Enabling Children as Disaster Risk Communicators by Using Social Media Learning Kit

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Abstract
Children are widely recognized as one of the most at-risk groups from disasters but can also play a significant role in disaster risk reduction, including as effective communicators. Involving children in these activities and decision-making processes is crucial for enabling proactive measures and effective risk communication within families and communities. Social media can be a useful tool for teaching children about disaster preparedness. This study uses the Participatory Action Research (PAR) method to engage children in disaster risk communication via social media learning. A total of 175 children aged 13-15 (95 girls, 80 boys) from two middle schools in Jakarta, Indonesia, participated in exploring ideas and producing social media content on disaster preparedness. Effectiveness was measured through surveys, participant observation, focus group discussions, and teacher interviews. Results showed that most children used social media to learn or seek information (95%), shared positive content with peers (92%), and were interested in creating and sharing disaster-related content (78%). Teachers viewed social media positively as an educational tool. Practical approach by combining learning media engagement, practical training, and access to credible information has been proven to be an effective way in enabling children to become active agents of disaster risk communicators. The next research stage is to measure the reach and engagement of media produced by participating children.

Keywords: Children, Risk Communicator, Social Media, Disaster, Participatory Action Learning

Introduction

Children are a particularly vulnerable group during disasters; they often have limited access to food sources and health services and are at risk of being separated from their families (Peek, 2008). According to WHO (2020), as many as 30–50% of deaths due to natural disasters are children. To minimize the risk of disasters to children, they need to be involved in disaster preparedness efforts (UNISDR, 2009). Children can contribute to disaster mitigation, preparedness, and response by serving as an important resource in building community resilience, where they have the capacity to influence community preparedness effectively so that they can strengthen their response to future disasters (Bessaha et al., 2021). Thus, the involvement of children in disaster management contributes to creating more inclusive policies that improve overall community preparedness and resilience (Ridzuan et al., 2022). Children's participation in disaster preparedness is essential because they can be risk communicators for their families and peers (Mohammadinia & Mohammadinia, 2020; Pfefferbaum et al., 2018) and agents of change that can strengthen the impact of risk communication (SFDRR, 2015).

One way that children can contribute is through education, which must be aimed at equipping children with the knowledge and skills needed to recognize, respond to, and recover from disasters. Effective disaster education can significantly improve children's understanding of risks and the ability to take appropriate action during emergencies (Karisa, 2023; Seddighi et al., 2021; Yildiz et al., 2022). However, several challenges must be faced, such as limited integration into the school curriculum, inadequate teacher training (Amri et al., 2017), low awareness and disaster preparedness in school children (Nur'aeni, 2023), lack of conventional disaster education materials and methods, causing the process of involvement and children's learning outcomes about disaster mitigation to be ineffective (Pranata, 2022). Teaching children about natural hazards encourages their active participation in preparedness, response, and recovery efforts (Morris & Edwards, 2008). Because of their imaginative, enthusiastic, and motivated nature, children can become strong advocates for preparedness through sharing information (USDHHS, 2017), which can help inform and prepare their families and friends (FEMA, 2015). This, in turn, builds resilience and recovery for themselves, their families, and their communities (Peek, 2008).

This paper shows how integrating social media into disaster education presents a promising avenue for enhancing awareness and preparedness among children. Social media platforms can effectively disseminate information, engage students, foster a culture of preparedness (Gupta, 2015), and can be used to create engaging content (Karisa, 2023). Moreover, social media facilitates peer-to-peer learning and community engagement. Children can share their experiences and knowledge about disaster preparedness through social media, fostering a collaborative learning environment (Cumiskey et al., 2015). This peer engagement can effectively reinforce the lessons learned in formal educational settings. For example, schools can encourage students to participate in online discussions or challenges related to disaster preparedness, thereby promoting active involvement and ownership of their learning (Cumiskey et al., 2015). By providing platforms for sharing stories and experiences related to disasters, social media can help normalise discussions about risks and preparedness, reducing anxiety and fear associated with disasters and building resilience among children (Gupta, 2015; Houston et al., 2014).

Methods

This study uses the Participatory Action Research (PAR) methodology by Stringer in 2015, focusing on disaster education in a school-based setting, emphasising a transformative approach that empowers children to engage in their preparedness actively. PAR is a qualitative research methodology emphasising collaboration between researchers and participants, aiming to address specific community issues through a cyclical process of reflection, action, and learning (MacDonald, 2012). By fostering collaboration between researchers and participants, children contribute their perspectives and experiences, helping to create more relevant and effective disaster education programs that resonate with their realities (Zeng & Silverstein, 2011; Delicado et al., 2017).

This study proceeded along three phases: "look," "think," and "act." During the "look" phase, interviews were conducted with government agencies, disaster practitioners, and schools to get a current idea about disaster education. The target of the study involved students aged 13-15 years old in middle school, in which children are at a time of being both cognitively mature and active in communal life, as advanced (Berk, 2015). In the "think" phase, by using Hart's Ladder of Participation (2015), which involves children being consulted and informed, and culminates in a collaborative decision-making process where children actively contribute to decisions affecting them (Warraitch, 2023; Arunkumar et al., 2018). In the final "act" phase, children created social media content about disasters with support from adults. This phase describes the design and results of a workshop on disaster preparedness education through social media content development that consisted of the "think" phase, in which content and media strategies were designed. The efficiency of their involvement was measured through participatory observation techniques during the activity, whereas reflection sessions were organized to analyze the workshop result.

The PAR Project Workshop

The study followed all three phases of PAR based on Stringer (2014), which began with the "look phase" to understand stakeholders and define the problem within the community context. Here, the author identifies and analyses the target audience for disaster mitigation education and how to enable them as a risk communicator. The primary target audience is Indonesian middle school students aged 13 to 15 years. Children in this age range were chosen because they can think in a complex way and are more active in communal life (Berk, 2015). The author conducted interviews with stakeholders from The National Disaster Management Agency (BNPB), PREDIKT (disaster practitioners), and teachers from two middle schools in Jakarta, respectively Hati Kudus Grogol Private Middle School and Taman Siswa Kemayoran Private Middle School. We also conducted a literature review to gain an overview of disaster preparedness content provided by BNPB, UNICEF, and the Indonesian Ministry of Education and Culture (MENDIKBUD) to understand the fundamentals of disaster education in schools.

Based on the initial data collected during the "Look Phase," the project moved to the "Think Phase." During this phase, content and media strategies were developed and prototypes were designed to implement instructional materials for the PAR workshop. Building on the insights gathered in the previous phase, social media was selected as an alternative medium for disaster preparedness education. Social media increases student engagement, promotes collaborative learning, and provides access to a wide range of resources. It also creates a platform for active learning by building a virtual community of peers who explore and learn

together (Rampai, 2015). In addition, social media connects students with experts and resources outside the classroom, enriching their learning experiences (Hiranyachattada & Kusirirat, 2020). The PAR workshop project developed a social media learning kit to help teachers and children teach and learn disaster preparedness. The kit includes disaster preparedness book, brochures, activity cards, video examples, and manuals. These materials aim to enhance and support the learning experience and encourage active participation in disaster preparedness education.
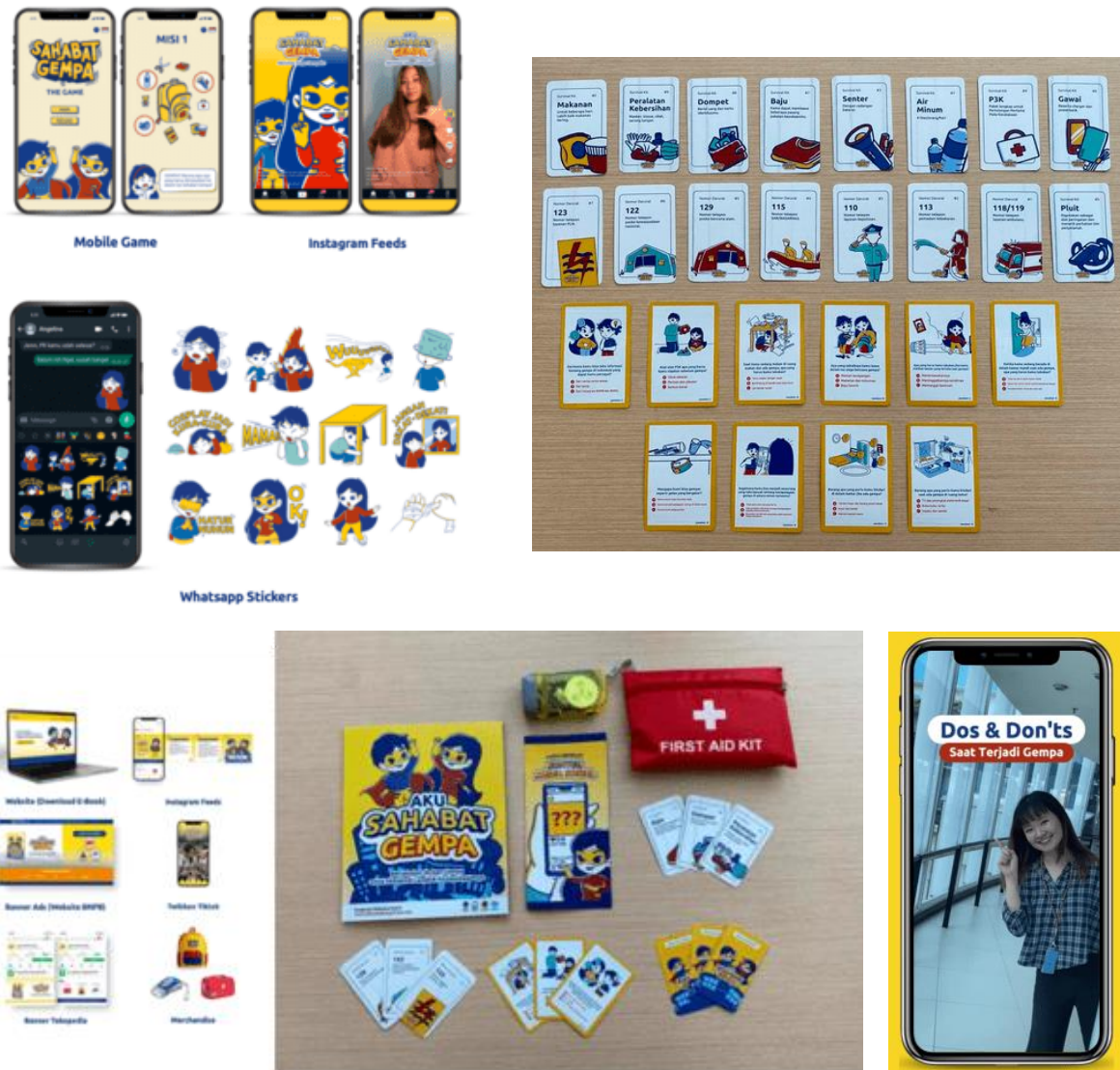

Figure 1: Social Media Learning Kit

The PAR research workshop was conducted in two middle schools in Jakarta, Indonesia. The first was Hati Kudus Grogol Private Middle School, with 90 participants (47 girls and 43 boys) in June 2023, and the second was Taman Siswa Kemayoran Private Middle School, with 85 participants (48 girls and 37 boys) in October 2023. The participants from both schools were between 13 and 15 years old. Based on Hart's Ladder of Participation (2015), the workshop began with a session on disaster preparedness in collaboration with PREDIKT (a disaster practitioner). The second session focused on using social media for education and content creation about disasters while being taught proper ethics for its use. A training kit was provided as an additional alternative educational medium to help equip the children with the knowledge and skills to effectively communicate about disasters and use social media for

advocacy and education. This approach served as a bridge between identifying issues and taking action, ensuring that subsequent steps were informed by comprehensive data analysis and collective insights (Rämgård et al., 2015).

Figure 2: PAR Workshop Project for Middle Schoolchildren

In the final "act phase," the workshop project progressed to the next step, where children took complete control of the decision-making process while adults supported and facilitated their initiatives. Based on the insights given and obtained by the participants, they were asked to join small groups and create content related to disasters for implementation on social media; this aimed to empower participants by giving them agency in decision-making. Mandoh et al. (2020) emphasise that when children implement policies and guidelines, they develop a sense of ownership and responsibility for the outcomes. In this activity, they had the freedom to experiment, choose the type of content, and select their preferred language and visual style. Additionally, we documented the actions taken and reflected on the process using participatory observation methods, as documentation is crucial for understanding participation effectiveness and planning future initiatives (Shier, 2001). At the end of the workshop, we conducted reflection and evaluation sessions with the participants to gather insights on the activity's effectiveness, leading to further reflection and the potential for new cycles of inquiry.

Result and Findings

Several findings have been identified on the PAR research project. Based on interviews with disaster preparedness education stakeholders and literature studies we get the result as follows:

Table 1: Key Findings From Interview and Literature Studies

No	Category	Key Findings
1.	Importance of Disaster Risk Education	Disaster risk education should be integrated into school curricula. Schools play a key role in disaster preparedness knowledge and risk communication.
2.	Children as Agents of Change	Educating children enables them to share information and engage in risk communication. They can be empowered as agents of change in their communities.
3.	Challenges in Integration	Disaster risk education is not prioritized in the general educational environment, resulting in students' lack of awareness and preparedness.
4.	Curriculum Gaps	Disaster mitigation education is integrated into various subjects, leading to fragmented and less effective learning.
5.	Teacher Preparedness	Many teachers feel unprepared to teach disaster risk education and rely on conventional teaching methods.
6.	Material and Support Deficit	There is a lack of adequate disaster preparedness materials, and institutions do not provide sufficient support.
7.	Case Study Insights	Interviews with middle schools in Jakarta highlighted reliance on outdated methods and a lack of proper preparation and resources among teachers.

Incorporating disaster risk education into school curricula is essential for equipping children to become effective risk communicators. Nonetheless, there are challenges like low prioritization, unprepared teachers, and a lack of adequate resources. Enhancing the content to make it more engaging and accessible can increase disaster awareness and preparedness for everyone.

Several interesting ideas emerged during the PAR workshop: participants were very active in asking questions, all of them had social media accounts and were active in using them, and they showed great enthusiasm when presented with material on creating social media content; this is in line with our goal to integrate social media as a learning tool in educational contexts. The results of the reflection phase showed that although educational media about disasters already exist, there is potential to improve them by using more familiar, interactive, and accessible formats. This approach will make the content more understandable not only for children but also for other stakeholders. By developing more comprehensive, accessible, and easily digestible content about disaster preparedness and selecting appropriate media and narratives, we aim to accelerate children's ability to become effective risk communicators.

Table 2: The PAR Research Project Reflection Survey Results

No	Statement	Results	
		Hati Kudus Grogol	**Taman Siswa Kemayoran**
		90 Responden	*85 Responden*
1.	Children prefer social media as learning advice the most.	97,8	97.64%
2.	Social media platforms that most interest children.	Tiktok (74,4%)	Tiktok (91%)
3.	Children want to share content with their friends	97,8%	92.93%
4.	The amount of time children spends on social media each day.	<2 hours (14.4%) 2-5 hours (51,1%) >5 hours (34.4%)	<2 hours (28.23%) 2-5 hours (43.52%) >5 hours (28.23%)
5.	Children like to upload content to social media.	54,4%	51.75%
6.	Children like to create content that aligns with social media trends.	53,3%	67.05%
7.	Children usually follow certain types of content.	Gaming (44.4%) Memes (19.8%) Dance (18.5%) other activities (17.3%)	Dance (30.6%) Gaming (18.8%) other activities (50.6%)
8.	Children enjoy learning from social media.	97.8%	95.30%
9.	Children understand the material from the disaster mitigation workshop.	93,3%	88.23%
10.	Children understand the material from the social media learning workshop.	95,5%	78,83%
11.	Children like creating content about disasters.	67.8%	44.69%

Data shows that children at both Hati Kudus Grogol Private Middle School and Taman Siswa Kemayoran Private Middle School predominantly prefer social media as a learning tool (97.8% and 97.64%, respectively). TikTok is the most popular platform among them, with 74.4% interested at Hati Kudus Grogol Private Middle School and 91% at Taman Siswa Kemayoran Private Middle School. They also show much interest in sharing content with friends (97.8% and 92.93%). Most children spend 2-5 hours on social media daily, with students at Hati Kudus Grogol Private Middle School spending slightly more time on it. While over half enjoy creating content (54.4% and 51.75%), students Taman Siswa

Kemayoran Private Middle School are more likely to engage in dancing and other activities, while gaming and memes are more popular at Hati Kudus Grogol Private Middle School. Both schools show great enthusiasm for learning from social media, although understanding from workshops and creating content about disasters varies, with students from Hati Kudus Grogol Private Middle School showing slightly higher engagement.

Discussion

This study demonstrates the potential of integrating disaster preparedness education into school curricula through innovative, participatory methods such as social media, empowering students to become active risk communicators within their communities. By involving middle school students in content creation and leveraging the interactive nature of digital platforms, the PAR approach enhanced their understanding of disaster risks and stimulated essential communication and collaboration skills. The findings suggest that when children can create and share disaster-related content, they take on a more active role in their education, contributing to a greater sense of ownership and responsibility. However, the success of such initiatives relies heavily on the support of teachers and disaster practitioners, as well as careful consideration of ethical issues related to social media use. The study also highlighted challenges such as limited access to social media platforms and the need for better teacher training in disaster preparedness education, suggesting that future efforts should focus on building more robust support systems for educators and expanding disaster education efforts to diverse communities for long-term sustainability. Also, due to time limitations, this study could not measure the efficiency of the content created by the workshop participants.

Conclusion

In conclusion, this study highlights the potential of integrating disaster preparedness education into school curricula through PAR methods like social media, enabling middle school students to actively engage as risk communicators in their communities. By fostering content creation and leveraging digital platforms, children gained a deeper understanding of disaster risks and developed vital communication and collaboration skills. Despite challenges such as limited teacher training and resource access, this approach demonstrates the potential to enhance community resilience and preparedness through education. Future research should focus on measuring the reach and engagement of the media produced by participating children to assess this educational approach's broader impact and effectiveness.

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