Assessing Digital Literacy Levels Among Children in Child Care Institutions in Kenya: Challenges, Opportunities, and Interventions

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Abstract

Digital literacy is increasingly essential for children's education and social development, yet children in childcare institutions often face significant barriers to acquiring these skills. This study explores the state of digital literacy among children in institutional care, examining access to digital resources, skill levels, and the effectiveness of existing training programs. Using a mixed-methods approach, the research gathers quantitative data on digital access and competencies while incorporating qualitative insights from caregivers and children. Findings reveal disparities in digital access, challenges in implementing structured digital literacy programs, and the critical role of caregivers in facilitating digital learning. The study recommends targeted interventions, including policy reforms, infrastructure improvements, and digital skills training, to bridge the digital divide and enhance learning opportunities for children in institutional care.

Keywords: Digital Literacy, Digital Divide, Child Care Institutions, Technology Access, Digital Inclusion

Introduction

According to the United Nations Children's Fund (UNICEF, 2019), digital literacy is an umbrella term encompassing a broad spectrum of skills, ranging from the ability to use digital devices and software to the capacity for consuming and producing digital content, as well as meaningfully participating in digital communities. Ilya and Mamlok (2021) highlight how digital advancements have transformed various aspects of society: education has become more accessible and personalized through online platforms and artificial intelligence (AI); communication is now faster and more interactive, reshaping social dynamics and identity; and economically, digital innovations have expanded global opportunities through e-commerce, remote work, and AI-driven solutions. Furthermore, the International Telecommunication Union's (ITU, 2020) Digital Skills Toolkit underscores the importance of inclusive digital education, emphasizing the need for equitable access to digital resources and training. While digital literacy has been widely recognized as essential for equitable participation in modern society, its implementation varies significantly across regions, particularly in Africa.

In Africa, digital literacy remains a significant challenge, with internet penetration and access to digital devices varying widely across regions. While some countries, such as South Africa and Rwanda, have made notable progress in integrating digital education into formal schooling, many others continue to face obstacles such as inadequate infrastructure, high internet costs, and limited digital training for educators (World Bank, 2022). Despite substantial technological advancements, issues like the digital divide, misinformation, restricted access to information, and digital exclusion persist globally, disproportionately affecting marginalized groups, including children in underserved rural areas, orphanages, and those with limited access to education. For these populations, barriers to technology and digital education reinforce cycles of inequality, restricting their ability to engage with and benefit from the opportunities of an increasingly digitized world (Arfa Afzal et al., 2023).

Kenya, often recognized as a leader in digital innovation in East Africa, has made notable progress in expanding internet access and digital learning initiatives through policies such as the National ICT Policy and the Digital Literacy Programme (DLP) (Government of Kenya, 2019). However, digital literacy interventions have predominantly focused on formal schooling, with minimal attention given to children in childcare institutions. Research highlights significant disparities in access to technology, digital skills training, and caregiver preparedness to support digital learning within these institutions (CAK, 2021). The challenges faced by childcare institutions in Kenya reflect a broader issue: the digital divide is not merely a technological gap but one deeply rooted in social and economic inequalities. Addressing these disparities requires a focused examination of digital literacy among children in childcare institutions to identify barriers, opportunities, and strategies for inclusive digital education.

More broadly, the digital divide extends beyond a lack of technology; it intersects with social, economic, and educational inequities. In Kenya and globally, rural areas often experience slower broadband speeds due to limited infrastructure, while low-income households struggle with affordability, leaving these groups excluded from education, employment, and healthcare opportunities in an increasingly digitized world (Gallardo & Whitacre, 2024). Limited access to high-speed internet also exacerbates disparities in digital literacy, making it difficult for marginalized communities to utilize technology effectively, participate in civic activities, or safeguard against misinformation. Bridging this divide requires targeted policies to

expand infrastructure, ensure affordable high-speed internet, and implement comprehensive digital literacy programs that empower underserved populations to thrive in the digital era.

Addressing digital inclusion for children in underserved groups is particularly critical in institutional settings, where limited access to technology further exacerbates educational inequalities. Digital access equips these children with educational resources, healthcare information, and opportunities for social and civic engagement, which are critical for their development. Collaboration between governments, private sectors, and nonprofits is crucial to ensure that no child is left behind in the digital era (United Nations Development Programme, 2024).

This study seeks to assess the current state of digital literacy among children in Kenyan childcare institutions, examining access to digital tools, skill acquisition, and the role of caregivers in fostering digital learning. By analyzing these factors, the research aims to provide insights for policymakers, educators, and stakeholders to develop targeted interventions that bridge the digital divide for children in institutional care. This study was guided by the following research questions:

- What is the level of digital literacy among children living in care institutions?
- To what extent are these children exposed to career opportunities in the technology sector?
- What digital tools and resources are available to them for learning and skill development?

Literature Review

Theoretical Review

The digital divide refers to the inequalities in access to, use of, and benefits derived from digital technologies, influenced by sociodemographic factors such as age, income, education, employment status, and geographical location. Initially understood as a gap in physical access to technology, it has expanded to include disparities in digital skills, motivation, and social support (second-level divide), as well as differences in the outcomes of digital use (third-level divide), highlighting its dynamic and evolving nature (Maggie Hartnett, 2019).

According to Van Dijk (2019), digital divide theory emphasizes two key components: access and use. Access refers to the availability of technological resources such as computers, tablets, and the internet, while use pertains to the ability to engage with digital tools in a meaningful way, including the development of necessary skills for navigating the digital world. This framework helps explain how children in childcare institutions may experience exclusion due to both limited access to digital tools and inadequate skills to utilize them effectively for learning.

According to a World Bank (2016) report, the digital divide is a significant socio-economic factor influencing growth and development. International institutions such as the United Nations (UN), International Telecommunications Union (ITU), and The Organization for Economic Cooperation and Development (OECD) highlight strong correlations between internet access, Information Communications Technology (ICT) use, and economic progress, framing the divide as an economic policy concern. While it restricts innovation in developed nations, it hinders economic growth and global competitiveness in developing countries.

According to Van Dijk (2020), those without access to technology are at risk of being left behind in both academic and social contexts, as digital literacy is increasingly integral to modern education and future employment. This is particularly relevant to this study, which examines the digital literacy levels of children living in care institutions. By evaluating their access to digital tools, exposure to technology-related careers, and the resources available for digital engagement, this research seeks to highlight the extent of the digital divide among this vulnerable group. Understanding these disparities is crucial in identifying gaps and formulating strategies to ensure that children in care institutions are not excluded from the opportunities presented by digital advancements.

Empirical Literature Review

Digital Literacy and Its Importance in Education

In today's world, digital literacy has become an indispensable skill for individuals, especially students, as it is now essential for academic success, social inclusion, and future employment opportunities. UNESCO (2018) defines digital literacy as not only the ability to use digital tools and technologies but also the capacity to critically assess information, create digital content, and communicate effectively within various digital environments. As digital technologies continue to revolutionize education, the ability to navigate these tools is increasingly viewed as a key determinant of educational outcomes and future economic prospects (Helsper, 2012).

Digital literacy in education extends beyond the basic use of technology and encompasses critical skills that enable students to think critically, analyze complex information, collaborate with peers, and create innovative solutions. In the classroom, digital tools such as computers, tablets, and online learning platforms provide students with access to vast amounts of information and diverse learning opportunities that were once inaccessible. These tools allow for personalized learning, enabling students to learn at their own pace, access a range of learning materials, and interact with educators and peers beyond physical classroom walls (Crompton & Burke, 2020).

As the world becomes increasingly interconnected, digital literacy is fundamental for preparing students for a rapidly evolving job market. The future workforce demands digital competencies such as coding, digital communication, and the ability to collaborate remotely (OECD, 2020). For children in institutional care, digital literacy is particularly important as it can provide them with the skills needed to access educational content, engage with remote learning resources, and enhance their academic performance. It also fosters greater social inclusion, as children in institutional care are often disconnected from mainstream education systems and may experience social isolation. Digital literacy provides them with opportunities to communicate and collaborate with peers and educators, both locally and globally, thus enhancing their educational engagement and personal growth (Van Dijk, 2020).

Digital literacy is crucial in addressing the digital divide, particularly for marginalized groups. For children in institutional care, acquiring digital skills can significantly contribute to reducing the gap in educational opportunities, thus allowing them to develop skills that promote social inclusion, empowerment, and future self-sufficiency.

Barriers to Digital Literacy in Child Care Institutions

While digital literacy is an essential skill for all children, children in childcare institutions face unique challenges in acquiring these skills. One of the most significant barriers is limited access to digital devices and the internet. Many childcare institutions, particularly those in rural or under-resourced areas, do not have the infrastructure to support widespread access to technology (ITU, 2021). Without reliable access to computers, tablets, or the internet, children in these institutions are unable to engage with digital learning tools or participate in online educational opportunities, which hinders their digital literacy development (World Bank, 2022).

The lack of trained caregivers is another critical barrier. In many childcare institutions, caregivers may not possess the necessary digital skills to teach or support children's use of technology effectively. A study by the Communications Authority of Kenya (CAK, 2021) found that caregivers often have minimal digital literacy themselves, which limits their ability to integrate technology into learning activities or guide children in developing digital skills. This lack of digital competency among caregivers compounds the challenges faced by children, as they do not have the support they need to develop their digital abilities.

A significant barrier is the absence of structured digital literacy programs within childcare institutions. Unlike formal schools, which often have standardized curricula for integrating digital literacy into education, childcare institutions may not have the resources, curriculum, or support structures to implement such programs. In many cases, these institutions are focused on providing basic care and protection rather than educational development, and as such, digital literacy may not be prioritized (Helsper, 2012). This absence of formal digital literacy education exacerbates the digital divide for children in institutional care, leaving them without the skills they need to fully engage with technology and participate in the digital world.

Societal and institutional factors, such as a lack of awareness about the importance of digital literacy for children in care, contribute to the challenge. Many institutions and caregivers may not fully recognize the value of providing children with digital education or the potential long-term benefits of digital literacy for their future opportunities (Van Dijk, 2020). This can result in a lack of investment in technology or training programs, further entrenching the digital exclusion of vulnerable children.

These barriers, when combined, create a significant digital divide that limits the opportunities for children in institutional care to benefit from the educational and social advantages of digital literacy. Without addressing these obstacles, children in these settings will continue to face difficulties in acquiring the necessary skills to participate in the digital world, further marginalizing them in society.

Methodology

This study employed a qualitative approach, utilizing focus groups and interviews to gather insights from children living in care institutions and their caregivers. The focus groups facilitated discussions with the children on their digital literacy levels, exposure to technology-related careers, and the digital tools they use. In-depth interviews were conducted with both the children and their caregivers to gain a deeper understanding of their experiences, challenges, and perceptions regarding digital access and usage. Including caregivers was important to the study in order to examine their role in supporting digital learning

and the institutional capacity for fostering digital literacy. This approach provided a comprehensive analysis of the digital divide within care institutions, highlighting both structural and experiential barriers to digital inclusion.

Findings

Accessibility of Laptops in the Home

At Umbrella Children's Home, there were no laptops available for the children at the outset of the study. To ensure access to digital resources, laptops were provided specifically for the study. This limited access to technology initially presented a barrier to digital literacy engagement, putting much emphasis on the importance of having the necessary devices to support digital learning activities. This lack of resources underscores the need for institutions to prioritize the provision of digital tools in order to foster effective digital literacy education.

Accessibility of the Internet

The institution had an internet connection, and the children were able to access YouTube as part of their digital engagement. This access to the internet provided the children with opportunities to explore educational content, entertainment, and general information on various topics. However, while YouTube served as a key platform, the limited internet access and reliance on one primary source of content suggest that there is potential for expanding access to a wider range of digital resources and learning materials. Ensuring reliable and unrestricted internet access would enhance the children's ability to explore educational content and engage with diverse digital learning platforms.

Exposure to Social Media

The children were very familiar with social media platforms, particularly TikTok. Many of the children demonstrated a strong engagement with TikTok, using the platform for both entertainment and social interaction. This exposure to social media at a young age presents both opportunities and challenges. While social media can offer educational and creative opportunities, it is also important to be mindful of the potential risks related to privacy and digital safety. This familiarity with social media platforms offers an opportunity to incorporate digital citizenship education into digital literacy programs, teaching children how to navigate these platforms safely and responsibly.

Interest in Coding

The children at Umbrella Children's Home showed a strong interest in coding and other computer-related activities. Several children expressed enthusiasm for learning programming languages and exploring hands-on computer practices. This keen interest suggests that there is a desire to develop more advanced digital skills, such as coding, which can serve as a gateway to various career opportunities in the digital economy. The children's eagerness to engage with coding indicates that they would benefit from structured programs designed to teach digital skills, fostering not only academic growth but also potential future career pathways in technology.

Conclusion

The study at Umbrella Children's Home revealed significant insights into the barriers and opportunities for digital literacy among children living in care institutions. While challenges such as limited access to laptops initially hindered engagement, the availability of internet access allowed the children to explore educational content on platforms like YouTube. The high familiarity with social media, especially TikTok, highlighted the need to incorporate digital citizenship education into programs, helping children navigate these platforms safely and responsibly.

The children's strong interest in coding and computer-related practices presents a promising opportunity to further develop digital literacy programs that include advanced digital skills. These findings underscore the importance of providing adequate digital tools, expanding internet access, and fostering skills like coding to empower children with the necessary digital competencies for the future. To bridge the gaps identified, it is essential for childcare institutions to prioritize digital literacy education, focusing on age-appropriate and engaging programs that cater to the diverse needs of children. This would not only enhance their educational experience but also equip them with valuable skills for the digital age.

Recommendations

Provision of Digital Devices and Infrastructure

To overcome the challenge of limited access to technology, it is crucial for Umbrella Children's Home, and similar institutions, to prioritize the provision of laptops or tablets for all children. Additionally, ensuring consistent and reliable internet access will allow the children to fully engage in digital learning activities and explore a variety of educational resources.

Integration of Digital Citizenship Education

Given the children's high exposure to social media platforms such as TikTok, it is important to incorporate digital citizenship education into digital literacy programs. This would equip the children with the necessary skills to navigate social media platforms responsibly, protecting their privacy, and fostering positive online behavior.

Introduction of Structured Coding Programs

The strong interest in coding and computer-related practices among the children presents an opportunity to introduce structured coding programs. By providing children with age-appropriate coding lessons and hands-on activities, they can develop critical thinking, problem-solving, and technical skills that will serve them well in future academic and career pursuits.

Age-Specific Digital Literacy Programs

Considering the varying levels of interest and skill, it is recommended to design age-specific digital literacy programs that cater to the unique needs of children at different stages of development. This ensures that all children, regardless of age, can benefit from tailored digital learning experiences that build foundational skills before advancing to more complex topics.

Collaborative Partnerships for Digital Resources

To support the provision of necessary technology and educational materials, the children's home should seek collaborative partnerships with local tech companies, non-governmental organizations, and government agencies. These partnerships could facilitate access to donations of digital devices, internet connectivity, and specialized training programs for both children and staff.

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