

# Digital Empowerment through Website Development for Early Childhood Education Institutions: A Sustainable Community Engagement Study in Jayapura, Indonesia

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## Abstract

Digital transformation has become a strategic necessity for Early Childhood Education institutions (PAUD) in Indonesia. However, many PAUD centers in Eastern Indonesia continue to face capacity constraints in adopting digital technologies, particularly institutional websites. This article examines a sustainability-oriented community service program through website development at PAUD ALFA OMEGA in Jayapura City. The program employed a participatory approach involving needs assessment, website design, training, and continuous mentoring. Data were collected through observation, interviews, documentation, and statistical analysis of website traffic. The findings indicate that within the first month after launch, the website recorded an average of 105 online visits per week. After being indexed by Google's search engine, the number of parents visiting the school to obtain enrollment forms increased from an average of 10 to 15 per month. The website also continued to be actively managed after the completion of the community service activities, reflecting institutional ownership and sustainability. These results demonstrate that website development integrated with capacity building can function as an effective instrument for institutional empowerment. This study contributes to the development of a sustainable, digitally empowered community service model for early childhood education institutions.

*Keywords:* digital empowerment, website development, early childhood education, community service, institutional capacity, sustainability.

## 1. Introduction

Digital transformation has become an integral part of educational organization management in the information age. Educational institutions are increasingly expected to utilize digital technologies to enhance communication effectiveness, information transparency, and institutional credibility (Bond, Bedenlier, Marín, & Händel, 2021; Selwyn, 2022). Among various digital platforms, institutional websites function not only as channels for information dissemination but also as representations of professionalism and public legitimacy, shaping stakeholders' perceptions and trust toward educational organizations (Campoverde-Molina, Luján-Mora, & Valverde, 2023; Morales-Vargas, Pedraza-Jimenez, & Codina, 2023).

Previous studies indicate that the use of school websites contributes positively to institutional image building, wider information outreach, and stronger engagement with stakeholders (Rau, Gao, & Wu, 2008). Through websites, educational institutions can systematically provide accessible information on learning programs, school activities, enrollment procedures, and achievements. This enables parents to obtain essential information without the need for direct visits to schools, supporting more inclusive and transparent educational communication practices (Selwyn, 2022).

Nevertheless, the adoption of digital technology in early childhood education (PAUD) remains relatively limited, particularly in peripheral regions and developing contexts, including Eastern Indonesia. Research on early childhood digitalization shows that many institutions still rely on informal communication channels due to infrastructure gaps and uneven digital competencies (Dong, Cao, & Li, 2020; Rau et al., 2008). Most PAUD institutions continue to rely on

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verbal announcements, messaging groups, and face-to-face interactions as their primary means of information dissemination. Although these methods are convenient, they often result in fragmented, poorly documented, and less accessible information for the wider public (Bond, Marín, Dolch, Bedenlier, & Zawacki-Richter, 2018).

The limited level of digitalization among PAUD institutions is influenced by various structural factors, including low levels of digital literacy among educators, inadequate digital infrastructure, and limited financial support (Parkavi & Selvamathi Sugirtha, 2022; UNESCO, 2021). These constraints hinder many educational institutions from developing a professional image, enhancing competitiveness, and managing administrative services efficiently. As a result, their potential to attract prospective students and strengthen public trust remains underutilized (Bond et al., 2018).

In the context of community service and outreach programs, many educational digitalization initiatives still emphasize technical aspects, such as website or application development. These approaches are often not accompanied by systematic capacity building and sustainability mechanisms, leading to low long-term adoption rates after external assistance ends (Redecker & Punie, 2017). This situation reflects a persistent gap between technological intervention and long-term institutional strengthening.

From an institutional perspective, digital platforms should be understood as strategic resources that shape organizational routines, documentation systems, and stakeholder relationships. Website adoption has the potential to stimulate changes in information governance, administrative practices, and institutional communication patterns, aligning with broader theories of digital transformation as organizational change rather than mere technological adoption (Naldi, Gusty, & Saqdiyah, 2025; Vial, 2019). Therefore, digital transformation in PAUD institutions should be viewed as a broader process of organizational development rather than merely technological modernization.

Despite the growing body of literature on digital transformation in education, most studies primarily focus on higher education or secondary schools, while early childhood education institutions (PAUD), particularly in peripheral regions, remain underexplored. Moreover, existing community service initiatives in educational digitalization tend to emphasize short-term technological outputs—such as website or application development—without systematically integrating institutional capacity building and sustainability mechanisms. As a result, there is limited empirical evidence on how participatory, sustainability-oriented digital empowerment models can foster long-term institutional transformation in early childhood education contexts.

This study addresses this gap by examining the implementation of a sustainability-based website development program integrated with capacity strengthening and participatory governance at a PAUD institution in Jayapura, Indonesia. By positioning website development as an instrument of institutional transformation rather than merely a technological intervention, this research contributes to the development of a replicable digital empowerment model for resource-constrained early childhood education settings.

## **2. Methods**

### **2.1. Program Approach**

This community service program employed a participatory action approach that emphasizes the active involvement of partners throughout all stages of the program, including planning, implementation, and evaluation. This approach was adopted to promote mutual learning processes and to strengthen institutional ownership of program outcomes. Through this framework, partners were not positioned merely as program beneficiaries but as active participants in the digital empowerment process.

### **2.2. Location and Participants**

The program was implemented at PAUD ALFA OMEGA, located in Jayapura City, Papua Province, Indonesia. This institution was selected based on preliminary observations indicating the absence of an official digital platform and limited capacity in information technology management. The participants consisted of 12 individuals, including the school principal, teachers, and administrative staff. All participants were actively involved in the training and mentoring activities related to website management.

### **2.3. Program Implementation Stages**

The program was carried out through four integrated stages:

- a. Needs Assessment

The initial stage aimed to identify the partner’s baseline conditions, including levels of digital literacy, information dissemination practices, and institutional information system needs. This assessment was conducted through field observations, informal interviews, and focused group discussions with PAUD management.

b. Website Design and Development

Based on the needs assessment results, the service team designed and developed the institutional website using a user-friendly content management system. The website was developed with a responsive design to ensure accessibility across various devices and included features such as institutional profiles, learning programs, activity galleries, enrollment information, and official contact details.

c. Training and Mentoring

This stage focused on strengthening partners’ digital capacity to independently manage the website. Training activities covered content management, information updating, basic search engine optimization (SEO), and social media integration. Mentoring was conducted intensively through face-to-face meetings and online communication during the implementation period.

d. Monitoring and Evaluation

Monitoring and evaluation were conducted to assess program effectiveness and the sustainability of website management practices. The evaluation process included monitoring content management activities, analyzing website traffic statistics, and conducting reflective interviews with participants. The results were used as the basis for program improvement and recommendation formulation.



Figure 1. Flowchart of the Community Service Program Implementation

#### 2.4. Data Collection Techniques

Data were collected using multiple complementary techniques to ensure methodological triangulation and enhance the credibility of the findings. Participatory observation was conducted to directly examine the implementation process of the program and to identify changes in institutional information management practices. Semi-structured interviews were carried out with participants to explore their perceptions, experiences, and levels of understanding regarding website utilization and digital management practices. Documentation analysis was also employed, including the review of activity photographs, training modules, website content archives, and internal institutional reports. In addition, website statistical analysis was performed by examining visitor data, traffic sources, and user interaction metrics to assess levels of community engagement and the effectiveness of the digital platform.

## 2.5. Data Analysis Techniques

The collected data were analyzed using descriptive qualitative and simple quantitative approaches. Qualitative data from observations and interviews were processed through data reduction, categorization, and thematic interpretation. Quantitative data, including website visit statistics and the number of enrollment form requests, were analyzed descriptively to illustrate changes before and after program implementation.

## 2.6. Program Success Indicators

Program success was assessed based on several key indicators:

- a. The availability of an active and publicly accessible institutional website.
- b. Improved participant capacity in independently managing website content.
- c. Increased website visitation rates.
- d. Growth in the number of parents accessing information and requesting enrollment forms.
- e. Sustained website management after program completion.

## 3. Result and Discussion

### 3.1. Implementation of PAUD Website Development

The community service program successfully resulted in the development of an official institutional website for PAUD ALFA OMEGA, which is publicly accessible and functions as a centralized information hub for the institution. The website includes key features such as the institutional profile, learning programs, activity galleries, enrollment information, and official contact details.

Prior to the implementation of the program, the institution did not have a structured digital medium for information dissemination. All communication relied primarily on verbal interactions and short messaging applications. Following the introduction of the website, institutional information became more systematically documented, integrated, and easily accessible to the wider community.

The website was also developed using a responsive design, allowing access via both desktop computers and mobile devices. This feature is particularly important given that most parents rely on mobile phones as their primary means of accessing information. As a result, the website enhanced the institution's visibility and improved the efficiency of information delivery to parents and prospective stakeholders.



Figure 2. The PAUD ALFA OMEGA Website Display with Participants as an Output of the Community Service Program.

### 3.2. Digital Capacity Building of PAUD Administrators

The training and mentoring activities provided to PAUD administrators had a positive impact on improving digital literacy and operational capacity. Participants were able to independently manage website content, regularly update institutional information, and upload documentation of school activities.

Observational findings indicate a noticeable shift in work practices, particularly in information management and documentation processes. Prior to the program, documentation was largely conducted manually and was not systematically archived. After the implementation of the program, documentation practices became digital, structured, and more easily retrievable.

These changes in institutional capacity are summarized in Table 1.

Table 1. Changes in Information Management Practices Before and After the Program

Management Aspect	Before the Program	After the Program
Information updates	Irregular	Scheduled
Activity documentation	Manual	Digital
Communication media	Informal	Integrated
Data management	Non-systematic	Systematic

The observed improvement in digital capacity demonstrates that the program did not merely produce a technological output in the form of a website. More importantly, it facilitated a shift in institutional work behavior toward more organized, transparent, and accountable information management practices. This finding reinforces the argument that digital empowerment initiatives are most effective when they are accompanied by capacity-building processes that enable institutions to internalize and sustain technological change.



Figure 3. Website Management Training and Mentoring Activities

### 3.3. The Impact of the Website on Community Access to Information

Website traffic monitoring results indicate that within the first month after its launch, the institutional website recorded an average of approximately 105 online visits per week. The primary traffic sources originated from organic searches via Google and links shared through social media platforms.

The website's appearance in Google search results significantly facilitated public access to information about the institution without requiring direct visits to the school. Several parents reported that they first became aware of PAUD ALFA OMEGA through online searches, highlighting the role of digital platforms in shaping initial information-seeking behavior.

In addition, the number of parents visiting the school to obtain enrollment forms increased from an average of 10 to 15 per month following the website's implementation. This suggests that the website functioned as an initial contact point between the institution and the community, bridging online information access and offline engagement.

These findings indicate that digitalization not only expands the reach of institutional information but also enhances organizational visibility in the public sphere. The website served as a strategic communication tool that reduced information barriers, improved accessibility, and supported community engagement in early childhood education services.



Figure 4. Information Service and Enrollment Activities

#### 3.4. Sustainability and Institutional Ownership

One of the key indicators of the program's success is the sustainability of website management after the completion of the community service activities. Monitoring results show that PAUD administrators continued to regularly update content, upload documentation of school activities, and respond to public inquiries through the website.

This continuity reflects a strong sense of institutional ownership of the developed digital platform. Rather than being perceived as a temporary project, the website has been integrated into the institution's routine work system and daily information management practices. In this sense, the website functions as an organizational asset rather than an external intervention.

Several factors contributed to this sustainability, including: (1) the active involvement of partners from the planning stage onward; (2) practice-oriented training that emphasized hands-on learning; (3) continuous mentoring throughout the implementation period; and (4) system design adjustments aligned with the administrators' actual technical capacities.

These conditions distinguish the program from many digitalization initiatives that tend to stagnate once external assistance ends. The findings suggest that sustainability in digital empowerment programs is closely linked to participatory processes and capacity-oriented approaches that enable institutions to internalize and maintain technological innovations over time.

#### 3.5. Discussion: Websites as Instruments of Institutional Transformation and Digital Empowerment

The findings of this study demonstrate that website development at PAUD ALFA OMEGA did not merely produce a digital information medium, but also initiated changes in work structures, communication patterns, and institutional governance. The website functioned as institutional infrastructure that systematically integrated documentation, information services, and institutional promotion. These findings are consistent with previous research highlighting that digital platforms enhance institutional credibility, transparency, and public image when embedded into organizational systems (Campoverde-Molina et al., 2023; Selwyn, 2022).

However, unlike many previous studies that primarily focus on secondary or higher education contexts, this study demonstrates that digital transformation can also be effectively implemented in early childhood education institutions with limited resources, provided that sustained mentoring and participatory support are available. Studies on early childhood digitalization emphasize that institutional readiness, educator competence, and continuous assistance play a decisive role in successful technology adoption (Dong et al., 2020; Mhlongo, Mbatha, Ramatsetse, & Dlamini, 2023). This finding expands the scope of the educational digitalization literature by incorporating the early childhood education context, which remains comparatively underexplored, particularly in peripheral regions.

The increase in website visits and the number of parents requesting enrollment forms indicates that digitalization can significantly expand community access to educational information. Prior research shows that institutional websites improve public information accessibility, strengthen transparency, and reduce reliance on informal communication channels (Lohr et al., 2024; Naldi et al., 2025). Through the website, parents were able to independently access information, reflecting a shift toward more inclusive and digitally mediated communication practices.

From an institutional perspective, website adoption encouraged shifts in the daily work practices of PAUD administrators. Information management, which was previously personal and undocumented, transitioned into a more systematic and digitally archived process. This transformation reflects the institutionalization of technology within educational organizations, where digital systems reshape organizational routines, decision-making processes, and work patterns (Dhamera, Muazeib, Blhaj, Sugiyarsih, & Rosadah, 2025; Vial, 2019).

The sustainability of website management after the completion of the program further highlights the importance of participatory and capacity-based approaches in digital empowerment initiatives. Research suggests that long-term sustainability of educational digital media is strongly influenced by human resource readiness, collaborative governance, and institutional ownership rather than technological infrastructure alone (Handayani, Jalwis, & Prahajmaja, 2024; Selwyn, 2022). The involvement of partners from the planning stage through evaluation contributed to the development of strong institutional ownership of the digital platform.

Furthermore, this study shows that digitalization in PAUD institutions should not be understood merely as a process of technological modernization, but rather as a strategy for institutional development. The website contributed to building social legitimacy, enhancing parental trust, and strengthening the institution's position within the local educational ecosystem. This perspective aligns with digital transformation theories that frame technology adoption as organizational change capable of reshaping governance structures and institutional identity (Vial, 2019).

From the perspective of community service, these findings underscore the need for a paradigm shift from output-oriented approaches toward transformation-oriented models. Community service programs should move beyond the delivery of technological products and instead focus on building institutional capacity, systems, and new work cultures. The integrated approach adopted in this study demonstrates that combining technological interventions with continuous training and reflective mentoring can generate sustainable, long-term impacts (Fullan & Quinn, 2016).

Nevertheless, this study has limitations, particularly the absence of longitudinal evaluation regarding the impact of website utilization on service quality and child development outcomes. In addition, the findings remain context-specific and are influenced by the social and institutional characteristics of the partner organization. Future research is therefore encouraged to replicate this model in other regions and to conduct long-term analyses.

Overall, this discussion highlights that websites are not merely digital media, but instruments of institutional transformation capable of strengthening governance, increasing community participation, and promoting organizational sustainability. The digital empowerment model developed in this study may serve as a reference for the design of community service programs in early childhood education, particularly in resource-constrained settings.

In terms of future development, the sustainability-oriented digital empowerment model proposed in this study has the potential to be expanded into a scalable framework applicable to other PAUD institutions in similar socio-geographical contexts. Future initiatives may incorporate more advanced digital features, such as online enrollment systems, parent-teacher communication portals, digital reporting systems, and integrated learning management components tailored for early childhood education. In addition, longitudinal evaluation is necessary to assess the long-term impact of website utilization on institutional performance, parental engagement, and service quality improvement. Further research could also explore comparative implementation across multiple institutions to refine the model and strengthen its generalizability. By integrating continuous mentoring, policy support, and cross-institutional collaboration, this digital empowerment framework can evolve into a sustainable ecosystem of early childhood education digital governance.

#### **4. Conclusion**

This community service program confirms that digital empowerment through website development can enhance institutional capacity and public communication in early childhood education institutions, particularly in peripheral areas. By combining needs assessment, technical implementation, and sustained mentoring, the program successfully established a functional and sustainably managed institutional website while strengthening digital literacy and organizational readiness.

The results underline that long-term digital sustainability depends not only on technology but also on human resource capacity and institutional commitment. The model implemented in this program offers a practical reference for similar initiatives and highlights the importance of continuous capacity development to ensure sustainable institutional growth.

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