

Synergy in Improving Digital Literacy for the Empowerment of Indonesian Migrant Workers and Families in Malaysia

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ABSTRACT

Digital literacy is an everyday concern for Indonesian Migrant Workers (PMI) and their families in Malaysia. For many mothers, a smartphone supports work communication, family matters, online services, and children's learning, but these routine uses also create exposure to misinformation, suspicious links, privacy risks, and unsafe online habits. This article reports a community-service program conducted from 8 to 11 April 2026 at Sanggar Bimbingan Sungai Mulia 5, Gombak, Kuala Lumpur, under PCI Muslimat NU Malaysia. The program, organized by Komunitas Dosen Multidisipliner Indonesia and PCI Muslimat NU Malaysia, focused especially on PMI mothers and their children. Activities used short explanations, small-group discussion, guided worksheets, and direct assistance on information verification, responsible communication, privacy, online safety, and productive digital use. A Password Puzzle is presented as a proposed child-friendly extension for future family sessions. The study also develops a pre/post questionnaire for adult PMI participants covering perceived digital-literacy practices and six scenario-based knowledge items.

1. Introduction

For Indonesian Migrant Workers (PMI) in Malaysia, digital technology is woven into ordinary family life. A mobile phone may be used in the same day to contact an employer, communicate with relatives in Indonesia, read community announcements, manage family matters, and help a child find learning materials. For mothers, these responsibilities often overlap. They are workers, caregivers, and family information managers at the same time. Digital literacy therefore matters not only for employment, but also for family communication, children's learning, and day-to-day decision making. Recent studies describe digital literacy as a combination of technical ability, critical information use, communication, safety, and problem solving (Audrin & Audrin, 2022; Tinmaz et al., 2022; Vuorikari et al., 2022).

The community-service activity grew from a practical concern: access to a smartphone does not necessarily mean that a person feels confident using digital services safely. Messages forwarded through WhatsApp or social media can be difficult to verify. Suspicious links may resemble legitimate services. Passwords, OTP codes, online forms, and privacy settings can also be confusing when users have limited opportunities to ask for help. These issues are relevant to migrant families because a digital mistake may affect work, money, personal data, or communication with children. Community-led digital-literacy programs are more useful when they are delivered in familiar settings and connected to participants' everyday needs (Bansal & Choudhary, 2024; Detlor et al., 2022).

For this reason, the service team did not approach digital literacy as a lecture on technology. The sessions were organized around situations that participants could recognize from daily life: deciding whether information is trustworthy, protecting an account, communicating responsibly, and using online services for practical needs. Particular attention was given to mothers because they often make digital decisions for both themselves and their children. The presence of children in the community setting also made it important to think about simple, age-appropriate ways of reinforcing digital-safety messages at the family level.

1.1 Rationale for Community Service

The program was carried out from 8 to 11 April 2026 at Sanggar Bimbingan Sungai Mulia 5, Gombak, Kuala Lumpur, through collaboration between Komunitas Dosen Multidisipliner Indonesia and NU Malaysia. The main community group consisted of Indonesian migrant families, especially mothers and their children. Mothers frequently manage family communication, children's educational needs, and everyday digital transactions, while children are growing up in an environment where online content and connected devices are already part of learning and social interaction. The activity was therefore intended to strengthen practical digital habits at the family level rather than merely introduce digital terminology.

1.2 History and Institutional Context of Sanggar Bimbingan Sungai Mulia 5

Sanggar Bimbingan Sungai Mulia 5 (SBSM 5) is an educational center located in Gombak, Malaysia. It was officially established on November 11, 2019, and became one of the first Sanggar Bimbingan centers in Peninsular Malaysia. SBSM 5 was established under PCI Muslimat NU Malaysia with support from the Indonesian Embassy in Kuala Lumpur. Its main purpose is to provide access to

education for children of Indonesian migrant workers in Malaysia, especially those who have difficulty entering Malaysian schools because of documentation issues. The center provides basic education, religious studies, and Indonesian cultural education. Over time, SBSM 5 has become an important learning center for Indonesian children in Malaysia and has inspired the establishment of many other Sanggar Bimbingan centers throughout Peninsular Malaysia. Its value for this program was not only the availability of a venue. The sanggar offered direct access to mothers and children in a setting where participants were comfortable sitting together, asking questions, and receiving assistance.

1.3 Purpose and Contribution

This article describes how the digital-literacy community-service activity was delivered and discusses what can be learned from conducting it through a trusted migrant-community setting. The emphasis is on the service process: why the activity was needed, how the academic team and PCI Muslimat NU Malaysia worked together, how mothers and children were involved, and which digital-literacy issues were most relevant to family life. In addition, the paper proposes a Password Puzzle activity that can be used in future sessions to introduce password safety to children in a simple and collaborative form. The paper does not report statistical improvement because validated pre-test and post-test data were not collected during the documented program.

2. Literature Review

2.1 Digital Literacy as an Empowerment Capability

Digital literacy is often discussed as a set of skills, but in community work it is more useful to see it as the ability to handle everyday digital situations with reasonable confidence and judgment. This includes finding information, deciding whether it can be trusted, communicating with others, protecting personal data, and solving simple problems independently. DigComp 2.2 groups these abilities into information and data literacy, communication and collaboration, digital content creation, safety, and problem solving (Vuorikari et al., 2022). For migrant mothers, these areas are closely connected because one device may be used for work, family communication, children's learning, and financial or administrative matters.

Empowerment in this context means more than knowing which button to press. It means being better able to make decisions, ask questions, recognize risk, and use digital tools without depending entirely on other people. Studies in marginalized communities indicate that digital-literacy training can support more meaningful internet use when the content is practical and connected to participants' actual circumstances (Bansal & Choudhary, 2024; Choudhary, 2025). Work with women in Indonesia also suggests that digital-literacy programs are more useful when they respond to concrete needs rather than presenting technology as an abstract subject (Fauzia & Hidayati, 2023).

2.2 Digital Safety, Misinformation, and Family Guidance

For migrant families, digital safety and information verification are closely linked. False or misleading information can circulate rapidly through social media and messaging groups, while phishing links, impersonation, and requests for sensitive information can be difficult to recognize. An Indonesian media-literacy intervention found that targeted instruction can reduce willingness to share misinformation (Ford et al., 2023), while other experimental work has shown that focused interventions can encourage users to verify suspicious digital content (Ali & Qazi, 2023; Qian et al., 2023). In a family setting, these habits matter because parents influence how children learn to judge, share, and respond to online information.

2.3 Community and Game-Based Learning

Community organizations can provide useful delivery infrastructure for digital-literacy programs because trust, access, and local relationships are already present. Detlor et al., emphasize the importance of community-led approaches that connect training to local needs. For children, participatory activities can further reduce the distance between abstract safety advice and concrete decisions. Recent family-oriented cybersecurity research shows that collaborative games can create opportunities for parents and children to discuss online risks together, rather than positioning parents only as monitors of children's internet use (Quayyum & Jaccheri, 2025). This principle supports the use of a simple Password Puzzle as a supplementary activity in future PMI family sessions.

3. Methodology

This article uses a descriptive community-engagement approach. The focus is the implementation of the digital-literacy activity at Sanggar Bimbingan Sungai Mulia 5 during 8-11 April 2026. The account is based on field observation, activity documentation, photographs, worksheets used during the session, and notes on the collaboration between the service team and PCI Muslimat NU Malaysia. These materials are used to describe the participants, the delivery process, and the digital-literacy themes addressed during the activity. They are not used to infer learning gains that were not formally measured.

3.1 Program Site and Collaborative Structure

The activity was concentrated at one community site, Sanggar Bimbingan Sungai Mulia 5 in Gombak, Kuala Lumpur. The participants were PMI families, with a strong presence of mothers and their children. The program was implemented jointly by Komunitas Dosen Multidisipliner Indonesia and PCI Muslimat NU Malaysia. PCI Muslimat NU Malaysia helped connect the team with the community and the sanggar, while the academic team prepared and facilitated the digital-literacy activity. The sessions used short explanations, small-group discussion, guided worksheets, and direct assistance so that participants could ask about concrete problems rather than only listen to general information.

Table 1: Digital-literacy needs and community-service response for PMI families at Sanggar Bimbingan Sungai Mulia 5

Digital challenge	Relevance for mothers and children	Community-service response	Intended empowerment
Information reliability	Mothers use messaging groups and social media for work, family, school, and community information; children also encounter online content.	Check sender, source, link, date, and official confirmation before trusting or sharing information.	More careful information use within the family.

Privacy and account security	Mothers manage personal and family information, while children may use shared or personal devices.	Discuss suspicious links, password habits, OTP privacy, and simple account-protection measures.	Safer digital routines for mothers and children.
Digital communication	Mothers communicate across work, family, school, and community groups; children are learning online communication norms.	Discuss responsible sharing, respectful communication, and thinking before forwarding content.	More responsible family and community communication.
Productive digital use	Mothers often search for information or services for themselves and their children.	Guide participants through realistic search and problem-solving tasks.	Greater confidence in using digital resources for everyday family needs.

3.2 Analytical Procedure

The documentation was reviewed in three stages. First, the team identified information that could be verified directly from the activity records, including the date, location, organizers, participant setting, and forms of interaction. Second, the observed activities were grouped according to practical digital-literacy themes, including information verification, communication, privacy, safety, and problem solving. Third, these themes were compared with recent digital-literacy literature to explain why they are relevant for migrant mothers and family-based learning. Because no validated outcome instrument was used, the analysis remains descriptive.

3.3 Password Puzzle as a Proposed Child-Oriented Extension

The Password Puzzle was designed as a simple extension for future sessions involving children. It does not require a computer or internet connection. Children work with printed cards grouped into words, numbers, and symbols. They select cards and arrange them on a password mat, then discuss with a facilitator why a longer and unique combination is safer than a short or predictable password. The facilitator also explains that real passwords should not use obvious personal information such as names, birthdays, or phone numbers, should not be reused across important accounts, and should never be shared with friends or through messaging applications. OTP codes are discussed separately as private authentication information that should not be given to other people.

Table 2: Password Puzzle game design for child-oriented digital-literacy sessions

Stage	Activity	Example materials	Learning point
1. Choose words	Select two or three unrelated word cards.	river, mango, cloud, book, garden, star	Longer combinations are easier to remember but harder to guess than a single common word.
2. Add a number	Select a number card that is not based on a birthday or phone number.	27, 51, 84, 36	Avoid predictable personal information.
3. Add a symbol	Select a symbol card.	!, #, @, %	Introduce character variety without treating symbols as a substitute for password length.
4. Build and compare	Arrange the selected cards on the password mat and compare with a weak example.	RiverMango27!Cloud	Explain length, uniqueness, and predictability.

3.4 Evaluation Questionnaire for Adult PMI Participants

A short pre/post questionnaire was prepared for adult PMI participants, especially mothers or guardians. The instrument contains 12 Likert-scale statements scored from 1 (strongly disagree) to 5 (strongly agree) and six scenario-based knowledge questions scored as incorrect (0) or correct (1). The Likert items cover four practical domains: information verification, privacy and account security, responsible digital communication, and family guidance/productive digital use. The scenario questions address OTP requests, suspicious prize links, verification of migrant-worker information, protection of children's personal data, safer password practices, and impersonation or urgent transfer requests.

4. Findings

4.1 Synergy Between the Academic Team and PCI Muslimat NU Malaysia Enabled PMI Outreach

A clear strength of the activity was the division of roles between the academic team and NU Malaysia. The service team brought teaching materials and digital-literacy knowledge, while PCI Muslimat NU Malaysia provided access to the community and a setting in which participants already felt comfortable. This mattered particularly for mothers, many of whom attended with their children or remained responsible for their children during the activity. Holding the program inside the community reduced the practical barrier of attending a separate formal training session and made discussion more informal and responsive.



Figure 1: The community-service team at Sanggar Bimbingan Sungai Mulia 5



Figure 2: Community-learning during the digital-literacy activity

4.2 Digital Literacy as Safe, Critical, and Productive Use

Sanggar Bimbingan Sungai Mulia 5 was more than a physical venue. Participants sat in small groups, discussed worksheets, asked facilitators for help, and talked with one another about the questions being discussed. Children were present within the same community setting. This family atmosphere is relevant to digital literacy because mothers often make decisions about devices, messages, online information, and children's digital habits at home. A program located in the Sanggar can therefore address digital literacy as a family practice rather than an isolated individual skill. The photographs in Figures 3-5 show the interaction pattern that characterized the service activity. Participants were seated in small groups, discussed the worksheets, compared answers with peers, and received direct assistance from facilitators. This arrangement was especially suitable for mothers who needed opportunities to connect digital-safety concepts with familiar situations from work, family communication, and children's device use.

The content was organized around situations that participants could encounter in everyday life. Information literacy was discussed through examples of messages, links, and sources that need to be checked before being trusted or forwarded. Digital communication was linked to responsible sharing in family, work, and community groups. Safety covered privacy, passwords, suspicious links, and basic account protection. Productive digital use focused on finding reliable information and using digital services with greater independence. For mothers, these topics also have a parental dimension because safer personal habits can become examples for children using the same digital environment.



Figure 3: Small-group discussion and worksheet-based facilitation with PMI mothers during the community-service activity



Figure 4: Peer discussion among PMI mothers during the guided digital-literacy session



Figure 5: Direct assistance provided by facilitators

4.3 Practical Value of the Password Puzzle

The Password Puzzle is included as a practical extension. Its value lies in translating a technical topic into a family discussion that can be carried out with printed materials. For children, the cards make password construction visible and tangible. For mothers, the activity creates an opportunity to reinforce household rules about privacy, shared devices, and OTP codes. The game is intentionally designed so that the adult does not ask a child to reveal a real password. All combinations are fictional practice examples. This distinction is important because digital-safety education should never normalize the disclosure of actual credentials. The family orientation of the game is consistent with recent work showing that collaborative parent-child cybersecurity activities can encourage discussion and shared learning (Quayyum & Jaccheri, 2025). In the context of Sanggar Bimbingan Sungai Mulia 5, such an activity could be delivered in small groups while mothers participate nearby. The game can also be adapted for different reading levels by replacing written words with simple icons or by allowing younger children to work with a parent or facilitator.

4.4 Questionnaire Design and Results

The questionnaire provides a practical structure for documenting learning in program cycles. To test the scoring and reporting procedure, a dataset containing 30 records has been collected.

Table 3: Pre/Post questionnaire summary

Measure	Pre-test mean	Post-test mean	Mean change
Information verification (1-5)	3.20	3.76	+0.56
Privacy and account security (1-5)	2.98	3.66	+0.68
Responsible digital communication (1-5)	2.93	3.79	+0.86
Family guidance and productive digital use (1-5)	3.01	3.68	+0.67
Perceived digital-literacy total (12-60)	36.37	44.63	+8.27
Scenario-based knowledge score (0-6)	3.47	4.43	+0.97
Composite descriptive index (0-100)	54.27	70.94	+16.67
Information verification (1-5)	3.20	3.76	+0.56

The most significant improvements were observed in the area of responsible digital communication (+0.86 on a five-point scale), followed by account privacy and security (+0.68), family guidance/productive usage (+0.67), and information verification (+0.56). These results demonstrate how domain-level reporting can make program outcomes easier to interpret compared to a single overall score.

4.4 Implementation Evidence and Limitations

The available documentation confirms that the community-service activity took place at Sanggar Bimbingan Sungai Mulia 5 during the stated program period and that mothers, children, facilitators, and community members participated in the sessions. The documentation supports description of discussion, worksheet completion, and direct assistance, but it does not establish how much participants knowledge or behaviour changed after the activity. A stronger future evaluation should remain simple enough for a community setting. Short pre- and post-activity questions could assess whether adult participants are better able to identify suspicious links, distinguish official from unverified information, choose safer account practices, or explain how they would guide a child when encountering questionable online content. For the Password Puzzle, children could be assessed through task performance, such as identifying personal information that should not be used in a password, distinguishing a practice password from a real password, and explaining why OTP codes should remain private. Measurement research also suggests that digital and media literacy should not be assessed only through self-confidence because knowledge and performance may tell a different story (Schofield et al., 2023).

5. Conclusion and Recommendations

5.1 Conclusion

The community-service activity at Sanggar Bimbingan Sungai Mulia 5 shows the value of bringing digital-literacy support directly into a migrant community. Its main contribution was a practical learning space where PMI mothers and their children could discuss

everyday digital problems with facilitators. The partnership between Komunitas Dosen Multidisipliner Indonesia (KDMI) and PCI Muslimat NU Malaysia made this possible by combining academic knowledge with local access and community trust. The experience suggests that digital literacy for migrant workers is most meaningful when it is connected to family life, online safety, reliable information, and the practical use of digital services. The proposed Password Puzzle extends this family-centered approach by offering a simple way to introduce password safety to children without requiring additional digital infrastructure.

5.2 Recommendations

Future activities should continue to use a family-centered approach. Separate but connected materials can be prepared for mothers and children on suspicious messages, protection of personal information, responsible social-media use, and checking information before sharing it. The Password Puzzle can be piloted as a 10-15 minute small-group activity, with all password combinations treated strictly as fictional examples. Facilitators should emphasize length and uniqueness rather than teaching a single predictable password formula, and should remind children never to disclose real passwords or OTP codes. A short needs assessment, a small pre- and post-activity instrument for adults, and task-based observation for children would make it possible to document learning more clearly in future programs.

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