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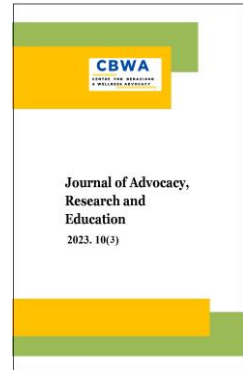
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Editorial

From 2014 to 2024: Celebrating a Decade of Open Access

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Abstract

The Journal of Advocacy, Research and Education (JARE) was started in 2014 by the then KAD International (now Centre for Behaviour and Wellness Advocacy, Ghana) to promote free Open Access publishing opportunities. In 2024, the JARE will be celebrating a decade of publishing quality peer-reviewed scholarly papers across the globe. Today, the JARE has evolved as one of the fastest-growing journals in Ghana, Africa, with an international outlook. The JARE boasts of distinguished authors from 24 countries across five continents. So far, we celebrate authors from Africa (44.26 %), Asia (8.28), Europe (16.26 %), North America (4.84 %), and the Middle East (0.35 %). With a commendable track record of consistent publications, we have committed to promoting open access and securing comprehensive funding to aid all our contributors. As we commemorate our 10th anniversary of disseminating scientific knowledge without financial, geopolitical, or institutional constraints in 2024, we reflect on the accomplishments of our journal and editorial team. We appreciate all regulatory bodies and funding partners for their unwavering support. Collaboratively, we aspire to elevate the JARE to the pinnacle, making it the leading choice for researchers, academics, students, practitioners, policymakers, and anyone engaged in creating or consuming research outputs.

Keywords: Centre for Behaviour and Wellness Advocacy, Journal of Advocacy, Research and Education, open access, publishing.

1. Historical Overview

The Journal of Advocacy, Research and Education (JARE) began in October 2014 as an initiative by KAD International [now the Centre for Behaviour and Wellness Advocacy]. As a charity organisation, our main source of funding was from Cherkas Global University Press (Washington, District of Columbia, USA). Beginning with seven articles from Ghana and the Russian Federation, our journal has kept to its aim of becoming one of the best multidisciplinary journals in the world (KAD International, 2014).

Currently, the JARE boasts of regularly released volumes/issues in April, August, and December, with authors from Africa (44.26 %), Asia (8.28), Europe (16.26 %), North America

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(4.84 %), and the Middle East (0.35 %) (see [Table 1](#)). Specifically, we have authors from 24 countries: Canada, China, Ethiopia, Germany, Ghana, India, Indonesia, Japan, Kenya, Malaysia, Nigeria, Philippines, Romania, Russia, Serbia, South Africa, South Korea, Tanzania, Ukraine, United Arab Emirates, United Kingdom, USA, Vietnam, and Zimbabwe. Notably, the leading contributors to our publication are Ghana, Ukraine, South Africa, Russia, the United States of America, and Nigeria ([KAD International, 2023a](#)).

In addition to our diverse authors, the JARE is indexed by reputable databases and regulatory bodies like Crossref (USA), Directory of Open Access Journal (Sweden), EBSCOhost Electronic Journals Service [EJS] (USA), Research4Life (Hinari, AGORA, ARDI, GOALI & OARE), Sherpa Romeo (Spain), and ROAD, the Directory of Open Access scholarly Resources ([KAD International, 2023b](#)). Aside from these indexes, the JARE is indexed by the Catholic University of the Sacred Heart (Italy), Electronic scientific library (Russian Federation), Electronic Journals Library – Social Science Research Center Berlin (Germany), EuroPub (UK), Ghent University Library (Belgium), Google Scholar, HOLLIS (Harvard Library) (USA), IKCEST under UNESCO (China), Institute of Information Sciences (Slovenia), Leibniz Information Centre for Science and Technology and University Library (Germany), Let Pub (China), Open Academic Journals Index (USA), Society of African Journal Editors (Africa), Southeast University Library (China), Système Universitaire de Documentation (France), Trove (Australia), University of Jyväskylä (Finland), University of Oulu (Finland), Vancouver Public Library (Canada), and Zhejiang University [China] ([KAD International, 2023b](#)). Presently, the JARE is one of the journals accredited by South Africa’s Department of Higher Education and Training and is part of national libraries in countries like Ghana and the National Library of Myanmar ([KAD International, 2023b](#)). This editorial aims to share key lessons from our years of embracing open access as a journal based in Ghana, Africa.

Table 1. Summary of Continents and Authors

Continent	Authors	Percentage (%)
Africa	128	44.26
Asia	24	8.28
Europe	47	16.26
North America	14	4.84
Middle East	1	0.35

Notes: Percentages are rounded to two decimal places, and the total may not add up to exactly 100 % due to rounding.

2. Our Achievements, Challenges, and Overcoming Strategies

As we reflect on the past nine years, the JARE have made massive strides in open access and reshaped the landscape of scholarly communication as a multidisciplinary journal focusing on advocacy. Based in a low-resourced country, the JARE have faced unique challenges and opportunities in navigating these transformative years. From our database from October 2014 to August 2023, the JARE boasts 289 authors affiliated with institutions based in five continents (see [Table 2](#) for details). In Africa, the JARE has published papers from authors from Ethiopia, Ghana, Kenya, Nigeria, South Africa, Tanzania, and Zimbabwe. Out of the African countries, our top three with the most papers are Ghana, South Africa, and Nigeria. Aside from having authors from seven African countries, we have published papers from eight Asian countries: China, India, Indonesia, Japan, Malaysia, Philippines, South Korea, and Vietnam. However, India, Indonesia, and China are the top three Asian countries. In Europe, our authors came from Germany, Romania, Russia, Serbia, Ukraine, and the United Kingdom. Also, we had our top three out of our six European authors from Romania, Russia, and Ukraine. Furthermore, the rest of our authors were based in North America (Canada and the USA) and the Middle East (United Arab Emirates).

In addition to our scholarly achievement, the JARE has faced challenges over the years. As the journal approaches its 10th anniversary in 2024, its journey from a low-resourced country has been marked by various challenges, each of which has been met with strategic solutions. Here are some key challenges faced by JARE over the years and the corresponding overcoming strategies:

Table 2. Summary of Continents, Country and Authors

Continent	Country	Authors	Percentage (%)
Africa	Ghana	81	28.03
	Zimbabwe	2	0.69
	Kenya	2	0.69
	Nigeria	13	4.49
	Tanzania	6	2.07
	Ethiopia	2	0.69
	South Africa	24	8.28
Asia	Vietnam	1	0.35
	India	9	3.10
	Indonesia	3	1.03
	China	6	2.07
	Malaysia	1	0.35
	Philippines	2	0.69
	Japan	1	0.35
	South Korea	1	0.35
Europe	United Kingdom	1	0.35
	Germany	1	0.35
	Russia	10	3.45
	Romania	2	0.69
	Serbia	1	0.35
	Ukraine	31	10.69
North America	Canada	1	0.35
	USA	13	4.49
Middle East	United Arab Emirates	1	0.35

Notes: The percentages are rounded to two decimal places and may not add up to exactly 100% due to rounding.

Financial Constraints

Challenge: Being based in a low-resourced country, the JARE has faced challenges since 2014 in securing financial resources for publishing, marketing, and maintaining high editorial standards.

Overcoming Strategy: The JARE sought external funding through partnerships with international organisations, academic institutions, and research foundations like Cherkas Global University Press (Washington, District of Columbia, USA). Additionally, we initiated the implementation of cost-effective publishing practices to alleviate financial constraints.

Global Visibility and Recognition

Challenge: Establishing and enhancing global visibility and recognition for a journal in Ghana, Africa, was a hurdle in attracting diverse and high-quality submissions. It was a major challenge as the period of JARE's establishment was met with an influx of predatory journals promising open access to authors.

Overcoming Strategy: JARE engaged in strategic marketing and networking efforts, actively participating in international conferences and forming partnerships with established journals and academic bodies. This helped in building credibility and expanding the journal's reach.

Capacity Building and Expertise

Challenge: Resource limitations presented challenges in developing and retaining a pool of qualified editors, reviewers, and technical staff.

Overcoming Strategy: The JARE currently depends on editors, reviewers, and technical staff willing to provide free services. Also, the journal prioritised capacity-building initiatives, providing training programs for our experts. We also secured collaborations with experienced professionals and mentorship programmes to enhance the quality of the journal's productivity.

Quality Assurance and Editorial Integrity

Challenge: Maintaining rigorous peer review standards and ensuring editorial integrity without significant financial resources was a constant challenge.

Overcoming Strategy: JARE implemented robust editorial policies, emphasising the importance of ethical research practices. Collaborating with renowned scholars and experts in the field as part of the editorial board contributed to upholding quality standards.

4. Declarations

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data and materials

Not applicable.

Conflict of interest statement

The author reports no conflicts of interest.


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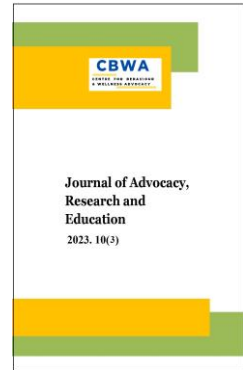
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Articles

Re-imagining the Technical and Vocational Education and Training Curriculum that can Address the Skills Shortage Gap in South African Rural Communities

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Abstract

The study's main aim was to investigate challenges faced by the Technical and Vocational Education and Training (TVET) in addressing the skills shortage gap in the rural communities of South Africa. The human capital theory was employed as the theoretical framework in this study. The study followed the qualitative approach for data generation and analysis. In their respective portfolios, six campus senior personnel participated in the in-depth interviews. The findings identified a lack of trained lecturers, the poor design of the TVET curriculum, curriculum fragmentation, weak institutional structures, and poor infrastructure. The findings also noted the poor funding norms, poor policy frameworks, lack of active support by the stakeholders, and a poor relationship with the TVET partners.

Keywords: skills, skills shortage, technical and vocational education, training curriculum.

1. Introduction

The concept of Technical and Vocational Education and Training (TVET) came into effect after the first higher education summit held in Johannesburg in April 2010, during which the government and the Department of Higher Education and Training (DHET) called on all stakeholders in education and training, for example, parastatals, Universities, civil society organisations and businesses, to collaborate and respond to the need for improving mid- to high-level skills development opportunities, job creation and improvement of the poor educational achievement which continue to confront South Africa. The TVET colleges were formerly called Further Education and Training (FET). The government renamed these colleges (TVET colleges) to emphasise vocational education and training (Sithole et al., 2022).

Surprisingly, Lagakos (2020) reveals that rural communities' education and development remained behind compared to the education of urban communities. Rural communities' education is envisaged for rural development. Yet, rural schools and colleges are poorly serviced regarding infrastructure and other necessary resources. Nevertheless, communities are expected to be liberated through education and training for social, economic and psychological abilities. Individuals may also discover their identity and ways to fight poverty through education and training (Jagers et al., 2019).

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Hence, Mustapha and Hussain (2022) suggest that to mitigate the situation, the TVET curriculum programmes should be designed to assist trainees in working in a specific trade or occupation for the job market that is recognised by the relevant bodies. That supports the relevance of this study in identifying challenges facing the TVET in addressing the skills shortage gap in South African rural communities and further finding possible alternative ways for the TVET curriculum to address the skills shortage gap in the South African rural communities. Moreover, Ronnie (2023) avers that the TVET curriculum is also faced with several challenges that limit its attempt to address the skills shortage gap. Accordingly, this study investigated the challenges facing the TVET curriculum, addressing the skills shortage gap in South African rural communities. This has been done through the conclusions that were reached as well as the recommendations based on them for all the partners of the TVET sector, with a particular focus on the DHET and the government.

2. Theoretical framework

In this study, the Human Capital Theory was employed as the framework. The study explored the belief that human capital can be increased through higher education and training to promote access to various skills and knowledge while promoting lifelong learning and economic security for communities. The theory has a background in macroeconomic development theory back in the 1950s when the focus fell strongly on land, labour, management, and physical capital against peoples' capabilities as a resource in the production process. The human capital theory has its roots in the Industrial Revolution and the philosophy of productivism. The human capital theory was promoted by researchers such as Becker (1976), Houghton and Sheehan (2000), Laanan (2000), and Schultz (1961), as they believe that human beings are capital in themselves.

Human capital must be trained, educated, developed, and maintained within an organisation's system to enhance the organisation's productivity and the expertise of its workforce. Investment in human capital leads to greater economic outputs (Kareem, Hussein, 2019). According to Winterton and Cafferkey (2019), modern economists seem to concur that education and health care are the keys to improving human capital and, ultimately, increasing the economic output of the nation. In doing so, the skills shortage is addressed explicitly. Education and training through the knowledge, skills and abilities should be acquired to improve the employee production and performance of the organisation (Werdhiastutie et al., 2020). According to this approach, the TVET curriculum is perceived to play a fundamental role in providing the necessary human capital required by the industry (Ziad, 2021). Development financial institutions such as the World Bank have been advocating for policies to promote the TVET curriculum that invests in human capital as a means for supporting economic growth.

3. Methods and Materials

Approach and design

This study utilised qualitative research and case study design to explore participants' experiences pertaining to a specific phenomenon whilst also attempting to understand how those people have constructed reality through interrogation processes such as interviews (McMillan, Schumacher, 2010; Sarfo et al., 2021).

Sampling and sampling procedure

Researchers used purposive sampling to identify participants (Creswell, 2014; Sarfo et al., 2022). Purposive sampling is a process where the researcher selects a sample based on the experience or knowledge of the group on the topic of study. Purposive sampling means participants are selected because they possess the distinct features of the data needed (Creswell, Plano Clark, 2011). This implies that the researcher purposively selected participants with knowledge and experience in the TVET curriculum. Purposive sampling refers to the process where the researcher selects a sample based on experience or knowledge of the group. Importantly, purposive sampling means participants are selected because they possess the distinct features of the data needed (Creswell, 2014; Sarfo et al., 2021). The complete sample frame consisted of one (1) TVET College Principal, two (2) Campus Managers, one (1) Assistant Director for Curriculum, and two (2) Curriculum Specialists. The College Principal was regarded as the chief executive of TVET College. The Campus Managers were regarded as the overseers of the TVET College at campuses where different TVET curriculum programmes were implemented. They were looked at as the

supervisor of the campus. The Assistant Director for Curriculum was regarded as a staff member with sound curriculum training and experience. The curriculum specialists were believed to be the managers of different departmental units of homogeneous instructional offerings. All participants were identified as subject managers who fully understood the theory and practice of TVET Curriculum design and implementation.

Instrument

Individual semi-structured interviews were conducted with the sampled participants to generate data. Corbin and Strauss (2008) suggest that semi-structured interviews are used to elicit individual perceptions, opinions, facts, forecasts, and their reactions to the findings and the potential solutions. Semi-structured interviews had a predetermined list of open-ended questions or topics, but they also allowed for flexibility in probing further based on the participant's responses (Osborne, Grant-Smith, 2021). Considerably, the researchers believed that the combination of structured and unstructured elements ensured that researchers could cover specific areas of interest while allowing for unexpected insights. Additionally, the researchers used the predetermined questions or topics during the interview as a guide since they could ask follow-up questions and explore new areas based on the participant's responses. Taherdoost (2022) suggests that this flexibility helps capture a wide range of information. Hence, all questions asked to participants were related to challenges facing the TVET curriculum in addressing the skills shortage gap in South African rural communities and suggestions that may be used to overcome challenges.

Data analysis

Data generated from interviews were analysed by identifying themes, patterns, and relationships that were manageable first. As part of the process, Terry and Hayfield (2020) advise that theme identification and a thematic content analysis should be applied to allow the researchers to immerse themselves in the collected data and categorise it into different themes by employing a bottom-up approach as the data emerged from the transcripts. Bryman and Bell (2014) further propose that keywords, names, letters, and numbers are assigned to themes according to the source as pseudonyms to hide the identity of the participants. Table 1 indicates all the steps that were taken to analyse data.

Table 1. Procedure for analysing qualitative data (Interviews)

Step 1	Interviews were done with participants
Step 2	Transcriptions were done on the same day the interviews were conducted.
Step 3	All the interviews transcribed were read.
Step 4	Codes were indicated for each interview scheduled with the description.
Step 5	The themes that emerged were established through grouping codes.
Step 6	To get an idea of the data generated, thematic networks were placed with codes.
Step 7	Codes were trimmed and added together to find a better meaning and coherence.
Step 8	Thereafter, results were presented and discussed in the following section of the study.

4. Results

Table 2 presents the sample frame of those who participated in the study. The researchers gave participants the following pseudonyms (Zodwa, Zakes, Zandi, Zinzi, Zethu, and Zipho) to hide their identities.

Table 2. Description of the participants who were interviewed

Participants	Responsibility and accountability
Pseudonyms	
Zodwa (College Principal)	She is responsible for running the whole TVET college daily and reports to the regional director of colleges.
Zakes (Campus Manager A)	He is responsible for running campus A and reports to the

Participants	Responsibility and accountability
	college principal for everything that happens at campus A.
Zandi (Campus Manager B)	She is responsible for running campus B and accounts to the college principal for everything that happens at campus B.
Zinzi (Assistant Director for Curriculum)	She is responsible for curriculum management in the entire TVET college. She accounts to the college principal.
Zethu (Curriculum Specialist)	She is responsible for curriculum management in the entire campus A and accounts for the assistant director for curriculum and campus manager A.
Zipho (Curriculum Specialist)	He is responsible for curriculum management in the entire campus B and reports to the assistant director for curriculum and the campus manager B.
Total = 6	

Main theme one (1): The challenges facing the TVET in addressing the skills shortage gap of South African rural communities

- The results revealed that many of the TVET lecturers possessed lower qualifications. This presents a challenge that affects the administration and management of the TVET curriculum. **Zodwa** confirmed that *“most of the staff members that are responsible for curriculum implementation only hold diplomas as their qualifications”*.

- The results revealed that lecturers in TVET colleges lack vocational training and experience. **Zethu** stated that *“lecturers studied for normal qualifications to work in normal schools which do not require vocational skills”*.

- The results further stated that TEVET colleges offer inappropriate skills to students. **Zodwa** explained, *“Many students have completed and passed with distinction, but they fail to get jobs in their careers; instead, they take anything they come across.”*

It was also noted that the TVET curriculum does not address issues that are encountered in South African rural communities. **Zandi** stated, *“TVET colleges have many courses that do not have a market in rural areas.”* **Zakes** agreed by indicating that *“inappropriate skills acquired in relation to the available jobs can hamper graduates in their careers, and there is a lack of information and connections with regard to employment opportunities.”*

Main theme two (2): The possible alternatives for the TVET curriculum to address the skills shortage in the rural areas of South African rural communities

- The results showed that the TVET sector has pillars that need to be strengthened to address the skills shortage gap. **Zandi** said, *“The college is on a plan to open new campuses deep in the villages. The purpose is to take skills training to rural students where they are.”*

- The results further indicated that the current TVET system needs to be reviewed and re-designed. **Zinzi** asserted that *“The TVET system needs to be overhauled from scratch. The DHET must release more funds to establish and develop the necessary infrastructure, such as infrastructure related to technology.”*

- The results also implied that a relationship with all the stakeholders in the TVET sector is imperative. **Zipho** indicated that: *“TVET colleges must establish partnerships. Partnerships may help to relate the curriculum to the local, national, and international skills demand.”*

- The results have suggested continuous training for lecturers. **Zethu** was quoted emphasising that *“Colleges must always try to offer some training to lecturers. For example, training for moderators, assessors, coaching, and facilitators.”*

5. Discussion

Main theme one (1): The challenges facing the TVET in addressing the skills shortage gap of South African rural communities

Unqualified TVET lecturers

TVET has remained the same even though the TVET curriculum is supposed to contribute significantly to skill development for economic growth. Omar et al. (2021) allude that many TVET lecturers do not possess the requisite training, skills, experience, motivation, and vocational

exposure. On the other hand, McPherson (2021) postulates that TVET lecturers should ideally have theoretical knowledge and practical skills relevant to their teaching fields, which is not the case with the current TVET lecturers. Without proper training and skills, they may struggle to convey knowledge and effectively provide hands-on training to students. Additionally, practical experience in the industry is often essential for TVET lecturers to relate classroom teachings to real-world applications. Without sufficient experience, lecturers may be unable to effectively bridge the gap between theory and practice (Mesuwini, Mokoena, 2023).

Lack of enough trained vocational and experienced lecturers

Significantly, Russon and Wedekind (2023) reveal that the national education quality assurance body in South Africa concluded that most lecturers are ill-equipped to cope with the academic and social demands of vocational teaching. This implies that lecturers are incapacitated to achieve the purposes of the curriculum. The lack of trained vocational and experienced lecturers is a significant issue in South Africa's education system, as highlighted by Russon and Wedekind (2023). The findings of the national education quality assurance body in South Africa suggest that many lecturers in vocational education are ill-prepared to meet the academic and social demands associated with vocational teaching (McGrath et al., 2023).

Poor timetabling

TVET colleges were inundated with unplanned programmes and events within and without. Muchineripi et al. (2022) argue that a theoretical workload that is too heavy and the poor timetabling of the TVET calendar year are key challenges for the TVET curriculum. This has affected the teaching and learning activities as the core values of the curriculum. Subsequently, Muchineripi, Akwasi and Kofi (2022) agree that a heavy theoretical workload can compound the problems caused by poor timetabling. Students may be required to cover substantial theoretical content in a limited time. This makes it difficult for them to grasp and apply the concepts fully. Significantly, Alghamdi et al. (2020) emphasise that effective timetabling is essential for optimizing the use of resources such as classrooms, equipment, and instructors. Poor timetabling may result in underutilized resources during some time slots, while overcrowding in others leads to inefficiencies in the educational process.

Unresponsiveness of the TVET curriculum

Most of the participants answered that the TVET curriculum was structurally unresponsive to the national skills needs. Importantly, it was noted that the content of the curriculum is too theoretical and does not address the salient skills needs of the labour market, especially in rural areas. Rensburg (2020) maintains that the South African TVET system needs to be strengthened to provide access to high-quality, differentiated technical and vocational education and skills training that is responsive and relevant for all. The TVET curriculum appears to have structural issues that hinder its ability to adapt to the changing demands of the labour market. This suggests a potential mismatch between the skills taught in TVET institutions and those required by industries and employers (Comyn, 2018). Le et al. (2022) argue that the emphasis on theoretical content in the curriculum may not align with the practical skills needed by individuals entering the workforce. This imbalance could lead to a gap between what students learn in TVET programs and what employers require in the real world.

Inaccessibility to TVET training

Accessibility indicates providing inclusive education and training for all within the limits of finance, distance, affordability, flexibility, and adjustability. All participants asserted that the TVET curriculum does not offer full accessibility to the required training for employment. Elfert (2019) states that the United Nations Education and Scientific Cultural Organisation (UNESCO) on Agenda 2030 emphasises universal access to basic education and lifelong learning opportunities, including vocational education, higher education, and adult learning. Therefore, the TVET curriculum needs to offer differentiated bridging courses to allow for flexibility and mobility within the college sector to achieve an articulated post-school education and training system with no dead ends for students. Consequently, Mhlanga et al. (2022) agree that TVET institutions are scarce in rural areas and far from where people live. This can make it difficult for individuals with limited resources to access TVET institutions. Nevertheless, some prospective students may not be aware of the existence or benefits of TVET programs. A lack of information about available opportunities can prevent individuals from seeking out this type of education and training (Le, 2022).

Poor TVET curriculum design

The design of the TVET curriculum lacked the authenticity to address the skills shortage gap. All participants indicated that the TVET curriculum was destined to address the skills shortage gap despite the institutional challenges faced. Magidi and Mahiya (2021) regard the TVET curriculum as pivotal in addressing the skills shortage gap in rural communities. Education and training are central to long-term development, reducing poverty and inequality, and building a foundation for an equal society. However, Nkwanyane et al. (2020) indicate that outdated content is one of the most significant issues with poorly designed TVET curricula. Industries and technologies are constantly evolving, and if the curriculum does not keep pace with these changes, students may graduate with skills that are no longer in demand.

Outdated information technology

The study revealed that the TVET colleges were facilitated by poor technology in communication and instructional offerings. Olowoyo et al. (2020) opine that TVET colleges have a challenge regarding securing modern training equipment for workshops that will expose students to practical life in the workplace and the world of employment. Hence, Oviawe (2018) maintains that an effective TVET curriculum requires access to up-to-date equipment and facilities to provide practical training. If the curriculum design does not consider the need for such resources, students may graduate without gaining the necessary hands-on experience.

Insufficient funding

Insufficient funding was identified as one of the main challenges facing the TVET curriculum in addressing the skills shortage gap. Accordingly, Sithole et al. (2022) contend that the funds allocated by the government through the DHET should be maximised to implement the TVET curriculum and do research on a comparative study of good practices in other countries that offer TVET systems. An improvement in the funding norms for the TVET curriculum was seen as important for acquiring facilities, tools, equipment, instruments, workshops, laboratories, library, maintenance, and capacity building. Therefore, Wanjohi et al. (2019) affirm that insufficient funding often means that TVET institutions have limited resources to invest in modern equipment, technology, and infrastructure. This can hinder the quality of education and training that students must receive.

Weak partnerships and collaboration links

According to the findings, most TVET colleges have no formal relationship with the industry, except for cases where they offer an apprenticeship, leadership, or other skills programmes that are inherently practical. Makgato and Moila (2019) affirm that the relationship between TVET colleges and other partners is weak. Secondly, the TVET curriculum is alienated from its prime market as well as the consumers of the graduates in the form of the trade and industry (employers). As a result, many TVET graduates cannot get the workplace experience required to complete the practical component for reasonable work. The training offered seems ambiguous, unrealistic, and unresponsive to the economy's needs for rural areas. Additionally, Mabunda and Frick (2020) state that if there is no collaboration between colleges and industries, there is a risk of a skills mismatch. Graduates may not possess the skills and knowledge employers require, leading to higher unemployment rates among TVET graduates.

Main theme two (2): The possible alternatives for the TVET curriculum to address the skills shortage in the rural areas of South African rural communities

TVET curriculum change

Curriculum change was seen as a possible alternative way for the TVET curriculum to address the skills shortage gap. Change is necessary for TVET colleges to provide the relevant programmes required for specific students and specific locations. Curriculum change may promote accessible and high-quality skills training. Le (2022) asserts that education is a medium through which the formal schooling system transforms learners' global values and norms. Investing in education through the TVET curriculum will explore the potentialities of the rural youth and enable them to enjoy complete citizenry and their purpose in life. A challenge for any government is to estimate and anticipate the education and skills required to support the development and production of society (Majid, 2020). A framework to set up the indicators of skills planning should be set up to inform the government to obtain a holistic understanding of the supply and demand for skills.

Universal accessibility to TVET training

Accessibility entails providing inclusive education and training for all within the limits of finance, distance, affordability, flexibility, and adjustability. Therefore, the TVET curriculum should be designed to include bridging courses to allow for flexibility and mobility within the college sector. Quality education (Agenda, 2030) emphasises universal access to basic education and long-life learning opportunities, including vocational education, higher education, and adult learning (Elayyan, 2021). This is important to achieve the version of an articulated post-school education and training system with no dead ends for students. In this study, dormitories were found to be a challenge for TVET students because they were a causative factor in the phenomena of absenteeism and dropping out.

Offering continuous professional development programmes

The DHET and the TVET colleges must have a comprehensive plan for in-service vocational training programmes for the TVET lecturers. This training should form part of the continuous professional development programmes and refresher courses, workshops, conferences, and symposia to keep lecturers abreast of the new skills developments and innovations within the TVET sector, industry, and curriculum. This will speak to the critical pedagogy and the skills training requirements regarding the TVET students in rural areas. Addressing the issue of the heavy workloads and understaffing in TVET colleges is a possible alternative way of improving the TVET curriculum.

Notably, the TVET lecturers must be motivated regarding recruitment, service and maintenance. Accordingly, lecturers' remuneration should be standardised with attendant benefits to attract them to work at rural TVET colleges. Motivation will also help lecturers change their attitude towards the TVET curriculum and the entire sector in general. Govindasamy (2021) on Umalusi, the national education quality assurance body in South Africa, concludes that most lecturers are ill-equipped to cope with the academic and social demands of vocational teaching.

Practical skills training

There is no skills training without experiments. The practicality of training lays the foundation for skills acquisition. In this regard, results showed that the TVET colleges need to pay greater attention and provide more resources for practical training if they are to address the skills shortage gap. Practical lessons should form the largest part of the TVET curriculum training by implementing the approach for subject experts to meet the administrative requirements for undertaking practical work. Olowoyo et al. (2020) affirm that TVET colleges need to secure modern training equipment for workshops that will expose students to practical life in the workplace.

Exploring collaborative opportunities

The results showed that building strong partnerships is seen as an alternative way of effective skills training by the TVET curriculum and, subsequently, better addressing the skills shortage gap. The above may be done regarding other countries such as Germany, Ethiopia, and Australia, where companies play a crucial role in designing, development, implementation, assessment, experiential learning, apprenticeships, trade tests, and employment, as well as funding for vocational training (Melesse et al., 2022). Sgarz (2021) alludes that the social partners of TVET include organisations that represent the interests of workers and employers, while Allais and Marock (2020) maintain that social partners impact the responses to labour market policies. This is the role that is missing in the South African TVET context.

Addressing rural skills challenges

The TVET curriculum is perceived to address the rural skills challenges in a unique approach and strategy through an adequate vocational curriculum since unemployment is one of the big social challenges in rural areas (Yeap et al., 2021). Shereni (2020) affirms that the problem of unemployment in Africa can be traced through periods of socio-economic instability and political factors. The findings of this study revealed that the TVET curriculum has not yet played its role in addressing the skills shortage gap. Sano and Mammen (2022) believe that rural areas are faced with a deficit of high skills. However, they have a surplus of low-skilled members of the communities. Therefore, this is the gap the TVET curriculum must fill through relevant programmes and high-quality training with hands-on skills.

6. Limitations

This study was limited by its scope and the relatively small sample frame; hence, the researcher could not generalise the study's findings to the entire population of all the TVET

colleges. Nevertheless, the findings could be used as a motivation for effective skills training within the TVET curriculum. Time, space, and the shortage of other necessary resources also constrained the study. Hence, only six TVET managers were interviewed. The researchers are of the view that this was a small representation of the TVET sector.

7. Conclusion and Recommendations

The study concludes that capacity building is critical in any system to deliver as expected. TVET colleges do not have the suitable human capital to address the skills shortage gap. Thus, the study recommends that the DHET and TVET colleges should consider outsourcing personnel from industries in terms of trainers to upskill the TVET lecturers, especially regarding the practical lessons. Melesse and Obsiye (2022) indicate that the National Development Plan agrees that the TVET sector is not effective, and its output is poor due to a lack of capacity-building programmes for lecturers.

The study further concludes that the TVET curriculum does not address the economic and social issues that it was designed to address. Stein and Scholz (2020) confirm that job markets on pre-existing human capital needs completely ignore the obvious ways the markets manufacture needs and desires instead of merely responding to them. Therefore, the study suggests that the curriculum's re-design will be manifested by providing relevantly- demanded programmes for specific students and specific locations with high-quality training being offered, delivered, and made accessible to all students. The TVET curriculum should identify social issues in rural areas and not respond to them only.

8. Declarations

Ethics approval and consent to participate

Ethics approval was granted by the University of Zululand, South Africa, with informed consent from all participants.

Consent for publication

Not applicable.

Availability of data and materials

Data and materials associated with this study are available upon request.

Conflict of interest statement

The authors of the manuscript declare that there is no conflict of interest, and all reference materials were duly acknowledged.


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Assessing Students' Mathematics Interests and Perceived Teacher Effectiveness in Rural Communities: Implications for Rural Mathematics Education

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Abstract

Students in rural areas in developing nations are at risk of under-performing and dropping out of school. This worsens when it comes to science subjects such as mathematics. Sustaining their mathematics interests demands understanding the factors that impact their mathematics learning outcomes. Our study adopted a cross-sectional survey research design to examine the association between teacher effectiveness and rural students' mathematics interests. Our sample comprised 205 randomly sampled secondary school students from six community schools in Awka, Anambra State, Nigeria. Our findings revealed that all the components of teacher effectiveness were positively related to students' mathematics interests. After controlling for gender, the regression analysis revealed that the dimensions of teacher effectiveness had a joint significant association with students' mathematics interests, with the student-teacher dimension having the greatest predictive capacity on students' mathematics interests. We concluded that affective aspects of teacher effectiveness are crucial for stimulating rural students' interest in mathematics.

Keywords: Mathematics interests, Nigeria, rural communities, rural mathematics, teacher effectiveness.

1. Introduction

Rural education is seen as a key aspect of the growth of rural communities. Mathematics has long been recognized as a science discipline at the epicenter of scientific progress. However, desirable mathematics skills and competencies appear lower in rural areas than in urban areas (Ajai, Imoko, 2013). As such, researchers have shifted their focus from individuals and individual understanding in science education towards how learning contexts impact science students' knowledge and abilities (Carlone et al., 2010). Undermining relevant contexts to mathematics teaching is likely to negate sociocultural systems' impact on learning mathematics.

Overtly, some research on rural-urban disparities in mathematics learning has shown that students in urban areas achieve significantly better than students in rural areas (Nworgu, Nworgu, 2013; Ochoche, Oguche, 2022) and that urban students engage in mathematics significantly better than rural students (Ayub et al., 2016). This disparity has been attributed to a lack of access to high-quality educational facilities (Adenuga, Adeniran, 2022) and the continual marginalization and neglect of rural schools, which stymies the development of rural communities in Nigeria (Nworgu, Nworgu, 2013). Despite international proclamations to achieve education for all for

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sustainable development, many nations are failing to provide high-quality education for their citizens (Beckman, Gallo, 2015). In Nigeria, for example, more than 14.6 million children are out of school (Olaniyan et al., 2018), and the burden of the out-of-school children is more in rural communities. According to parity indicators, the out-of-school rate of children in secondary school in rural areas is 33 %, while it is 12.6 % in urban areas (Adenuga, Adeniran, 2022).

One of the issues that have been fingered as a factor impeding the teaching and learning of mathematics in rural areas in most developing nations is the teacher factor (Anigbo, 2016; Ochoche, Oguche, 2022), which bothers on how effective the teacher is in teaching mathematics. Teacher effectiveness has been considered necessary to improve mathematics learning outcomes of students (Ramezani-Monfared et al., 2015), and the shared features of rurality as well as the unique features of each rural place and people could interfere with how effective mathematics teaching could be (Hardré, 2011). Hardré further notes that these complex circumstances influence students' interest in mathematics. Interest in mathematics is a significant factor in mathematics learning outcomes since it has the capacity to induce in the learner a consistently high cognitive commitment and emotional attachment to learning (Tembe et al., 2020). As a result, teacher effectiveness may be a powerful element in arousing students' interest in mathematics. However, there is insufficient data in the literature on how teacher effectiveness is related to students' mathematical interests in rural settings.

Perceived teacher effectiveness and mathematics learning in a rural setting

Teacher effectiveness is a crucial factor influencing students' academic achievement and learning outcomes (Kamayubonye, Mutarutinya, 2022). Students who perceive their teachers as more effective are more likely to be engaged in mathematics learning, to have positive attitudes towards mathematics, and to attain higher levels of mathematics achievement (Akram, 2019). This is because teaching behavior, student ability, and student background work hand in hand to support students' learning (Garcia et al., 2019). In rural settings, it has been established that teachers perceived as effective in terms of content knowledge and pedagogical skills produced students whose achievement was high (Marshall, Sorto, 2012; Adams, 2012). Teacher effectiveness is closely linked to student engagement (Shin, Shim, 2021). Also, the study carried out by An et al. (2022) using a sample of urban and rural students in China established that there is a significant positive relationship between teacher support, learning motivation and learning engagement.

Interests in mathematics of students in rural communities

There is a close relationship between interest and students' performance in mathematics (Wong, Wong, 2019). When students manifest interest in a subject, they focus more on the work, gain/ apply more skills, and are better equipped to face challenges emanating from the subject (Abin et al., 2020). Rural communities are shaped by factors like poor means of transportation/roads, inadequate facilities, and the literacy level of parents, and all these factors negatively influence teaching and learning (Shikalepo, 2019). Students, schools, teachers, and stakeholders in rural communities often face different challenges (Hardré, 2011) when learning mathematics. These challenges include limited access to internet resources, inadequate infrastructure, lack of specialist teachers, and effective teaching methods (Darkis, 2020), which invariably affect interest in mathematics. However, findings regarding the mathematics interest of rural and urban students have been inconsistent. For example, Ayub et al. (2016) and Ababneh and Kodippili (2020) established that rural students manifested lesser interest in mathematics than urban students. In contrast, Ajai and Imoko (2013) and Illiyas and Charles (2017) demonstrated that rural students showed greater interest in mathematics, while Rajak and Gayen (2022) established no significant difference in mathematics interest between students in the rural and urban areas.

2. Methods

Research design

The design for this study was correlation research design, which aimed to describe and measure the degree of relationship between two or more variables (Devi et al., 2022). This design is suitable for this study because it sought to predict the relationship between teacher effectiveness and students' interest in mathematics in rural public secondary schools in Anambra State.

Participants

Our respondents consisted of 205 randomly sampled senior secondary II students (male = 47 %; female 53 %) from six public secondary schools in six rural communities in Anambra State.

Instrument for data collection

We employed two instruments for data collection in this study with a demographic section consisting of students' gender. The demographic section consisted of a single-item question demanding that students indicate whether they are males or females. The first is the Academic Interest Scale for Adolescents (AISA), a generic multi-dimensional instrument used to measure academic interest across different school subjects developed by Luo et al. (2019). It was anchored on Hidi and Renninger's (2006) four-phase interest development model and consists of 29 items structured on a four-point scale of strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). It has four clusters – emotion, value, knowledge, and engagement. The reliability coefficient for mathematics using Cronbach's alpha (α) was originally 0.80. This surpassed the 0.70 value benchmark (Nunnally, Bernstein, 1994). In our current study, the reliability index using Cronbach's α is 0.97.

The second instrument is the Teacher Effectiveness Questionnaire (TEQ) - a researcher-developed scale – consisting of 37-item statements. The questionnaire was structured on a four-point rating scale with response options of Strongly Disagree (SD), Disagree (D), Agree (A) and Strongly Agree (SA). It is developed after an extensive literature review. We drew from the works of Macia and Sanchez (2015), Meng et al. (2012), Moreno-Murcia et al. (2015), and Swathi (n.d) to frame the TEQ. Because teacher effectiveness is a multi-dimensional construct, we structured the scale to reflect this reality. The clusters include subject mastery (9 items), classroom management (10 items), student-teacher relationship (9 items), and use of instructional materials (9 items). The reliability index using Cronbach's α for the four clusters is 0.97. 0.93; 0.92; 0.90 respectively.

Method of collection and analysis

Our data-gathering procedure adhered to the ethical guidelines for behavioral sciences data collection and was in line with the Helsinki Declaration of 1964. We discussed the purpose of our study with the school authorities and got their approval to conduct the study in the schools. We also explained to the students the essence of the research and highlighted that their participation was strictly for research purposes. Participation was voluntary, and students' names and registration numbers were not included in the questionnaire to protect our respondents' identities. A password-protected private computer was used to manage the data. With the aid of the teachers, we distributed the questionnaire to the students during the school hour. Fifty students were randomly sampled from each school, making up 300 students. However, only 205 students completed the filling out of the questionnaire, accounting for 68.33 % of the total distribution. We collected the questionnaires from students who were able to finish filling the questionnaire on the spot, while the teachers helped in collecting copies of the questionnaire from students who requested to fill in the questionnaire later. No completion or inappropriate filling out of the scale appears to result from the students who could not complete the questionnaire immediately upon receipt. It is possible that the response burden could have resulted in the students not filling in the questionnaire upon receipt. This resulted in a low response rate in filling out the questionnaire. The two scales were framed in the English language. Our respondents were instructed to pay careful attention to each item and respond in an honest manner to the items.

Moreover, we employed SPSS version 25 to analyze our data. Mean, Standard deviation, bivariate correlation and multiple regression analysis were adopted to answer the research questions and test the hypothesis at a 0.05 significance level.

3. Results

Table 1. Mean Responses on Rural Students' Mathematics Interests

SN	Items	Mean	SD
1	I enjoy the fun of learning mathematics	2.90	.89
2	Studying mathematics makes me feel happy	2.71	.92
3	I am interested in mathematics classes	2.92	1.03

SN	Items	Mean	SD
4	The content I learn from mathematics topics is interesting	2.73	.95
5	I enjoy studying mathematics	2.72	1.01
6	I really like mathematics topics	2.71	.99
7	I enjoy when I study mathematics topics	2.70	1.02
8	The knowledge of mathematics is important	3.36	.88
9	A good mark in mathematics means a lot to me	3.27	.89
10	I think that mathematics is helpful for my career in the future	3.29	.90
11	The knowledge of mathematics makes my daily life easier	2.87	.97
12	The knowledge of mathematics promotes my growth	2.62	.99
13	I find that the knowledge of mathematics is useful in daily life	3.04	.99
14	The knowledge of mathematics is valuable for my future development	3.08	1.02
15	I think that learning mathematics is significant for my growth	2.59	1.08
16	I know all kinds of things about mathematics at my level	1.96	.91
17	I am expert in mathematics at my level	1.97	.93
18	I can answer all kinds of questions that teachers ask in the mathematics class	1.90	.84
19	I am familiar with the knowledge and skills required in mathematics	2.16	1.01
20	I do well in mathematics lessons	2.45	1.03
21	I have a lot of things to say about mathematics topics	2.42	1.01
22	I have a lot of knowledge about mathematics	2.28	1.01
23	I want to learn things that are not included in mathematics textbooks	2.71	1.10
24	I hope to explore things about mathematics	2.78	1.08
25	I will read more books about mathematics if I have the chance	2.83	1.11
26	I want to know more things about the field of mathematics	2.87	1.10
27	I will take part in an extracurricular training class for mathematics if I have the opportunity	2.84	1.10
28	I want to find various ways to complete the mathematics assignment	2.99	1.09
29	I am willing to spend time on the skills or methods learned from mathematics lessons	2.79	1.13

Results in [Table 1](#) showed that students' interest in mathematics was high except in a few places that had to do with evaluating their competence in mathematics. They enjoyed mathematics, were willing to invest in the study of mathematics, and saw mathematics as relevant to their future career.

Table 2. Mean Responses on Perceived Teacher Effectiveness in Mathematics Teaching

S/N	Items	Mean	SD
	Subject Mastery		
1	My teacher is well organized and prepared for mathematics class	3.19	.94
2	My teacher always displays authority when teaching mathematics	3.18	.974
3	My teacher introduces mathematics topics in an interesting way	2.97	.99
4	My teacher answers mathematics questions satisfactorily	2.73	1.03
5	My teacher shows thorough understanding of lesson taught during mathematics lessons	2.86	.96
6	My teacher has a good knowledge of mathematics	3.26	.93
7	My teacher goes the extra mile to ensure students understand mathematics	2.63	1.09
8	My teacher exhibits ability to teach a lot of mathematics topics	2.88	1.02

S/N	Items	Mean	SD
9	My teacher can solve all mathematics problems correctly	2.93	1.09
	Effective Classroom Management		
1	My teacher is always composed in class	3.10	.93
2	My teacher writes on the chalkboard clearly	2.95	1.06
3	My teacher uses lesson time efficiently	3.07	.95
4	My teacher ensures good behavior in the classroom	3.10	1.01
5	My teacher marks and corrects assignment on time	2.91	1.04
6	My teacher asks appropriate questions during lessons	2.99	.98
7	My teacher is audible and clear in class	3.07	1.04
8	My teacher is regular and punctual	3.187	.98
9	My teacher ensures that the classroom is orderly before teaching mathematics	3.08	1.05
10	My teacher ensures that the classroom orderliness is maintained during mathematics teaching	2.96	1.06
	Student-Teacher Relationship		
1	My teacher motivates me to learn	2.51	1.17
2	I work well with my teacher	2.35	1.04
3	My teacher is interested in me especially when he is teaching mathematics	2.23	1.06
4	My teacher maintains a good relationship with me	2.33	1.07
5	My teacher treats me with respect	2.35	1.03
6	My teacher treats me equally with other students	2.61	1.14
7	My teacher encourages me to contribute in class	2.56	1.09
8	My teacher is approachable during and after class	2.48	1.14
9	My teacher is patient with me even when I don't understand mathematics	2.26	1.17
	Efficient Use of Instructional Materials		
1	My teacher uses the board effectively	3.08	1.04
2	My teacher uses instructional materials to make teaching mathematics real	2.35	1.10
3	My teacher makes me interested in mathematics using instructional materials	2.23	1.09
4	My teacher uses a variety of instructional materials to make teaching mathematics interesting	2.25	1.12
5	My teacher comes with materials that aid my understanding of mathematics	2.14	1.10
6	My teachers' use of instructional materials makes teaching mathematics clearer for me.	2.18	1.07
7	My teacher makes use of a board mathematical set for construction effectively	2.43	1.20
8	My teacher's use of power point (visual aid) aids my understanding of mathematics during mathematics teaching	1.84	.99
9	Overall, my teacher uses instructional materials (visual, audio, and audio-visually) effectively during mathematics teaching.	1.63	.92

Table 2 showed that students in rural areas perceived their mathematics teachers to be proficient in the subject matter. They reported that their mathematics teachers have a very good understanding of mathematics and could be seen as authorities in the subject they teach. Also, teachers were perceived by students in rural areas as being effective in classroom management while teaching mathematics. However, students reported that their teachers were ineffective in ensuring productive relationships with students. They were also poor in the use of instructional materials in the teaching of mathematics.

Table 3. Bivariate Relationship among the Variables

S/N	Variables	1	2	3	4	5
1	Subject Mastery	-	.759**	.655**	.625**	.578**
2	Effective Classroom Management		-	.660**	.642**	.602**
3	Student-Teacher Relationship			-	.757**	.684**
4	Efficient Use of Instructional Materials				-	.481**
5	Interest					-
	Mean	26.6 2	30.41	21.67	20.13	78.46
	SD	6.74	7.81	7.77	7.20	21.38
	Skewness	- .473	-553	-637	.195	-584
	Kurtosis	- .844	-058	-1.089	-945	-557

Note: **. Correlation is significant at the 0.01 level (2-tailed).

Table 3 revealed that the dimensions of perceived teacher effectiveness - subject mastery, effective classroom management, student-teacher relationship and efficient use of instructional materials – were significantly and positively related to students' interest in mathematics, $r = .578^{**}$, $r = .602^{**}$, $r = .684^{**}$, and $r = .481^{**}$ respectively.

Table 4. Gender and Dimensions of Teacher Effectiveness as Predictors of Students' Mathematics Interests

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant) $R^2 = 0.013$	85.763	4.873		17.601	.000
	gender	-4.858	3.032	-.113	-1.602	.111
2	(Constant) $\Delta R^2 = 0.518$	18.951	6.208		3.053	.003
	gender	2.602	2.173	.060	1.197	.233
	Subject Mastery	.442	.256	.138	1.723	.086
	Effective Classroom Management	.669	.224	.244	2.991	.003
	Student-Teacher Relationship	1.653	.226	.600	7.308	.000
	Efficient Use of Instructional Materials	-.617	.238	-.206	-2.593	.010

Note: Dependent Variable: Interest

Table 3 showed that the dimensions of teacher effectiveness had a joint positive significant relationship with students' mathematics interest after controlling for gender. We entered gender as a predictor in model 1. This model was not statistically significant, $F(1, 199) = 2.567$; $p > 0.05$. Entering the dimensions of teacher effectiveness (subject mastery, effective classroom management, student-teacher relationship and efficient use of instructional materials) in model 2, the total variance explained by the model was 53.1% ($F(5, 195) = 44.164$; $p = 0.000$). It explained an additional 51.8% of the variance in students' interests in mathematics after controlling for gender ($\Delta R^2 = 0.518$, $\Delta F(4, 195) = 53.881$; $p = 0.000$). In the final adjusted model, the student-teacher relationship made the highest individual positive contribution to students' interest in mathematics ($\beta = 0.600$, $p = 0.000$), followed by effective classroom management ($\beta = 0.244$, $p = 0.003$). Efficient use of instructional materials, however, negatively predicted students' interest in mathematics ($\beta = -0.206$, $p = 0.010$) in spite of the fact that it positively correlated with students' interest in the bivariate relationship analysis. Only teachers' mastery of the subject did

not predict students' interests in mathematics ($\beta = -0.138$, $p = 0.086$) despite its significant positive relationship with mathematics interests.

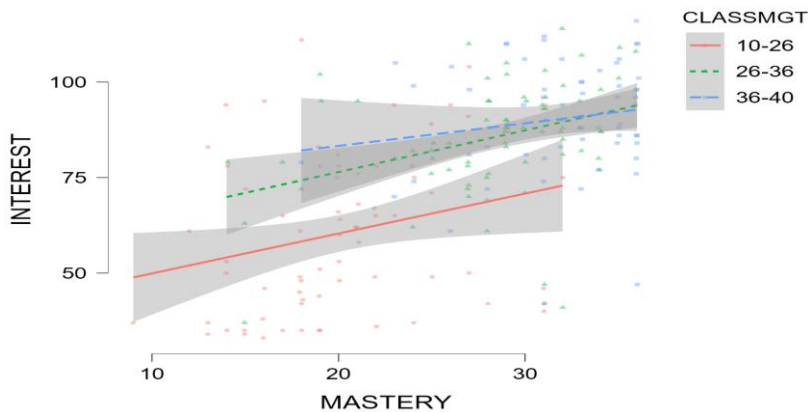


Fig. 1. Flexplot

4. Discussion

Our study examined students' mathematics interests in rural areas and their perceived teacher effectiveness, as well as how perceived teacher effectiveness is associated with students' mathematical interests. Findings revealed that students in rural areas had high mean scores in mathematics interests and also reported that their mathematics teachers were effective in mathematics teaching, especially in subject mastery and classroom management. However, they noted that their teachers were ineffective in ensuring productive relationships with students and using instructional materials to teach mathematics. Students reporting high interest in mathematics align with similar studies showing that rural students' interests in mathematics are measured comparatively with their urban counterparts (Rajak, Gayen, 2022; Vandana, 2014). These studies reported that students had high mean scores in their interest in mathematics and that their interest in rural and urban areas did not differ significantly. However, some studies (Acharya, Poudel, 2016; Ayub et al., 2016) have also reported contradictory findings when rural students' mathematics interests are compared with urban students'. They demonstrated that students in urban areas were more interested in mathematics than those in rural areas. Although our current findings are comparable to those listed above, they differ from them since our study did not focus on the urban-rural interest divide.

In addition, students also stated that their mathematics teachers were effective in teaching mathematics, particularly in the areas of subject mastery and classroom management, but not in the areas of fostering positive relationships with students or the use of teaching aids. Our findings regarding students' perceptions of teachers' expertise in the field go against those of Tshabalala and Ncube (2012), who claimed that pupils in rural areas of the Nkayi District had an unfavourable opinion of their teachers' subject knowledge. In our survey, teachers were evaluated as having a strong understanding of mathematics and being able to convey that knowledge authoritatively. Although there is little research on how rural and urban students perceive their teachers' ability to manage the classroom in mathematics, a similar study that compared the perceptions of rural and urban students revealed that rural students have a moderate perception of their teachers' management skills (Rajoo, 2011). This finding is consistent with our current finding that teachers controlled their classrooms during the teaching and learning process in mathematics. Rural students perceived their teachers as being able to maintain orderliness before and during mathematics teaching. It also reflected that teachers possess the pedagogical competence to retain students' engagement during mathematics lessons. Conversely, students rated their teachers poorly in fostering positive relationships with students or using teaching aids, which are critical components of teacher effectiveness. Poor student-teacher relationships might suggest teachers' inability to invest time and energy in building productive relationships with their students. This could be inimical to students' mathematics achievement since research has shown that it is critical in enhancing the mathematics achievement of rural students (Adams, 2012). More so, teachers being rated poorly by rural students on effective instructional materials may reflect the resource-

constrained contexts in which mathematics teachers in rural schools operate (Adenuga, Adeniran, 2022; Nworgu, Nworgu, 2013). This could be a hindrance to the concretization of abstract aspects of mathematics.

Looking at the relationships existing between the composites of teacher effectiveness and rural students' mathematics interests, all the dimensions - subject mastery, effective classroom management, student-teacher relationship and efficient use of instructional materials – were significantly and positively related to students' interests in mathematics. This implies that the higher the teachers' subject mastery, effective classroom management, student-teacher relationship and efficient use of instructional materials, the higher the mathematics interest of rural students. The regression analysis revealed that the dimensions of teacher effectiveness had a joint positive significant relationship with students' mathematics interest after controlling for gender. This is consistent with relevant literature, which has shown that effective mathematics teaching can motivate students to engage in mathematics and improve their attitude towards mathematics (Akram, 2019). This can be explained from the evidence in literature that effective teachers have mastery of their subjects, have confidence in teaching, are effective in classroom management, and can build effective relationships with students (Mbaye, 2017).

The student-teacher relationship and good classroom management had the strongest individual positive effects on students' interest in mathematics when the components of teacher effectiveness were disentangled. Researchers have highlighted that instructors' social-emotional support behaviors strongly influence students' perceptions of good-quality relationships with their teachers (Prewett et al., 2019). However, studies in this area targeting rural pupils are still lacking. Our results align with those of Anderson and Chambers (2020), who found that children from low-income homes who felt their teachers were helpful and compassionate experienced improvement better than their peers. It is possible that positive relationships between the teacher and the students can foster a sense of belonging, which can increase students' mathematics interests, thereby enhancing their overall mathematics learning experience. Efficient use of instructional materials negatively predicted students' interest in mathematics, although it positively correlated with students' interest in the bivariate relationship analysis, indicating possible interaction and covariance with other variables. A thorough examination of the bivariate relationship analysis reveals that student-teacher relationships and efficient use of instructional materials correlate highly. It could be that they occur together even though they represent distinguishable constructs. It is plausible that accounting for the student-teacher relationship in the multiple regression model undid the positive significant relationship observed in the bivariate relationship analysis. This must be taken into consideration in the interpretation of these findings and should not be taken as being a negative predictor of students' mathematics interests.

The classroom management of teachers significantly influenced rural students' interest in mathematics. This suggests that efforts made by teachers to prevent disruptions in their courses while mathematics is being taught could increase students' interest in mathematics. Therefore, controlling students' behavior for efficient learning may increase their interest in mathematics. Understanding the potential impact classroom management could have on students' mathematics performance, Ahmad and Setyaningsih (2020) undertook a study to investigate students' perceptions of classroom management by mathematics teachers. According to their findings, students had a favorable opinion of how their teachers handled the classroom. Similar findings were made by Dijk et al. (2019), who found that teachers' classroom management directly impacted students' motivation for learning mathematics while also indirectly impacting their mathematical achievement.

Furthermore, Kunter et al. (2007) had shown a positive correlation between teachers' classroom management and students' interests in mathematics. Although few studies have looked into the connection between teachers' classroom management and students' interest in mathematics, particularly in the rural setting, the current findings that show a positive relationship impact of classroom management on mathematics interests could be explained based on the fact that a well-managed classroom may produce an ambient environment that may encourage students' engagement in mathematics. Even though it has a substantial association with students' interest in mathematics, teachers' mastery of the subject did not predict their interests. This runs counter to earlier research that showed instructors' subject-matter expertise to strongly predict students' mathematics achievement, especially among students in rural locations (Marshall, Sorto, 2012).

Our study has made significant contributions to knowledge. First, it closed the existing gap in the literature on how teacher effectiveness could impact the mathematics interests of students in rural communities in Nigeria. Second, the fact that we unbundled the components of teacher effectiveness contributed to understanding which components would deserve more attention than the others in advancing the mathematics interests of students in rural areas. In spite of the contributions mentioned above, the fact that our study is a cross-sectional research study, which makes it difficult to obtain a causal relationship between teacher effectiveness and students' mathematics interests, may limit the generalizability of our findings. Also, the low response rate in filling in the questionnaire could impact the validity of the inferences that could be drawn from the findings. However, current literature demonstrates that low response rates may not necessarily lead to biased inferences, especially when multivariate models are used (Rindfuss et al., 2015).

5. Conclusions and Implications for Rural Mathematics Education

Our study found that students in rural areas had a high interest in mathematics. They also reported that their mathematics teachers were effective in teaching mathematics, particularly in subject mastery and classroom management, but less so in ensuring a positive relationship with students and using teaching resources. Mathematics interest among students was positively correlated with student-teacher relationships and instructors' classroom management abilities in rural areas. Therefore, we draw the conclusion that affective aspects of teacher efficacy are crucial for stimulating rural students' interest in mathematics.

Our findings are significant for rural mathematics education because teachers lacking a strong rapport with their students may jeopardize their interest in mathematics learning. Therefore, the curriculum for mathematics teacher education should be designed to contain content that will help mathematics teachers develop supportive roles and relationships. The utilization of teaching resources by teachers, as reported by students, has numerous consequences for rural mathematics. It can imply that teachers in rural areas struggle with a lack of resources and don't regularly use teaching aids for mathematics. This shows that mathematics teachers in rural areas can have trouble making abstract mathematical concepts concrete. More specifically, the positive relationships between student-teacher relationships, teachers' classroom management practices, and rural students' mathematical interests highlight the necessity of emphasizing teacher affective, managerial, and motivational skills in teacher education and professional development, particularly for mathematics teachers who want to work with rural students.

6. Declarations

Ethics approval and consent to participate

Our data-gathering procedure adhered to the ethical guidelines for behavioural sciences data collection and was in line with the Helsinki Declaration of 1964. We discussed the purpose of our study with the school authorities and got their approval to conduct the study in the schools.

Consent for publication

Not applicable.

Availability of data and materials

Data and materials associated with this study are available upon request.

Conflict of interest statement

The authors of the manuscript declare that there is no conflict of interest, and all reference materials were duly acknowledged.


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Assessment of the Usage of Extension Communication Channels for Disseminating Crop Production Information to Oil Palm Farmers in the Birim South District, Ghana

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Abstract

The study assessed the usage of extension communication channels for disseminating crop production information to oil palm farmers in Birim South District. A sample size of 181 farmers was selected through purposive and simple random sampling techniques. The data collected were analyzed using frequency, percentage, mean, standard deviation, ordinal logistic regression, and Kendall's coefficient of concordance. The results showed that radio, extension agents and colleague farmers were generally the most available communication channels for oil palm farmers. Radio, colleague farmers and extension agents were the communication channels that the farmers frequently used. Nursing and planting, pest and disease control, use of fertiliser, and harvest and post-harvest handling were the crop production information mostly sought by the farmers. It was also discovered that the majority of farmers do not get any agricultural information from farmer magazines, newspapers, or mobile text messages. Sex, level of education and household size were the most significant factors influencing oil palm farmers' frequency of use of the available/accessible communication channels for crop production information (p values =0.037, 0.010 & 0.034, respectively). The major challenges affecting the use of communication channels were low farmer-extension ratio, poor signals and the high cost of using such channels. The study recommends that the Ministry of Food and Agriculture and Non-Governmental Organisations facilitate the establishment and maintenance of farm radio programmes and encourage more peer-to-peer extension among rural farmers.

Keywords: use, extension communication channels, dissemination, crop production information, oil palm farmers.

1. Introduction

Agricultural development is one of the most powerful tools to end extreme poverty, boost shared prosperity and feed a projected 9.7 billion people by 2050 (World Bank, 2007). Agriculture is crucial for economic growth. In 2018, it accounted for 4 % of global gross domestic product (GDP); in some developing countries, it accounted for more than 25 % (Osabohien et al., 2019). The agricultural sector forms the backbone of the global economy and serves as the means of revenue for about 50 % of the world's population (Chemutai et al., 2012). In this regard, agriculture has been prioritised in Ghana's national development blueprint, which aims to transform the nation into a middle-income and rapidly industrializing country. The sector is identified as one of

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the critical drivers of the economy. It contributes to about 19.7 % of Ghana's current GDP, accounts for over 30 % of export earnings and serves as a major source of inputs to our manufacturing industry, as stated by the Government of Ghana (2021). Therefore, this shows that agriculture is a significant sector of Ghana's economic growth (Government of Ghana, 2021).

Ghana's agriculture is predominantly smallholder, traditional and rain-fed (Ministry of Food and Agriculture, MoFA, 2011). However, the World Bank (2007) suggested that subsistence farming can and should be enhanced to help the rural poor meet their basic needs while acquiring new skills for the labour market. This implies that while working out strategies towards poverty eradication, there is a need to focus more on rural agricultural development, particularly how these farmers acquire information about their production. Such strategies must accelerate agriculture productivity, causing overall output growth and creating necessary agricultural research and education interventions, especially extension and its communication channels and development (Food and Agriculture Organization, 2008).

The concept of the use of communication channels is of great importance because the knowledge of it will provide keys for understanding and predicting outcomes of the communication process. Exposure to or use of various communication channels is a precondition for any effect of media content on people to occur (Shahzad et al., 2011). It seems right to state that the influence of any medium in a communication situation or on the message depends not merely on the type of media but also on how it is used or the use to which it is put. Agricultural information is a key component in improving agricultural production. The importance of knowledge and information sharing in research for development settings has been firmly established through various research (Masuki et al., 2010; Ndimbwa et al., 2021; Rodriguez et al., 2015).

There are complaints among oil palm farmers in the Birim South District about their oil palm production outputs. They complain that there is low output from the production and that most of them were quitting for other crops because of inadequate access to or lack of agricultural information as far as their production is concerned. Access to appropriate information and knowledge is known to be one of the biggest determinants of agricultural production (Masuki et al., 2010).

This study used various theoretical perspectives to assess the extension communication channels used to disseminate crop production information to oil palm farmers. The theories were the use and gratification theory, the social exchange theory, and the two-step flow communication theory (Lazarsfeld et al., 1944; Lin, 1999; Szekely, Strebel, 2013). The Use and Gratification theory perceives message recipients as those who selectively choose, attend to, perceive and retain the media messages because of their needs. The focus of this study was on channel consumption by the farmers. The theory acknowledges that users are goal-driven decision-makers who select information communication channels that meet their needs (Lin, 1999). The social exchange theory suggests that extension clients (farmers) are likely to use a particular source-channel combination when the social benefits are greater than the social costs. This theory also suggests that benefits are more likely to be realized when information is relevant to the client's needs and when channels provide detailed individualized information (Strebel, Szekely, 2013). Lazarsfeld et al. (1994) figured out how media messages directly affected the choice of users. According to their theory (the two-step flow communication theory), information from the media moves in two specific stages. The information gets to the key informants who first receive and envision it. The leaders then pass their interpretation with the exact media content to the rest of the members. In a sense, the key informants or leaders are very influential in directing and changing the behaviour and attitudes of lesser active members of the population. The audience's reaction to media messages relies on their interpersonal exchanges within social surroundings.

A number of studies have been conducted on extension communication channels. A study by Shahzad et al. (2011) showed that various public and private organisations use communication channels such as mass media and print media to catalyse agricultural innovation and diffusion. Another study by Age et al. (2012) concluded that if there is a continued imbalance in the distribution and wrongful targeting of information, the possibility of harnessing the full potential of the rural populace towards attaining high production will remain problematic and in limbo. According to Rodriguez et al. (2015), the usage of interpersonal communication channels has frequently overshadowed the use of non-interpersonal channels. They discovered that extension agents were the most favoured resource in the specific field of agriculture. Also, the results of

Ndimbwa et al. (2021) revealed that the scheduling of the programmes influenced farmers' use of radio and television.

Farmers maintain daily activity routines and only watch or listen to radio or television programmes when those schedules are agreeable. Agricultural extension agents are thought to have greater authority when providing agricultural extension services; they are more knowledgeable and skilled at meeting farmers' information needs (Melesse et al., 2018; Msoffe, Ngulube, 2017). Masuki et al.'s (2010) findings showed that rural communities, apart from agricultural officers, appreciated using non-interpersonal channels such as the telephone as an easy, fast, and convenient way to communicate and get prompt answers to respective problems. New technologies and extension workers are still trying to bridge the gap between the research stations and the local farmers. Developing an understanding of extension channels used by clientele to obtain agricultural information is a pre-requisite for efficient educational programming because messages that go unheard or unseen cannot lead to change (Israel, Wilson, 2006). Kapia-Mendano (2012) also found low extension contact between extension officers and smallholder oil palm farmers. Swanzy et al. (2020) conducted a study on the availability and use of information and communication technology among oil palm farmers in Ghana. They indicated a need to improve technical and infrastructural organisational structures regarding ICT availability to allow oil palm farmers more access to and use these facilities.

For oil palm farmers in Birim South District, information is key to their production's success. This information must be relevant, timely, accurate and easy to understand to ensure they reach their target. For that, this study was set to discover the crop information needs and the communication channels used for disseminating agricultural information among the oil palm producers to ensure the efficient use of the available extension communication channels in remote areas, particularly the Birim South District. The specific objectives of the study are to identify the extension communication channels available to oil palm farmers for agricultural information in the study area, identify the types of agricultural information farmers get from using the extension communication channels, assess the frequency of use of extension communication channels by oil palm farmers for agricultural information, determine the factors that influence the frequency of use of communication channels and examine the challenges affecting the use of communication channels by farmers for agricultural information on oil palm production.

2. Materials and Methods

The study area, Birim South District, is one of the thirty-three districts in the Eastern Region of Ghana. It was formerly part of the then-larger and original Birim South District until 2008 when it was split off to become a new Birim South District. The district lies within longitude 10 51 and 20 581 West and Latitude 80 321 and 100 21 North, has a total land mass of about 4,845.5 sq km, and has Akim Swedru as its capital town. The district's total population is 119,767, and it is 47.6 % male and 51.4 % female. Within it are a lot of hills, streams and rivers. The Birim River flows through the Birim South District. As high as 78.2 % of households in the district are engaged in agriculture. Major activities in the agricultural sector are crop farming and livestock production, which employ about 70 % of the active labour force. The main crops cultivated are cocoa, oil palm, rice, citrus, cereals, cassava, cocoyam and plantain. Other sectors that employ a minority of the population are trade, commerce and services (hotels, banking). The district has two peak rain seasons: May to June and September to October. The relative humidity ranges from 56 % during the dry season to 70 % during the rainy season (GSS, 2010).

The population for the study was made up of all the registered oil palm farmers under Birim South District MoFA. The purposive sampling technique was used to select the District. This is because it is one of the highest oil palms producing Districts in the Eastern Region. The communities in the district were grouped into three (3) operational areas: Swedru, Apoli and Akortekuro. A sample of 226 was used for the study using Yamane's formula ($n = \frac{N}{1 + N(e)^2}$) since the total population was known. They were selected using the simple random sampling technique, where the names were written on slips of paper, folded and placed in a basket. The papers were picked without replacement to obtain the total sample. Out of the 226 questionnaires, only data from 181 respondents were used for analysis. The others were discarded because some respondents could not complete the interview session, making some information incomplete.

Cross-sectional field survey was carried out to obtain primary data for the study. A well-structured questionnaire was developed and subjected to the scrutiny of relevant experts to ensure the instrument's validity. The developed questionnaire was used to collect data from oil palm farmers in the study area. The researchers personally administered the questionnaire to the respondents in the three operational areas. The agricultural extension agents (AEAs) in the study area assisted the researchers in locating the farmers during the field data collection. They were not involved in the actual data collection. The questionnaires were administered mostly in the Twi language because that was the main language in the district. Responses were written in English. Descriptive statistics was used to analyse the data.

Statistical Package for the Social Sciences version 20.0 software was used in the analysis of the data. Descriptive (mean, standard deviation, frequency, percentage) and inferential statistics were used to analyse the data (ordered logistic regression model and Kendall's coefficient of concordance). Kendall's coefficient of concordance (W) was used to examine the degree of agreement among the farmers regarding the challenges. The ranks were conducted on a scale of 1-9.

As adapted from Somanje et al. (2021), ordinal logistic regression was used to analyze the factors that influenced the frequency of the respondents' use of extension communication channels. The ordered logistic regression is ideal because the dependent indicator has multiple outcomes that use the Likert scale to measure farmer's responses (1 = low, 2 = moderate, 3 = high). A three-point Likert-type scale was used to assess farmers' frequency of use of extension communication channels. The mean of 0-1.49 meant low (rare/never), 1.5-2.49 was moderate (sometimes), and 2.5-3.00 was high (always). Some explanatory indicators were also ordinal (age, household size, educational level, farm size and years of farming experience), while others were categorical (sex, marital status and religion). The regression model used in the study is depicted as follows: $Y = (\beta_0 + \beta_i X_i + e_i)$: where Y (dependent variable) represents the frequency of use of extension communication channels by the oil palm farmers, X_i describes the independent socio-economic factors that influence farmers' frequency of use of communication channels, and β_i are the coefficients of the explanatory variables, and e_i are the error of terms.

Table 1. Definition of Variables

Variables	Definition	a-prior expectation
Dependent Variable (Channels frequency of use)		
High (3)	Regular use of communication channels	
Moderate (2)	Use of communication channels sometimes	
Low (1)	Rare/never use of communication channels	
Independent Variables		
Sex	Dummy: 1 = Male 0 = Female	+/-
Age	Measured in years	-
Marital status	Dummy: 1= Married 0 = Not Married	+/-
Household size	Measured in number of persons in farmers' household	+/-
Religion	Dummy: 1 = Christian 0 = Others	+/-
Educational levels	Measured in the years of school attended by the farmer	
Farm size	Measured in Acres	+/-
Years of farming experience	Measured in years that the oil palm farmer has practised	+/-

3. Results and Discussion

The frequency distribution of the respondents' socio-economic characteristics is presented in [Table 2](#). The sex distribution of the respondents showed that most were males, as they constituted 67.4 % of the total number of respondents, whilst 32.6 % were females. This is to be expected given that most of the activities involved in plantation crop production in Ghana tend to be more vigorous and physical and entail a lot of lifting heavyweights such as bunches and ladders during harvesting ([Mensah et al., 2009](#)).

Majority of the respondents (71.8 %) were married. Only 9.4% were single, while only 18.8 % were separated or widowed. A substantial percentage of the farmers (22.7 %) had no formal education. Those with primary or middle school and secondary school constituted the highest percentage (75.7 %) of the respondents. Only a small fraction of the respondents (1.6 %) had tertiary background education. Overall, the level of education of the farmers is relatively high and encouraging, and it indicates that most of them have a foundation in formal education, which will help the farmers appreciate technological sources for information. The results supported Kabeer's (2003) and Rehman et al.'s (2011) findings on the human right to education and information dissemination.

Table 2. Frequency distribution of the respondents' personal and social characteristics

Demographics	Frequency	Percentage (%)	Max	Min	Mean
Sex					
Males	122	67.4	-	-	-
Females	59	32.6	-	-	-
Age			79.0	23.0	47.0
20 – 30	6	3.3	-	-	-
31 – 40	41	22.7	-	-	-
41 – 50	65	35.9	-	-	-
Above 50	69	38.1	-	-	-
Marital status					
Single	17	9.4	-	-	-
Married	130	71.8	-	-	-
Others	34	18.8	-	-	-
Educational level					
No formal education	41	22.7	-	-	-
Primary education	38	21.0	-	-	-
Middle school/ Junior High School	58	32.0	-	-	-
Secondary School	41	22.7	-	-	-
Tertiary	3	1.6	-	-	-
Household size			17.0	2.0	7.3
1-5	94	51.9	-	-	-
6-10	69	38.1	-	-	-
11-15	14	7.8	-	-	-
16 – 20	4	2.2	-	-	-

Source: Field Data, 2021

The age distribution of farmers showed that the age group of 50 and above had the highest frequency of 69 respondents, constituting 38.1 % of the total number of respondents. In other words, most of them were above 50 years and had an average age of 47. The results showed that most of the farmers were quite strong enough to undertake most of the difficult farming activities. The young age group (farmers of 40 years and below) constituted only 26.0 %, indicating youth involvement in sectors other than agriculture. This finding agrees with that of Guo et al. (2015), who, after their studies, concluded that the number of younger people in plantation farming or agricultural labour population on farmland is not encouraging.

The household size distribution among the farmers showed that the majority (51.9 %) had between 1 and 5 people per household. The household size between 6–10 people was 38.1 %. Those with 11-20 people constituted 10.0 % of the total respondents, and the mean household size was seven (7) people among the farmers, which is higher than the national average of four (4) members per household (Ghana Statistical Service, 2008). The implication is that increases in household size put pressure on the demand for household needs, resulting in the need to produce more for the family and earn more to support the home. This could lead to the search and use of communication channels for agricultural information to improve productivity.

An average farm size of 10.64 acres was recorded for the farmers. Most farmers (41.4 %) had farm size between 6 and 10 acres while 35.9 % had 1 to 5 acres. A small number of the farmers (11.6 %) had 16 acres or more. The average farming experience of the farmers was estimated at 13 years. The majority of the farmers (60.2 %) had been in oil palm farming for 11-20 years. 26.5 % had 1-10 years of farming experience, 8.8% had been in production for 21-30 years, and the remaining few percentage (4.4%) had experience from 31 to 40 years.

Table 3. Distribution of communication channels available to farmers for agricultural information (Multiple responses)

Communication Channels	Frequency	Percentage (%)
Extension Agent (farm/home visit)	181	100.0
Colleague farmer	170	93.9
Radio	181	100.0
Television	176	97.2
Telephone call	168	93.4
Value chain actors (agro-input dealers, palm oil processors, buyers and sellers of palm oil, etc.)	12	6.7
Newspaper	5	2.8
Farmer Magazine	7	3.9
Mobile text message	3	1.7

Source: Field Data, 2021

The farmers indicated radio and extension agents (farm/home visit) as the highest available communication channels (100 %) for agricultural information. Television was ranked second (97.2 %) by the farmers, colleague farmers (93.9 %) had third position and telephone calls (93.4 %) placed fourth. Value chain actors (6.7 %), farmer magazines (3.9 %), newspapers (2.8 %) and mobile text messages (1.7 %) were the lowest available communication channels indicated by the farmers for acquiring agricultural information. Extension agents (farm/home visit) and radio were the two most available communication channels for the farmers because, since the establishment of extension services, extension agents have been very crucial in the development of agriculture, particularly in Ghana. Also, radio is one of the traditional mass media channels (Antwi et al., 2021). These findings agree with Isaya et al. (2018), who stated traditional media were successful in developing countries and rural radio, in particular, has played a significant part in distributing agricultural messages.

Table 4. Distribution of frequency of use of communication channels by farmers (Multiple responses)

Communication Channels	Never/ Rarely Use	Sometimes Use	Regular Use	Mean	Std Dev.
Extension Agent (farm/home visit)	15 (8.35 %)	22 (12.2 %)	144 (79.6 %)	2.90	0.02
Colleague farmer	4 (2.2 %)	30 (16.6 %)	147 (81.2 %)	2.85	0.04
Radio	4 (2.2 %)	3 (1.7 %)	173 (96.1 %)	3.00	0.01
Television	28 (15.7 %)	128 (71.9 %)	25 (14.0 %)	2.01	0.18

Telephone call	0 (0.0 %)	139 (6.8 %)	42 (23.2 %)	2.34	0.15
Value chain actors	173 (96.1 %)	0 (0.0 %)	8 (9.9 %)	1.85	0.07
Newspaper	181 (100.0 %)	0 (0.0 %)	0 (0.0 %)	1.82	0.20
Farmer Magazine	181 (100.0 %)	0 (0.0 %)	0 (0.0 %)	1.50	0.26
Mobile text message	174 (97.2 %)	7 (2.8 %)	0 (0.0 %)	1.01	0.30

Source: Field Data, 2021

The needs and gratification theory and the social exchange theory are reflected in this table. The frequency of use of the communication channels shows which types are most needed and used by the oil palm farmers (Lin, 1999; Strebel and Szekely, 2013). Oil palm farmers are likely to use a particular channel or a combination when the social benefits exceed the social costs. In the table, radio (96.1 %) constituted the most regularly used communication channel, followed by colleague farmers (81.2%) and then extension agents (farm/home visit) (79.6 %). This shows that most respondents regularly use the radio to acquire crop production information. This result agrees with Mangstl (2008) and Mittal and Mehar (2012), whose research discovered that radio has many advantages, including low cost, flexibility, and timely message delivery. Value chain actors, farmer magazines, newspapers, mobile text messages, telephone calls and television have very low usage as 96.1 %, 100.0 %, 100.0 %, 97.2 %, 76.8 %, and 71.9 % of the respondents had respectively indicated their rarely/non-use at all for agricultural information. The non-use of these communication channels could be due to inadequate educational level. These findings agree with the findings of Okwu and Daudu (2011) and Tologbonse et al. (2006), whose work discovered that the non-use of communication channels such as newspapers and farm magazines is due to the low educational level of farmers.

Table 5. Types of crop production information sought by farmers through extension communication channels (Multiple responses)

Type of Agricultural Information	Frequency	Percentage (%)
Market Information	8	4.4
Seed Sowing	31	16.1
Weather Information	20	11.0
Nursing and Planting	181	100.0
Use of Fertiliser	176	97.2
Pest and Disease Control	180	99.4
Record Keeping	23	12.7
Harvest and Post-harvest handling	160	88.4
Processing information	7	3.9

Source: Field Data, 2021

The needs and gratification theory, which explains that oil palm farmers selectively choose, attend to, perceive, and retain the media messages because of their needs, shows that they consume information because they need it (Lin, 1999). The types of crop production information sought by farmers are shown in Table 5. Nursing and Planting (100 %), pest and disease control (99.4 %), use of fertiliser (97.2 %), and harvest and post-harvest handling (88.4 %) were the agricultural information sought mainly by the farmers in the study area. Most of the farmers indicated that they get little market information (4.4 %), record keeping (12.7 %), processing information (3.9 %), seed sowing (16.1 %) and weather information (11.0 %). The results imply that nursing and planting information is the most sought and needed information by oil palm farmers. The results agree with Armstrong et al. (2010), who indicated that farmers will use communication

channels to access the information needed most. When the plants grow, different types of information are required to improve the amount and the quality of produce.

Table 6. Levels of frequency of usage of available extension communication channels

Levels	Frequency	Percentage (%)
Rarely/never	50	27.6
Sometimes	82	45.3
Regularly	49	27.1
Total	181	100.0%

Source: Field Data, 2021

Data summarized in [Table 6](#) tells the proportion of cases falling at each level of frequency of usage of extension communication channels. From the table, the available extension communication channels in the study area were sometimes used by the majority (45.3 %, n = 82) of the oil palm farmers for crop production information. Very few (27.1 %, n = 49) regularly used the extension communication channels for getting agricultural information, and 27.6 % (n = 50) indicated they rarely used the communication channels available in the study area.

Table 7. Factors that influence the frequency of usage of extension communication channels by farmers

Variables	Estimate	Std. Error	T	df	Sig.	95 % Confidence Interval	
						Lower Bound	Upper Bound
Low	-0.23	0.77	-0.30	1	0.76	-1.73	1.27
Moderate	1.85	0.78	2.37	1	0.02	0.32	3.37
Sex	0.62	0.29	2.14	1	0.04**	0.04	1.21
Age	-0.01	0.01	-1.00	1	0.33	-0.03	0.01
Marital status	-0.11	0.17	-0.65	1	0.52	-0.44	0.22
Household size	0.13	0.05	2.60	1	0.01***	0.03	0.22
Years of farming experience	0.01	0.02	0.50	1	0.05*	-0.04	0.05
Farm size	-0.02	0.03	-0.67	1	0.55	-0.07	0.04
Educational level	0.12	0.13	0.92	1	0.03**	0.38	0.37

Source: Field Data, 2021

Factors that influence the frequency of use of extension communication channels by oil palm farmers are summarised in [Table 7](#) above. From the table, sex, household size, years of farming experience and educational level of the respondents were found to be significant positive predictors of the frequency of usage of extension communication channels amongst oil palm farmers in the study area (p values =0.04, 0.01, 0.05, and 0.03 respectively).

The log odds of being able to use the extension communication channels frequently for crop production information is 0.62 points higher on average for a male oil palm farmer than a female farmer. This means that male farmers are more likely to be active seekers of information through extension channels than their female counterparts. Okwu and Daudu (2011) and Howell and Hebron (2004) support the findings on males being active seekers of agricultural information.

For every unit increase in household size, there is a predicted increase of 0.13 in the log odds of an oil palm farmer being able to regularly use the extension communication channels available for crop production information. This means that farmers with larger household sizes are more likely to be active seekers of information through extension channels than those with smaller farm sizes. Similarly, Howell and Hebron (2004) found household size influences both patterns of information use and methods of delivery.

For every unit increase in years of farming experience, there is a predicted increase of 0.01 in the log odds of an oil palm farmer being able to regularly use the extension communication channels available for crop production information. This means that farmers with more years of farming experience are more likely to be active seekers of information through extension channels than those with less farming experience. Similarly, Okwu and Daudu (2011) found farming experience influences patterns of information use and delivery methods.

For every unit decrease in farm sizes, there is a predicted decrease of 0.02 in the log odds of an oil palm farmer being able to regularly use the extension communication channels available for crop production information. This means that farmers with smaller farm sizes are more likely to be active seekers of information through extension channels than those with large farm sizes. Okwu and Daudu (2011) disagree and assert that farmers with large farm sizes are active seekers of agricultural information.

For every unit increase in years of education, there is a predicted decrease of 0.12 in the log odds of an oil palm farmer being able to regularly use the extension communication channels available for crop production information. This means that farmers with higher education are more likely to be active seekers of information through extension channels than those with less education. People with high educational levels and farming experience are expected to frequently use communication channels since they are better inclined to understand their usage (Okwu, Daudu, 2011; Yahaya, 2002).

Table 8. Challenges affecting farmers' usage of communication channels

Challenges	Mean Rank	Ranking
Low ratio of extension agents to farmers	2.00	1 st
High cost of Using such channels	2.40	2 nd
Inadequate or erratic power supply	3.30	3 rd
Programmes on the Radio are not interesting	3.80	4 th
Poor radio signal	4.80	5 th
Lack of time to listen to agricultural information	6.00	6 th
Poor television signal	6.60	7 th
Misinterpretations of information by colleague farmer	7.20	8 th
Attitudes of the extension agents	8.90	9 th

Source: Field Data, 2021

Note: N = 9; Kendall's Wa = 0.76; Chi-Square = 30.22; df = 8; Asymp. Sig. = 0.00

A low ratio of extension agents to farmers has the highest mean rank (2.00) and therefore becomes the most serious challenge facing the use of communication channels by the farmers, followed by the high cost of using such channels (2.40), inadequate or erratic power supply (3.30), programmes of radio are not attractive (3.80) and poor radio signal (4.80). The rest are lack of time to listen to agricultural information, poor television signal, misinterpretations of information by colleague farmers, attitudes of the extension agents, and their mean ranked values are 6.00, 6.60, 7.20, and 8.90, respectively. The findings agree with (Anang et al., 2020) and Sennuga et al. (2020) that challenges contributing to the poor use of communication channels can be due to the low extension agent-to-farmer ratio of 1:1300 in Ghana.

4. Conclusion

The following conclusions can be drawn. First of all, radio, extension agents, colleague farmers, television and telephone calls were generally found to be the more available communication channels for the farmers to obtain agricultural information. Radio was the most frequently used communication channel, followed by colleague farmers and extension agents for agricultural information. Most of the farmers received information on nursing and planting, pest and disease control, and fertiliser use from the communication channels. Sex, household size and educational level of the respondents were found to be significant positive predictors of the frequency of usage of extension communication channels amongst oil palm farmers in the study

area. The low ratio of extension agents to farmers and the high cost of using such channels were the major challenges militating against using communication channels in the study area. These findings of the study have important theoretical implications as the study largely corroborates the social exchange and the needs and gratification theories which underpinned the study, that the oil palm farmers are the ones who selectively choose and attend to particular communication channels that meet their needs. Aside from radio, extension agents and colleague farmers were frequently used because they passed the explanation with the exact research context to the farmers and friends. This supports the two-step flow communication theory.

It is recommended that the Ministry of Food and Agriculture, Oil Palm Research Institute, Non- Governmental Organisations and the District Assembly ensure that rural radio stations and community information centres are established and managed to feature special agricultural programmes targeted at rural farmers, and they should ensure that information disseminated to farmers is timely and relevant. Moreover, to solve the low ratio of extension agents to farmers, the government should employ more extension agents to disseminate information to oil palm farmers. This is because they are the most available source of information to oil palm farmers. For further research in this area, we recommend an expansion of the socio-economic variables in the logistic regression model to include other variables captured in theory. A national study of oil palm farmers will be very interesting in understanding their information-seeking behaviour.

4. Declarations

Ethics approval and consent to participate

The study was conducted after all permissions and committee approvals had been obtained. The authors also strictly adhered to the ethical principles outlined in the Declaration of Helsinki.

Consent for publication

Not applicable.

Availability of data and materials

Not applicable.

Conflict of interest statement

The authors report no conflicts of interest.

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Plight of Persons with Disability in Ghana: An Overview

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Abstract

Disability in most developing countries has serious implications on health, socioeconomic, and national development. In recent years, Ghana has made significant strides in advancing inclusivity and disability rights. However, this review highlights persistent gaps and issues that continue to hinder the full integration and empowerment of persons with disabilities in Ghanaian society. By shedding light on the challenges faced by persons with disabilities, this paper aims to raise awareness and inspire action toward a more inclusive and equitable society. It underscores the importance of collaborative efforts among government institutions, civil society, and the international community in addressing the plight of persons with disabilities and fostering a society where everyone can participate fully and thrive. It is therefore important for strong public education to be done across the country, advising on how everyone could assist in the fight for the rights of people with disabilities.

Keywords: advocacy, discrimination, Ghana, persons with disability, plight.

1. Introduction

It does not matter what stage at which it sets in; disability has a serious effect on anyone who experiences it. The onset of disability varies across the lifespan. It could start at birth, childhood, adolescence, adulthood or even at old age. There is ample evidence indicating that disability of any kind is a source of psychological distress (Choi, Marks, 2008; Lucas, 2007; Manor et al., 2001; Oswald, Powdthavee, 2008). Disability presents people with loss of bodily and other forms of functioning. This results in a sense of loss and grieving (Mandemakers, Monden, 2010).

The experiences associated with disability may differ from person to person depending on some factors. For example, social support has been found to correlate strongly with the impact of disability on individuals, where those who enjoy good social support experience less negative impact of disability than those who have poor social support (Turner, Noh, 1988). Bisschop et al. (2004) also indicated that a sense of maturity and locus of control help to temper the impact of disability.

The age of the disabled individual is an important factor in how the condition affects the individual. For adults, disability may present with stress in social life and daily hassles (Friedland, McColl, 1992; Turner, Noh, 1988). They may be affected in roles such as parenting, partner and even breadwinner (Friedland, McColl, 1992). It may result in job loss, increased expenditure and poor income (Burchardt, 2003; Jenkins, Rigg, 2004). There are national and societal factors that complicate or compound the experience of disabilities. When national policies fail to work and society structure hindrances for people with disabilities and minimise the chances of the liberty

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and rights of people with disabilities, it creates a much more debilitating experience of disability. Persons living with disabilities in Ghana are barely cared for by social policies, even though there seem to be such policies. Interventions are hardly implemented, and specialised services seem non-existent for people with disabilities in Ghana.

Unfortunately, the figures for disability, either with onset at birth or later in life, cannot be downplayed as people get disabled daily from different causes. It is reported in the United Kingdom (UK) that depending on the definition used for disability, in a given year, about 13 to 47 per 1000 people of working age experience the onset of a disability (Burchardt, 2003; Jenkins, Rigg, 2004).

Though not readily available, the figures may not be less in Ghana and other African countries, especially because there is a poorer consciousness towards the situation in this part of the world. This paper discusses the conceptualisation of disability, the types and burden of disability worldwide, with Ghana in particular view. It also discusses and critiques the interventions currently available, especially in Ghana, to minimise the negative effects of such disabilities. Finally, the paper calls for social and political policy frameworks and strengthening existing policies to assist persons with disabilities in Ghana.

2. Definition of Disability

Popularly, disability is identified by a person's function and appearance and, as such, labelling them as able or disabled (Davis, 1995). The definition of disability is complex, dynamic, multidimensional, contextual and contested. Grönvik (2007) presents five contextual definitions for disability as follows:

Functional definition of disability: It presents disability as the lack of or restrictions on bodily functions. This can be seen as a lay definition of disability. The challenge, unfortunately, is that disability in cases is defined in physical terms, ignoring the contextual/environmental and social implications. The problem with such definitions is that carefully analysing this definition brings out the understating that they are probably very much fitted for describing/defining impairment. This is what Grönvik's (2007) functional definition of disability captures. It is important to note that impairment is different from disability. For instance, a blind person is visually impaired. However, they become disabled when they use a computer without a screen reading software. In fact, this definition is not a useless one. However, it is only one dimension of the concept of disability. Therefore, it is clear to a large extent that the meaning of disability has a strong psychological undertone.

Relative or environmental definition of disability: It indicates that disability appears in the relation between a person with impairment(s) and inaccessible surroundings. This places the responsibility on the environment, particularly an environment that lacks adaptation. According to Grönvik (2007), a person (with impairment) only feels disabled when the environment or surroundings become inaccessible. This means that disability only occurs in some situations, not others, as long as the environment does not present an obstacle. Following this definition means that society must refrain from calling someone a 'disabled person' but rather a 'person with impairment'.

Social definition of disability: It defines disability as the oppression of and a barrier against people with impairments. This definition identifies that society has barriers that prevent people with impairments from fully participating in social activities. An example in Ghana is the traditional taboo that prevents persons with impairment from visiting or entering chiefs' palaces. Thus, persons with impairment may not be able to play any meaningful role in chieftaincy decision-making processes.

Administrative definition of disability: It also presents disability as when the welfare state categorises people as being in need of/or eligible for certain support systems. By this definition, the person termed as disabled is deemed qualified for assistance based on certain criteria, including physical impairment. In this case, assistance such as wheelchairs, sign language personnel and financial support are available to such persons. As far as this is concerned, the enlistment identifies the disability and not necessarily the other factors that impede the individual.

Subjective definition of disability: This is where disability is when people perceive themselves as disabled, irrespective of the basis of such perceptions. In the other definitions and, of course, in the general society, disability is defined from the viewpoint of the onlookers. What the

persons being referred to perceive about themselves might be a different story. However, the question is whether people seen as disabled also identify themselves as such. This is the import of the subjective definition. It describes the opinion and feelings of the person with the impairment. Indeed, in cases where persons are not actually perceived as disabled, they may perceive disability on their part. Thus, disability can also be a subjective concept or experience.

The World Health Organization (WHO) defined disability as the state in which a person fails to comply with the requirements of a normal life as a result of absence or malfunction of an organ leading to permanent loss of function and image of physical, mental and spiritual characteristics to a certain extent (Mutluer, 1997). In this paper, I adopted the WHO's definition of disability to guide this paper. Thus, the absence or malfunctioning of a bodily organ leading to significant impairment will be the basis for establishing the presence of disability. Indeed, this underlies all the definitions from a social, administrative or personal perspective.

3. Models of disability

The definitions for disability, as provided above, largely derive from some models that provide the basis for its conceptualisation. These models include the medical/individual, charity/institutional, and social models.

The medical model: This model links disability to various medical conditions an individual suffers. It identifies disability as residing solely with the affected individual. Effectively, the model perceives disability as the result of an individual's inability to function. By this assumption, the individual is alterable, the social environment is fixed and unalterable, and if a person does not fit into that environment, that person (not the environment) must be made to change. As a result, intervention should be medical rehabilitation and social assistance (Coleridge, 1993; Mitra, 2005). In this regard, the medical model describes impairment as an 'abnormality' and must be 'corrected', 'cured' or 'overcome'. This underscores the functional definition of disability provided by Grönvik (2007).

The charity model: This model perceives the person with a disability as a deserving recipient of charity, a person who is not able to or worthy of full participation in society and must be dependent on care and relegated to 'special' programs. They are effectively excluded from mainstream development activities (Coleridge, 1993; Yeo, Moore, 2003; Philpott, 1995). This is the basis for developing a society that ironically neglects people with disabilities. Instead of fighting for them, society is built against them, and a separate programme is later designed for them. Persons with disabilities are thus cared for by others rather than themselves because they are incapable. This is what drives the administrative definition of disability.

The social model: The social model of disability, on the other hand, presents the interaction of a person's functional status with the environment (physical, cultural, and policy) as the basis for disability (McClain-Nhlapo, 2006; Yeo, 2005). Thus, the model underscores that interventions must not be only at the individual level (e.g., medical rehabilitation) but also at the societal level. This includes the removal of societal barriers, including environmental, institutional, and attitudinal barriers, and a properly designed environment that allows better human functioning, accommodation, and support. This is believed to help people with functional limitations not to be "disabled" and fully participate in society. Disability is not only the individual's condition, and neither is it only the environment. The model advocates for universal design, making infrastructure accessible, inclusive education systems and community awareness programs to combat stigma.

4. Prevalence and Types of Disabilities

According to Mont (2007), there is a lack of consensus on the definition of disability due to differences in the nature and severity across places and time. Thus, it is difficult to establish an international prevalence rate that will provide comparison and understanding. However, in Ghana, approximately 8 % of Ghana's 30.8 million population in the 2021 census are persons with disabilities (Ghana Statistical Service, 2021). At the global level, more than 1 billion people, representing 10 % of the world's population (Ozcebe, 2008; Baser, 2008; Awasthi et al., 2017), are disabled. It has also been observed that disability is higher in low-income countries as well as higher in females than males. Developing countries have up to 20 % of their population as

prevalence rate for disability (Disability World, 2022). There is a strong diversity among persons with disabilities.

Stereotypical views of disability typically emphasise wheelchair users and a few other “classic” groups, such as the visually impaired and persons with hearing impairment, as persons with disabilities. Disability involves the newborn child with a congenital condition such as cerebral palsy, loss of his leg(s), a woman with severe arthritis, or even an older person with dementia, among many others. According to Voluntary Services Overseas, Ghana (2009), disability can be grouped under physical (paralysis, amputations), visual (blind), mental (mental retardation) and intellectual (learning disabilities, autism, dementia, speech).

A complex challenge exists regarding data on the prevalence and characteristics of disability (Blackburn et al., 2010). Mont (2007) maintained that the prevalence estimates of childhood disabilities vary considerably between and within nations, and in many countries, data on children with disability is even lacking. Interesting data emerging from India in the last census in 2011 indicates that there are 7,862,921 children with disabilities in the below 19-year age group, including 1,410,158 visual impairment, 1,594,249 hearing impairment, 683,702 speech disorders, 1,045,656 movement disorder, 595,089 intellectual disability, 678,441 multiple disabilities, and 1,719,845 other disabilities (Ministry of Home Affairs, Government of India, 2011). At the same time, the World Health Organization estimates that 15-20% of children worldwide have disabilities, 85% of which are in developing countries (WHO, 2011). In Ghana, the prevalence of disability was 14.4 per 1,000 for children (1-5) years, 16.6 per 1,000 for children 6-9 years and 3.7 per 1,000 for 10-15 years age group within the same period as India (Biritwum et al., 2001).

Across the literature, disabilities among children commonly found include Hearing and visual impairments, speech disorders, neurodevelopmental Disorders (NDDs) and intellectual disorders. However, this cannot be limited to only childhood. The onset of any of these forms of disability could be at any point in life. Thus, regardless of age, disability grouping/type and prevalence can be similarly identified. Among the aged, some common forms of disabilities include neurological disorders such as Alzheimer’s disease, dementia and amnesia. There are also instances of cortical blindness, hearing challenges and general reduction in muscle tone. In effect, old age itself has been often perceived as disabling.

5. Effects of Living with Disability

Economic effects of disability

Undoubtedly, the effect of disability across the lifespan is profound and worth worrying about. These effects have existed over centuries. As back as the 1990s, Wellington (1992) indicated that persons living with disabilities are not active users of public buildings and spaces, the same as indicated by Yarfi et al. (2017) and Kapsalis et al. (2022). This is often because the social, political and other structural systems create impediments for people with disability. Even in a disability-friendly environment, it is observed that the best is not given to them. For example, public places that are disability-friendly label washrooms with three genders: male, female and disabled. The challenge with this effort is that no attention is paid to the fact that the disabled are also males and females. Thus, males and females living with disabilities are expected to use a common washroom when they need the most privacy. In Ghana, most buildings have no provisions for people with disabilities when the international requirements stipulate that such provisions must be made (World Health Organization, 2001).

Persons living with disabilities, especially in developing countries, are usually unemployed. Those who were employed before the onset of their disability lost their jobs (Milner et al., 2015). Meanwhile, at the individual level, research indicates that persons with physical, psychological, intellectual and sensory disabilities have better mental health when they are employed compared to when they are unemployed (Milner et al., 2014). It is often assumed that disability means incapacitation. Meanwhile, the systems put in place are the hindrances for people with disabilities. Thus, it is difficult for an employer to think of hiring a disabled person. In contrast, people with disabilities find it challenging to pursue a particular career, knowing that the chances for success are minimal.

The social barriers which hinder their employability lead to poverty and poor education (Mitra, 2005; Banks et al., 2017). When even employed, exclusion may be evident where access to activities and resources may be grossly restricted. Surveys of work arrangements in Australia,

Canada, the United Kingdom and the United States of America found that people with disability are under-employed relative to their level of training, have lower income levels, have less promotion prospects, are at greater risk of becoming unemployed and are more often in non-standard work arrangements (Elwan 1999; Emmett, 2006; Mpawineza, 2023).

Psychological effects

The psychological effects of disability can be pervasive. According to Hussain (2006), disability affects the individual's self-image. In this case, it is observed that females have poorer self-concept than males within the disability group. In contrast, males have lower perceived scholastic competence, athletic competence and romantic appeal. This impacts the self-esteem of the individual, who tends to evaluate themselves against their able counterparts (especially among adolescents) in all aspects (Nair, Anuradha, 2014). According to Robson (1988) and Miyahara et al. (2015), persons living with disabilities experiencing low self-esteem are characterised by feelings of inadequacy, guilt, shyness, social inhibition, dependency, helplessness, withdrawal, downgrade by others, reduced ability, vulnerability and interpersonal problem.

Nair and Anuradha (2014) also found that the physically disabled experience a greater sense of low self-esteem compared to those with visual disabilities. Saghatoleslami (2005) found that students with learning disabilities struggle with self-concept and self-esteem, which in turn can lead to adjustment difficulties, substance abuse, depression, and suicidal ideation. There are also differences in the body image and Self-identity development for congenital and acquired disabilities (Grzesiak, Hicok, 1994; Livneh, Antonak, 1997; Taleporos, McCabe, 2002). As a result of the above effect of being disabled, people with disabilities have poorer physical and mental health (Emerson, Hatton, 2007; Emerson et al., 2012; Honey et al., 2011). Their mental health, on average, tends to decline after the onset of disability (Mandemakers, Monden, 2010).

Among the caregivers of persons with disabilities, especially children and adolescents, the task has been described as challenging (Howe, 2006). They are stressed out. Usually, parents tend to be less sensitive to the needs of their children with reduced parental emotional availability (Howe, 2006). These patterns of parenting behaviour (i.e. less sensitive parenting and reduced emotional availability) may significantly contribute to insecure attachment among adolescents with a disability (De Wolff, Van IJzendoorn, 1997; Out et al., 2009). Meanwhile, this kind of attachment has been found to be associated with poor psychological wellbeing even later in adulthood.

Usually, for people who are experiencing disability for the first time, there is the experience of shock. It comes as the initial phase of heightened emotional reaction to the onset of the disability or diagnosis of a life-threatening condition. It may be characterised by overwhelming depersonalisation, a sense of loss, and psychological numbness. Realising the magnitude of the disability often provokes anxiety, panic, confusion in thinking, fear of death, uncertainty about the future, and purposelessness. Denial or defensive retreat becomes a significant but problematic form of coping strategy against the painful realisation of the long-term effects of a disability or a disease. A person in denial often experiences wishful and unrealistic expectations of recovery. Depression may accompany an initial accurate understanding of the nature of the disability or loss. It is a natural grief reaction to loss associated with feelings of distress, helplessness, and hopelessness.

Social effects of disability

Disability is the largest minority group in the world. However, they are probably the most hit by society in a very negative manner. Apart from creating a physical structure that barely incorporates them, the social burden accompanying disability cannot be overemphasised. The existence of disability often causes a person to feel devalued, incomplete, and almost ashamed of oneself. The onset of a sudden traumatic event or insidious condition produces an emergency for the person and the family.

Sadly, disability compels a dependency state for the individual affected, primarily because provision is not made to assist them to function on their own. They are dependent on others within the confines of the domestic space and within the immediate limits of the community where there are willing neighbours to assist. They are typically not included in the mainstream developmental agenda (Department of Social Welfare (DoSW), South Africa, 1997). For example, the Millennium Development Goals had no provision for disability. This means that throughout the MDG to the current sustainable goals era, disability is not a priority and shall never be meant to improve. There is a horrifying attitude of fear, shame and rejection, together with negative stereotypes commonly

attached to disability. These generally result in social exclusion of the disabled (DFID, 2000) since many detest them and will do everything to avoid them. All these situations will cause severe psychological consequences for the state of disability for the affected individual.

The attribution of the responsibility for disability is an important factor in determining people's attitudes (Hanks, Hanks, 1948). In fact, if the attribution of the disability could be viewed with some positivity, society would have lessened the burden for people with disabilities. For instance, in the Hindu culture, the existence of a disability is believed to be the cause of wrongdoing in a previous life. As a result, there is little sympathy for those with disabilities. In Nordic mythology, Gods are said to have disabilities. Some believe that suffering is a test for high-level future pursuits. Suffering provides deep insight into life and is a means of self-sacrifice to achieve higher purposes (Wright, 1983). It is a fact that the prevalence of disability is high among older people. However, with age comes wisdom. American Indians, therefore, revere older people as the most knowledgeable and often have a connection between life and the afterlife (Marshall, 2001).

Physical appearance has been an important concern among human beings since time immemorial. In that case, it is often believed that the characteristics of the physique are reflections of the inner self. Perhaps the philosophy of mind and body being two interconnected parts of the human unity may have inadvertently generated the notion of intimate interdependence of physique and personality. Even today, disability is considered a challenge. It is perceived as a misfortune that results in a very long and arduous journey through life unique to those with disabilities. As a result, the effects of spread (where the spread is the ability of a single characteristic to evoke inferences about the person as a whole) continue to devalue and dehumanise the individual as an object of intervention. Thus, a person with a disability may be perceived as unhappy, eager to please, frustrated, childlike, and incompetent. Though society has made progress in becoming sensitive to the needs of this population, significant levels of prejudice, ignorance, and stereotypes continue to impact the quality of lives of people with disabilities (Marinelli, Del Orto, 1999; Gunderson et al., 2022; Mantey, 2017; Dammeyer, Chapman, 2018).

In line with Maslow's hierarchy of needs, an individual needs to satisfy personal needs for physiological (food, water, shelter, and warmth), safety (security, freedom from fear, and stability), and love (friendship, family, and belongingness) before attempting to self-actualise. This theory arguably places a responsibility on society to create a community that must function to connect, relate, and foster interdependence as a prerequisite for self-sufficiency. According to this theory, self-actualisation implies that a person has the ability to become proficient to a certain level. Villa et al. (1992) argue, however, that society has a unique way of identifying the "gifted" and the "mediocre" and providing the "gifted" with the opportunity to develop the areas in which they naturally excel (purely discriminatory against people with disabilities). Often, people with disabilities, with their obvious or otherwise limitations, do not appear to possess the need to self-actualise as per society's pre-existing standards.

In Ghana, there was a recent resistance to the nomination of a visually impaired politician to the office of tourism minister. It is an unfortunate traditional value that prevents the physically disabled from entering the chief's palace. As a tourism minister, the visually impaired may have to work hand-in-hand with local community chiefs and traditional leaders. This cannot happen without his entry into the palaces. The outcome is obvious to everyone that such a nominee must be denied the opportunity. Regardless of this person's talents, expertise and resources, society has no regard for him, nor is society ready to provide him with the asset to self-actualise.

The reality, however, is that there are such persons with disabilities in society who have a lot to provide at various levels. Currently, the flag bearer of the oldest political party is a physically disabled person who is stuck in a wheelchair (the disability that is so obvious for all to acknowledge). This was acquired in his political career during one of his political trips. However, this places some limitations on his chances since the attitude towards such conditions is not favourable at every level of society, hence the difficulty citizens will have in electing him to the highest position in the country.

6. Social Interventions and Legislation

Indeed, persons living with disability are the most significant minority in almost all societies across the world. Indeed, policy interventions regarding disability across the world have been impressive over the years. In most developed countries, disability is a good priority. This, however,

does not mean that in these developed countries, persons with disabilities have been rescued entirely from their challenges. In developing countries, disability and associated interventions are barely seeing the light of day.

There are several provisions made at the international, regional and national levels as interventions for the challenges faced by persons living with disabilities. This has led to the formulation of laws and the establishment of agencies (international and local) to protect people with disabilities. For example, in Ghana, the 'Persons with Disabilities Act' came into force in 2006. The effort to pass this Act took 13 years when the bill was presented to the parliament of Ghana in 1993. It is interesting that such a bill could take such a long time to pass. However, eventually, it was passed (on June 23rd, 2006). The Act seeks to protect the following: Rights of persons with disability, Employment of persons with disability, Education of persons with disability, Transportation, Healthcare facilities, Miscellaneous provisions, Establishment and functions of the National Council on Persons with Disability and Administrative and Financial provisions.

As to whether these agendas are being pursued and achieved in any way is a very debatable topic. This is because, for the past five years or so, the Association of Persons with Disabilities in Ghana constantly lamented their inability to secure jobs. One should not be confused about why people with disabilities in Ghana cannot guarantee jobs. It is not because of the general lack of jobs in the country. They do not get jobs because they are disabled. They are perceived to be incapable of delivering their duties. If this were not so, the visually impaired nominee for the tourism sector ministry should have faced no resistance.

The person with a disability has every right to access all public places, including transportation, buildings/offices and other facilities. The Act prescribes that owners or occupiers of an existing building to which the public has access shall make that building accessible to persons with disability within ten years of the commencement of this Act. It has been several years now, and buildings are without access for persons with disabilities. In fact, new buildings that still do not consider people with disabilities are springing up. Public transport makes no sense for people with disabilities. It is challenging to comprehend that the council established by the Persons with Disabilities Act, 2006, seems to do just little about the situation. It can be concluded that the person with a disability in Ghana is still on his own.

Other countries also have legislation determining the rights, fate and purpose of life of people with disabilities. The United States of America passed the Americans with Disabilities Act (ADA) in 1990. There is the Disability Discrimination Act (DDA) in Australia and the United Kingdom in 1992 and 1995, respectively (Otmani et al., 2009). Without a doubt, these countries will be making good use of these legislations to benefit people with disabilities and the country as a whole.

There are also intervention agencies that seek to guard the interests of people with disabilities. The 'African Charter on the Rights and Welfare of the Child' is at the continental level. This pursues the rights of children with disabilities to protection and assistance from the State to ensure their dignity, development and integration into the community. The 'African Charter on Human and People's Rights' also aims to give persons with disability the right to special protection measures in keeping with their physical or moral needs. Internationally, the 'World Programme of Action concerning Persons living with disabilities' helps to enhance disability prevention, rehabilitation and equalisation of opportunities. The UN Standard Rules on the Equalisation of Opportunities for Persons with Disabilities (World Health Organization, 2001) also ensures accessibility, education, employment, social security, family life and personal integrity, culture, recreation, sports and religion for people with disabilities.

7. Ghana's National Policies on Disability

Disability, as defined by the various models and perspectives, does not tend to be limited to only one form, nor is it restricted to only the presence of a physical challenge. Ageing can present with disability. Chronic illnesses are equally disabling. Viewed in this way, it is necessary for national policies to target the various domains and provide support as appropriately as possible.

Recently, in Ghana, the Livelihood Empowerment against Poverty (LEAP) programme was initiated by the Ministry of Gender, Children and Social Protection. This programme typically targets people experiencing poverty, most of whom are aged. These aged individuals usually depend on other people in their families or communities. With the introduction of the LEAP, these people, including many others who are disabled by poverty, are expected to be empowered. This

programme supports the beneficiaries financially and places them all on the National Health Insurance Scheme. Essentially, this is an excellent national policy directed at one disability domain in the country.

In 2013, the Ministry of Education in Ghana drafted an inclusion policy that creates room for more forms of disabilities and accommodation of all such disabilities in the educational sector. This comes as a realisation of the fact that disability in the educational sector has been limited to only visual, hearing and locomotor challenges among school children in Ghana. Thus, children with other forms of disabilities were for a long time disregarded for their challenges and not paid any particular attention when it comes to their educational needs. The West African Examination Council has provisions for students/candidates with visual and hearing impairments. This excludes children with intellectual disabilities. The 2013 inclusion policy positively indicates the educational sector catering to people with disabilities. The Inclusive Education (IE) programme, now adopted by the Ministry of Education, seeks to run an educational system that places children with disabilities in the same facility as their non-disabled counterparts. This will reduce discrimination stigma and avoid the poor facilities that special schools are run within. The programme has expanded from 29 districts in seven regions in 2011 to 46 districts in all ten regions. The programme has included training for district staff, head teachers, and teachers working with children with special educational needs using appropriate pedagogy.

Ghana formally introduced the National Social Protection Strategy (NSPS) in 2008 to give new direction and vision to governmental services to the less privileged in society. This was based on the philosophy that all Ghanaians, if accorded the opportunity, could contribute towards the transformation of Ghana. According to the NSPS (2008), social protection/intervention consists of formal and informal mechanisms to provide social assistance and capacity enhancement to the vulnerable and excluded in society. This idea gives the country a focus or direction on what and why to engage and assist people with disabilities in society.

There is also the Disability Employment Project, which intends to offer decent employment to Persons with Disability and to serve as a platform for demonstrating the capabilities of Persons with Disability to the general public. It also intends to offer livelihood opportunities to persons with disability, their general dependents, and their households. This project is to be implemented by Ghana Investment Fund Electronic Communications as an Easy Business Centre for Persons with Disabilities. These centers will be in the form of kiosks where persons with disabilities will sell telecom accessories such as phone recharge cards, USB data modems, and SIM cards and also carry out SIM registration. This policy directive from the Ministry of Communications urges the Ghana Investment Fund for Electronic Communications (GIFEC) to initiate projects beneficial to persons with disability.

Several activities have been initiated at the national level to empower and protect the person with a disability. It is commendable how Ghana has been working hard to meet international prescriptions on disability. At least, this offers hope that there will be a change shortly, even if things are not in the best shape now. Thus, the following recommendations are provided to help strengthen and improve the actions undertaken.

8. Recommendation

Despite the efforts by the country to help the situation of disability over the years, very little has been done about sensitisation among the citizenry on the prevention of stigma for disability. It becomes an individual decision on whether to perceive disability to be a crime, curse or disease. It is, therefore, crucial for strong public education to be done across the country, advising on how everyone could assist in the fight for the rights of people with disabilities.

It must also be recommended that cultural traditions that prohibit, discriminate and jeopardise the rights of persons with a disability must be strictly banned by the country. This is because the traditional ruler who guards these traditions against people with disabilities could also become disabled at a point in life. It is necessary to avoid such traditional norms that do not favour scientific knowledge among the citizenry.

Organisations must be compelled to provide a quota for employing persons with disabilities. This is because, without a national policy, individual organisations in their interest will not be willing to engage such persons since discrimination has been deeply embedded in society. Such a policy must come with incentives for organisations that comply with it. For example, there may be

some tax exemptions for a number of persons with a disability an organisation employs. The government may also absorb the salary burden of a percentage of such persons for the organisation. This will drive the zeal to hire them since most are exceptionally talented towards specific careers.

Government road toll booths can be used by persons with disabilities, especially those with walking challenges. This is because this job does not require walking about. Other people may rather assist them than people with disabilities. This will increase the job scope of such persons, thereby reducing unemployment among persons with disabilities.

The various government institutions enforcing policies for disability must be financially and logistically resourced in order to deliver their duties. Such institutions must make it a point to employ more persons with disabilities. The said institutions and policies must involve mental health personnel or consultants to deal with the psychological component of the challenges of disability, as indicated above. Traditional authorities must also be included in developing policies that cover people with disabilities in order to facilitate the fight against discrimination and stigma. This is the only way holistic attention can be given to the situation.

9. Conclusion

In conclusion, disability is a concept that has not received a unified definition and conceptualisation due to its diverse nature. This has also affected the data available on the types and prevalence rates across the world. The effects of disability are enormous, ranging from physical to social and psychological. The poor structuring of society often compounds these effects in terms of traditions, infrastructure, and human relations. However, when policy decisions are carefully made to include people with disabilities, a lot of success can be chalked on the fight against the effects of disability in Ghana and the world over.

10. Declarations

Ethics approval and consent to participate

The study was conducted following the ethics standards for completing reviews.

Consent for publication

Not applicable.

Availability of data and materials

Not applicable.

Conflict of interest statement

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