Media and Communication
2025 • Volume 13 • Article 9078
https://doi.org/10.17645/mac.9078

cogitatio

ARTICLE

Open Access Journal

Unveiling Disability Empowerment: Evaluating ICT Skill Enhancement Initiatives in Indonesia

Amri Dunan, Bambang Mudjiyanto, Karman, and Djoko Walujo

The National Research and Innovation Agency, Indonesia

Correspondence: Amri Dunan (amri003@brin.go.id)

Submitted: 29 July 2024 **Accepted:** 10 October 2024 **Published:** 23 January 2025

Issue: This article is part of the issue "Evaluating and Enhancing Media Literacy and Digital Skills" edited by Leen d'Haenens (KU Leuven) and Willem Joris (Vrije Universiteit Brussel), fully open access at https://doi.org/10.17645/mac.i466

Abstract

This study examines the role of information and communication technology (ICT) skill development programs, such as the Digital Talent Scholarship and ICT Jamboree, in empowering people with disability across Indonesia. Grounded in empowerment theory, it investigates how these programs contribute to personal autonomy, economic engagement, and social inclusion. The research focuses on participants' perceptions of the impact of ICT training on their independence and social integration. It also identifies challenges in applying ICT skills in daily life, including barriers to employment and limited access to assistive technologies like Braille displays and hearing aids. Through a qualitative approach—using semi-structured interviews and focus group discussions with 99 participants from diverse people with disability groups—the findings reveal significant improvements in self-confidence, digital literacy, and participants' ability to overcome employment and online communication challenges. While ICT shows potential to reduce social isolation and foster digital inclusion, disparities in proficiency and access to adaptive tools remain. The study emphasizes the need for more tailored interventions and advocates for increased funding, better accessibility, and stronger public-private partnerships to advance disability inclusion through ICT, extending beyond Indonesia to Asia and the Middle East.

Keywords

disability; empowerment; evaluating; ICT skills; ICT training; Indonesia; social inclusion

1. Introduction

Indonesia, as the world's fourth most populous country and an archipelago nation, faces unique challenges in addressing social and health issues, including among people with disability (PwD). Disability in Indonesia

is a complex issue requiring special attention from various sectors. According to the latest data from the Badan Pusat Statistik (BPS; Central Statistics Agency), in 2022 there will be approximately 22.5 million PwD in Indonesia, up from 16.5 million in 2021 (Kominfo, 2024). This introduction will discuss the demographics of disabilities in Indonesia, the challenges faced by PwD, and the efforts of the government and society to improve their welfare and social inclusion.

The population of PwD in Indonesia is spread across all provinces, with varying prevalence. According to data from BPS, most PwD are in rural areas. In 2022, it was recorded that around 720,748 PwD were working, which is 0.53% of the total working population in Indonesia. Of this number, 445,114 are men, and 275,634 are women (BPS, 2022). This figure shows a significant increase compared to the previous year, reflecting better recording and empowerment efforts for PwD. Indonesia has made significant strides in the area of disability rights. It ratified the United Nations Convention on the Rights of Persons with Disabilities in 2011, demonstrating a solid commitment to protecting and advancing the rights of PwD. Indonesia has also enacted laws related to disability rights, including Law No. 8 of 2016 on PwD. Through this law, Indonesia strives to equalize opportunities for PwD everywhere. Indonesia also monitors the equality of PwD through the Sustainable Development Goals.

Access to education for children with disabilities in Indonesia is still limited. Inclusive schools, which should provide friendly education for all children, are not evenly distributed throughout the region. Many children with disabilities lag in education due to a lack of facilities, trained teachers, and appropriate support (UNICEF, 2023). This gap affects the academic and social development of children with disabilities, limiting their future opportunities. Children with disabilities in Indonesia encounter significant obstacles in accessing education due to various factors, such as the lack of facilities, trained teachers, and specialized support. Historically, children with disabilities had the option to attend special schools, known as Sekolah Luar Biasa, which were designed to address specific disability categories, thereby segregating them from mainstream education (Rofiah et al., 2021; Sujarwanto et al., 2023). However, the research underscores the importance of integrating children with disabilities into mainstream schools to ensure equal educational opportunities (Crea et al., 2022; Hamenoo & Dayan, 2021; Notoprayitno & Jalil, 2019).

Technology plays a vital role in enhancing social inclusion for PwD. The Indonesian Government has initiated digital literacy programs tailored for PwD, such as podcast classes and training on utilizing digital technology (Kominfo, 2024). These programs aim to empower PwD with technological skills to help them in their daily lives and work. The Digital Talent Scholarship and Information and Communication Technology (ICT) Jamboree, organized by the Ministry of Communication and Informatics (Kominfo), are crucial to the Indonesian Government's efforts to enhance digital literacy across society, including for PwD (Kominfo, 2024).

Meanwhile, the ICT Jamboree emphasizes digital inclusion by offering an interactive space for participation. Through training sessions and competitions, PwD can directly engage with technology and a broader community, fostering social skills and strengthening their confidence in utilizing technology to support their social integration. During the ICT Jamboree, the training materials provided to PwD included Microsoft Office, internet usage, photoshop design, public speaking, and copywriting. Social inclusion is a crucial aspect of the lives of PwD, and initiatives like the ICT Jamboree play a significant role in addressing the stigma often faced by PwD by demonstrating their ability to compete and contribute significantly using

technology. Such initiatives promote the development of a more inclusive society where technology bridges new opportunities and fosters broader participation across all population segments (Kominfo, 2017).

This article is drawn from a more extensive mixed methods study that explored how improving ICT skills impacts PwD by involving parents, educators, and the disability community as participants. The study used a combination of qualitative and quantitative research methods to gather a comprehensive understanding of the topic. In this manuscript, we present findings from qualitative data about the experiences of ICT trainees. We included their experiences during and after completing ICT skills training. In Section 5, we consider young people's experiences in the context of independence in everyday life and whether these experiences differ from those reported in previous qualitative research. The guiding research question for this study is:

> RQ1: How do PwD perceive the impact of ICT skills training on their independence and social inclusion?
>
> RQ2: What challenges, including barriers to employment and access to assistive technologies, do they face in integrating ICT into their daily lives?

In addressing the research questions, this study seeks to examine the role of ICT skills training in shaping the experiences of PwD. The research aims to uncover how these training programs influence their ability to engage in digital environments and their broader social and professional integration by focusing on their perspectives. Furthermore, the study intends to identify and analyze the barriers individuals with disabilities face when applying ICT daily, particularly about employment opportunities and access to assistive technologies. The objective of this study is to (a) explore how PwD perceive the impact of ICT skills training on their independence and social inclusion; and (b) identify the critical challenges PwD face integrating ICT into their daily lives, including employment barriers and access to assistive technologies.

Specifically, it explores how these training programs enhance their daily lives and foster independence. By investigating the contributions of these programs to social inclusion and individual empowerment, this study aspires to provide valuable insights into the experiences of PwD, highlighting the essential role of ICT skills in enhancing their quality of life.

2. Literature Review

Empowerment theory posits that empowerment is a process through which individuals gain greater control over their lives, resources, and decision-making capacities. This process is particularly critical for PwD, as it fosters a shift from dependency to autonomy by enhancing their capacity to participate in social, economic, and political spheres. Central to this theory is the notion that empowerment is both an individual and collective process, requiring access to resources, opportunities, and support systems that enable individuals to make informed choices and assert their rights. In the context of ICT skill programs, these initiatives play a transformative role, providing essential technological tools and competencies that enable PwD to overcome structural barriers. By equipping them with the skills necessary to navigate and utilize digital technologies, these programs facilitate greater access to information, employment opportunities, and social networks—offering a hopeful vision for a more inclusive and empowering future for PwD.

Empowerment theory is a fundamental concept in social work and disability support. It focuses on enabling individuals to gain control over their lives and improve their social functioning and quality of life. Social workers in the disability field often practice empowerment at the micro-level due to structural and policy constraints. They face obstacles that impede the complete application of empowerment approaches, affecting their ability to empower clients effectively (Tören & Açan, 2024). Empowerment for children with disabilities involves recognizing their right to express views and participate in decisions that affect them. Overprotection can limit their empowerment, and a dynamic empowerment model is suggested to address these complexities (Andersen, 2022). Furthermore, the decision to disclose disability at work is influenced by personal, organizational, and legal factors. Empowerment can be achieved through supportive environments and policies, although there can be inequalities in how these are applied (Richard & Hennekam, 2020).

ICTs are powerful tools that significantly empower PwD in Asia and the Middle East. They open doors to skill development and employment opportunities, providing access to educational resources and skills training that are essential for employment. For instance, in Bangladesh, ICT training has been a beacon of hope, enhancing the social and economic freedoms of people with visual impairments and providing them with educational and work opportunities (Hasan et al., 2018). In Qatar, an e-readiness assessment tool identified gaps in ICT infrastructure in educational institutions, highlighting the need for inclusive digital environments to support the skill development of PwD (Othman et al., 2023).

ICTs play a crucial role in creating new employment forms that are accessible to PwD. In China, digital work such as online gaming, e-commerce, and software development has opened employment opportunities for people with physical impairments. However, these jobs often need more formal protections and benefits (Qu, 2020). Using assistive technologies and accessible ICTs can break down barriers to socioeconomic participation, making it easier for PwD to engage in various economic activities (Samant et al., 2012). Creating inclusive digital environments is a crucial factor, as well as underlining the importance of their work in this area.

The use of visual educational apps on tablets has proven effective in teaching essential ICT competencies to students with intellectual disabilities, as seen in a study conducted in Ghana, which can be extrapolated to similar contexts in Asia and the Middle East (Bayor et al., 2023). Effective policies and legislation are crucial for adopting and implementing accessible ICTs. The comprehensive ecosystem approach, which includes supportive legislation, policy, infrastructure, and financing, is essential for sustainable access to ICTs for PwD (Samant et al., 2012).

ICTs play a crucial role in promoting the employment of PwD by providing tools that enable them to perform job-related tasks efficiently. It includes using assistive technologies in the workplace to improve usability and integration (Gastaldi et al., 2015)—significantly enhancing skill development and employment opportunities for PwD in Asia and the Middle East. ICTs result from their ability to provide access to education, assistive technologies, and supportive policies. However, the success of these initiatives depends on the comprehensive alignment of various ecosystem components, including government policies and infrastructure (Gastaldi et al., 2015; Hasan et al., 2018; Samant et al., 2012; Zheng et al., 2023).

Digitization is recognized as a fundamental element in creating opportunities for social inclusion, particularly for PwD, enabling them to enjoy an improved quality of life (Agren et al., 2023; Alexopoulou et al., 2021;

Kerras et al., 2022; Mohammad & Aldakhil, 2024; Tsatsou, 2020). Social networks allow them to make their interests visible, take part in the digital environment, and interact with their audience, being a positive influence that promotes respect for diversity (Bonilla-del-Río et al., 2022; Martin et al., 2021; Usca & Vindece, 2020; Żuchowska-Skiba, 2021). Moreover, digital technologies in inclusive education can potentially integrate PwD into society's social and economic fabric (Avanesyan, 2020; Shumilova et al., 2022; Yaskevich, 2021).

Tele-rehabilitation utilizing the internet positively impacts the physical rehabilitation and social integration of adolescents with visual or hearing disabilities (Gefen et al., 2021; Guo et al., 2023; Senjam et al., 2021). Furthermore, participation in technology design activities has been found to enhance the digital inclusion of PwD by improving digital skills, displaying competence, increasing interest in technology use, and influencing technology adaptation (Li et al., 2023; McCampbell et al., 2021; Safari et al., 2023). Studies have shown that ICTs foster social connectedness among PwD, highlighting the potential of these technologies to promote inclusivity (Bao et al., 2023; Barlott et al., 2019). The digital inclusion of PwD is crucial in today's technology-driven world, emphasizing the need for accessible and inclusive digital support practices (Chadwick, Richards, et al., 2023; Seale, 2022; Weber et al., 2022). This work is not just important; it is essential for creating a more inclusive society, and digital technologies play a significant role in this transformative process.

3. Method

3.1. Study Design

This qualitative study is part of a broader mixed-methods research project that investigates the impact of ICT skills training on the independence and social inclusion of PwD in Indonesia. The study's design reflects a combination of purposive sampling, semi-structured interviews, surveys, and focus group discussions (FGDs). The selected participants were drawn from six provinces, encompassing 99 individuals who had completed ICT training programs. Interviews were conducted with all 99 participants, including individuals from two focus groups of 13 and 17 participants. The data collection process was designed to ensure inclusivity, accessibility, and depth, allowing for a comprehensive understanding of participants' experiences.

The use of purposive sampling in this study is aligned with established qualitative research practices in disability studies, where researchers prioritize participants with characteristics essential for exploring specific phenomena (Conner et al., 2023). By focusing on PwD aged 19–39 who had not yet entered the workforce, the study captures crucial transitional experiences from ICT training to employment. This approach ensures that the data reflects the lived realities of diverse individuals with varying degrees of experience and engagement in the workforce.

3.1.1. Theoretical Framework and Instrument Development

The development of data collection instruments, including surveys and interview questions, was guided by empowerment theory (Zimmerman, 1995). Empowerment theory is grounded in the understanding that marginalized groups, such as PwD, often experience systematic exclusion and disempowerment due to structural barriers within society. These barriers manifest in various forms, including limited access to education, employment, social services, and infrastructure, constraining their ability to live independently

and participate fully in societal life. Structural obstacles are not simply individual challenges but are entrenched within societal norms, policies, and institutional practices that inadvertently perpetuate inequality. For PwD, these barriers can lead to social isolation, dependency, and reduced opportunities for self-determination (Zimmerman, 1995). The instruments were developed in consultation with an advisory panel and informed by academic literature and insights from the Research and Development Agency of the Indonesian Ministry of Communication and Informatics. This theoretical grounding ensured that the survey and interview questions were relevant and comprehensive, addressing key themes such as transition planning, post-training activities, and support mechanisms.

Additionally, the qualitative aspects of the study, including semi-structured interviews and FGDs, were informed by Biklen and Bogdan's (1977) interactionist model, which emphasizes building rapport with participants and adapting the research process to their cognitive and communication abilities. Before conducting interviews, researchers explained the study's objectives in accessible language and provided participants with clear, detailed information regarding consent. This adaptive approach allowed participants to engage fully in the discussions and ensured the authenticity of their responses.

3.1.2. FGDs and Semi-Structured Interviews

FCDs and semi-structured interviews align with Morgan's (1997) framework on focus groups as a qualitative research tool. Focus groups are particularly effective when exploring collective experiences and shared insights among participants. In this study, the FGDs provided a platform for participants to discuss their experiences in a supportive group setting, while semi-structured interviews allowed for a deeper exploration of individual narratives. This dual approach enabled a more nuanced understanding of how ICT training influenced participants' lives, particularly regarding their aspirations for independence and employment.

Two focus groups involving 13 and 17 participants were conducted to ensure a broad and diverse data set. Including semi-structured interviews with all 99 participants ensured saturation, with recurring themes identified across the different data sources. Guest et al. (2006) noted that saturation is often reached with a relatively small number of participants in qualitative research, mainly when focusing on specialized populations such as PwD. Nevertheless, the larger sample size in this study strengthens the reliability and validity of the findings.

3.1.3. Ethical Considerations and Consent

Ethical considerations were central to the study design, particularly given that the participants were PwD. If participants could not provide consent independently, informed consent was obtained from caregivers or legal guardians. Consent processes were carefully explained, and participants were reassured of their right to withdraw at any point during the study. Pseudonyms were used to protect participants' identities, ensuring confidentiality throughout the research. In line with best practices in disability research, all participant materials—including surveys and interview guides—were developed in accessible formats, ensuring participants could fully engage with the study (Biklen & Bogdan, 1977).

This approach underscores the study's commitment to inclusivity and respect for participant autonomy. To gain a more comprehensive understanding of young individuals' experiences with transition planning,

their departure from ICT skills training, and subsequent engagement in post-training activities, the advisory group developed a set of qualitative survey and interview questions. These were informed by relevant academic literature and critical insights from the Research and Development Agency of the Indonesian Ministry of Communication and Informatics (see Table 1). The online survey, administered via the Qualtrics platform, included demographic queries, structured response options, and open-ended qualitative questions. This report focuses exclusively on the responses to the qualitative questions. The sample was restricted to individuals aged 19 and above who had completed ICT competence training.

Table 1. The interview and focus group questions.

Topic	Questions
The role of ICT training in enhancing technological skills, confidence, and employability for PwD	1. What challenges did you face in ICT training? 2. How did class size affect your learning? 3. Did the teaching method meet your needs? 4. How could the program better support learners? 5. What tools would have improved your experience?
Enhancing the empowerment of PwD via ICT training: An exploration of skill acquisition, confidence enhancement, and career advancement	1. How has your confidence in tech changed? 2. What skills from training are most valuable? 3. Can you share a moment when your skills helped? 4. Has the training improved your job prospects? 5. How has training affected your social confidence?
The influence of community support, personal attributes, and assistive technologies on ICT skill development and independence among PwD	1. How has community support helped your ICT skills? 2. What personal qualities have aided your progress? 3. How have role models influenced your independence? 4. How do assistive technologies support your ICT use? 5. What challenges have you faced, and how was support helpful?

Notes: Prompts and additional questions were employed to facilitate discussion on each topic; most survey items were presented in a fixed-response format, accompanied by textual answer options.

3.1.4. Data Collection

The data collection process involved 99 individual interviews and two FGDs. Following one of the focus groups, two participants opted to participate in individual interviews. The interviews typically ranged from 30 to 45 minutes in duration. Sometimes, parents were present at the participants' request to offer clarification when necessary. The focus groups, consisting of 13 and 17 participants, were held at different service provider locations in Jakarta and lasted approximately 1.5 to 2 hours each.

Two researchers facilitated each session—one focused on guiding the discussion, while the other observed, took notes, and ensured the inclusion of all participants. Support workers were also available to provide clarification and assist participants in recalling essential experiences relevant to the study. With the consent of participants, all interviews and focus groups were digitally recorded and later transcribed verbatim by a professional transcriptionist.

3.2. Analysis

Data collected from interviews, FGDs, and anonymous text responses were analyzed using NVIVO software. A reflexive thematic analysis approach, as described by Braun and Clarke (2019, 2021), was used to identify and organize significant patterns in the qualitative data. Analysis began by closely examining the transcripts to ensure the researcher fully understood the data. Each interview transcript was coded inductively to maintain the authenticity of the youth participants' perspectives. These codes were developed collaboratively through team discussions. Once no new codes emerged, the researcher grouped the data based on aligned conceptual similarities. Through ongoing discussions, the research team reached a consensus on standard codes that best described participants' experiences in the ICT training program.

Further analysis resulted in the identification of initial themes and subthemes. A thematic map was then created to visually represent potential themes and their interrelationships (Braun & Clarke, 2021). These initial themes were generated based on a comprehensive assessment of the data, research questions, and primary objectives of the study. Braun and Clarke's (2019) framework was used to refine and define the themes, leading to a written interpretation of the study findings. Due to the small sample size, no statistical analysis was conducted on the survey data.

4. Results

The data provided here are based on the responses of 99 young people aged 19 to 39, comprising 45 females and 54 males. Table 2 displays the features and demographics that we gathered from all participants.

Table 2. Characteristics of the participants.

Age Group	Physical Disability	Visual Disability	Hearing Disability	In Disability Service	Studying	Working	Volunteer	Doing Nothing
19–25	7	9	6	17	2	2	1	0
26–32	8	8	9	19	2	1	2	1
33–39	18	17	17	42	3	4	3	1
Total	33	34	32	78	7	7	6	2

Notes: In disability service, studying, working, volunteering, doing nothing—activities after leaving the ICT program.

The focus groups were organized with key stakeholders, including PwD, ICT training program evaluators, and educational psychology experts. The data collection process took place across multiple regions, including Jakarta (Special Capitol Region), Palembang (South Sumatra), Yogyakarta (Special Region of Yogyakarta), Balikpapan (East Kalimantan), and Manado (North Sulawesi). During the informant interviews, the teams were supported by translators, most of whom were teachers or parents of PwD.

To provide a structured overview of the qualitative findings, the emergent themes and their associated categories are presented in Table 3.

Table 3. Themes and categories.

Themes	Categories
Overcoming challenges in ICT skill training	1. Identifying issues: Addressing critical challenges encountered by participants in ICT skills development programs 2. Bridging knowledge and skills gaps: Implementing targeted solutions to enhance ICT competencies
Building confidence and competence through ICT participation	1. Self-confidence: Enhancing belief in one's abilities 2. Enhancing resilience: Strengthening confidence in overcoming difficulties
Empowering PwD through coordinated support and autonomy	1. Community and family support: Creating inclusive environments through community awareness and engagement with educators and family members as key facilitators 2. Internal and external factors influencing the independence of PwD

4.1. Theme 1: Overcoming Challenges in ICT Skill Training

4.1.1. Identifying issues: Addressing Critical Challenges Encountered by Participants in ICT Skills Development Programs

Despite the substantial resources provided by the ICT training program, participants consistently identified numerous challenges that significantly impeded their learning experiences. These challenges, such as accessibility barriers, the need for differentiated instruction, and the impact of classroom dynamics on engagement, are not just obstacles but real struggles that the participants face.

One critical accessibility issue highlighted by participants was the absence of Braille materials for visually impaired individuals. Mahmud, a visually impaired trainee, poignantly expressed his frustrations, stating, "A blind person like me just needs instructions because I cannot see. It was too noisy, so it is hard to listen" (Mahmud, interview, February 11, 2023). This statement underscores the need for auditory and tactile resources to create an inclusive learning environment. The lack of Braille materials hindered Mahmud's engagement with the content and revealed a systemic oversight in accommodating PwD. Participants in a FGD echoed Mahmud's sentiments, emphasizing the necessity for enhanced provision of adaptive learning tools. For instance, a participant named Rina noted, "Without proper Braille materials, we are left behind. It is not just about the lessons; it is about feeling included" (Rita, FGD, May 16, 2023). Such insights highlight the potential for improving accessibility by introducing adaptive learning resources, which could empower visually impaired participants to engage more effectively.

Similarly, accessibility issues were evident for Sony, a deaf participant, who experienced difficulties related to classroom seating arrangements. He remarked, "I sit in the rear row, so it is hard to see the expressions and sign language" (Sony, interview, March 15, 2023). This concern reflects a broader issue regarding the physical learning environment and its implications for effective communication. For deaf learners, visual cues, including sign language, are essential for comprehension. In the same FGD, another participant, Amir, shared, "When the class is large, and I cannot see the instructor or the sign language interpreter, I feel lost. Smaller

classes or better seating arrangements would help immensely" (Amir, FGD, May 16, 2023). The challenges posed by large class sizes—often exceeding 30 participants—restricted access to these critical visual cues, reinforcing the urgent need for strategies that promote smaller class sizes or prioritized seating arrangements that enhance visibility and communication.

Moreover, participants highlighted the necessity for differentiated instruction tailored to diverse learning needs. Fatima, another participant, articulated this concern, stating, "The pace of the class is often too fast for those of us who need more time to grasp the concepts" (Fatima, interview, March 12, 2023). It reflects a broader consensus among participants that a one-size-fits-all approach to instruction must accommodate varying proficiency levels and learning styles. The FGD participants collectively suggested, "We need more personalized support and varied teaching methods to cater to different learning speeds" (FGD, May 16, 2023). Implementing differentiated instructional strategies could significantly enhance engagement and comprehension among all participants, particularly those with varying abilities and backgrounds.

The challenges in ICT skill training programs are complex and interrelated. Offering adaptive resources, enhancing classroom dynamics, and implementing differentiated instruction is crucial to creating an inclusive and effective learning environment. Incorporating participants' feedback can help better address diverse learner needs, advancing educational equity.

4.1.2. Bridging Knowledge and Skills Gaps: Implementing Targeted Solutions to Enhance ICT Competencies

The ICT skill training program revealed diverse proficiency levels among participants, from complete beginners to advanced users. This disparity underscored the need for differentiated instruction, a critical factor in ensuring that the program meets the varied learning needs of its participants. The one-size-fits-all approach to training failed to challenge advanced learners while simultaneously overwhelming beginners, highlighting the necessity for a more tailored instructional strategy.

Fikri, an advanced learner, expressed dissatisfaction with the curriculum, stating, "The class was too easy for me. I already knew how to use the programs they were teaching" (Fikri, interview, March 21, 2023). His frustration points to a broader issue within the program: a lack of differentiation in instruction. A more effective approach would involve creating tiered levels of training, allowing participants to be grouped according to their pre-existing knowledge and skills. In a follow-up FGD, advanced learners emphasized the need for challenging content that could push their skills further. "We could have benefited from more advanced modules or independent projects. The basics were repetitive for us," noted Fikri (FGD, May 16, 2023). Implementing a multi-tiered training system could provide more stimulating learning opportunities for advanced participants, keeping them engaged while still catering to beginners.

Conversely, the experiences of beginner participants demonstrated a need for more excellent instructional support and adaptability. Rina, a deaf participant, shared her struggles, stating, "I needed more time to understand the instructions, especially because I rely on visual aids and lip reading" (Rina, interview, March 25, 2023). It highlights the importance of pacing and the need for educators to be aware of diverse learning styles. During an FGD with beginner-level participants, several voiced similar concerns, emphasizing that the pace of instruction was too fast. "We needed more time to absorb the material, especially those of us new to ICT," said another participant, Laila (FGD, May 16, 2023). Such feedback reinforces the need for

more inclusive and flexible teaching strategies, where beginners receive the time and support they need to succeed without feeling rushed or left behind.

In addition to pacing issues, class size and noise levels were recurring problems. Large classes often created a noisy and distracting environment, which was particularly detrimental for participants with sensory disabilities. Mahmud, a visually impaired participant, stated, "It was too noisy, so it is hard to listen" (Mahmud, interview, February 11, 2023). Others echoed his concerns in an FGD session. Another visually impaired participant, Amir, commented, "The noise made it impossible to concentrate, and it felt like no one was paying attention to how disruptive it was for us" (FGD, May 16, 2023). The disruptive atmosphere hindered learning and led to frustration and anxiety for many participants. The consensus from the FGD was that smaller class sizes and better classroom management strategies would be necessary to create a more focused and inclusive learning environment. "Having fewer people in the class would make it easier for us to engage and for instructors to cater to everyone's needs," said Amir (FGD, May 16, 2023).

Participants also raised concerns about the availability of appropriate learning aids, particularly for those with disabilities. Mahmud's earlier comments on the lack of Braille materials are part of a broader issue of insufficient accessibility resources. "We need more than just verbal instructions; there should be tactile resources and better support for those with sensory impairments," said Siti, a visually impaired participant in the FGD (May 16, 2023). Participants suggested that including more adaptive technologies, such as screen readers, larger text formats, and real-time captioning for deaf participants, could bridge these gaps and make the learning experience more inclusive.

ICT training challenges highlight the need for adaptive instruction. Multi-tiered content, better pacing, smaller classes, and improved accessibility will enhance learning for all participants. Using feedback from interviews and FGDs can further refine the program to create a more inclusive and effective environment.

4.2. Theme 2: Building Confidence and Competence Through ICT Participation

4.2.1. Self-Confidence: Enhancing Belief in One's Abilities

The ICT skill training program had a transformative impact on participants' self-confidence, particularly those who entered the program with little to no technical experience. Many participants reported that the training equipped them with specific digital skills, such as visual editing using software like Adobe Photoshop, and enhanced their belief in their ability to apply them in personal and professional contexts. This shift in self-perception was crucial for many participants, as it empowered them to pursue opportunities they previously felt were out of reach.

For instance, Sisil's journey illustrates the program's profound influence on her self-confidence and personal growth. Before the training, Sisil had minimal experience with digital tools and felt uncertain about her success in the modern workforce. However, her confidence grew as she engaged in the hands-on learning activities. She shared, "To achieve success and gain new experiences" (Sisil, interview, February 2, 2023), suggesting that the training acted as a stepping stone toward her broader life goals. Sisil realized she could overcome challenges and pursue meaningful accomplishments by mastering new technical skills. During a FGD, Sisil elaborated on this sentiment, saying, "I never thought I could learn something so complex, but now I feel like

I can take on anything" (Sisil, FGD, May 15, 2023). For Sisil, the program was not just a technical course but a confidence-building journey that ignited her desire for continuous personal growth, including digital writing.

Similarly, Nanda's experience demonstrates how the program reshaped her perception of her capabilities. She entered the program with self-doubt but quickly gained confidence as she learned to navigate new digital tools. Nanda described feeling "enthusiastic, knowledgeable, and more confident" (Nanda, interview, March 14, 2023). Her experience underscores the importance of building self-assurance through skill development. In a follow-up interview, Nanda explained, "Before the training, I always felt like I was not smart enough to keep up with technology, but now I feel capable and ready to learn more" (Nanda, interview, April 2, 2023). This newfound confidence extended beyond the classroom, impacting her daily interactions and her willingness to explore additional personal and professional growth opportunities. Nanda's story highlights the broader psychological benefits of ICT training, providing her with the technical competencies and the confidence to pursue her aspirations.

Ahmad, another participant, also experienced a significant boost in self-confidence due to the training. He explained that taking the course allowed him to gain valuable knowledge, which he found essential for his growth and goals (Ahmad, interview, March 13, 2023). Ahmad's response reflects a recurring theme among participants: The training equipped them with foundational skills and sparked a curiosity for lifelong learning. During an FGD, Ahmad expanded on this, saying, "I never thought I would enjoy learning, but this program made me realize how much more I want to learn. It is just the beginning" (Ahmad, FGD, May 15, 2023). His eagerness to continue developing his skills underscores the importance of providing ongoing educational opportunities for PwD, as the initial confidence boost from the training can lead to sustained academic and professional growth. Ahmad's experience highlights how the program fostered a continuous improvement mindset, particularly for individuals who may have previously felt excluded from educational or professional development.

The training also opened up entrepreneurial ambitions for some participants, illustrating how newfound self-confidence could translate into broader professional goals. Michael, one such participant, shared his aspirations, stating, "I want to open a business" (Michael, interview, February 14, 2023). Michael's experience reflects how the training equipped him with technical skills and the belief that he could succeed as an entrepreneur. In an FGD session, he further elaborated, "Before the program, I did not think someone like me could run a business. But now, with these new skills, I feel like I can make it happen" (Michael, FGD, May 15, 2023). Michael's story is a testament to how ICT training can catalyze broader professional aspirations, particularly for PwD, who might have faced barriers in traditional employment settings. His experience illustrates the potential of such programs to empower participants to think beyond immediate skill acquisition and envision new possibilities for their future, such as pursuing higher education, starting a small business, or securing a remote job that aligns with their abilities. The program helped him achieve these aspirations by providing technical skills and fostering self-confidence, resilience, and the ability to navigate digital and physical environments independently. Additionally, the program's support in accessing assistive technologies and personalized mentorship was crucial in facilitating his journey toward economic and social empowerment.

The ICT training significantly increased participants' confidence, helping them realize their potential personally and professionally. By providing skills in a judgment-free environment, the program inspired ongoing growth.

Sisil, Nanda, Ahmad, and Michael's experiences show how practical training and support empower individuals to achieve their goals with newfound confidence.

4.2.2. Enhancing Resilience: Strengthening Confidence in Overcoming Difficulties

Beyond technical skill development, the ICT training program greatly enhanced participants' confidence in overcoming challenges in both personal and professional domains. Many found this increased problem-solving ability transformative, allowing them to approach previously daunting tasks with greater self-assurance in the digital space.

Revi's experience illustrates this shift, as she used the program to expand her social network via social media. She noted, "Through social media, I have become more confident in making new friends" (Revi, interview, February 16, 2023). Initially feeling isolated due to her disability, Revi found social media a vital tool for communication and connection. The training equipped her with technical skills and built her confidence to engage in online social interactions she had previously avoided. In a focus group, she added, "I used to be hesitant about reaching out online, but now I can communicate more effectively and confidently" (Revi, FGD, May 15, 2023). This transformation highlights how ICT training can enhance social confidence, opening new interaction and community-building possibilities.

Similarly, Anwar found that the program empowered him to seek employment opportunities online, a significant tool for PwD who face barriers in traditional job markets. "We learned about job vacancies for the disabled in Jakarta," he shared (Anwar, interview, March 7, 2023). Before the training, Anwar was still determined to navigate job portals, but afterwards, he could search for positions and apply independently. He elaborated during an FGD, "Before, I did not know where to start with job searching. Now, I can browse job sites, find disability-friendly positions, and apply confidently" (Anwar, FGD, May 15, 2023).

It is a testament to the personal growth and empowerment experienced by the participants in the ICT program. Anti, for instance, found the training transformative, particularly in enhancing her creative skills. She expressed, "I can now design an attractive magazine cover for schoolwork" (Anti, interview, April 9, 2023). This newfound ability in digital design has given her the confidence to express herself artistically. In a group discussion, she shared, "I used to struggle to keep up with more artistic students, but now I can create professional-looking designs. It is an incredible feeling" (Anti, FGD, May 15, 2023). Anti's journey is a shining example of how ICT training can unlock creative potential, instil confidence to explore new avenues of expression, and even consider career opportunities in graphic design or digital marketing.

Susan's experience clearly demonstrates the ICT program's role in fostering independence among its participants. She shared, "When something goes wrong with my computer, I no longer panic. I can fix simple issues on my own" (Susan, interview, April 6, 2023). This sentiment echoes a broader theme: The program equips participants with digital skills and boosts their confidence in troubleshooting. In a follow-up group discussion, Susan added, "Before, if my computer froze, I would immediately ask for help. Now, I try to fix it myself first, and most of the time, I succeed" (FGD, May 15, 2023). This newfound problem-solving ability has empowered participants to take ownership of their digital experiences and rely less on external help.

The ICT program gave participants the skills and confidence to handle challenges independently through social media, job applications, or creative problem-solving. Revi, Anwar, Anti, and Susan's stories illustrate how ICT training boosts self-efficacy, empowering them to embrace opportunities and confidently overcome obstacles.

4.3. Theme 3: Empowering PwD Through Coordinated Support and Autonomy

4.3.1. Community and Family Support

Community support has proven vital in advancing ICT skills among PwD. These networks offer practical training, foster a deep sense of belonging, and provide motivation. The Association of the Visually Impaired in Palembang exemplifies how peer collaboration can empower members to embrace new technologies. Dewa, the Association of the Visually Impaired's secretary, emphasized how shared knowledge boosts ICT capabilities: "A collective drive to share ICT skills and explore new applications" (Dewa, interview, March 11, 2023). During a focus group, other members echoed how AVI's culture of mutual support reduced feelings of isolation in their learning journey: "We help each other with technical challenges and motivate one another during moments of frustration" (FGD, May 16, 2023). This blend of technical support and emotional encouragement was crucial for building confidence and independence.

In academic settings, teachers also play a pivotal role in enhancing students' ICT proficiency and confidence in entering the workforce. Wijaya, a teacher at State Special School—SSS Balikpapan, noted the long-term benefits of ICT education for students with disabilities: "ICT competence instill confidence, preparing students for professional environments" (Wijaya, interview, February 11, 2023). SSS Balikpapan collaborates with local businesses to provide real-world experience, bridging classroom learning with workplace expectations. One program alum, now employed at a local hotel, reflected: "Learning ICT and applying it in the hotel gave me confidence that I could perform as well as anyone else" (Interview, April 25, 2023). Such partnerships demonstrate the importance of applying ICT skills in practical contexts to build competence and self-assurance.

Beyond formal education, teachers like Santi offer additional support to ensure students master ICT skills. Santi explained how she provided extra assistance outside regular class hours: "Teachers must dedicate extra time to help students beyond normal learning hours" (Santi, interview, March 17, 2023). In a focus group, one student shared how this personalized attention significantly impacted: "Without Santi's extra help, I would not have understood the program we were learning. She ensured I did not fall behind" (FGD, May 16, 2023). Santi's commitment underscores the importance of tailored support, accommodating different learning paces, and ensuring all students succeed in ICT mastery.

Parents also play a crucial role in fostering ICT education for their children with disabilities. Dita, a participant from Manado, shared how her parents' support was crucial to her development: "Parents' encouragement gave me confidence, helping me see that I could be on par with non-disabled peers" (Dita, FGD, May 16, 2023). By providing access to ICT tools at home and reinforcing the importance of practice, Dita's parents helped sustain her learning. She noted, "Even when I did not feel like practising, my parents reminded me of how important these skills are for my future" (FGD, May 16, 2023). This constant support from her family, as highlighted by Dita's experience, is instrumental in helping PwD gain the confidence and skills needed for greater independence.

Similarly, Zaky, from West Papua, expressed gratitude for the holistic support his parents provided during his ICT education: "My parents built my confidence and encouraged me to engage with my peers and community" (Zaky, interview, February 19, 2023). In a later interview, Zaky shared how this combination of technical learning and social inclusion empowered him to participate in community activities: "Before, I hesitated to join in, but with my ICT skills, I felt I had something to contribute" (interview, March 5, 2023). His experience highlights how family support extends beyond academics, fostering social confidence and inclusion.

Dewa, Dita, and Zaky's stories emphasize how Community and family support empower PwD. Mentorship, teacher guidance, and family encouragement helped participants gain skills and emotional strength to apply them, fostering independence, professional growth, and social inclusion.

4.3.2. Internal and External Factors Shaping the Independence of PwD

Both internal and external factors shape PwD's journey to independence. Personal qualities like resilience and self-motivation are essential, while external supports—such as role models, accessible technology, and mentorship—play a complementary role. This section explores how these elements combine to foster technical and emotional empowerment. Resilience is critical, as PwD often face ongoing obstacles requiring determination. As Lisa from an FGD noted, "Our internal strength drives us forward. Without self-belief, external support alone is insufficient" (Lisa, FGD, May 16, 2023), underscoring the importance of self-motivation in overcoming barriers and maximizing external support. This resilience and self-motivation of PwD should inspire us all in the face of challenges. For many, self-motivation is the key to achieving goals. Rizky, a participant from East Kalimantan, shared how small victories during ICT training fueled his motivation: "I started with simple tasks like sending an email, then moved to design a flyer. Each success built my confidence, allowing me to tackle more complex tasks" (Rizky, interview, March 12, 2023). His experience illustrates how small accomplishments reinforce self-motivation, creating a positive cycle of personal growth.

Role models are essential in demonstrating that independence is possible despite challenges. Lisa emphasized the value of witnessing success within the disability community: "Role models are crucial. Seeing disabled people achieve financial independence inspires others to push boundaries" (Lisa, FGD, May 16, 2023). Success stories shift disability perceptions from limitations to potential. Another participant shared how seeing a visually impaired person succeed in a corporate job inspired him to aim higher: "I did not think those roles were for us, but seeing someone like me succeed made me believe I could too" (Dewa, interview, March 25, 2023). Role models thus reshape societal views and help challenge internalized limitations.

Technology has become a critical tool for PwD, levelling the field in professional and social spaces. Silvia, a visually impaired civil servant, shared how mastering ICT transformed her work: "Technology made me more effective, boosting my confidence" (Silvia, FGD, May 16, 2023). Tools like screen readers and voice-to-text software empower PwD by breaking barriers. Rudy, a deaf community leader, emphasized the importance of communication tools, noting the challenges students face when sign language support is lacking in schools, leading to passivity (FGD, May 16, 2023).

Mentorship is vital for PwD independence. Basuki, a physically disabled participant, highlighted its value: "Mentors guide us and make sure we do not feel alone" (FGD, May 20, 2023). He shared how mentorship

helped him confidently use his wheelchair in public: "I was afraid to leave the house, but my mentor showed me how to navigate safely" (interview, April 15, 2023). Mentorship promotes skills, resilience, and expanded social networks, fostering personal and professional growth. The journey toward independence for PwD is multifaceted, blending internal resilience with external support.

Role models inspire, technology empowers, and mentors provide guidance. When coupled with self-motivation, these factors create a robust framework for empowerment, enabling PwD to overcome obstacles and pursue their personal and professional aspirations. This integrated approach underscores the complexity yet attainability of independence for PwD.

5. Discussions

5.1. Empowering PwD Through ICT Skill Enhancement

The results of this study reinforce the transformative power of ICT in enhancing the lives of PwD. Supported by empowerment theory, ICT programs offer technical skills and facilitate a broader social empowerment process. As Zimmerman (1995) and Perkins and Zimmerman (1995) explain, empowerment allows individuals to control resources and make decisions, fostering autonomy and self-efficacy. This study found that ICT training empowered participants to transcend societal barriers, enhancing their social inclusion and participation. The transformative impact of these programs highlights their importance and the need for sustained efforts to implement them across various contexts.

The literature further supports this, demonstrating how ICTs can open educational and employment opportunities for PwD across regions. For instance, ICT training in Bangladesh has significantly improved the social and economic freedoms of people with visual impairments, enabling them to access education and employment (Hasan et al., 2018). These findings suggest that ICT equips individuals with practical skills and empowers them to challenge systemic barriers and navigate their environments independently.

One notable outcome of this study was the marked improvement in participants' self-confidence and independence after ICT training. It aligns with Rappaport's (1987) assertion that empowerment occurs when individuals gain control over their environments, allowing them to make informed decisions. Equipped with digital skills, participants could independently perform online communication and job searching tasks previously obstructed by systemic limitations. Similarly, ICTs have been shown to reduce social isolation in PwD by fostering engagement in broader social networks (Zimmerman, 1995), as evidenced in Qatar's assessment of e-readiness, which revealed the need for inclusive digital environments to better support the skill development of PwD (Othman et al., 2023).

Furthermore, the access to employment opportunities facilitated by digital literacy was a significant finding. As observed in this study, the ability to navigate the job market effectively mirrors Alsop et al. (2006), who argue that empowerment includes economic agency through skill acquisition. Similar observations have been made in China, where ICT employment opportunities in e-commerce and software development have opened new avenues for PwD, although often without legal protections (Qu, 2020). Despite the successes, the study revealed challenges due to participants' varied ICT skill levels, echoing Narayan's (2005) view that empowerment is an ongoing, individualized process that requires sustained support. This analysis strongly

affirms that ICT programs go beyond technical intervention—they are crucial to fostering empowerment in PwD by enabling them to achieve independence, social inclusion, and economic participation.

5.2. Policy and Practical Implications

One of the key findings of this study is the pressing need for increased funding and resources to make ICT training more accessible to PwD. Participants faced several logistical challenges, including the lack of assistive technologies like Braille displays and hearing aids. These gaps are similarly noted in global literature, where inadequate resources and infrastructure severely limit the effectiveness of ICT programs for PwD (Notoprayitno & Jalil, 2019). Governments and policymakers must prioritize investment in assistive technologies to realize the full potential of ICT programs. It is important to note that such investment not only enhances the quality of life for PwD but also contributes to the economy by enabling their participation in the workforce. In rural or low-resource areas, especially in Asia and the Middle East, collaboration between governments, private organizations, and NGOs could bridge the resource gap (Avanesyan, 2020). For example, the ICT infrastructure in Bangladesh and Qatar showcases both the potential and the need for comprehensive resource allocation to achieve equitable ICT training for PwD (Hasan et al., 2018; Othman et al., 2023).

Another policy implication is ensuring that training materials are accessible to individuals with varying learning needs. As observed in this study, the absence of accessible formats such as Braille or sign language interpretation limits inclusivity in ICT programs. Kerras et al. (2022) argue that inclusivity in digital platforms is essential for fostering equal access to ICT training. Ensuring that training materials are available in diverse formats could significantly improve participants' learning experiences. In addition to accessible materials, physical infrastructure—such as adequately designed classrooms and quiet learning environments—also plays a crucial role in accommodating participants with disabilities (Chadwick, Buell, et al., 2023).

A third critical implication is the need to evaluate and adapt ICT training programs continuously. The study revealed that while some participants found the training too elementary, others struggled due to a lack of foundational ICT skills. This underscores the need for adaptive learning technologies that tailor content to individual learning needs, as Safari et al. (2023) highlighted. Modular learning systems, where participants can focus on specific topics based on their existing skills, would enhance personalization and maximize the effectiveness of ICT training. Additionally, program evaluations should incorporate feedback from participants with disabilities to ensure the training content remains relevant and accessible (Weber et al., 2022).

These findings have broad implications, particularly for countries in Asia and the Middle East facing similar systemic challenges in providing ICT training for PwD. Addressing these gaps through better infrastructure, accessible materials, and adaptive learning platforms is essential to empowering PwD across diverse contexts.

6. Conclusion

This study underscores the transformative role of ICTs in empowering PwD. Grounded in empowerment theory, the findings demonstrate that ICT skill development programs are not mere technical interventions but act as transformative tools. They enable PwD to gain greater autonomy, self-efficacy, and participation in social and economic spheres. Participants reported increased self-confidence and independence,

illustrating the potential of ICTs to dismantle societal barriers and reduce social isolation, reinforcing Zimmerman's (1995) perspective on empowerment as a multifaceted process involving control over one's environment.

The research also underscores critical challenges that must be addressed to optimize the efficacy of ICT programs, particularly the need for accessible learning materials, adaptive educational approaches, and improved infrastructure. Disparities in participants' ICT competencies suggest that more than a one-size-fits-all approach is required. Tailored, modular learning platforms and sustained policy support are necessary to ensure inclusivity and effectiveness for individuals with varying skill levels. These findings align with global literature, which advocates for aligning policies, infrastructure, and resources to create equitable access to ICT for PwD, especially in resource-limited settings such as rural areas in Asia and the Middle East.

Finally, the study emphasizes that the success of ICT initiatives depends on the availability of technology and the comprehensive integration of supportive policies, adequate funding, and inclusive infrastructure. It underscores the need for governments, private sector stakeholders, and international organizations to collaborate in addressing these gaps. This collective action is crucial in ensuring that ICT serves as a vehicle for empowerment and socioeconomic participation for PwD. The findings provide a roadmap for future research and policy development, advocating for a holistic, inclusive approach to ICT skill development that maximizes the potential of PwD across diverse contexts.

Acknowledgments

We extend my deepest gratitude to the disabled community, notably the Indonesian Society for the Care of Disabled Children and the Indonesian Association for the Welfare of the Deaf, for their collaboration in this research. Their contributions were instrumental to the success of this study.

Conflict of Interests

The authors declare no conflict of interest.

References

Agren, K. A., Hemmingsson, H., & Kjellberg, A. (2023). Internet activities and social and community participation among young people with learning disabilities. *British Journal of Learning Disabilities*, *51*(2), 125–134. https://doi.org/10.1111/bld.12519

Alexopoulou, A., Batsou, A., & Drigas, A. (2021). The contribution of information and communication technologies to the improvement of the adaptive skills and the social inclusion of students with intellectual disability. *Research Society and Development*, *10*(4), Article e47010413046. https://doi.org/10.33448/rsd-v10i4.13046

Alsop, R., Bertelsen, M. F., & Holland, J. (2006). *Empowerment in practice: From analysis to implementation*. World Bank. https://documents.worldbank.org/en/publication/documents-reports/documentdetail/286191468315851702/empowerment-in-practice-from-analysis-to-implementation

Andersen, C. S. (2022). Recognition and capability—Prerequisites for empowerment for children with disabilities? *Child Indicators Research*, *15*(4), 1363–1378. https://doi.org/10.1007/s12187-022-09925-5

Avanesyan, G. (2020). Psychological make-up of inclusive education and its ties with the development of digital technologies. *ITM Web of Conferences*, *35*, Article 05001. https://doi.org/10.1051/itmconf/20203505001

Badan Pusat Statistik. (2022). *Disabilitas* [Data set]. https://sensus.bps.go.id/topik/dataset/sp2022/19

Bao, Y., Hu, X., Zhang, R., & Shi, X. (2023). Enter into society: Digitalized livelihoods and prosumer labor for people with disabilities in China. *Frontiers in Psychology*, *14*, Article 1103199. https://doi.org/10.3389/fpsyg.2023.1103199

Barlott, T., Aplin, T., Catchpole, E., Kranz, R., Goullon, D., Toivanen, A., & Hutchens, S. (2019). Connectedness and ICT: Opening the door to possibilities for people with intellectual disabilities. *Journal of Intellectual Disabilities*, *24*(4), 503–521. https://doi.org/10.1177/1744629519831566

Bayor, A. A., Brereton, M., Sitbon, L., & Ploderer, B. (2023). ICT use and competencies of school children with intellectual disabilities in low-resource settings: The case of Ghana in sub-Saharan Africa. *Universal Access in the Information Society*. Advance online publication. https://doi.org/10.1007/s10209-023-01059-x

Biklen, D., & Bogdan, R. (1977). Media portrayals of disabled people: A study in stereotypes. *Interracial Books for Children Bulletin*, *8*(6), 4–9.

Bonilla-del-Río, M., Castillo-Abdul, B., García-Ruiz, R., & Rodríguez-Martín, A. (2022). Influencers with intellectual disability in digital society: An opportunity to advance in social inclusion. *Media and Communication*, *10*(1), 222–234. https://doi.org/10.17645/mac.v10i1.4763

Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, *11*(4), 589–597. https://doi.org/10.1080/2159676X.2019.1628806

Braun, V., & Clarke, V. (2021). One size fits all? What counts as quality practice in (reflexive) thematic analysis? *Qualitative Research in Psychology*, *18*(3), 328–352. https://doi.org/10.1080/14780887.2020.1769238

Chadwick, D., Buell, S., Burgess, E., & Peters, V. (2023). "I would be lost without it, but it's not the same" experiences of adults with intellectual disabilities of using information and communication technology during the COVID-19 global pandemic. *British Journal of Learning Disabilities*, *51*(2), 148–162. https://doi.org/10.1111/bld.12522

Chadwick, D., Richards, C., Molin, M., & Strnadová, I. (2023). Digital inclusion and people with learning disabilities. *British Journal of Learning Disabilities*, *51*(2), 119–124. https://doi.org/10.1111/bld.12530

Conner, K. J., Acosta, V. M., Nouri, R., von Wrangel, M. T., Gramillo, E., & Conner, A. (2023). Psychotherapy experiences of U.S. adults with physical disabilities: Recommendations for affirmative practice. *The Counseling Psychologist*, *51*(7), 970–1004. https://doi.org/10.1177/00110000231186824

Crea, T. M., Evans, K., Hasson, R. G., Neville, S. E., Werner, K., Wanjiku, E., Okumu, N., Arnold, G. S., Velandria, E., & Bruni, D. (2022). Inclusive education for children with disabilities in a refugee camp. *Disasters*, *47*(1), 99–113. https://doi.org/10.1111/disa.12534

Gastaldi, L., Ghezzi, A., Mangiaracina, R., Rangone, A., Cortimiglia, M. N., Zanatta, M., & Amaral, F. G. (2015). Mapping ICT access and disability in the workplace: an empirical study in italy. *WORK*, *51*(2), 293–300. https://doi.org/10.3233/wor-141868

Gefen, N., Steinhart, S., Beeri, M., & Weiss, P. (2021). Lessons learned during a naturalistic study of online treatment for pediatric rehabilitation. *International Journal of Environmental Research and Public Health*, *18*(12), Article 6659. https://doi.org/10.3390/ijerph18126659

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods*, *18*(1), 59–82. https://doi.org/10.1177/1525822X05279903

Guo, J., Luo, R., Xu, Y., Chen, S., Yi, L., Yan, Q., & Zhou, Q. (2023). Effects of the internet access environment on utilization of telerehabilitation for adolescents with visual or hearing disabilities. *Youth & Society*, *56*(2), 351–371. https://doi.org/10.1177/0044118x231171944

Hamenoo, E. S., & Dayan, V. (2021). Inclusive education and disabilities: narratives from Ghana. *Disability, CBR and Inclusive Development*, *32*(1), 37–51. https://doi.org/10.47985/dcidj.385

Hasan, K. M. A., Ashraf, M., Narasimhan, P., & Aggarwal, R. (2018). Expanding freedoms of people with

visual impairment through information and communication technologies: Narratives from Bangladesh. *International Journal of Disability Management*, *13*, Article e5. https://doi.org/10.1017/idm.2018.7

Kerras, H., Bautista, S., Perea, D. S. P., & De-Miguel, M. D. (2022). *The technological barrier in the world of disability: The wall to tear down*. Research Square. https://doi.org/10.21203/rs.3.rs-2124219/v1

Kominfo. (2017, October 27). *Jambore TIK bagi remaja dan dewasa dengan disabilitas kota manado tahun 2017* [Press release]. https://bpsdm.kominfo.go.id/upt/manado/berita-jambore-tik-bagi-remaja-dan-dewasa-dengan-disabilitas-kota-manado-tahun-201-5-10

Kominfo. (2024, February 19). *Pelatihan Pengenalan TIK Bagi Disabilitas dengan Tema Pengenalan Office khususnya Power Point* [Press release]. https://bpsdm.kominfo.go.id/upt/jakarta/berita-pelatihan-pengenalan-tik-bagi-disabilitas-dengan-tema-pengenalan-office-khu-5-57

Li, G., Li, D., & Tang, T. (2023). Bibliometric review of design for digital inclusion. *Sustainability*, *15*(14), Article 10962. https://doi.org/10.3390/su151410962

Martin, A. J., Strnadová, I., Loblinzk, J., Danker, J. C., & Cumming, T. M. (2021). The role of mobile technology in promoting social inclusion among adults with intellectual disabilities. *Journal of Applied Research in Intellectual Disabilities*, *34*(3), 840–851. https://doi.org/10.1111/jar.12869

McCampbell, M., Schumann, C., & Klerkx, L. (2021). Good intentions in complex realities: Challenges for designing responsibly in digital agriculture in low-income countries. *Sociologia Ruralis*, *62*(2), 279–304. https://doi.org/10.1111/soru.12359

Mohammad, W. S., & Aldakhil, A. F. (2024). Promoting inclusive learning environments: Leveraging university websites for digital empowerment in the post-Covid-19 era. *Healthcare*, *12*(12), Article 1212. https://doi.org/10.3390/healthcare12121212

Morgan, D. L. (1997). *Focus groups as qualitative research* (2nd ed.). Sage.

Narayan, D. (Ed.). (2005). *Measuring empowerment: Cross-disciplinary perspectives*. World Bank. https://openknowledge.worldbank.org/handle/10986/7441

Notoprayitno, M. I., & Jalil, F. (2019). Legal aspect of inclusive education for persons with disabilities in Indonesia. *Education Quarterly Reviews*, *2*(4), 799–810. https://doi.org/10.31014/aior.1993.02.04.107

Othman, A., Mutawaa, A. A., Tamimi, A. A., & Mansouri, M. A. (2023). Assessing the readiness of government and semi-government institutions in Qatar for inclusive and sustainable ICT accessibility: Introducing the marsad tool. *Sustainability*, *15*(4), 3853. https://doi.org/10.3390/su15043853

Perkins, D. D., & Zimmerman, M. A. (1995). Empowerment theory, research, and application. *American Journal of Community Psychology*, *23*(5), 569–579. https://link.springer.com/article/10.1007/BF02506982

Qu, Y. (2020). Is the internet the game changer? Disabled people and digital work in China. *Disability and Society*, *37*(5), 725–745. https://doi.org/10.1080/09687599.2020.1833314

Rappaport, J. (1987). Terms of empowerment/exemplars of prevention: Toward a theory for community psychology. *American Journal of Community Psychology*, *15*(2), 121–148. https://link.springer.com/article/10.1007/BF00919275

Richard, S., & Hennekam, S. (2020). When can a disability quota system empower disabled individuals in the workplace? The case of France. *Work, Employment and Society*, *35*(5), 837–855. https://doi.org/10.1177/0950017020946672

Rofiah, K., Sheehy, K., Widayati, S., & Budiyanto. (2021). Fun and the benefits of sign supported big books in mainstream Indonesian kindergartens. *International Journal of Early Years Education*, *31*(2), 467–481. https://doi.org/10.1080/09669760.2021.1956440

Safari, M. C., Wass, S., & Thygesen, E. (2023). Digital technology design activities—A means for promoting the digital inclusion of young adults with intellectual disabilities. *British Journal of Learning Disabilities*, *51*(2), 238–249. https://doi.org/10.1111/bld.12521

Samant, D., Matter, R., & Harniss, M. (2012). Realizing the potential of accessible ICTs in developing countries. *Disability and Rehabilitation: Assistive Technology*, *8*(1), 11–20. https://doi.org/10.3109/17483107.2012.669022

Seale, J. (2022). It's not all doom and gloom: What the pandemic has taught us about digitally inclusive practices that support people with learning disabilities to access and use technologies. *British Journal of Learning Disabilities*, *51*(2), 218–228. https://doi.org/10.1111/bld.12497

Senjam, S. S., Manna, S., Vashist, P., Gupta, V., Varughese, S., & Tandon, R. (2021). Tele-rehabilitation for visually challenged students during COVID-19 pandemic: Lesson learned. *Indian Journal of Ophthalmology*, *69*(3), 722–728. https://doi.org/10.4103/ijo.ijo_2527_20

Shumilova, E. A., Kuzma, L. P., & Makuha, L. S. (2022). Digital tools for assessing educational achievements by students with disabilities in an inclusive educational environment. *Perspectives of Science and Education*, *60*(6), 337–351. https://doi.org/10.32744/pse.2022.6.19

Sujarwanto, S., Ashar, M. N., Purwoko, B., & Ardianingsih, F. (2023). Special school vs mainstream school: Parents' perspective on school choice for students with disabilities. *Journal of ICSAR*, *7*(2), 280–287. https://doi.org/10.17977/um005v7i22023p280

Tören, Z., & Açan, B. A. (2024). Social workers' experience with the concept of empowerment: voices from the disability field. *Journal of Social Work Practice*, *38*(3), 287–301. https://doi.org/10.1080/02650533.2024.2379449

Tsatsou, P. (2020). Is digital inclusion fighting disability stigma? Opportunities, barriers, and recommendations. *Disability & Society*, *36*(5), 702–729. https://doi.org/10.1080/09687599.2020.1749563

UNICEF. (2023). *Analisis Lanskap tentang Anak Penyandang Disabilitas di Indonesia*. https://www.unicef.org/indonesia/id/disabilitas/laporan/analisis-lanskap-anak-dengan-disabilitas-di-indonesia

Usca, S., & Vindece, A. (2020). Activity of young people with disabilities in the digital environment. *Education Reform Education Content Research and Implementation Problems*, *1*, 33–41. https://doi.org/10.17770/er2020.1.5195

Weber, D. L., Brereton, M., & Kanstrup, A. M. (2022). Developing visual, tangible artifacts as an inclusive method for exploring digital activities with young people with learning disabilities. *British Journal of Learning Disabilities*, *51*(2), 250–259. https://doi.org/10.1111/bld.12505

Yaskevich, D. (2021). Digital technologies are a factor in the search for a new quality of inclusive education. *E3S Web of Conferences*, *258*, Article 07086. https://doi.org/10.1051/e3sconf/202125807086

Zheng, N., Lu, M., & Chuang, C.-Y. (2023). A new path to empowering the disabled people. In W. Li (Ed.), *China's evolving policy processes under the comparative lenses* (pp. 60–76). Routledge. https://doi.org/10.4324/9781032658186-5

Zimmerman, M. A. (1995). Psychological empowerment: Issues and illustrations. *American Journal of Community Psychology*, *23*(5), 581–599. https://link.springer.com/article/10.1007/BF02506983

Żuchowska-Skiba, D. (2021). The social dimension of the internet from the perspective of people with disabilities during the COVID-19 pandemic. *Przeglad Socjologiczny*, *70*(3), 31–47. https://doi.org/10.26485/ps/2021/70.3/2

About the Authors

Amri Dunan is a senior researcher at the National Research and Innovation Agency (BRIN) in Jakarta and a Senior Lecturer at Gunadarma University, Depok, who holds a PhD in communications from the University of Malaya (2013). His research focuses on digital media communication, supported by 20 years of experience as a broadcaster at Television of the Republic of Indonesia (TVRI) and a decade at the Ministry of Communication and Informatics, enhancing his expertise in media practice and policy.

Bambang Mudjiyanto is a research professor at the National Research and Innovation Agency (BRIN), Jakarta, Indonesia, specializing in communication and media studies. With a distinguished career spanning over three decades, he previously held the position of researcher at the Ministry of Communication and Informatics of the Republic of Indonesia. His extensive experience and academic contributions have made him a key figure in the field.

Karman is a senior researcher at the National Research and Innovation Agency (BRIN), Indonesia, with a PhD in communication science from Universitas Indonesia. His expertise encompasses communication and media studies. Prior to his current role, he dedicated 10 years as a researcher at the Ministry of Communication and Informatics of the Republic of Indonesia, where he developed a strong foundation in his field.

Djoko Walujo is a research professor at the National Research and Innovation Agency (BRIN), Jakarta, Indonesia, with a specialization in communication and media studies. Over the course of three decades, he served as a researcher at the Ministry of Communication and Informatics of the Republic of Indonesia, where he gained extensive experience and contributed significantly to the advancement of the field.