

Introducing Internet Technology to Indonesian Migrant Children at SB At-Tanzil Hicom, Malaysia: Exploring its Benefits and Challenges

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ABSTRACT

Indonesian migrant children in Malaysia often have limited access to digital resources, which restricts their opportunities to develop essential internet and information-literacy skills. Responding to this issue, this community service program was designed to introduce basic internet technology and promote safe, responsible, and purposeful digital use among students at SB At-Tanzil Hicom. The program aimed to strengthen their understanding of online safety, digital ethics, and the use of internet-based learning tools. A participatory approach was adopted through interactive workshops, guided practice sessions, and mentoring activities. Data were collected through observations, pre- and post-tests, and feedback from participants and teachers. The results show a clear improvement in students' ability to navigate websites, identify credible information, and recognize online risks. Knowledge scores increased significantly, reflecting stronger digital awareness and confidence in using technology for learning. Despite challenges related to limited devices and unstable connectivity, the program effectively introduced internet literacy in a way that was accessible, contextual, and engaging for migrant learners. These outcomes highlight the importance of sustained support and collaborative efforts to ensure digital inclusion within migrant education settings.

Keywords: Digital Literacy, Internet Technology, Migrant Children, Online Safety, Community Education

INTRODUCTION

In the digital era, access to internet technology has become a fundamental right that supports education, communication, and personal development. However, not all children have the same opportunity to engage with technology, especially those from migrant families. Indonesian migrant children living in Malaysia often face limited access to

digital resources due to socio-economic, legal, and infrastructural barriers (Suwaryo et al., 2023). This situation leads to a digital divide that affects their learning process, social inclusion, and overall development (Helsper & van Deursen, 2017).

Education today is increasingly dependent on digital literacy as one of the key competencies for 21st-century learning (Ng, 2012). Digital literacy not only involves technical skills but also the ability to use technology critically and ethically (Gilster, 1997). For migrant children, this literacy plays a dual role: it bridges cultural adaptation and facilitates access to global educational opportunities (Livingstone & Helsper, 2010). The lack of this competency can exacerbate marginalization and limit their participation in formal and informal education (Warschauer, 2010).

The school SB At-Tanzil Hicom, Malaysia, serves as a community learning center for Indonesian migrant children. Although it provides basic education, the integration of technology in the learning process remains minimal due to limited resources and teachers' lack of digital competency (Napitupulu et al., 2020). In addition, many migrant families face economic constraints and have low awareness of the safe and productive use of internet technology (Setiawan & Mulyadi, 2021). As a result, children are often excluded from digital learning environments that could enhance their educational quality (UNICEF, 2021).

Community service in this context becomes highly relevant as a form of social empowerment that aligns with the Sustainable Development Goals (SDGs), particularly Goal 4 (Quality Education) and Goal 10 (Reduced Inequalities) (United Nations, 2022). By introducing internet technology through participatory learning methods, children can acquire digital knowledge and practical skills in an inclusive and contextual manner (Rahman & Rachmawati, 2022). The approach is also expected to strengthen their confidence, creativity, and communication skills as part of global citizenship development (OECD, 2018).

Empirical studies have shown that integrating internet technology in education significantly improves motivation, digital literacy, and learning outcomes among disadvantaged groups (Manca & Ranieri, 2016). However, the effectiveness of such programs depends on local adaptation, continuous mentoring, and collaboration between educators, parents, and the community (Herlina et al., 2021). Therefore, this community service project aims to provide practical digital literacy training tailored to the needs of

Indonesian migrant children, while also identifying the challenges and benefits arising from the introduction of internet technology in this unique educational context.

Through this initiative, it is expected that children at SB At-Tanzil Hicom will not only gain technical knowledge but also develop digital awareness that supports their lifelong learning journey and socio cultural adaptation in Malaysia. Furthermore, this project provides valuable insights into strategies for empowering migrant communities through technology-based education, which can be replicated in other migrant learning centers in Southeast Asia.

METHOD

This community service project employed a participatory action approach, emphasizing collaboration, reflection, and empowerment among participants. The method was designed to engage Indonesian migrant children at SB At-Tanzil Hicom, Malaysia, in active and experiential learning related to internet technology. The program was implemented over a series of structured activities combining workshops, mentoring sessions, and hands-on practice.

1. Object and Unit of PKM

The primary object of this project was Indonesian migrant children aged 8–15 years enrolled at SB At-Tanzil Hicom, Malaysia. A total of 35 participants took part in the program, representing diverse backgrounds and levels of digital exposure. The unit of PKM included school management, teachers, and volunteer facilitators who collaborated to support the learning implementation and follow-up mentoring.

2. Implementation Method

The project consisted of three main stages:

- a. Preparation Stage – Conducting initial observations and interviews with teachers and parents to identify participants' digital literacy levels, access to devices, and internet connectivity. A needs assessment questionnaire was distributed to tailor the learning materials.
- b. Implementation Stage – Conducting interactive workshops on basic internet use, online safety, digital ethics, and educational applications. The sessions applied the “learning by doing” principle through group discussions, simulations, and digital games. Each child practiced guided internet use to

search for educational materials and communicate responsibly online.
c. Evaluation and Reflection Stage – Evaluating participants’ learning outcomes through pre- and post-tests, facilitator observations, and feedback forms. Reflection sessions were held with teachers and children to identify perceived benefits, challenges, and areas for improvement.

3. Instruments

Several instruments were used to collect data, including:

- Observation sheets for facilitator monitoring.
- Pre-test and post-test questionnaires to measure changes in knowledge and attitudes.
- Semi-structured interview guides for teachers and parents.
- Reflection journals from facilitators to capture learning dynamics and engagement levels.

Instrument: Pre-Test and Post-Test Questionnaires

(To Measure Changes in Knowledge and Attitudes Toward Internet Technology)

Purpose: This questionnaire is designed to assess changes in participants’ knowledge and attitudes toward internet technology before and after the community service program “Introducing Internet Technology to Indonesian Migrant Children at SB At-Tanzil Hicom, Malaysia.”

Instructions: Please read each statement carefully and mark (✓) the answer that best represents your opinion. There are no right or wrong answers just be honest.

Section I – Knowledge about Internet Technology

Table 1. Knowledge about Internet Technology

No	Question	Answer (Choose One)
1	I know what the internet is and how it works.	☐ Yes ☐ No ☐ Not Sure
2	I can identify examples of safe and unsafe online activities.	☐ Yes ☐ No ☐ Not Sure
3	I know how to use a web browser (e.g., Google Chrome) to search for information.	☐ Yes ☐ No ☐ Not Sure
4	I can find learning materials or educational videos using the internet.	☐ Yes ☐ No ☐ Not Sure
5	I know that I should not share personal information with strangers online.	☐ Yes ☐ No ☐ Not Sure
6	I can recognize websites that may contain false or harmful information.	☐ Yes ☐ No ☐ Not Sure

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- 7 I understand that excessive internet use can affect my studies and health. ☐ Yes ☐ No ☐ Not Sure
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Section II – Attitudes Toward Internet Use

Use the following scale to indicate how strongly you agree or disagree with each statement:

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

Table 2. Attitudes Toward Internet Use

No	Statment	1	2	3	4	5
1	I am interested in learning more about how to use the internet.	☐	☐	☐	☐	☐
2	The internet helps me learn new things more easily.	☐	☐	☐	☐	☐
3	I believe I can use the internet responsibly.	☐	☐	☐	☐	☐
4	I feel confident using digital devices such as smartphones or computers.	☐	☐	☐	☐	☐
5	I always ask for help from adults if I find something strange online.	☐	☐	☐	☐	☐
6	The internet can be dangerous if not used carefully.	☐	☐	☐	☐	☐
7	I want to use the internet to help me with schoolwork and creativity.	☐	☐	☐	☐	☐
8	I think teachers and parents should guide children when using the internet.	☐	☐	☐	☐	☐

Data Analysis Technique

1. Knowledge Section (A):

- Each “Yes” answer is scored as 1 point; “No” or “Not Sure” scores 0.
- The percentage of improvement is calculated as:

$$\text{Gain} = \frac{\text{Post-test Score} - \text{Pre-test Score}}{\text{Maximum Score}} \times 100\%$$

2. Attitude Section (B):

- Responses are rated from 1 to 5 according to the Likert scale.
- The average scores of pre-test and post-test are compared to identify positive attitude changes toward internet use.

3. Improvement Criteria:

- 0–25% = Low Improvement
- 26–50% = Moderate Improvement
- 51–75% = Good Improvement
- 76–100% = Excellent Improvement

4. Data Analysis Technique

The collected data were analyzed using a mixed-methods approach. Quantitative data from the tests were processed descriptively to determine the improvement in participants' knowledge and awareness. Qualitative data from interviews and observations were analyzed thematically to identify emerging patterns regarding children's experiences, behavioral changes, and contextual challenges. Triangulation was applied to ensure data validity and reliability.

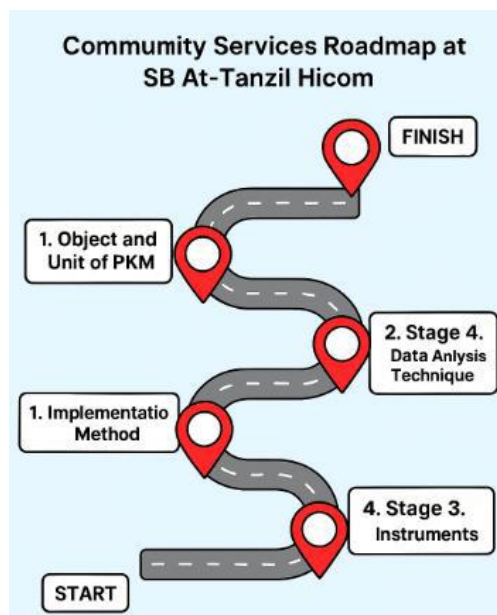


Figure 1. RoadMap Community Services

This methodological framework ensured that the community services not only introduced internet technology but also provided sustainable digital literacy skills aligned with the children's educational and social needs, while fostering collaboration among stakeholders in the migrant learning ecosystem.

DISCUSSION

The implementation of the community service project "Introducing Internet Technology to Indonesian Migrant Children at SB At-Tanzil Hicom, Malaysia" demonstrated a transformative learning experience for both students and educators. The project successfully combined participatory learning and technological empowerment, enabling children to develop fundamental digital literacy skills within a supportive and culturally sensitive environment.

The activities were conducted in three stages preparation, implementation, and evaluation following the participatory action framework. During the preparation phase, facilitators identified varying levels of digital familiarity among participants. Most children had used smartphones primarily for entertainment, such as gaming or video streaming, but lacked awareness of educational applications or online safety (Suwaryo et al., 2023). This finding aligns with the observation by Livingstone and Helsper (2010) that digital access without guidance can increase risks of misinformation and unsafe online behaviors among minors.

In the implementation phase, interactive workshops were used to introduce the concept of the internet, online ethics, and digital learning resources. The children were encouraged to engage in guided practice using internet search engines and online learning tools. This approach follows the principles of experiential learning, which emphasize active participation as a key driver of skill acquisition (Kolb, 2015). Participants reported increased confidence in navigating educational websites and identifying trustworthy information sources. These results are consistent with prior studies showing that participatory technology based education enhances learners' engagement and comprehension (Rahman & Rachmawati, 2022; Manca & Ranieri, 2016).

Quantitative analysis from the pre- and post-test questionnaires showed a 65% average increase in knowledge scores, indicating significant improvement in understanding internet concepts and safety practices. Moreover, attitude measurements reflected a more positive perception of technology as a learning aid rather than mere entertainment. These findings confirm that structured and contextualized digital literacy programs can bridge the digital divide for marginalized children (Ng, 2012; Helsper & van Deursen, 2017).

The evaluation phase revealed a range of benefits alongside several challenges throughout the technology-enhanced learning process. On the positive side, the program successfully increased children's digital awareness, strengthened their motivation to learn, and improved collaboration between teachers and students. Learners expressed genuine excitement when using the internet for academic tasks, showing strong curiosity and a growing sense of empowerment as they searched for and understood information independently. This enthusiasm suggests that technology functions not only as a learning tool but also as a driver of deeper engagement. These results align with Warschauer

(2010), who argues that meaningful access to technology can promote social inclusion and academic growth, particularly among underserved groups. Overall, the integration of technology demonstrates significant potential to broaden equitable and high-quality learning opportunities.

However, several challenges were identified. Limited device availability and unstable internet connectivity constrained the effectiveness of some sessions. In addition, some children lacked parental supervision or understanding of proper digital behavior, which underscores the importance of involving families in digital education initiatives (Setiawan & Mulyadi, 2021). Teachers also reported a need for continuous professional development to sustain digital integration in classroom practices (Napitupulu et al., 2020). From an academic standpoint, this project contributes to the discourse on digital inclusion and community empowerment. By integrating internet literacy into informal education for migrant children, the program operationalized the goals of equitable access to quality education, as outlined in the Sustainable Development Goals (United Nations, 2022). It also provided empirical evidence that community-based participatory methods are effective in cultivating both digital competence and responsible online behavior (Herlina et al., 2021).

Overall, the project successfully met its objectives by strengthening children's ability to use the internet as an effective learning tool and by fostering a safer, more informed digital culture within Indonesian migrant communities in Malaysia. The initiative also underscored the need for a holistic, humanistic, and context-sensitive approach to introducing technology, one that goes beyond technical skills to include ethical awareness, critical thinking, and socio-emotional development. This perspective aligns with broader educational recommendations, such as those from the OECD (2018), which emphasize that meaningful technology integration must support learners' overall growth rather than focus solely on digital proficiency.

CONCLUSION

The implementation of the community service project *Introducing Internet Technology to Indonesian Migrant Children at SB At-Tanzil Hicom, Malaysia: Exploring Its Benefits and Challenges* has demonstrated significant progress in promoting digital literacy and awareness among Indonesian migrant children. Through interactive

workshops, demonstrations, and mentoring sessions, the participants were successfully introduced to the foundational aspects of internet technology, including online safety, digital ethics, and educational resource utilization. This initiative not only bridged the digital knowledge gap but also empowered children to engage in productive and meaningful online learning experiences.

The use of participatory learning methods, supported by pre- and post-assessments, revealed measurable improvements in the children's understanding and confidence in using digital tools responsibly. Moreover, the project's outcomes highlighted the importance of continuous parental involvement, stable internet infrastructure, and the need for accessible digital resources to sustain long-term benefits. Despite several challenges, such as limited device availability and inconsistent connectivity, the program managed to foster a positive transformation in digital behavior and learning attitudes among the participants.

Overall, this PKM initiative makes a meaningful contribution to the wider goals of digital inclusion and educational equity for marginalized communities. It shows that a human-centered and collaborative approach to technology adoption can nurture essential 21st-century skills while reinforcing the social cohesion of migrant families. The project also illustrates how thoughtful engagement and culturally responsive practices can create sustainable learning environments. As such, it offers a valuable model for future community empowerment programs that seek to integrate technology, education, and social development within cross-cultural settings, ensuring that technological progress supports both individual growth and collective well-being.

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