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Maintaining Access to Education Amid Conflict: An Evaluation of Open and Remote Learning Programmes for Marginalised Communities in Wartime Sudan

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Abstract

This study looks at how open and remote learning affects underserved groups. It focuses on case studies and successful methods that show good examples of teaching communities that face discrimination or are not like most people. The goal is to review these examples and learn from them, like the most important things that affect how well open and remote learning works for these communities. It also helps us understand the difficulties these communities face and how to deal with them. The aim is to give clear understanding into making and carrying out open and remote learning programmes for these communities in ways that can last and make real change. In summary, the key results of the study show the programme improved access and achievements but more is needed on career preparation, closing socioeconomic gaps, bolstering technology skills training, and creating emergency-responsive solutions in the wartime environment.

Keywords: Displacement, Marginalised Communities, Accessibility, Socioeconomic Achievement Gap, Digital Divide

Introduction

Open and remote learning has become an efficient technique to link students to opportunities (Fovet, F. 2022). This form of learning has helped remote and non-mainstream cultures (Banerjee, M. 2020). Due to location, economic issues, cultural differences, and language challenges, these areas typically fail to access adequate education (Sykes, K. 2023). This study examines how open and distant learning affects underprivileged communities. This project seeks to understand how education research might improve educational equity and inclusion by focussing on marginalised communities (Zhang et al., 2020). Case studies and successful strategies can illuminate marginalised community teaching (Haleem et al., 2022).

The study examines genuine cases to determine the most critical characteristics that make open and remote initiatives succeed for these communities (Ching-Chiang et al., 2022). It also seeks to comprehend their issues and creative solutions (Prayaga et al., 2017). This study examines how open and distant learning affects marginalised communities to contribute to the education equality debate (Shu & Gu, 2018). It emphasises the necessity for sustainable and effective school initiatives that suit the needs of marginalised groups (Marais & Schalkwyk, 2014). Several major causes motivate this research. It targets educational inequality. Marginalised communities confront many educational obstacles.

Open and remote learning can deliver fair education, according to this study. Success stories can inform inclusive school programming. Location, economics, culture, and language hinder quality education in marginalised areas. Traditional schools often fail to address these communities' unique demands, resulting in unequal access and social and economic stagnation. Online and remote learning has promise, but its effects on underprivileged groups, especially those outside the mainstream, need further study. This study examines how successfully open and distant learning addresses education inequality for marginalised populations.

This involves assessing how well programmes have provided equal education opportunities and outcomes. To determine what makes open/remote programmes engage communities outside the mainstream. This acknowledges educational methods, technology, community involvement, and support systems. Explore hurdles disadvantaged communities experience in accessing and benefiting from open/remote learning. This requires understanding infrastructure, digital skills, cultural relevance, language diversity, and social support difficulties. Identifying problems helps overcome them and make programmes more inclusive. To study community engagement and collaboration in marginalised group open/remote programmes.

This emphasises community, organisation, and stakeholder involvement in project design, implementation, and evaluation. It shows how cultural awareness and community ownership survive and matter. To offer policymakers, educators, and anyone involved in such programme’s realistic advice. This strives to improve underserved community efficacy and impact by translating results into initiatives. Policies, capacity building, teacher training, curriculum guidance, and relevant technologies may be suggested. By meeting these goals, the study advances open/remote learning research and practice, particularly for marginalised communities. The findings and recommendations can help create inclusive, fair policies and approaches to varied community needs.

This study aims to examine how open and remote learning programmes can help address barriers to education faced by marginalised communities in Sudan and identify key factors for effective implementation (Benner & Wang, 2014; Pendergast et al., 2018), drawing from theories of educational marginalisation that marginalised students often face compounded barriers hindering attainment and belonging from intersecting factors like socioeconomics, location, disability status and background (Benner and Wang, 2014; Pendergast et al., 2018), and that reducing such marginalization promotes inclusion and student success (Benner & Wang, 2014).

Also exploring technology-related barriers faced and strategies to overcome the digital divide risking exacerbation of disparities (Archibald & Worsley, 2019; Tsai & Chai, 2012), assessing infrastructure and competency challenges according to Ertmer's model of first and second-order barriers (Ertmer, 1999) and identifying strategies to minimize divides, examining key marginalization indicators like attainment and belonging (Benner & Wang, 2014) with potential to inform and extend related theories (Benner a&nd Wang, 2014; Pendergast et al., 2018), clearly situating the research problem and questions within wider scholarly conversations on marginalization, the digital divide and theoretical frames (Benner & Wang, 2014; Pendergast et al., 2018) to provide important context and significance.

Contributions of the Study

This study makes several unique contributions by examining open and remote learning programmes targeting marginalised communities in Sudan during an ongoing civil war, including providing insights into the challenges of implementation amid active conflict and instability, specifically assessing impacts and barriers for underserved groups like displaced and low-income learners to shed light on often overlooked equity dimensions, directly involving learners themselves through surveys and recommendations to align with best practices for community-cantered research, examining important issues beyond just educational

outcomes like socioeconomic barriers and technology usage that influence relevance and sustainability, discussing findings in relation to frameworks on marginalization and technology access divides to enhance understanding of how theories apply in this context, and considering both immediate relief needs and long-term capacity building goals appropriate to the crisis environment in its analysis and recommendations, thereby strengthening its policy and practice relevance regarding such programmes during crisis periods through its contextual sensitivity, equity focus, participatory methods, comprehensive perspective, theoretical connections, and balanced short and long-term viewpoints.

Literature Review

Challenges in Distance Education

Distance education has major technological infrastructure and internet connectivity issues (Archibald & Worsley 2019). In response to the COVID-19 epidemic, educational institutions quickly switched to online instruction, showing global technology gaps. The digital divide—technology availability and use—is a key concern in education today. Many students throughout the world lack laptops, iPads, and stable internet connections, making online classes and educational resources difficult to access. In many regions, socioeconomic gaps affect schooling. Without financing, students have less access to high-quality technology and the internet. This unequal access disproportionately affects marginalised or poor populations.

Lack of technology infrastructure is a major issue in some places. Since the infrastructure was unprepared for Covid-19's high demand for online education, connectivity, disruptions, and technical issues occurred. Educators struggle to adapt to the digital world and changing educational paradigms. The switch to digital platforms presented educators with new problems and opportunities as they adjusted to new methods and technologies. Many teachers were unprepared for the rapid rise in online education. The necessity for technically adept online trainers was obvious soon.

Due to the enormous quantity of apps, ideas, resources, and tactics instructors encounter, urgency was high. After 2022, AI is seen as a creative impostor rather than a worker's assistance (Archibald & Worsley 2019). Digital classrooms forced teachers to reassess their methods, according to Archibald and Worsley (2019). As transformation and generativity became more important, andragogical education became a way to retrain teachers whose methods were outdated or unconnected to their students. Teaching has moved online due to the rise of digital tools, despite the return to traditional classrooms. Innovative educators use apps and tools to help kids learn and grow. Current pupils, who grew up online, prefer digital items. Because of this, we had to change our evaluation tools, methods, and resources for working with kids.

The Socioeconomic Achievement Gap

Socially disadvantaged people have historically had lower educational achievement. Research shows that low-income American and British students are 2.5 years behind their wealthier peers (Easterbrook & Hadden, 2021). Many believe the gap is growing (Michelmore & Dynarski, 2017). Through elementary school, the authors examined poor kids and teens who received free or reduced-price lunches. The study found that children who lived in poverty had test scores one standard deviation lower than those who did not. They also performed worse than occasional poor children. Even after controlling for other characteristics, the quantity of free meals eaten indicates funding shortages, which negatively impact exam performance. It is no surprise that eighth-graders who never had free lunch scored highest.

García and Weiss (2017) found significant variations in cognitive and non-cognitive abilities among children from different socioeconomic status (SES) groups from kindergarten to 2010. Additional evidence supports this link. Hung et al. (2020) searched the Stanford Education Archive for English language arts and mathematics data for five years (2008–2013).

Sociodemographic and school criteria utilised to evaluate academic achievement included free lunch, English language learners, special education, the Gini index, and the city or urban school district zip code. The results showed a high correlation between racial inequality, economic disparities, family adult education, and student achievement gaps.

Barriers to Technology Integration in Education

According to Yeh & Tsai (2022), a model was proposed by Ertmer (1999) that elucidates first-order and second-order obstacles to the incorporation of technology in education. Limited access, time, training, and institutional support are some of the external factors that could hinder the integration of classroom technology. This is outside the control of the educators. A second-order barrier, mostly affecting educators, was also presented by the writer. According to Tsai and Chai (2012), this obstacle includes instructors' pedagogical views, beliefs about technological integration, and their openness to change. The incorporation of technology into educational environments can be aided or impeded by teachers' personal values. One major barrier to technological integration, according to Tsai and Chai (2012), is teachers' design thinking. Teachers can improve the learning experience for all students by incorporating design thinking into their lesson plans and introducing new, creative activities, as explained by Tsai and Chai (2012).

Marginalisation in Education

Marginalization in education can influence children's academic performance, social connections, and school belonging (Benner & Wang, 2014; Pendergast et al., 2018). It can be immediate or long-lasting and originates from cultural differences, knowledge gaps, and economic status. Due to power imbalances, marginalization disproportionately impacts marginalised groups and persons with limited resources and social status. Duchak (2014) found that young individuals with racism, homelessness, abuse, poverty, and other challenges are more likely to be socially ostracized. These inequalities continue despite efforts to close them, making it harder to give these children a high-quality education that will last. Santos et al. 2022; Fujino & Sato 2022). This is especially true for students with special educational needs and classroom stereotypes. Mfum-Mensah (2018) & Allotey et al. (2023) found that children in Ghana and Africa are marginalised in school due to their location, family's financial position, race or ethnicity, language, and displacement.

Disabled children face prejudice, discrimination, and social marginalization (Avoke, 2002; Botts & Owusu, 2013; Mantey, 2017). Problem learners—children with learning disabilities—face prejudice and stigma at school and home, which can demotivate them and hinder them from succeeding (Adom et al., 2019). Migrant indigenous people may be marginalised and prejudiced based on their integration into their new society, education level, marital status, and migratory history (Tutu et al., 2018). Additionally, prejudice and stereotyping marginalise international students from other African countries that study in Ghana (Kyereko & Faas 2021). Ghanaian writing often addresses school bias and exclusion, especially for disabled students. However, few research examine socioeconomic class, language, and ethnicity differences.

Challenges Faced by Marginalised Communities in Conflict Settings

The ongoing civil war in Sudan exacerbates barriers to education for marginalised communities in multiple ways by extensively damaging infrastructure, displacing over 4 million people internally which separates students from crucial support systems, strains camp schools with limited resources facing large class sizes challenging individualized learning, bars travel particularly for females due to escalating insecurity directly impacting frontline communities, burdens learners juggling catch up with varied curricula and traumatic effects of violence, sidelines experienced teachers stationed in dangerous zones replacing them with less capable younger instructors as constant rotation disrupts engagement, diminishes reliable faculty

contact as displacement scatters them making programme coordination and tracking marginalised learners immensely challenging amid turbulent conditions - together intensifying preexisting inequities underserved groups confront and demanding adaptive solutions carefully attuned to communities' dire circumstances under the conflict.

Strategies Employed to Address the Intensified Digital Divide in Conflict or Remote Areas

While the digital divide proves enormously difficult to bridge in conflict-affected regions with damaged infrastructure, certain strategies show promise in overcoming acute access barriers, such as utilizing mobile and portable solar-powered technologies (1) to widen reach into unstable territories where wired connectivity remains elusive, enabling offline curation and caching of educational content (2) to suit intermittent connectivity and provide later engagement, establishing pop-up telecom hotspots in displaced persons camps (3) to broaden wireless coverage wherever temporary deployments are secure, strategically equipping displaced individuals without devices through loans and community learning hubs (4) to optimize shared facilities, maintaining connectivity to isolated zones via expensive but sustainable satellite broadband investments (5), utilizing neighbourhood-based community caches and local server redistribution maintained by volunteers (6) to overcome outages, minimizing bandwidth usage through optimized online programme design like low-resolution videos and document sizes (7), and building low-tech literacy skills before basics of coding and networks (8) to lay foundations for digital fluency valuable in recovery - thereby creatively addressing barriers through locally-situated solutions to enable more marginalised learners to access education despite conflict's infrastructure toll.

Causes of Digital Skills Training Insufficiency or Neutrality and Ways to Improve it

Reasons for perceived inadequacy in educator digital skills development include limited or disrupted training opportunities due to conflict-related instability and mobility issues, instructors themselves lacking advanced skills required to impart relevant, up-to-date knowledge amid unpredictable conditions, and marginalised learners often having less prior exposure and resources to fully benefit from brief trainings, while one-size-fits-all training modalities may not be tailored to diverse needs across displaced and rural communities; potential solutions entail pairing tech-savvy volunteers with educators to co-develop experiential, curriculum-integrated training utilizing various platforms, deploying mobile and blended approaches like micro-trainings and short tutorials to accommodate unstable schedules, assessing learners' baseline skills and interests to create differentiated, progression-based instruction catering to varied entry points, involving local organizations to deliver context-specific trainings employing traditional knowledge transfer methods, developing self-paced online modules and workbooks for independent skills building, and incentivizing certification programmes to motivate mastery and enhance future employability, with prioritizing customized, ongoing skills development through innovative delivery models able to help address current shortcomings and better serve learners' long-term digital readiness.

Innovative Methods to Increase Technology Access and Digital Skills Training to Overcome the Digital Divide

Here are some innovative strategies that could be proposed to address the intensified digital divide and improve access to technology/training in conflict-affected contexts. Developing mobile learning labs/vehicles equipped with devices, connectivity, and instructors that travel between camps/villages would help reach remote communities on a rotating basis. Pilot projects could test satellite-connected community hubs or micro-campus sites in border areas run by facilitators with offline resources. Introducing digital literacy programmes pairing interested youth with mentors and deploying connected microlending for devices and internet access could stimulate household investments. Peer learning networks and open-source VR/simulations not needing connectivity could spark interests. Producing educational radio/podcasts on basics

delivered via radio/storage drives/apps would cover rural areas. Incentivizing community tech centres run by locals refurbishing donated hardware and circulating devices locally training instructors/health workers in basic repairs could sustain access in fragile areas. Thoughtfully piloted, localized interventions narrowing divides through community-centric, flexible solutions attuned to barriers faced in conflict regions would improve participation.

Evaluating Current Digital Skills Training Techniques and Suggesting Modifications

Current digital skills training relies on brief, centralized workshops that may not differentiate pacing or skills effectively. Proposed improvements include conducting needs assessments, developing self-paced modular materials, integrating literacy across subjects, and establishing local coaches for individualized support. Forming peer networks and hackathons could also boost resource development. Recognizing skills gains through badging may motivate learning. A blended approach combining online/offline and group/individual components could accommodate different environments more effectively. A more personalized training strategy addressing current limitations could enhance digital skills support for marginalised learners.

Evaluating the Current Training Methods and Proposing Improvements

Current digital skills training relies on brief, lecture-style workshops that may not differentiate pacing or skills effectively based on starting levels. Content provides an overview but limited modular resources restrict self-paced study and infrequent sessions hinder fitting with displaced schedules. Instruction occurs through centralized workshops with little follow-up support, as inconsistent internet access hinders online tools. Proposed improvements include conducting needs assessments to identify priority skills and preferences of different communities. Developing open-source, modular online and printed materials tailored to local contexts could be delivered via various platforms. Integrating digital literacy across subjects could reinforce skills application. Training community "champions" for one-on-one coaching and troubleshooting via remote tools could provide ongoing support. Organizing certification programmes, hackathons and skill-sharing networks could incentivize mastery and boost confidence. Creating blended learning playlists and collaborative workspaces could foster peer networks. Facilitating train-the-trainer programmes could develop local coaching capacity. A more tailored, practical, collaborative and flexible multi-modal approach may help address current training gaps within unstable environments.

The Potential Long-Term Impacts of the Open/Remote Learning Programmes

While immediate relief of barriers is paramount, thoughtfully designed programmes can yield enduring benefits bolstering communities. Targeting marginalised groups increases the likelihood of positive ripple effects enhancing stability, opportunity, and social cohesion long-term. Initiatives that expand technical/vocational skills can prepare disadvantaged youth to contribute to Sudan's recovery. Linking education to sustainable livelihoods stimulates self-reliance and local enterprise critical to normalcy. Maintaining peer networks counters displacement's social effects. Opportunities to tutor or aid communities foster indigenous solutions and intergenerational knowledge sharing. Empowering marginalised groups psychologically by expanding access to quality learning protects against learned helplessness and its consequences. Community participation through parental engagement and workplace partnerships fuels buy-in to sustain programming. Judiciously incorporating long-view dimensions can maximize learning's intersecting benefits beyond crisis response into durable dividends for peace and prosperity cantering lives made increasingly precarious by conflict.

Methods

The researchers have adopted the analytical-descriptive research methodology in this article. The collected data was analysed by utilising the SPSS, then described scientifically by explaining the numbers and percentages in detailed paragraphs following the tables. The sample

of this study was constituted of 144 tertiary level students from various Sudanese universities. These students are majored in various fields of specialty at different university levels starting from freshmen to seniors. The entire study population were students at war zones scattered in different places in Sudan and even abroad. Data collection took place through distributing a questionnaire as an instrument to obtain the required information. The questionnaire was divided into four main sections with three questions in each section. The first questionnaire section was regarding the educational outcomes, the second was about access to resources, while the third was concerning technology usage, and the fourth section was related to socio-economic background of the learners.

Result and Disscusion

Section A: Educational Outcomes

Table 1. Educational Outcomes

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. Improved access to education	39.5%	36.3%	8.9%	12.9%	2.4%
2. Increased educational achievements	37.6%	44.8%	11.2%	4.8%	1.6%
3. Enhanced career prospects	25.6%	4.8%	22.4%	9.6%	1.6%

For question 1, 39.5% strongly agreed and 36.3% agreed that the programme improved access to education. For question 2, 37.6% strongly agreed and 44.8% agreed that the programme increased educational achievements. For question 3, more respondents selected neutral (22.4%) than agreed (25.6% strongly agreed, 4.8% agreed) that the programme enhanced career prospects. So, in summary the majority agreed that the programme improved education access and achievements. But fewer felt it enhanced career prospects, with over 20% remaining neutral on that question. Open/remote learning has successfully enhanced access to excellent education and accomplishment for underserved learners, addressing unequal access. Fewer said it improved employment chances or opportunities, suggesting more can be done to assure socioeconomic advantages. Low-income students had more trouble getting resources and support, highlighting the need to close digital and socioeconomic disparities. Affordable internet/device access and learning support for underserved communities could reduce situational barriers.

As advised, expanding vocational/skills courses may improve relevance, career preparedness, and outcomes. Based on study objectives, community participation and ownership seem vital. While educational access has improved, the study shows that career preparedness, resource divisions, and community involvement must be addressed to fully fulfil open/remote learning for underrepresented areas. This study studied open/remote learning programmes in Sudan's war, where implementation is difficult. Delivery is difficult due to infrastructure damage, student/faculty displacement, and learning disruptions. Due to digital gaps and lack of infrastructure, marginalised groups in conflict/remote locations may have less dependable internet/device access. In-person disruptions put pressure on open/remote choices to sustain education continuity. Conflict-affected marginalised groups need inclusive support tailored to their circumstances.

Given environmental constraints, job advancement needs innovation. Conflict breaks social systems, making community engagement difficult. Emergency assistance and development may be needed to address acute needs during active violence. While progress was made, the complicated conflict environment shows how important and challenging it is to ensure

open/remote learning reaches and benefits underprivileged groups under such pressure. The results confirmed various literature review problems. As results showed low-income learners require better career guidance and support, the Community of Inquiry framework's emphasis on social, cognitive, and teaching presence is significant. Learners experienced infrastructure/device access barriers similar to the literature's digital divide. Results match socioeconomic achievement differences. Ertmer's infrastructure first-order obstacles model and advice requests were seen. Impacts on underserved populations mirrored marginalization literature on belonging, completion rates, and compounding hurdles. Community involvement is emphasised in literature-based study goals. Overall, the results corresponded with core issues facing marginalised groups as highlighted in the literature, giving context for evaluating findings and making suggestions about open/remote learning divides disproportionately affecting these communities.

Section B: Access to Resources

Here is the table reflecting on the results based on the context of Sudanese universities during the ongoing war in Sudan:

Table 2. Access to Resources

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
4. Access to technology	55.5%	32.8%	6.3%	3.9%	1.6%
5. Learning resources meet needs	55.5%	37.5%	4.7%	1.6%	0.8%
6. Available technical support	45%	30.2%	17.8%	4.7%	2.3%

Higher agreement percentages than preceding table imply programme is improving resource access despite difficulties. However, question 6 shows over 17% were neutral on technical support availability, indicating improvement is needed. Access to devices/internet (questions 4-5) was most positively rated, yet conflict may still have a digital gap. Literature noted infrastructure constraints, and findings show students struggle, yet open/remote learning can help underprivileged groups with adaption. Community participation was emphasised in study aims, consistent with relevance and sustainability literature. Conflict context requires careful engagement. While progress has been made, emergency and long-term solutions may be considered to improve programme benefits for under-represented populations amid conflict-related constraints. In conclusion, the latest data reveals significant benefits, however technical help is needed due to infrastructure issues in conflict contexts.

Section C: Technology Usage

Table 3. Technology Usage

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
7. Able to use technologies	25.5%	30.8%	16.3%	13.9%	2.6%
8. Received training for digital skills	15.5%	17.5%	24.7%	20.6%	20.8%
9. Technologies are intuitive	25%	30.2%	27.8%	14.7%	2.3%

Over half said the curriculum increased their technology skills and was intuitive in questions 7 and 9. However, question 8 showed that many felt digital skills training was inadequate or neutral, supporting books on technical skills and instructor assistance. Conflict-related infrastructure impediments can exacerbate skills development hurdles. Digital training could be emphasised to properly equip students. Community training through local organisations may help sustainability. Ensuring all pupils can interact online can boost benefits. Combining emergency and long-term techniques, such as training, in recommendations could increase impact in a dynamic context. In conclusion, while most people could use technology, improving digital skills training is essential to maximising open/remote learning's benefits.Conflict exacerbates infrastructure issues at Sudanese colleges, making digital skills development even more necessary but difficult to achieve due to disruptions.

War-displaced communities need specific training since they have trouble acquiring technology and skills. Given infrastructure issues, Questions 7 and 9 demonstrating over half could utilise and found technology intuitive is significant, but additional support is needed. Inadequate training in Q8 shows emergency conditions disrupting standard assistance compound second-order hurdles, requiring inventive emergency solutions like mobile security-resistant training that can reach displaced communities. Community involvement is important for relevance and security, with local partners helping give training to remote areas. Long-term goals like skill development are crucial, but short-term activities are needed to assist learning during turmoil. Career advancement is difficult but necessary for future success, requiring creative vocational possibilities that encourage study. Thus, technology usage support must be flexible and multi-pronged to endure Sudan's protracted instability through emergency and developmental recommendations.

Section D: Socio-Economic Background

Table 4. Socio-Economic Background

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
10. Social/economic challenges	39.5%	35.7%	9.3%	13.2%	2.3%
11. Addresses background barriers	30.6%	44.6%	11.5%	5.4%	1.5%
12. Improved life conditions	24.6%	41.5%	22.3%	9.2%	2.3%

Question 10 showed that over 70% of respondents identified socioeconomic barriers to online learning, consistent with literature on low-income learners. Question 11 showed the programme helped most overcome barriers, useful. However, Question 12's greatest neutral response shows improving practical life advantages. Conflict may worsen economic problems, highlighting the need for support. They could improve socioeconomic support and vocational possibilities. Designing culturally relevant, adaptive projects requires community cooperation. Emergency measures must promote learning and social outcomes. In fragile conflict zones, socioeconomic constraints affect students greatly. The programme has merits, but it needs innovative adaptations to maximise open/remote learning's function in aiding development during instability. In Sudan's war, Table4:

Support is essential since conflict worsens socioeconomic burdens, as shown in questions 10 and 11. Wartime infrastructure and economic constraints may have contributed to the neutral response in Q12 notwithstanding positives, as options to enhance are restricted. Emergency stipends and skills training for displaced students are not enough. Creative solutions are needed. Understanding restrictions and how to maximise benefits under pressure is necessary for

recommendations. Local expertise and engagement are essential for pragmatic, adaptive programmes. Short-term emergency interventions and long-term aims, like staff training throughout reconstruction, are necessary. Career development is difficult, however engaging displaced kids may lessen marginalisation. Isolated people need flexible, transportable schooling options. In conclusion, wartime settings require flexible recommendations that address acute suffering and sustain learning/opportunities through instability, with urgent learner needs as important as long-term growth.

Novelty of the Study

This study offers an innovative assessment of open and remote learning initiatives conducted during ongoing war in Sudan, emphasizing their efficacy in preserving educational access for marginalized populations. This study distinctly investigates the immediate obstacles and novel methods of providing education in a tumultuous wartime environment, in contrast to earlier research that mostly focuses on education in post-conflict scenarios. The work provides new insights into the flexibility of open and remote learning models in resource-limited and high-risk situations by using firsthand data from conflict-affected countries. Moreover, it emphasizes the convergence of education, technology, and conflict resilience, offering a vital viewpoint on sustainable educational initiatives in humanitarian emergencies.

Conclusion

After analysing the survey data and reflecting on Sudanese universities' particular environment during war, here are some conclusions and recommendations for the future:
The open/remote learning programme has improved education and learning outcomes for marginalised Sudanese university students, but the ongoing conflict requires adaptive, emergency-focused solutions alongside longer-term development initiatives.
To maximise the programme's influence on education, future, and stability in turbulent times, a multipronged strategy is essential. Thus, its contextual awareness, equity emphasis, balanced perspective, and ability to impact policy and practice for open/remote learning programmes targeting marginalised people during conflict and other turbulent periods make it stand out. Emergency continuity preparations and staff training can increase programme resilience against potential disturbance. Open/remote learning can help Sudan's universities protect marginalised people' right to quality education even during war and turbulence by implementing a holistic, diverse strategy to urgent relief and long-term capacity building. This would boost national opportunity, recovery, and stability.

Recommendations

Open and remote learning programmes can significantly impact marginalised learners' long-term career preparedness and community involvement in ways that support stabilization. Vocational guidance, local business partnerships, and mentorships can help disadvantaged youth impacted by conflict translate skills into improved livelihoods and self-employment prospects, aiding recovery of futures. Integrating work-based learning boosts relevance. Alumni associations maintaining peer networks counteract displacement isolation, while graduates assisting with skills clinics and tutoring sustains knowledge transfer and local infrastructure. Engaging advisory boards in strategic planning fosters sustained local investment. Surveying graduates on programmes' lifelong impacts may reveal unforeseen benefits like leadership development and activism vital for recovery. Documenting success stories motivates continued participation and advocacy crucial for stabilization by preventing exclusion-driven conflicts. Considering initiatives' multigenerational ripple effects within communities they strengthen is key to maximizing their potential role in stabilization. Community ownership also enhances sustainability of impacts that strengthen social cohesion and long-term development prospects of marginalised groups.

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