

# Strengthening the digital community space and English village initiative for sustainable smart village development in Bumi Harjo

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## ARTICLE INFO:

Received: 2025-11-25  
Revised: 2026-01-14  
Accepted: 2026-02-12  
Published: 2026-04-30

## Keywords:

Community empowerment, Digital literacy, English village, Participatory action research, Smart village

## ABSTRACT

This community service program aimed to empowering the Village Digital Community Space (RKDD) and developing Digital-English Villages. Conducted in Bumi Harjo Village, Moilong District, Banggai Regency, Central Sulawesi, over an eight-month period, this program addressed the issue of local RKDD which has not been running optimally. As it tends to limit its function as an administrative facilitator with the absence of sustainable digital literacy improvement activities. The implementation method uses the Participatory Action Research (PAR) approach by involving the village government, 10 RKDD managers as the primary target, academics from Tompotika Luwuk University, and the local community. Evaluation was conducted through pre-and post-activity competency assessments and satisfaction surveys. Activities include socialization, preparation of roadmaps, training, mentoring, and development of the "English Go" Android and desktop application, and official website Kampung Inggris Digital Bumi Harjo (Bumi Harjo Digital-English Village). The results of the program show a significant increase in the RKDD empowerment level, rising from 40 percent to 92 percent, indicating the strengthening of the function of RKDD as a digital literacy center. The implementation of the Digital-English Village reached a 90 percent completion rate, providing innovations in the form of applications and websites. The existence of the Digital-English Village strengthens village identity and opens up technology-based economic opportunities.

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**How to cite:** Enteding, A. A., Rahman, N. S., Muhlin., Mangendre, Y., & Nurlaela. (2026). Strengthening the digital community space and English village initiative for sustainable smart village development in Bumi Harjo. *Abdimas: Jurnal Pengabdian Masyarakat Universitas Merdeka Malang*, 11(1), 288-298. <https://doi.org/10.26905/abdimas.v11i1.16172>

## 1. INTRODUCTION

The digital transformation has opened up new opportunities, including the development of smart villages. In village development context, smart villages development is an approach that incorporates information and communication technology to improve the quality of life, strengthen public services, and create inclusive and efficient development in rural areas. Prior literature reviews suggest that the concept of smart villages strengthen community dimensions, technology usage, institutions, and local

potentials that synergize within the smart city framework. The role of smart villages is crucial in bridging the development gap between villages and cities (Pinuji et al., 2024). This is consistent with evidence from other global contexts where small-scale regions can successfully transition into smart areas through localized technological governance (Lopes, & Oliveira, 2020).

Indonesia has incorporated smart village development into its national priority agenda, given that the country is home to more than 84,000 villages, most of which are characterized by a strong agrarian economic base. However, various obstacles are still found in the implementation, ranging from digital gaps, limited infrastructure, to low digital literacy among residents. Consequently, both community-based capacity building strategies and adaptive use of technology are urgently needed (Meilani & Resinta, 2024)

One of the villages included in the national program is Bumi Harjo Village in Moilong District, Banggai Regency, Central Sulawesi, which was designated as one of 1000 Smart Villages according to The Decree of the Minister of the Village Development and Information Agency, Disadvantaged Regions, and Transmigration (Kemendes PDTT) Number 55 of 2022. This initiative aligns with Banggai Regency's vision of developing a Banggai Smart City by accelerating technology-driven development and fostering smart villages capable of managing both physical and non-physical resources in an innovative manner. Through the utilization of information technology, these villages can enhance social, economic, and governance aspects of community life.

For this reason, local resources, including natural, social, and cultural assets, should be integrated with technological innovations to support sustainable development (Susilowati et al., 2025). Based on observations and interviews conducted in early 2025, the Village Digital Community Space (RKDD) in Bumi Harjo was found to be not operating at its full potential. Evaluation showed that the RKDD empowerment level was below 40 percent, where its function was still limited to administrative services without a systematic digital literacy program. This gap poses a significant barrier to the village's transformation into a smart village, as the institutional capacity required to manage digital innovation remains underdeveloped.

Taken together, establishing the Digital-English Village as a flagship strategy is driven by the specific needs of Bumi Harjo's younger generation. Many local youths have educational backgrounds and experience in English from the Pare Kediri model, yet their potential remains underutilized. In the context of Banggai Smart City, mastering English is crucial for village branding, expanding job access for youth, and promoting local MSMEs to the global market. The integration of Digital-English Village with RKDD is expected to strengthen the strategic position of villages in the fields of education, creative economy, and technology-based tourism (Ikram et al., 2024). By combining English learning with Android-based "English Go" applications and official websites, the village can create a unique digital identity.

To achieve these objectives, this community service program adopted a Participatory Action Research (PAR) approach, emphasizing the active involvement of all stakeholders throughout the process. Participants including lecturers and students of the English Language and Culture Study Program at Tompotika Luwuk University, RKDD managers, village officials, and the local community. This collaboration aims to empower village communities to master digital skills, enhance the global competitiveness of English, and establish a sustainable learning system. The PAR approach is seen as relevant because it not only addresses actual problems but also provides space for the community to be involved in every stage of activities, from planning, implementation, to evaluation (Khafsoh & Riani, 2024). This community service program aims to empower the RKDD as a digital literacy center and develop the Digital-English Village as a technology-based learning innovation to support the sustainability of the Bumi Harjo Smart Village.

## **2. METHODS**

This community service adopted the Participatory Action Research (PAR) approach, conducted over an eight-month period in Bumi Harjo Village. The PAR approach was selected because it emphasizes direct community empowerment through the active involvement of stakeholders in problem identification, planning, implementation, and evaluation. As supported by [Hak et al. \(2024\)](#), PAR emphasizes participatory collaboration between academics and the community to solve practical problems while increasing the knowledge and skills capacity of the community.

In the context of this community service, the primary subjects involved were 10 managers of the Village Digital Community Space (RKDD), selected based on their roles in village digital transformation, along with village officials and youth groups as secondary participants. [Purnamasari et al. \(2025\)](#) suggest that the success of the implementation of smart villages is primarily determined by village leadership motivation, community involvement, and utilization of available village resources. The implementation stages were systematically arranged through the following stages:

### **Socialization and Planning**

The initial stage of the activity is the socialization of the program, which aims to introduce the concept of service, the scope of activities, and the expected benefits for the people of Bumi Harjo Village. The session was conducted through direct meetings with village officials, RKDD managers, and community leaders, accompanied by the distribution of informational materials outlining the objectives and implementation of the program. During this stage, participants were introduced to the importance of digital literacy, the strategic role of RKDD empowerment, and the development of the Digital-English Village concept as a distinctive identity and development strategy for the village. This stage concluded with the collaborative design of a digital development roadmap.

### **Training and Mentoring (Action)**

The next stage is empowerment through RKDD training and mentoring, including the preparation of a roadmap for the development of RKDD, digital literacy training, and strengthening the capacity of RKDD members in creating educational content and managing online classes. Furthermore, collaboration with academics from Tompotika Luwuk University and practitioners in the field of technology is carried out to design training programs specific to the needs of the participants. This training combines theoretical knowledge with hands-on practice, enabling participants to acquire practical skills in digital content production, village social media management, and the use of learning applications.

The next stage involved the implementation of the Digital-English Village initiative. During this phase, the RKDD served as the central hub for English language learning activities, with selected RKDD members receiving training to become local facilitators. The training program was delivered through both face-to-face and online sessions to strengthen local human resource capacity and prepare participants to serve as community tutors. In addition, digital learning materials were developed to address community needs while supporting educational development and language-based tourism initiatives. Collaboration with information technology specialists resulted in the development of an English learning application called "English Go", available on both Android and desktop platforms, as well as the creation of the official Digital-English Village website, which serves as a platform for information gathering, promotion, and educational activities.

### Application of Technology (Implementation)

The application of technology constituted a key component of the program and played a crucial role in supporting its implementation. The technologies introduced included Android and desktop-based learning applications, virtual learning platforms through Zoom and Google Meet, and the management of the official Digital-English Village website. These technologies facilitated access to educational services, enhanced digital literacy, and expanded opportunities to promote the village's potential through digital channels. This finding is consistent with Basri et al. (2025), who highlighted the important role of technology in rural areas in accelerating service delivery, improving access to information, and enhancing the quality of administrative services.

To ensure the systematic implementation of the program, the community service team developed a detailed activity schedule, as presented in the following table.

**Table 1.** Schedule of RKDD empowerment activities and implementation of Digital-English Village in Bumi Harjo Village

Empowerment of RKDD	Implementation of Digital-English Village
<ul style="list-style-type: none"> <li>- Development of a roadmap for the development of RKDD which includes activities that support village development.</li> <li>- Socialization to village officials and village communities regarding the role of RKDD as an education center.</li> <li>- Collaboration with village governments, academics, and communities in the village to expand the role of RKDD which is beneficial for village development.</li> <li>- Collaboration with academics and practitioners in developing technology-based training programs that suit the needs of the community and the village government</li> <li>- Training and mentoring for RKDD members in creating educational content and managing online classes.</li> <li>- Collaborating with academics from Tompotika Luwuk University and practitioners in developing digital literacy-based training programs.</li> </ul>	<ul style="list-style-type: none"> <li>- Integrated the RKDD as a coordination center for English language training and learning activities, as well as preparing RKDD members as facilitators.</li> <li>- Face-to-face and virtual training and mentoring for human resources in Bumi Harjo village to prepare them to become English learning tutors.</li> <li>- Compiled Digital-English learning materials suitable for the needs of the community.</li> <li>- Collaborated with IT experts to design Android and desktop-based English learning apps.</li> <li>- Conducted training on the use of English learning applications.</li> <li>- Involved RKDD members in designing English learning applications.</li> <li>- Collaborated with IT experts in creating the official website of "Kampung Inggris Digital Desa Bumi Harjo" as a platform for information gathering, promotion, and education.</li> <li>- Filled the website with learning activity content, information boards, and activity schedules.</li> <li>- Involve RKDD members to periodically update website content to make it attractive and <i>up to date</i>.</li> </ul>

### Evaluation and Analysis (Reflection)

The final stage of the program was evaluation and analysis. This stage involved assessing the extent to which the program's objectives had been achieved, including improvements in the capacity of RKDD managers, the implementation of digital literacy activities, and the operational effectiveness of the Digital-English Village application and website. To ensure clear measures of success, the evaluation used specific instruments: (1) Pre-test and post-test competency rubrics for RKDD managers to measure the empowerment level improvement; (2) A Likert-scale satisfaction survey for the community; and (3) A functionality checklist for the application and website.

The data collected were analyzed using a descriptive mixed-method approach. Quantitative data from the surveys and competency tests were analyzed using percentage descriptive statistics, while

qualitative data from observations and interviews were analyzed through thematic analysis to identify program sustainability factors. The evaluation is carried out in a participatory manner by involving all related parties, so that this program truly answers the real needs of the community and is sustainable after the service period ends.

### 3. RESULTS AND DISCUSSION

#### Results

The results of the community service program indicate significant achievements in social aspects and village management. In the social aspect, RKDD's empowerment level as a village digital activity center increased sharply from 40 percent to 92 percent, marked by the implementation of digital empowerment programs that have practical impact on increasing human resource capacity. Meanwhile, in the management aspect, the formation of the Digital-Based English Village was successfully implemented by 90 percent. To illustrate the institutional transformation, the following table summarizes the changes in partner conditions before and after the intervention.

**Table 2.** Comparison of partner conditions before and after the program

<b>Aspects</b>	<b>Before Program (Baseline)</b>	<b>After Program (Final Condition)</b>
RKDD Function	Only administrative facilitator; passive role.	Active digital literacy center with a systematic roadmap.
Digital Content	No educational content produced.	12 educational videos and 5 digital modules produced.
English Learning	Conventional and unorganized.	Integrated with technology (app and website).
Human Resources	Limited digital & tutoring skills.	10 certified RKDD managers and 5 local tutors.
Identity	Ordinary village status.	Recognized as a Digital-English Village.



**Figure 1.** Socialization to partners

The first stage is the socialization of the program to village officials, RKDD managers, and the community. A total of 35 participants participated and providing a positive response as they considered the role of RKDD could support them to access information and develop technology-based skills. Furthermore, a roadmap for the development of RKDD was prepared. The roadmap contains short, medium, and long-term plans that involve collaboration between village governments, academics, communities, and practitioners.

RKDD members were given mentoring on creating digital educational content and managing online classes. This training not only improves the technical skills of RKDD members, but also prepares

them as main facilitators within the Digital-English Village program. In line with the opinion of [Ahmad et al. \(2024\)](#), technology-based training at the village level is able to produce digital cadres who act as agents in supporting digital transformation. The output of this mentoring included 12 educational videos regarding village public services and digital literacy.



**Figure 2.** Training and mentoring for RKDD members

### **Implementation of Digital-English Village**

One of the main objectives of this community service program was the implementation of the Digital-English Village initiative. Designed to address the community's need to improve English language proficiency, the initiative was implemented by integrating the role of the RKDD as the central hub for coordinating English learning activities.

The tutors are recruited from village youth and RKDD members who already have basic English skills and trained properly to deliver material by utilizing digital media. In addition, digital-based English learning materials are also prepared and adapted to the needs of the community, such as English for public services, tourism, and daily communication.



**Figure 3.** Training of Trainers (ToT) for English Tutors

Furthermore, to reach a broader range of learners, the program introduced English for Kids and English for Teens classes. The English for Kids program, attended by 20 children, was designed using engaging and interactive methods such as songs, games, storytelling, and digital flashcards, encouraging children to learn English in an enjoyable and stimulating environment (Figure 4). In addition to developing vocabulary and pronunciation skills, the program helped foster children's confidence in communicating in English from an early age.

Meanwhile, English for Teens focuses on developing speaking, writing, listening, and reading skills that are relevant to the needs of school, further education, and career preparations (Figure 5). This

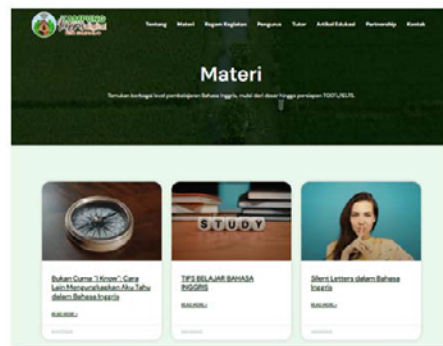
activity was participated by 15 teenagers, utilizing project-based and discussion-based learning models. Adolescents can practice critical thinking and collaborate with peers and tutors while improving their English skills. To strengthen the digital aspect, these two programs are also supported by multimedia materials and online platforms, making the learning experience more dynamic and accessible for the young generation of Bumi Harjo Village.



**Figure 4.** English for kids



**Figure 5.** English for teens



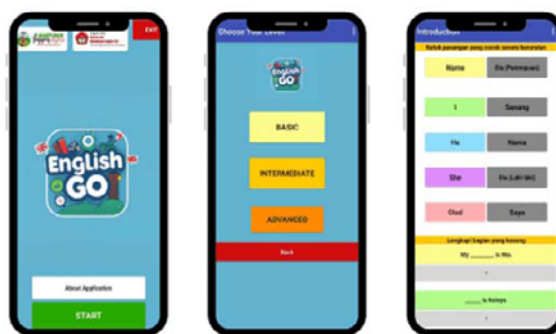
**Figure 6.** Website of Digital-English Village

This program also initiated the official website of the Digital-English Village of Bumi Harjo. The website functions as a platform for information gathering, promotion, as well as a forum for publication of learning activities. The content displayed includes class schedules, tutor profiles, learning materials, and activity documentation. RKDD members are directly involved in the process of filling in the content and maintaining the website so that the information presented is always up-to-date and relevant. The

website offers several features, including online resources to support English learning, an activities section providing updates on Digital-English Village programs and events, and an educational articles section featuring content on English language learning topics that can be easily accessed by the public.

To ensure the sustainability of the program, collaboration with IT experts was established to develop an Android-based English learning application, ensuring easy access for learning materials, anytime and anywhere. Training on the use of applications is also provided, in order to build familiarity with online learning technology. Application design offers an interface that is easy to be followed by everyone. The application, named English Go, consists of 3 levels, which are basic, intermediate, and advanced.

Learning topics include expressions and vocabulary used in everyday life, ranging from introducing yourself to conversation examples used in shopping. As the name implies, English Go is not only practical and efficient, as it provides ease of learning anywhere and anytime. To ensure long-term usability and relevance, the application will be further developed and updated according to the village's needs.



**Figure 7.** English learning application

### **Application of technology**

The application of technology is a key aspect in this service program. The official website and learning application developed function as a learning medium and village promotion. Proper utilization of technology is in line with [Anggraeni et al. \(2025\)](#) view that the digitization of village public services not only accelerates administrative services, but also improves the quality of village human resources through access to technology-based learning. According to the website's traffic tracker, the English Go application has recorded 45 active users, while the official website reached over 200 visits during the initial launch stage.

### **Program impact**

The results of this program indicate a substantial improvement in the digital literacy of the Bumi Harjo community. RKDD members who participated in the training are now capable of managing online learning activities and independently producing educational content. Local English tutors have strengthened their ability to utilize digital learning technologies, while community members can access learning resources through the village's official application and website.

The program has created new opportunities for economic and community development through the Digital-English Village branding initiative. The village's strengths in language education and digital technology can now be promoted to wider audiences at both the national and international levels, in

line with ongoing trends in digitalization. A detailed overview of the program achievement indicators is presented in the following table.

**Table 3.** Program achievement indicators

Achievement Indicator	Target	Achievement
Increase in RKDD Empowerment Level	> 80 percent	92 percent
Number of Local English Tutors Formed	3 Persons	5 Persons
Development of English Learning App	Functional	100 percent (English Go App)
Digital Content Production	5 Items	12 Videos & 5 Modules
Community Satisfaction Rate	> 80 percent	88 percent (Likert Scale)

## Discussion

This service activity aims to increase digital literacy and empower village communities through the utilization of technology. The findings indicate significant achievements in strengthening RKDD as a center for digital literacy and in introducing the Digital-English Village as a model of technology-enabled educational innovation.

The improvement of RKDD has increased members' capacity in managing digital-based learning activities and services. Through training and mentoring, RKDD members now acquire skills in compiling materials, managing online classes, and utilizing digital media to deliver information. This achievement demonstrates a progressive milestone compared to the previous condition, when RKDD functioned solely as a meeting room without directed activities that met the community's needs. With this initiatives, RKDD has developed into a more structured and sustainable digital education center.

Meanwhile, the Digital-English Village offers a new approach to English learning by integrating technology. This program involves training local tutors, creating Android-based learning applications, and developing the village's official website as a platform of promotion and publication of activities. Providing broader, more flexible, and more relevant access to learning opportunities that meet community needs. Previously, the learning process have limited options to choose from, such as to face-to-face interaction with limited resource. After this program, people are able to learn independently through village applications and websites. The integration of digital platforms into the curriculum has been shown to significantly enhance learner engagement and accessibility in various educational settings (Guan et al., 2020).

The results align with findings from Kusumawati (2024), which emphasize that village digitalization accelerates public services and increases human resource capacity through technology use. Similarly, Zahra et al. (2024) suggest that community-based digital platforms can improve access to information and form a culture of independent learning in rural communities. With the Digital-English Village application and website, residents of Bumi Harjo now have access to a sustainable learning platform that was previously unavailable.

In addition to access improvement, this program also has an impact on the empowerment of village youth. The trained English tutors serve not only as instructors but also as agents of change, promoting the village through digital media and community-based educational activities. This result supports the findings of Herwinsyah (2024), which highlight the crucial role of digitally competent village youth in advancing digital transformation at the local level. Furthermore, the achievement of 88 percent community satisfaction rate indicates that the technology-based approach and community participation are highly effective and demonstrates strong potential for replication in different village contexts. As

such, it can inspire the expansion of community empowerment efforts to other villages, promoting more inclusive smart village development in other regions.

#### **4. CONCLUSION AND RECOMMENDATIONS**

This community service program successfully empowered the Village Digital Community Space (RKDD) and implemented the Digital-English Village in Bumi Harjo through a Participatory Action Research approach. The intervention resulted in a significant increase in the RKDD empowerment level, rising from 40 percent to 92 percent, and a 90 percent implementation rate for the technology-based English learning ecosystem, including the "English Go" application and an official website. The impact on partners is evidenced by the formation of 10 certified RKDD managers and 5 local English tutors, shifting the RKDD function from basic administrative services to a dynamic digital literacy hub. This transformation proves that integrating digital technology with local potential is a viable strategy for enhancing rural institutional sustainability and human resource capacity within the smart village framework.

Despite these achievements, the program is still in its initial implementation stage and requires more comprehensive long-term data to evaluate its sustained effectiveness. Therefore, several recommendations are proposed to support program sustainability, including the development of Standard Operating Procedures (SOPs), clear organizational structures, and management regeneration mechanisms. In addition, comparable capacity-building programs for local tutors and digital content managers are needed to maintain professionalism and technical standards. Routine maintenance and continuous development of the "English Go" application and website should also be undertaken, by considering user feedback and technological updates. To ensure financial sustainability, funding sources may be assorted through village funds and external partnerships collaborations. Establishing networks with schools and universities can also be initiated to support program replication. Lastly, a periodic monitoring and evaluation system with measurable indicators should be implemented, including strengthening community literacy regarding media ethics and data security.

#### **ACKNOWLEDGEMENTS**

Gratitude is extended towards the Ministry of Education, Culture, Research, and Technology (KEMDIKBUDRISTEK) for providing funding support this activity. Further acknowledgements were also delivered to Tompotika Luwuk University, UNTIKA Luwuk Research and Community Service Institute, Bumi Harjo Village Government, RKDD, and the residents of Bumi Harjo Village for their active participation and contribution in supporting the success of this activity.

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