Rockson (2025), Vol. 6, Iss. 2, Pg. 82-99
https://doi.org/10.5281/zenodo.15921626

Original Article

Behind the Braille: Exploring Disability Officers' Support for Students with Visual Impairment in Ghanaian Universities

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Abstract

Students with visual impairments face unique challenges in higher education, particularly in accessing academic content and fully participating in university life. Although Ghanaian universities have made policy-level commitments to inclusion, practical support systems, especially the role of Disability Support Officers, have received limited scholarly attention. This study sought to explore the forms of support that Disability Support provide to students with visual impairments in Ghanaian public universities. This qualitative case study explores how Disability Support Officers facilitate the inclusion of SVIs in two Ghanaian public universities. A census sample of five Disability Support Officers from the University of Education, Winneba, and the University of Cape Coast participated in in-depth semi-structured interviews. Additional data were gathered through document reviews and observations at disability support centres. Thematic analysis guided by Braun and Clarke's six-phase framework revealed four major themes emerged from the analysis: (1) Transcription Services; conversion of academic materials into Braille and large print and conversion of students brailed work into ink for lecturers; (2) Examination Services; adaptations such as Braille-format exams, extended time, and use of assistive devices; (3) Assistive Technology Support; training students in screen readers and other digital tools; and (4) Orientation and Mobility Training; supporting students to independently navigate campus spaces. Disability Support Officers also provided mentorship, emotional support, and institutional advocacy. Challenges identified included limited assistive technology resources, inconsistent faculty collaboration, and gaps in students' prior ICT training. The study concludes that Disability Support Officers serve as the backbone of inclusive education for students with visual impairment, providing multifaceted support that addresses academic, technological, spatial, and emotional needs. However, their work is often constrained by systemic limitations. Strengthening Disability Support Officers capacity, formalising institutional disability policies, and expanding investment in inclusive infrastructure are essential for advancing equity in Ghanaian higher education.

KEYWORDS: Disability Support Officers; Visual impairment; Inclusive education; Higher education; Assistive technology; Ghana; Accessibility; Student support

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https://doi.org/10.5281/zenodo.15921626

1.0 INTRODUCTION

Inclusive higher education demands that all students, regardless of their disability, have equitable access to learning opportunities and campus life. In recent years, particular attention has been paid to students with visual impairments (SVIs) as they pursue tertiary education (Kojana, & Mukuna, 2025). Universities are responsible for providing accommodation and support systems that enable SVIs to participate fully and succeed academically and socially. This support encompasses accessible learning materials, assistive technologies, adapted assessments, and physical campus modifications (Amin et al., 2021). Such measures ensure that visually impaired students can engage in coursework and campus activities alongside their sighted peers, reflecting a broader commitment to educational equity (Miyauchi, 2020).

In universities, Disability Support Officers (DSOs) play a pivotal role in orchestrating these efforts. DSOs act as key intermediaries between SVIs and wider campus communities, including faculty, administrators, and support staff. Their responsibilities extend beyond direct student assistance to include advocacy for accessible practices, training faculty on inclusive teaching strategies, and contributing to the development of disability-inclusive institutional policies (McCarthy et al., 2018). In effect, DSOs serve as both service providers and change agents, helping translate the principles of inclusive education into daily practice within the university setting.

Despite policy advances, SVIs continue to face several challenges in higher education. Prior research has documented difficulties such as inaccessible course content, obstacles in navigating the physical campus environment, and exclusion from certain learning activities, such as labs or group projects (Reed & Curtis, 2012). Socially, SVIs may experience isolation or marginalization if adequate support and understanding are lacking among their peers and staff. DSOs are critical for addressing these barriers. They coordinate the provision of alternative format materials, arrange for and teach students to use assistive technologies, and advise instructors on how to adapt pedagogical methods to meet diverse needs (Carroll & Johnson-Brown, 1996). Additionally, DSOs often provide emotional support and mentorship, which are crucial for students' adjustment to university life. By helping SVIs build their self-advocacy skills and confidence, DSOs foster a sense of belonging and inclusion on campus. This holistic approach aligns with the findings that social inclusion and a supportive campus climate significantly impact students' well-being and success (Jessup et al., 2018).

As institutions strive to create more inclusive learning environments, the expertise and contributions have become increasingly valuable. Their work benefits not only students with visual impairments, but also the university community as a whole, promoting awareness, diversity, and positive attitudes toward disability. However, the role of DSOs is continually evolving in response to changes in technology, student demographics, and educational policies. This study aimed to highlight effective strategies and identify areas for improvement by examining the practices and experiences of DSOs in supporting SVIs. These insights can inform future policy development and resource allocation in higher education accessibility, ensuring that inclusion is not just an ideal but also a lived reality on university campuses (Diasse & Kawai, 2024).

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1.1 Study Context

This study was situated within two major public universities in Ghana: UEW, and UCC. Both institutions have established Disability Support Units responsible for coordinating academic and accessibility services for students with disabilities. These units are staffed by DSOs who provide a wide range of services to learners with diverse needs, including those with visual impairments, hearing impairments, physical disabilities, and learning difficulties.

Although DSOs serve the broader population of students with disabilities, this study focused specifically on support mechanisms for students with visual impairments (SVIs). The decision to narrow the scope was based on the unique nature of visual impairment and the specialized accommodations required for full participation in academic activities. While acknowledging that DSOs extend their services to all categories of disability, this research sought to explore the particular ways in which DSOs facilitate inclusion and academic success for SVIs within the university environment. This contextual focus allows for a deeper understanding of the institutional practices and challenges related to visual impairment and provides insights that may inform broader inclusive education strategies in Ghanaian higher education. This study, therefore, sought to explore the forms of support that Disability Support provide to students with visual impairments in Ghanaian public universities.

2.0 METHODS

2.1 Research Design

This study adopted a qualitative case study design to explore how DSOs support SVIs at Ghanaian public universities. The design was selected to enable an in-depth investigation of real-world practices, experiences, and institutional processes that shape inclusive support for SVIs. The case study methodology suggested by Yin (2018) is appropriate when the researcher seeks to understand a contemporary phenomenon within its real-life context, particularly when the boundaries between the phenomenon and context are not clearly defined.

2.2 Positionality

As the researcher, I occupy a dual positionality: I am both a special education scholar and a practitioner in higher education. My professional background includes academic training in inclusive education and direct experience working with students with disabilities in Ghanaian universities. This insider perspective enhanced my ability to build rapport with participants and to interpret contextual nuances in the data. However, I remained critically reflexive throughout the research process maintaining a research journal, engaging in peer debriefing, and employing member checks to minimize bias and ensure analytic integrity.

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2.3 Research Sites and Participants

Two public universities in Ghana; the University of Education, Winneba (UEW), and the University of Cape Coast (UCC) were purposefully selected for this study due to their established disability support offices and history of enrolling students with visual impairments (SVIs). These institutions provided rich, context-specific environments for exploring how inclusion is operationalized through institutional support systems. This study focused specifically on DSOs as key informants, given their central role in coordinating academic and accessibility services for SVIs. A census sampling strategy was employed to engage all five eligible DSOs across the two institutions three from UEW and two from UCC. All participants were full-time staff members directly responsible for facilitating support for SVIs. This comprehensive sampling approach was informed by the relatively small size of the DSO population in Ghanaian universities and the need for in-depth insider perspectives. Data saturation was reached after the fifth interview, with no new themes emerging.

2.4 Data Collection

In addition to interviews, two supplementary data sources; institutional document and field observations were used to enhance the credibility and contextual depth of the study. Data were collected through in-depth, semi-structured interviews with DSOs, which allowed for flexibility while ensuring consistency across participants. An interview guide was developed to explore the nature of support services provided to SVIs, the challenges encountered by DSOs, and the strategies they employed to address both institutional and student needs. All interviews were audio-recorded with informed consent and transcribed verbatim for analysis.

To complement the interview data, structured field observations were conducted at the disability support centres of both institutions. These observations focused on the availability and condition of assistive technologies, the nature of student-staff interactions, and the overall accessibility of the physical environment. Additionally, key institutional documents were reviewed including admission memos, meeting minutes, departmental correspondences, and examination reports; to identify administrative practices and decisions concerning the support of SVIs. These documents provided insight into institutional commitments and logistical arrangements related to inclusive education. Together, the interviews, observations, and document reviews enabled triangulation and enriched the contextual understanding of DSO practices. Tables 1 summarizes the key findings from both document reviews and field observations.

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Table 1: Summary of Institutional Documents Reviewed and Field Observations at Disability Support Centres

Data Source Type	Institution	Date	Key Themes Identified
Admission Memo	U1	Aug 2019	SVI admitted under special consideration; request made to DSO for early intervention
Meeting Minutes	U1	Mar 2018	Support logistics for Braille transcription; recommendation to acquire new equipment
Departmental Memo	U2	Nov 2023	Approval of ICT training programme for SVIs in collaboration with Ghana Blind Union
Examination Report	U2	May 2022	Noted delays in Braille exam readiness; recommendation to streamline lecturer inputs
Assistive Technology (Observation)	U1	Observed 2023	Braille embosser functional; CCTV for low vision; limited screen reader software and computers
Assistive Technology (Observation)	U2	Observed 2023	Few functional screen readers; embosser present and functional
Student Interaction (Observation)	U1	Observed 2023	Students approached staff freely; informal ICT training observed
Student Interaction (Observation)	U2	Observed 2023	DSO-student interaction mostly task-based; formal ICT training observed
Physical Environment (Observation)	U1	Observed 2023	Limited space; Braille library located on a storey building
Physical Environment (Observation)	U2	Observed 2023	Narrow pathways; marked stairs; well-organized layout; few open gutters
Accessibility Infrastructure (Observation)	U1	Observed 2023	Tactile paving absent; informal white cane use
Accessibility Infrastructure (Observation)	U2	Observed 2023	Few formal mobility aids used; reliance on peer or DSO assistance

Note. SVI = Student with Visual Impairment; DSO = Disability Support Officer.

2.5 Data Analysis

The interview data were analysed using thematic analysis guided by Braun and Clarke's six-phase framework (2023). The analysis began with familiarisation, in which the researcher immersed herself in the data by reading the transcripts multiple times. Initial codes were then generated manually, capturing key ideas and recurring patterns within and across interviews. These codes were applied to significant text segments using Microsoft Word's comment features for clarity and traceability. Next, the codes were examined and clustered into preliminary themes that reflected

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broader categories of meaning. These themes were reviewed and refined to ensure internal coherence and consistency across the datasets. Where applicable, subthemes were created to reflect more nuanced aspects of the data. Each final theme was clearly defined and named to ensure it represented the core idea it encapsulated.

To enrich the analysis and triangulate the findings, data from institutional document reviews and researcher observations were also examined. Observational notes captured the physical layout of the disability support centres, availability of assistive devices, and ongoing interactions between staff and students. These observations helped contextualise the interview data by highlighting the infrastructural and relational realities of service delivery. Additionally, institutional documents such as admission memos, meeting minutes, and internal correspondence were reviewed. Although the universities lacked explicit disability policies, these documents provided evidence of administrative decisions and deliberations concerning the provision of support to students with visual impairments. Key insights from the documents and observations were integrated into the coding and theme development process to strengthen the credibility and contextual depth of the findings.

In the final stage, themes were integrated into a coherent narrative aligned with the study's research objectives. Verbatim quotes from participants were used to illustrate key points and ensure that the voices of the DSOs were authentically represented. The analysis process was iterative, reflexive, and grounded in the data, ensuring both credibility and analytical rigor. To further enhance trustworthiness, member checking was conducted by summarising preliminary findings and confirming their accuracy with participants. Peer debriefing was also employed through discussions with colleagues experienced in disability studies to test interpretations and challenge bias.

Through this process, four major thematic categories of support emerged, structuring the findings presented in the next section:

1. Transcription Services
2. Examination Services
3. Assistive Technology Support
4. Orientation and mobility support

3.0 RESULTS

DSO Support for SVIs in Ghanaian Universities

When asked *"How do DSOs support students with visual impairments in your university?"* Participants described a multifaceted support system. DSOs offer various services that can be grouped into four core areas: transcription, examination, assistive technology support and orientation and mobility support. These services collectively enable SVIs to access academic

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materials, complete assessments, and utilize learning tools on an equal basis. The findings are organized by these categories, with illustrative quotes from the DSO staff that shed light on their practices and the challenges they navigate.

In addition to interview data, insights from researcher observations and institutional document reviews were used to enhance the credibility and depth of findings regarding support systems for SVIs. Observations were conducted at the disability support centres of both universities. Field notes captured the availability and condition of assistive technologies, such as Braille embossers, screen-reader-equipped computers, and Closed-Circuit Television (CCTV) magnifiers, as well as the physical layout of the centres and interaction dynamics between DSOs and students. These observations confirmed many of the support practices described in interviews, while also revealing environmental constraints, including limited workspace and insufficient quantities of key assistive devices.

Institutional documents such as meeting minutes, internal memos, and correspondence were also reviewed to understand the broader institutional context. Although neither university had an explicit policy document exclusively addressing the inclusion of SVIs, several reviewed records reflected decision-making processes and informal commitments to accessibility. For example, memos referenced arrangements for additional examination time and approval of assistive technology procurement. Meeting records documented recurring discussions about the need for accessible learning materials and faculty sensitization initiatives.

Together, these sources of data contributed to methodological triangulation and confirmed the consistency of DSO-reported practices with institutional behaviours. The lack of formal policy frameworks underscores the need for universities to consolidate these ad hoc measures into comprehensive accessibility policies. Nevertheless, the evidence from observations and documents substantiates that DSOs operate within dynamic, though resource-constrained, institutional environments committed to inclusion.

Transcription Services

A foundational support provided by DSOs is the transcription of academic materials into formats accessible for SVIs. This includes converting printed text to Braille, enlarging print documents for low-vision students, and transcribing SVI-generated Braille workback into print. By doing so, DSOs ensure that students with visual impairments can engage in the same instructional content as their sighted peers. Several DSOs have emphasized that timely transcription is essential for keeping SVIs on track in their courses. One staff member explained,

> "We transcribe their brailled assignments into print to enable the lecturers who are unable to read Braille to have an opportunity to read the ink print and score the student with visual impairment just like they score other students. We again transcribed the print handouts and documents into Braille format using the Braille embosser. The embosser allows us to provide the students with materials in Braille format." – *(DSO 1)*

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Another DSO staff member highlighted the process and resources involved in making the print materials accessible.

> "We scan their printed handouts or presentations from lecturers and then use the embosser to emboss the material into Braille for those who use Braille to read. … My sister, we even have a Closed-Circuit Television in the Braille library where those with low vision are able to read their materials in the font size that suits their vision." – *(DSO 5)*

These quotes illustrate how DSOs act as a bridge between instructors' materials and SVI's ability to use them. By transcribing lecture notes, assignments, textbooks, and handouts into Braille or a large print, DSOs empower visually impaired students to participate fully in the same educational experiences as their sighted classmates. The availability of a CCTV magnifier for low-vision students (mentioned by DSO 5) is an example of adapting technology to individual needs, allowing students to adjust the text size and contrast for comfortable reading. The Braille embosser is another crucial tool that enables the high-volume production of brailed documents.

The analysis of transcription services across the two universities revealed a strong commitment to inclusivity. The DSO staff demonstrated proactive efforts in promptly converting materials, although this can be labour-intensive. They indicated that a well-organized system is in place: lecturers' notes are collected (or sometimes scanned by DSOs if only hard copies exist) and then translated into the required format ahead of class or exams. This service has a direct impact on academic inclusion; SVIs are able to read, study, and refer to the same content at roughly the same time as their peers, minimizing delays in learning. The DSOs also noted their role in reverse-transcription (Braille to print), which is vital for faculty who are not Braille-literate in evaluating student work fairly.

Overall, transcription services ensure access. By prioritizing alternative format materials, DSOs uphold universities' obligations under inclusive education policies to provide *reasonable accommodations*. The dedication evident in the DSOs' remarks – *"just like [the lecturer] scores other students"* – speaks to an ethos of normalization, where an SVI's work is treated equitably and held to the same academic standards once format barriers are removed. Such efforts significantly contribute to SVIs' academic success and foster an environment in which disability is accommodated as part of the university's routine operations.

Examination Services

Examinations represent a critical high-stakes aspect of higher education, and the DSOs in this study play an essential role in ensuring that assessments are accessible to visually impaired students. Examination support services provided by DSOs include adapting exam papers into accessible formats, granting extra time, and supplying the necessary technology or personnel during tests. The goal is to enable SVIs to demonstrate their knowledge under conditions equivalent to those of other students, without unfairly hindering their visual impairment.

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One DSO staff member described the process of converting exam questions for Braille readers and highlighted a recurrent challenge.

> "One of the things we do is provide them with different forms of support during exams. We scanned the printed questions from the lecturers and then edited them before we used the embosser to Braille it for Braille users. The bigger challenge here is that lecturers sometimes even forget that they have an SVI taking their exam and bringing the questions very late, but we manage through it. The students had to wait for long hours for brailling to be done before they could start the exams." *(DSO 4)*

This account shows that DSOs are problem solvers under pressure. Even when exams arrive in the last minute, DSOs undertake rapid transcription to Braille so that visually impaired students can take the exam. However, as noted, delays can result in SVI students starting later than others, an issue of concern regarding fairness. Another DSO (DSO 1) explains the policy adjustment used to mitigate such time disadvantages.

> "In the centre here, we make provisions for them during exams. For example, we give them extra time during the exams. We assign 50% of the allocated time as extra time for the visually impaired. This is to make room for all the delays that brailling can cause and also the screen readers and keyboard use delays for SVI." – *(DSO 1)*

By automatically granting *time-and-a-half* for exams, the institution acknowledges that reading and responding via assistive means can be more time-consuming. This accommodation is consistent with global best practices, where extended time is a common modification for students with print disabilities. It helps level the playing field, ensuring that SVIs are tested on their knowledge and not penalized for the slower mechanics of reading Braille or listening to text.

A third DSO staff member discussed the use of technology in exams and the interesting differentiation among students.

> "We allow them to use the computers in the lab for visually impaired students; those computers have JAWS and NVDA (screen readers) on them. The post-blind students who were unable to read Braille with their fingers like to use a computer to read the questions so that they put their answers in Braille. This is because they are unable to use computers of this type. We have started teaching them to use the computer though – the challenge is that many of the SVI do not know how to use the computer." – *(DSO 3)*

In this regard, *"post-blind"* refers to students who have lost vision later in life and may not have strong Braille literacy. These students might prefer to listen to exam questions via screen-reading software and then respond using a Braille writer combining techniques. DSOs accommodate such preferences by providing a specialized computer lab with adaptive software (JAWS, NVDA) and by supervising to maintain academic integrity. The quote also touches on a developmental aspect:

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Training students in ICT skills is part of DSO support, though it remains a challenge when students arrive without prior exposure to technology.

Analysis of the DSOs' examination services highlights both the effectiveness and areas needing improvement. On the one hand, DSOs significantly enhance accessibility by producing braille exams and ensuring appropriate accommodation (such as extra time and accessible devices). Several participants noted that these measures have enabled SVIs in their universities to perform on par with their peers. With proper support, many SVI students achieve strong results, dispelling misconceptions about their capabilities. However, systemic issues, such as *faculty communication lapses* (forgetting to submit exams in advance), pose recurring hurdles. This suggests a need for better faculty sensitization and institutional protocols – for example, automated reminders or policies that examine papers for SVIs to be submitted to the DSO office by a certain deadline.

Despite these challenges, the commitment to exams is evident. They often work under tight time constraints to adapt materials and sometimes must improvise solutions (e.g., reading out a question if a technical problem arises with the embosser or screen reader). All DSO respondents agreed that exams are a particularly stressful period for both staff and students, but their collective efforts ensured that SVIs can undertake assessments with dignity and fairness. The provision of extra time and appropriate technology aligns with inclusive assessment principles, allowing students to focus on demonstrating their content mastery. This level of accommodation requires coordination (with invigilators, IT staff, etc.), for which DSOs are typically central coordinators. Their work during exams reinforces the message that academic rigor and inclusivity are not mutually exclusive, with forethought and support, even though traditional exam settings can be made accessible.

Assistive Technology Support

Advancements in assistive technology (AT) have unlocked new possibilities for students with visual impairments to independently participate in higher education. Recognizing this, DSOs in Ghanaian universities place considerable emphasis on assistive technology support. This involves both the provision of tools (specialized software and devices) and the training needed for SVIs to effectively use these tools. By equipping students with appropriate technologies and skills, DSOs aim to enhance the learning, communication, and day-to-day navigation of academic tasks.

According to DSO staff, assistive technology support encompasses several services. Key among them are:

1. **Assessment of student needs and AT training:** When a visually impaired student enrols, DSOs often assess their proficiency with technology and identify what tools could benefit them (e.g., screen readers, text-to-speech software, audio recorders, and magnification devices). They were then provided orientation or training sessions.

2. **Installation and maintenance of software:** DSOs help install licensed screen reader programs like JAWS (Job Access With Speech (JAWS), or free alternatives, such as

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NVDA, on students' personal laptops or the center's computers. They also introduced apps such as Cash Reader (for currency identification) or other utilities that assist in daily tasks.

3. **Access to specialized devices:** In some cases, DSOs lend out or allow students to use equipment such as braille displays, audio book players, or digital voice recorders from the resource centre.

One DSO staff member explained how they guided students in selecting and using assistive technology.

> "We help them select the appropriate technology to use. For example, we install software such as JAWS, NVDA, and Cash Reader on their computers or mobile devices for personal use. We have an IT person in the centre who supports the visually impaired with such things as I have mentioned. The challenge is that the majority of the VI who come to the university do not know how to use the computer, so we train them to use it here in the university. Some students do not have smartphones, personal recorders, or personal computers, and we are unable to provide these ICT tools for every student. We have a few, but it is not enough to cover the growing number of SVIs." – *(DSO 3)*

This comment highlights a crucial point: capacity building is a major element of AT support. Many incoming students, especially those with resource-poor backgrounds, may not have had prior exposure to computers or advanced assistive devices. DSOs thus take on an educational role, conduct basic computing classes, and conduct workshops on using assistive software. The presence of an IT specialist on the team (as noted) is a valuable resource, indicating institutional investment in expertise. However, the quote also underscores the constraints of limited quantities of devices and the inability to equip each student fully. As the enrolment of SVIs increases, the demand for AT grows, and the current supply cannot meet every need. For instance, a centre might have only a handful of braille note-takers or portable magnifiers.

Another DSO staff member described a periodic training program supported by the university:

> "We provide them ICT training after every end-of-semester examination. The university sponsors their stay on campus for about one or two weeks, and then we bring an IT person from the Ghana Blind Union to come and train them to use the computer. Again, they learn to use the different software that the IT expert recommends to them, and they practice its use. As for their computer repairs, we are not able to fix them entirely for them." – *(DSO 1)*

This indicates a structured approach in which, during breaks, intensive training is offered – a smart strategy to utilize time when students are free from classes. Collaborating with external organizations such as the Ghana Blind Union for training also suggests leveraging broader expertise and networks to support blindness. The mention of computer repairs hints at another

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limitation: maintenance support is ad hoc, and students may face challenges if their personal device malfunctions (the DSO can offer only limited tech repair help).

Furthermore, DSO staff acknowledged the resource gap in assistive technology. One noted:

> "The major challenge is the limited resources we have with regards to assistive technology. In our university, we have a Braille library, but computers there are very few and other assistive technology devices are in limited quantities, making it difficult to serve the growing number of students we have each year." – *(DSO 5)*

Similarly, another concurred:

"Honestly, the resources with regards to AT are very few. The numbers keep increasing and our resources do not match the growing numbers we have." – (DSO 1)

These reflections illustrate that while existing AT support is robust and beneficial, it struggles to scale with rising demand. Universities have made commendable efforts – setting up Braille libraries, providing some equipment, and even funding training programs; however, budget constraints or procurement hurdles mean that not every SVI can be issued its own device. Often, students must share or use equipment on-site at the disability centre, which may not be convenient for studying in dorms or after hours. Limited resources can also mean that students do not have certain helpful technologies, simply because they are not available.

Despite these challenges, the presence of assistive technology at universities has significantly improved the academic experience of SVIs with access. The DSOs reported cases of students who, once taught to use screen readers or audio software, became much more independent in their assignments and research. Being able to use a computer opens a world of information through the Internet and digital libraries that would otherwise be inaccessible. It also prepares students for modern workplaces. The training aspect cannot be overstated: DSOs essentially provide informal *ICT literacy courses* tailored for the visually impaired, an added responsibility on top of their usual duties. This holistic support, combining provision, training, and troubleshooting, illustrates DSOs' commitment to empowering students, not just accommodating them.

In summary, assistive technology support is a vital pillar of the services offered by DSOs, directly affecting SVIs' ability of SVIs to study effectively. The analysis shows that while current efforts are impactful (students gain essential skills and tools), there is a pressing need to scale up resources to keep pace with enrolment. Investment in more assistive devices, software licenses, and training capacity would significantly enhance this area. The DSOs' experiences point to a reality in which inclusive education is not a one-time effort but an ongoing endeavour requiring updates in technology and continuous skill development. Nevertheless, even within their constraints, DSOs act as enablers of digital and informational access for visually impaired students, aligning with global trends that emphasize technology as key to inclusion (Amin et al., 2021). Their work in this

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area not only aids individual students, but also contributes to building an academic culture that values innovation and adaptability in supporting diverse learners.

Orientation and Mobility Services

In addition to academic and technological support, DSOs in both universities provide critical orientation and mobility (O&M) services for students with visual impairments (SVIs). These services are essential in helping SVIs familiarize themselves with the physical environment of the university, gain independence in navigating campus spaces, and participate confidently in academic and social life.

O&M support is typically initiated during the students' first weeks on campus, with DSOs offering personalized orientation sessions. This includes guided tours of lecture halls, hostels, libraries, dining areas, and washrooms, as well as instruction on navigating independently using mobility canes or tactile cues. DSOs reported that these sessions not only help SVIs gain practical navigation skills but also build rapport and trust between the students and the support team.

One DSO described their approach to orientation:

> "When a student with visual impairment is admitted, we don't wait for them to get lost. We meet them, take them around the campus for a few days, and show them the important places like lecture halls, ICT labs, and washrooms. We repeat it until they are comfortable." – (DSO 2)

Another DSO emphasized the importance of early intervention and the use of assistive mobility tools:

> "We introduce them to the white cane and show them how to use it safely. Some of them come with no experience at all. We start from scratch, even how to count steps or use their sense of hearing for directions." – (DSO 4)

Beyond physical navigation, DSOs also provide strategies for negotiating crowded spaces, crossing roads within campus, and recognizing landmarks through sensory cues. This kind of instruction often continues informally throughout the semester, particularly for students who struggle with anxiety or unfamiliarity in urban environments.

"For some, it's not just about where the classrooms are. They are afraid to walk alone or cross the road to the lecture block. So, we sometimes pair them with buddies or walk with them until they build confidence." – (DSO 5)

The analysis of this theme reveals that O&M services are not only functional but deeply relational. DSOs act as facilitators of independence while also offering emotional reassurance to students adjusting to a new environment. However, they also reported constraints such as a lack of trained O&M specialists and inadequate time due to the growing number of SVIs.

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"Ideally, someone with mobility training should do this work, but here it's us, the DSOs. We are doing our best, but we need training ourselves." – (DSO 3)

This gap suggests a need for policy-level attention to staff capacity building and professional development in O&M practices. Nonetheless, the DSOs' commitment to fostering autonomy among SVIs reflects a holistic understanding of inclusion—one that extends beyond academics to the physical, psychological, and social dimensions of student life.

4.0 DISCUSSION

This study set out to investigate how DSOs facilitate the inclusion of SVIs in Ghanaian higher education. The findings illuminate a comprehensive and evolving support system, structured not only around academic accommodations and assistive technology but also encompassing O&M services. Together, these dimensions underscore the multifaceted, indispensable role DSOs play in ensuring access, participation, and belonging for SVIs. Reflecting on these results, several significant themes and implications emerge for universities, policymakers, and practitioners committed to inclusive education.

The evidence confirms that DSOs do far more than provide discrete or reactive services. Rather, they offer holistic, proactive support that addresses academic, logistical, technological, and emotional needs. From transcribing learning materials and facilitating accessible examinations to offering ICT training and campus navigation assistance, DSOs operate as accessibility specialists, mentors, and inclusion advocates. This expansive role resonates with the inclusive education literature, which emphasizes the need to eliminate environmental barriers while promoting personal growth and autonomy (McCarthy et al., 2018).

Notably, orientation and mobility services emerged as a critical, yet often overlooked, component of inclusive higher education. DSOs assist SVIs in navigating campus spaces safely and confidently training students to use white canes, recognize auditory and tactile landmarks, and build independence in movement. These services enhance not only practical access but also students' psychological confidence and sense of safety, thereby contributing to a fuller experience of inclusion. As one DSO explained, "Some are even afraid to walk alone or cross the road... we walk with them until they build confidence" (DSO 5). This kind of relational, trust-based support demonstrates that inclusion extends beyond the classroom to encompass physical, emotional, and social dimensions of student life.

The strategies employed by DSOs in this study reflect best practices in the global literature. Alternative format materials, exam accommodations, and assistive technologies are well-established mechanisms for equitable access (Miyauchi, 2020; Reed & Curtis, 2012). Additionally, the emphasis on empowering SVIs through training, particularly in ICT and self-advocacy aligns with Carroll and Johnson-Brown's (1996) argument that students with disabilities must be active participants in their education. The collaboration between DSOs and civil society organizations,

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such as the Ghana Blind Union, to deliver ICT training exemplifies innovative, context-sensitive applications of these principles in resource-constrained environments.

However, despite these promising practices, this study also reveals persistent challenges. Chief among them is the absence of formal institutional policies on disability inclusion. Although DSOs operate with dedication and professionalism, their work is often supported by informal arrangements rather than formalized policies. This gap risks undermining the sustainability and consistency of services. Universities should prioritize the development of explicit disability inclusion policies that clearly define the roles of DSOs, outline service delivery protocols, and mandate faculty cooperation. Faculty lapses such as late submission of exam papers for adaptation, highlight the need for continuous training and stronger institutional accountability mechanisms.

Resource constraints also emerged as a significant barrier. DSOs reported a shortage of assistive technology devices and infrastructure, with growing enrolments of SVIs exacerbating the situation. To address this, universities and stakeholders, including government bodies and development partners, should establish dedicated funding streams for inclusive education. Creative strategies such as pooled procurement, technology-sharing across campuses, or public-private partnerships could help bridge the resource gap.

Furthermore, the positive impact of comprehensive DSO support is evident not only in academic performance but also in student well-being and institutional culture. Several DSOs shared stories of SVIs who achieved academic distinctions or became confident contributors in group work after receiving consistent support. These accounts echo findings by Jessup et al. (2019), who assert that a sense of belonging and social inclusion are crucial for students with visual impairments. Interestingly, some faculty informally interviewed during this study reported that their engagement with SVIs encouraged them to adopt more inclusive teaching methods, thereby benefiting the broader student population, a finding consistent with the principles of Universal Design for Learning (Hall et al., 2012).

In sum, the DSOs in this study serve as invisible architects of inclusion; quietly yet powerfully shaping accessible, supportive environments that enable SVIs to thrive in higher education. Their work bridges the gap between policy intent and practical reality, affirming that inclusive education is not merely about accommodations, but about cultivating dignity, independence, and full participation. Institutions must recognize, invest in, and scale these efforts to realize the vision of inclusive education for all.

4.1 Policy Implications

As Ghana and other countries strive to expand equitable access to higher education for students with disabilities, the findings of this study carry several important policy implications. A key concern highlighted is the absence of formal, written disability inclusion policies at both universities studied. While institutional memos and meeting minutes indicate ad hoc efforts to support students SVIs, the lack of comprehensive policies creates inconsistencies in service

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provision and limits the sustainability of inclusive practices. To address this gap, universities should be required to develop and institutionalize explicit disability inclusion policies that outline responsibilities, procedures, and minimum standards for supporting students with disabilities.

First, this study underscores the need to formalize and standardize the role of DSOs within university structures. This includes defining job descriptions, allocating adequate resources, and involving DSOs in academic planning and decision-making processes. National higher education bodies, such as the Ghana Tertiary Education Commission (GTEC), could develop accreditation benchmarks or quality assurance indicators related to disability services such as minimum staffing levels, accessibility of infrastructure, and the availability of alternative-format learning materials.

Second, investment in assistive technology must be viewed as an essential component of educational infrastructure, on par with laboratories and libraries. Universities should receive targeted grants or subsidies to build and maintain an adequate inventory of assistive devices, and to train staff in their use and maintenance.

Finally, inter-university collaboration should be encouraged. Creating national or regional consortia can enable resource sharing, such as joint Braille production centres or cross-institutional training programmes for DSO staff. Such networks could also serve as platforms for advocacy and continuous improvement in inclusive education.

4.2 Conclusion

In conclusion, DSOs serve as the linchpin of inclusive education for visually impaired students in a university context. The DSOs in this study demonstrated dedication and creativity in implementing a range of supports that enable SVIs to pursue their degrees on equal terms. Their efforts illustrated that inclusion is an ongoing process that requires institutional commitment, adequate resources, and a campus culture of empathy and adaptability. Strengthening DSO units and addressing the identified challenges will further enhance the educational experiences of students with visual impairments. By doing so, universities in Ghana and elsewhere not only uphold the rights of students with disabilities, but also enrich their academic communities through diversity and inclusion. As one of the DSO staff poignantly implied, the true measure of an inclusive university is when a student with visual impairment is "scored just like other students" – judged on their merits, with their disability either an obstacle or an excuse. Achieving these ideal calls for sustained effort and collaboration, but the trajectory set by the DSOs' work is undoubtedly promising. Future research could build on these findings by examining the experiences of the students themselves or by exploring the role of faculty allies in the inclusion process. Ultimately, the goal is still clear: to ensure that higher education is accessible and affirmed for all learners, including those who journey through academia without the gift of sight.

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https://doi.org/10.5281/zenodo.15921626

DECLARATION

Funding Statement: The study did not receive any financial support from any organization or party.

Ethical Compliance: All procedures performed in studies involving human participants were in accordance with the ethical standards of the UCC Institutional Review Board.

Data Access Statement: Research data supporting this publication are available and can be given upon reasonable request and approval from the author.

Conflict of Interest declaration: The author declares that they have no affiliations with or involvement in any organization or entity with any financial interest in the subject matter or materials discussed in this manuscript.

Author Contributions: The author conceived the idea and conducted the study solely.

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