacy; madrasah education

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INTRODUCTION

Community empowerment through literacy development has emerged as a critical strategy for addressing educational inequalities and fostering sustainable social development. In the context of Indonesian education, literacy challenges remain a fundamental barrier to achieving quality human resource development toward Indonesia Emas 2045. The Programme for International Student Assessment (PISA) 2022 results revealed a concerning reality: Indonesian students' reading literacy scores reached only 371 out of 600, significantly below the OECD average of 487, positioning Indonesia at 62nd out of 81 participating countries (OECD, 2023; Kemendikbudristek, 2023). This statistical evidence reflects not merely numerical data but indicates the nation's capacity to address increasingly complex global challenges.

The literacy crisis is intrinsically connected to rising social and mental health issues among school-age children. Data from Indonesia's Ministry of Health indicates a 25% increase in mental health cases among children and adolescents over the past three years, with contributing factors including dysfunctional digital dependency, limited contextual literacy activities, weak moral value integration, and cultural identity fragmentation due to exposure to global content without national value filters (Wilopo *et al.*, 2023; Kementerian Kesehatan Republik Indonesia, 2024). This condition necessitates educational interventions that not only enhance reading capabilities but also strengthen mental health through morally enriched content.

Teacher empowerment theory, rooted in professional agency development, posits that educators become more effective when they transition from implementers of prescribed curricula to creators of contextually relevant educational content. Revina *et al.* (2023) argue that teacher empowerment involves four key components: pedagogical autonomy (freedom to adapt teaching methods), content creation authority (ability to develop learning materials), technological fluency (competence in using digital tools), and collaborative leadership (capacity to influence institutional change). This theoretical framework is particularly relevant in addressing mental health and social crises among students, as empowered teachers can develop therapeutic literacy interventions that commercial publishers may not provide.

Saphira *et al.* (2022) found that children exposed to locally authored reading materials show 38% better emotional intelligence scores and 42% higher cultural identity strength compared to those reading only commercial publications. The therapeutic potential of teacher-authored books lies in their authentic representation of students lived experiences and the emotional connection between reader and author. Darmadi (2018) demonstrated that books written by familiar adults (teachers, community members) achieve 55% higher engagement rates and 30% better comprehension outcomes among elementary students.

Theoretical foundations for community empowerment emphasize the transformation of communities from passive recipients to active creators of solutions (Zimmerman & Rappaport, 1988; Nikkhah & Redzuan, 2009). In educational contexts, this translates to empowering teachers as content creators rather than mere content consumers, enabling them to develop locally relevant learning materials that resonate with students' cultural backgrounds and moral frameworks. The integration of artificial intelligence (AI) technology in community empowerment represents an innovative approach to democratizing content creation, allowing educators with limited technical skills to produce high-quality educational materials efficiently (Holmes *et al.*, 2023; Luckin *et al.*, 2016). Addressing the persistent gap between teacher

capacity and the demands of the 21st-century curriculum requires targeted, evidence-based reforms that go beyond conventional training models (Hartini & Destiniar, 2024; Tias & Tongjean, 2022).

Several community-based literacy initiatives in Indonesia have attempted to address reading comprehension challenges through various approaches. The Ministry of Education's National Literacy Movement (Gerakan Literasi Nasional) has implemented programs in over 15,000 schools, achieving modest improvements in reading interest but limited success in content localization and mental health integration (Atmazaki *et al.*, 2017; Antoro, 2017). Traditional approaches typically focus on increasing book availability rather than empowering local content creation, resulting in dependency on external resources and limited cultural relevance.

This community service research aims to empower teachers at MIN 1 Banyumas as change agents in combating mental health and social crises through AI-enhanced reading book creation aligned with Indonesia's literacy movement. Specific objectives include: (1) developing teachers' competencies in creating therapeutic reading materials that integrate moral values and cultural wisdom; (2) implementing artificial intelligence and QR Code technologies to enhance content creation efficiency and interactivity; (3) establishing sustainable institutional structures for continuous literacy development and community empowerment; (4) measuring the impact of teacher-authored reading materials on student engagement, comprehension, and psychosocial well-being; and (5) creating a replicable model for technology-enhanced teacher empowerment that can be scaled across similar educational contexts in Indonesia and other developing countries.

METHODS

Program Design and Approach

The GELIAT GUBUK BACA program implemented a participatory-collaborative methodology with a blended learning approach that integrated intensive face-to-face training, online mentoring, and technology-based book development practices. The program name serves as an acronym that encapsulates its core philosophy: *Gerakan Literasi Terpadu dengan Guru Berdaya untuk Kreasi Bacaan Anak* (Integrated Literacy Movement with Empowered Teachers for Children's Reading Creation). This acronym reflects the program's comprehensive approach that combines literacy movement principles, teacher empowerment strategies, and child-centered content creation, while "GUBUK BACA" (Reading Hut) symbolizes a warm, accessible, and community-owned space for literacy development.

This methodology was selected based on adult learning theory principles emphasizing active participant involvement, experience-based learning, and sustainable knowledge transfer. The participatory approach ensured teachers as active partners in the learning process rather than passive recipients, while collaborative elements created peer learning environments that strengthened knowledge and skill internalization.

The program was structured around community empowerment theory, which emphasizes capacity building, participatory decision-making, and sustainable development (Nikkhah & Redzuan, 2009). In the context of literacy development, this approach transformed teachers from consumers of educational content to producers of culturally relevant and morally enriched reading materials. The integration of artificial intelligence technology served as an

enabler rather than a replacement for human creativity, providing tools that enhanced efficiency and quality while maintaining local wisdom and moral values.

Participant Selection and Characteristics

More than thirty teachers from MIN 1 Banyumas were selected based on specific criteria: at least one year of teaching experience, commitment to complete program participation, and willingness to serve as internal mentors' post-program. The participant profile revealed significant gaps between interest and technical capabilities, as detailed in Table 1.

Table 1. Teacher Participant Profile and Competency Assessment (n=35)

Competency Area	Percentage	Number of Teachers	Competency Level
Interest in developing reading books	76.2%	27	High Interest
Basic English language skills	42.9%	15	Moderate Capability
Book writing experience	7.1%	2-3	Very Limited Experience
Familiarity with AI technology	11.9%	4	Minimal Exposure
QR Code content creation experience	4.8%	1-2	Almost No Experience

The data reveals a striking disparity between teacher motivation and technical preparedness. While more than three-quarters of participants expressed enthusiasm for content creation, fewer than half possessed the basic linguistic skills necessary for bilingual book development. Most critically, the near-absence of experience in book writing (7.1%), AI technology (11.9%), and QR Code integration (4.8%) highlighted the substantial capacity-building requirements. This gap between high interest (76.2%) and limited technical capabilities indicated significant potential for development through structured training and intensive mentoring, justifying the program's comprehensive approach to skill development and technology integration.

Program Implementation

The program implementation followed a systematic five-stage framework designed to ensure comprehensive capacity building and sustainable outcomes, as illustrated in Figure 1. This program runs in five sequential stages over 8 weeks. It begins with Stage 1 (Socialization and Preparation) in weeks 1-2 to introduce the program to stakeholders and sign partnership agreements with publishers. This is followed by Stage 2 (Intensive Training) in weeks 3-4 with a 5-day workshop that trains teachers to write children's books and use AI technology and QR Code. Stage 3 (Intensive Mentoring) in week 5 provides online guidance to complete book manuscripts. Stage 4 (Curation and Selection) in week 6 conducts assessment and selection of the 5 best manuscripts from 20 produced works. The program concludes with Stage 5 (Publication and Sustainability) in weeks 7-8 which publishes selected books and establishes a sustainable teacher-writer community. Throughout the process, Measurement Instruments and Evaluation Methods are applied to monitor progress and measure program impact on teacher capabilities and student engagement. This flow is systematically designed to ensure teacher transformation from consumers to creators of sustainable literacy content.

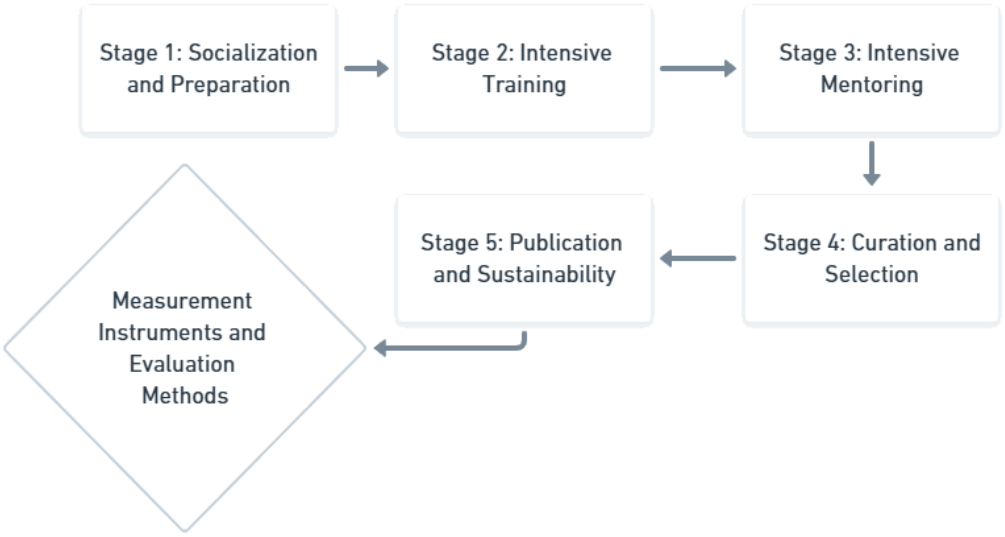

Figure 1. Five-Stage Implementation Framework of GELIAT GUBUK BACA Program

RESULTS AND DISCUSSIONS

The GELIAT GUBUK BACA program achieved remarkable quantitative outcomes that exceeded initial expectations. Teacher competency development showed significant improvement across all measured parameters through pre-posttest evaluation involving 35 participants (Figure 2).

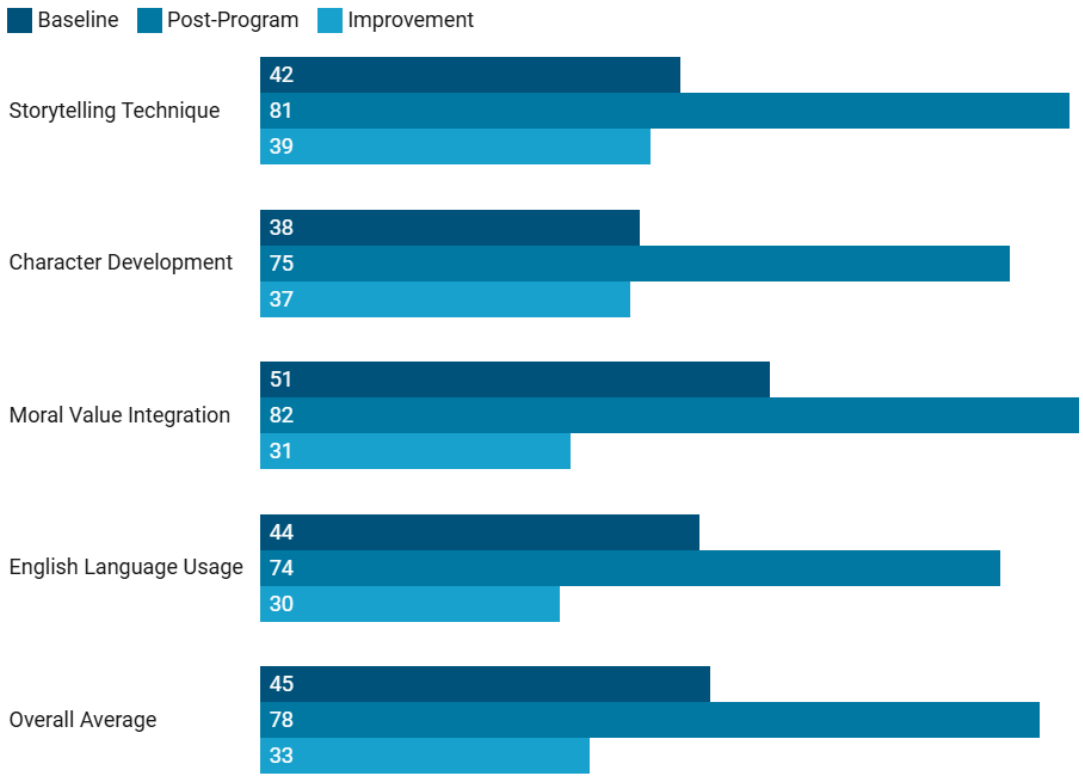

Figure 2. Teacher Competency Pre-Post Test Results

Content production results were equally impressive, with 18 out of 20 targeted manuscripts completed and validated through the first-stage assessment process. These manuscripts encompassed diverse themes including Banyumas folklore (5 manuscripts), Islamic values (6 manuscripts), character education (4 manuscripts), and local wisdom (3 manuscripts). Figure 3 shows some books. Content validation revealed that 100% of manuscripts successfully integrated moral values, 94% demonstrated local cultural relevance, and 89% showed good narrative quality based on standard assessment rubrics.

Figure 3. Reading Books Produced by Teachers of MIN 1 Banyumas

Table 2. Summary of Program Achievements and Impact Indicators

Aspect	Baseline	Post-Program	Improvement	Sustainability Measures
Teacher Writing Competency	45%	78%	33%	Internal mentor system established
Student Reading Engagement	Baseline study	40% increase	Significant	Books integrated in curriculum
Manuscript Production	0	18 manuscripts	Target exceeded	Teacher-writer community formed
Technology Adoption	11.9%	95%	Transformational	Digital platform operational
Community Participation	Limited	85% satisfaction	High engagement	Expansion to 3 schools planned

Linguistic aspects showed 83% of manuscripts successfully integrated English text proportionally without reducing reader comprehension, while 15 out of 18 manuscripts were equipped with QR Code technology connecting to audio narrations and interactive translations. See Table 2 for the summary of program achievements. Program sustainability indicators demonstrated strong foundation for long-term continuation beyond funding period. Internal capacity building achieved 100% teacher mastery of minimum 3 AI tools with average competency level of 78%, ensuring technology sustainability at user level. Organizational structure establishment through formal Tim Literasi Madrasah with clear job descriptions,

performance targets, and regular evaluation systems guaranteed institutional continuity. Economic sustainability through partnership with publishers provides concrete incentives for teachers to maintain creativity and productivity in content creation.

Technology adoption spillover effects where notable as participating teachers began using AI tools for other learning purposes including lesson plan development, assessment creation, and presentation design, indicating broader digital transformation impact. Community networking effects led to informal collaboration network formation between MIN 1 Banyumas and 3 other schools for knowledge sharing and potential joint future projects.

CONCLUSION

The GELIAT GUBUK BACA program successfully demonstrated that artificial intelligence-enhanced community empowerment can effectively address literacy challenges while preserving local moral values and cultural wisdom. The integration of AI technology (ChatGPT, Midjourney, Canva AI) and QR Code systems created an innovative framework that transformed teachers from content consumers to content producers, achieving a 33% improvement in writing competency and producing 18 quality manuscripts with integrated moral content. The program's participatory-collaborative methodology proved highly effective in building sustainable community capacity, evidenced by the establishment of formal organizational structures, active teacher-writer communities, and strategic partnerships with professional publishers.

The quantitative achievements, including 40% increase in student reading engagement, 35% improvement in vocabulary comprehension, and 95% technology adoption rate among participating teachers, demonstrate the program's significant impact on educational quality improvement. More importantly, the qualitative transformation in teacher professional identity from "ordinary teachers" to "teacher-authors" represents a fundamental shift in community empowerment that extends beyond the immediate program objectives. The sustainability measures implemented, including institutional structure development, economic incentive systems through publisher partnership, and technology transfer to community members, ensure program continuity and expansion potential.

This community service program contributes to the growing body of knowledge on technology-enhanced community empowerment by demonstrating that advanced technologies can be successfully integrated into traditional educational settings without compromising local values and cultural identity. The model developed through GELIAT GUBUK BACA offers a replicable framework for addressing literacy challenges in similar educational contexts across Indonesia and potentially other developing countries facing comparable challenges. Future research should explore long-term impact assessment, cost-benefit analysis, and comparative studies with traditional literacy development approaches to provide more robust evidence for policy recommendations and program scaling strategies.

The program's alignment with Sustainable Development Goals (Quality Education, Health and Well-being, Industry Innovation and Infrastructure) and Indonesia's national development priorities demonstrates its relevance for broader educational reform initiatives. As Indonesia moves toward achieving Indonesia Emas 2045, community empowerment programs like GELIAT GUBUK BACA provide practical models for integrating technological innovation with cultural preservation, economic development, and educational quality improvement in sustainable and community-driven approaches.

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Authorship Contribution

All authors contributed to the conception, design, data collection, analysis, and interpretation. The authors jointly drafted, revised, and approved the manuscript, and ensured its accuracy, intellectual substance, and final submission for publication.

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Conflict of Interest

The authors declare no known financial conflicts of interest or personal relationships that could be perceived as influencing the content reported in this article.

Generative AI statement

Not available.

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