Differentiated Instruction as an Inclusive Practice: Addressing the Needs of Learners with Visual Impairment in Ghanaian Basic Schools

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ABSTRACT

The study explores the application of differentiated instruction (DI) for addressing students with visual impairment in Ghana's inclusive primary schools. Even though Ghana's Inclusive Education Policy (2015) promotes access to education for all learners, the daily application of disability-inclusive pedagogies such as DI has not yet been fully explored, particularly in low-resourced contexts. Adopting a convergent mixed-methods design, the study was conducted with 60 teachers in three historically inclusive schools: Ghana National Basic School (Cape Coast), St. Joseph Integrated Basic School (Bechem), and Avakpedome Basic School. The study was guided by the Inclusive Pedagogy Framework and Universal Design for Learning (UDL) principles. Data were collected using structured questionnaires, semi-structured interviews, and classroom observations. Quantitative data were analysed using descriptive statistics, while qualitative data were analysed using thematic analysis. Findings suggest that while teachers understand DI principles and apply a variety of strategies, such as translating materials into Braille, using peer tutoring, and differentiating instruction delivery, there is no consistent implementation. Limitations include limited access to assistive technology, no training in disability-specific pedagogy, and a lack of institutional support. Despite these constraints, the majority of teachers showed a commitment to inclusive practice, with teachers often improvising with available resources. The study concludes that while DI has much potential in enabling access and participation for learners with visual impairment, systemic barriers must be removed to enhance its effectiveness. It calls for the enhancement of teacher training, resource availability, and collaborative support mechanisms within schools. This study contributes to the body of literature on inclusive education in low-resourced environments and offers practical recommendations for enhancing the implementation of DI in Ghanaian basic schools.

Keywords: Differentiated Instruction, Inclusive Education, Visual Impairment, Assistive Technologies, Resource Constraints

INTRODUCTION

Inclusive education has been greatly accepted as a foundation for achieving quality and equitable education for all students, including students with disabilities (Ainscow, 2020; UNESCO, 2020). By social justice and human rights, inclusive education requires the proper integration of all students, regardless of ability, into mainstream classrooms. For students with visual impairment, inclusive education is crucial not just for participation in learning but also in building independence, social integration, and stigma reduction (Florian & Spratt, 2013; WHO, 2019).

Ghana's Inclusive Education Policy (2015) reaffirms the country's commitment to inclusive education, outlining strategies for integrating learners with special educational needs into mainstream education settings. Notwithstanding this, policy implementation is patchy, particularly for learners with visual impairment. Research shows that teacher preparation gaps, limited access to assistive devices, and inflexible curricula continue to limit effective inclusion (Opoku et al., 2021; Kuyini & Desai, 2009; Mantey, 2017).

Among the viable approaches to addressing varied learners in inclusive settings is Differentiated Instruction (DI). DI refers to the purposeful adjustment of content, instructional strategies, and assessment modes to

address students' varying learning profiles, levels of readiness, and interests (Tomlinson, 2001; Florian & Black-Hawkins, 2011). For visual impairment, DI may involve the use of Braille, tactile graphics, auditory materials, and assistive technologies, alongside alternative assessment formats. Utilised effectively, DI enhances access to the curriculum as well as agency among learners (Gheyssens et al., 2020; Sharma et al., 2022).

Despite growing DI research globally, its application in low-resource settings remains unexplored. In Ghana, most research on inclusive education has focused on policy and teachers' attitudes rather than pedagogical strategies used to support specific learner groups, for example, learners with visual impairment (Mensah & Akyeampong, 2019). In addition, teacher training programs that are available scarcely include specialised training on adaptive instruction for students with visual impairment (Akyeampong & Raufu, 2015).

A number of basic schools, such as Ghana National Basic School (Cape Coast), St. Joseph Integrated Basic School (Bechem), and Avakpedome Basic School, have previously enrolled students with visual impairment and attempted to apply inclusion. Such schools give good information about the way DI is conceptualised and implemented by instructors in low-resource inclusive schools. Even with reports from the teachers in these schools that they use strategies such as peer tutoring, Braille materials, and oral instruction, challenges such as overcrowded class sizes, lack of professional development, and shortage of resources persist (Akyeampong & Raufu, 2015; Kisanji, 2015).

Socio-cultural issues also interfere with inclusive education practice. Misconceptions about disabilities, low community awareness, and deep-rooted deficit thinking can discourage experimentation and facilitate alienation amongst teachers who attempt inclusive practices (Anthony, 2011; Kisanji, 2015). The majority of educators work in the absence of specialist advice or collaboration time, making it challenging to sustain differentiated practice in diverse classrooms.

This study explores how teachers in three inclusive schools in Ghana apply differentiated instruction to support students who have visual impairment. It looks at (a) the specific DI strategies used, (b) how the strategies are used in instructional practice, and (c) what challenges teachers experience in delivering inclusive instruction. Through examination of these dimensions, the research will aim to inform subsequent understanding of inclusive pedagogy in low-resource contexts and yield actionable lessons for policy, teacher education, and school-level implementation of DI strategies.

Statement of the problem

Ghana’s Policy for Inclusive Education (2015) proves its commitment to providing equal access to all learners, including people with disabilities. However, students with visual impairment remain underserved by systemic barriers in curriculum enactment, teacher preparedness, and access to tailored instructional materials. Although policy, its enactment, particularly in resource-poor public schools, remains uneven and patchy (Opoku et al., 2021; Kuyini & Desai, 2009).

Differentiated Instruction (DI) is usually regarded as one of the core methods for responding to diverse learner needs within inclusive classrooms. DI is the planned adaptation of content, instructional practices, and assessment to respond to learners’ profiles (Tomlinson, 2001; Florian & Black-Hawkins, 2011). About learners with visual impairment, this involves Braille, tactile graphics, assistive technology, and alternative means of assessment. Effective deployment of DI in resource-constrained schools, most prominently in Ghana, is a far more under-researched phenomenon (Gheyssens et al., 2020).

Although schools like Ghana National Basic School, St. Joseph Integrated Basic School, and Avakpedome Basic School have tried to be inclusive, teachers have limitations when it comes to DI training, resources, and institutional support (Akyeampong & Raufu, 2015; Mensah & Akyeampong, 2019). These limitations raise very critical questions about practice in DI.

This study offers an intervention of this gap through an exploration of how instructors in inclusive Ghanaian classrooms implement DI to support students with visual impairment. The intervention explores the strategies utilised, their usage, and the challenges experienced by teachers in supporting equal participation. The study also sought to address the following questions:

1. What differentiated instruction strategies are employed by teachers at Ghana National Basic School, St. Joseph Integrated Basic School, and Avakpedome Basic School to support learners with visual impairment?
2. In what ways are differentiated instruction strategies employed by teachers in Ghana National Basic School, St. Joseph Integrated Basic School, and Avakpedome Basic School to support learners with visual impairment?
3. What are some challenges to providing differentiated instruction to teachers, and how do those challenges affect the academic engagement and social interaction of learners with visual impairment?

Limitations of the Study

There are a number of limitations that must be considered:

The research was confined to three schools. Although these schools embody inclusive education initiatives in Ghana, the findings may not extend to all inclusive environments. The relatively modest sample size, particularly within the qualitative strand, may not reflect the entire spectrum of teacher experiences. Time and logistical limitations precluded classroom observation data, which could have yielded more diverse views on DI practice.

Secondly, using questionnaires and interviews poses the risk of response bias. Future research needs to triangulate evidence with classroom interaction observations and student performance data. The environment of Ghana's education, infrastructure, and disability attitude in cultures can influence results. These results should be used cautiously when generalising to countries with different policy and resource settings.

LITERATURE REVIEW

Theoretical framework

This study is guided by the Inclusive Pedagogy Framework (Florian & Black-Hawkins, 2011) and Universal Design for Learning (UDL) principles (CAST, 2018), which together offer a strong theoretical basis for understanding differentiated instruction in inclusive settings. Inclusive pedagogy emphasizes the importance of extending learning opportunities to all students by valuing diversity and promoting shared responsibility among educators. UDL complements this by offering practical guidelines for designing flexible learning environments that accommodate learner variability through multiple means of representation, engagement, and expression. These theories provide a coherent foundation for exploring how teachers in Ghanaian basic schools adapt instructional strategies to support learners with visual impairments, and what systemic or contextual barriers affect their efforts.

Differentiated Instruction in Inclusive Education

Differentiated Instruction (DI) has been recognised as a responsive pedagogy that enables teachers to modify the content, process, and assessment of learning to meet various student needs (Tomlinson, 2001; Florian & Black-Hawkins, 2011). In inclusive settings, DI offers a mechanism through which all students, including students with disabilities, can access and engage with the curriculum on an equal basis. DI adheres to Universal Design for Learning (UDL), which seeks multiple means of representation, engagement, and expression (CAST, 2018). For the learner with visual impairment, such guidelines are addressed through delivering content in accessible formats such as Braille, tactile graphics, and audio-enriched materials.

Gheyssens et al. (2020) and Sharma et al. (2022) affirm that appropriate use of DI enhances learner agency, academic engagement, and academic participation. Nonetheless, it requires meticulous planning, adaptive instructional practices, and sensitivity to learners' strengths and weaknesses. These are amplified in environments where training opportunities and resources are limited.

Embracing DI for Students with Visual Impairment

Learners with visual impairment face unique challenges in general classrooms, including inability to access print materials and participate in visually oriented activities (WHO, 2018). Unless provided with adapted

instruction, such students risk academic and social isolation. DI offers a model for addressing such inequalities by promoting alternative ways of presenting information and demonstrating learning.

In low- and middle-income countries, however, the implementation of DI remains a significant challenge. Sub-Saharan African studies reveal that while teachers appreciate the value of DI, its implementation is ever undermined by inadequate training, absence of instructional materials, and non-availability of assistive technology (Owino, 2015; Mensah & Akyeampong, 2019). In Ghana, Kisanji (2015) reports that inclusive policies are not complemented by corresponding systems at school levels, resulting in improvisational adjustments instead of systematic instructional planning.

METHODS AND MATERIALS

Research Design

The research employed a convergent mixed-methods design in examining the application of differentiated instruction (DI) in inclusive classrooms for students with visual impairment. Quantitative data were collected using guided questionnaires, and qualitative data were elicited through interviews and class observations. The design allowed for triangulation, thereby enabling rich comprehension of not only the implementation of DI strategies but also the lived experience of teaching practitioners in using them (Creswell & Plano Clark, 2018). Quantitative data revealed trends in the use and availability of DI, while qualitative data expressed instructional practice, contextual problems, and implementation barriers.

Sample and Sampling Process

Fifty instructors participated from three inclusive basic schools in Ghana. They include Ghana National Basic School (Cape Coast), St. Joseph Integrated Basic School (Bechem), and Avakpedome Basic School. These schools were chosen because they were the first to adopt the Ghana Inclusive Education Policy (2015). Criterion-based purposive sampling was employed to ensure only teachers with direct experience of teaching students with visual impairment were included. This ensured depth and richness of insight. The sample size was sufficient to capture varied experiences without being too large for in-depth analysis.

Data Collection Instruments

Questionnaire

A guided questionnaire with a combination of closed-ended (5-point Likert scale) and open-ended questions was utilised. Closed questions asked about the type and frequency of DI strategies used (e.g., tactile materials, assistive technology), and open-ended questions asked about barriers and support needs. This combination allowed for statistical analysis and also more understanding of teacher experience.

Semi-Structured Interviews

Fifteen teachers, five from each participating school, were purposefully selected based on specific criteria. These included having a minimum of two years' experience working with learners with visual impairments, demonstrating regular use of differentiated instruction (DI) strategies, willingness to participate voluntarily, and representing a range of subjects and grade levels. The semi-structured design allowed for flexibility with consistent application across interviews. Inclusion in the discussion was instructional adaptations, difficulties with DI, and views on effectiveness.

Classroom Observations

Non-participatory classroom observations provided instant feedback on the use of DI. Instructional delivery, teacher-student interaction, and the use of adapted materials were tracked by the researcher. Observations were used to triangulate and support questionnaire and interview data.

Data Analysis

Quantitative data were analysed through descriptive statistics (means, percentages, frequencies) to present an overview of DI use and perceived impact. Qualitative data collected through interviews and observations were

thematically analysed through Braun and Clarke's (2006) six-step process. Synthesis of both data sets during interpretation allowed the study to offer a comprehensive and validated analysis of DI practice.

Ethical Considerations

The research strictly adhered to established ethical standards to ensure the protection and dignity of all participants involved. Informed consent was obtained from all participants after they were fully briefed on the purpose of the study, the procedures involved, and their rights, including the right to withdraw at any time. Participants' identities were protected through anonymisation, with names and identifiable information removed from all documents. The study posed no physical or emotional harm, as it focused solely on teachers' professional experiences and did not directly involve students. Participation was entirely voluntary, and respondents were given ample time to consider their contributions without any form of pressure or coercion. Additionally, all data collected were securely stored and used exclusively for academic purposes.

Importantly, ethical clearance for conducting research involving human subjects was obtained from the Ghana Education Service, by national guidelines for educational research.

RESULTS AND DISCUSSION

Demographic Profile of Respondents

Table 1: Distribution of Teachers by Years of Experience and School

Category	Frequency (n = 50)	Percentage (%)
Years of Experience		
3–5 years	33	66%
6–10 years	12	24%
More than 10 years	5	10%
School		
Ghana National Basic School	20	40%
St. Joseph Integrated Basic School	15	30%
Avakpedome Basic School	15	30%

Researcher's Field Survey (2024)

A majority of teachers (66%) possessed 3–5 years of experience, 25% 6–10 years of experience, and 10% more than 10 years of experience. This distribution resulted in diverse perspectives on the application of differentiated instruction (DI). The sample was rather diversified across the three inclusive schools: 40% from Ghana National Basic School, 30% from St. Joseph Integrated Basic School, and 30% from Avakpedome Basic School.

Frequency of DI Strategies

Quantitative findings revealed frequent use of verbal instruction with visual aids (M = 3.85), touch materials such as Braille (M = 3.45), peer tutoring (M = 3.55), and flexible grouping (M = 3.60). Use of assistive technologies was less (M = 3.05), which is likely because they were not available in adequate quantities or trained. The predominance of touch materials and peer tutoring reflects consensus with inclusive interventions responding to learners with visual impairment' sensory and social needs. Educators employ them extensively because they are adaptable and less resource-dependent. In contrast, the limited use of assistive technologies reflects ongoing limitations related to cost, infrastructure, and teacher preparedness, consistent with previous studies (Mensah & Akyeampong, 2019; Owino, 2015).

Table 2: Frequency of Different DI Strategies

DI Strategy	Never	Rarely	Sometimes	Often	Always	Mean	Standard Deviation
Use of tactile materials (Braille)	10%	15%	25%	30%	20%	3.45	1.23
Use of assistive technologies	15%	20%	30%	25%	10%	3.05	1.22
Peer tutoring	5%	10%	35%	30%	20%	3.55	1.10
Flexible grouping	10%	10%	20%	40%	20%	3.60	1.05
Use of verbal instructions with visual aids	0%	5%	30%	40%	25%	3.85	0.85

Researcher's Field Survey (2024)

DI Strategies by Teaching Experience

Cross-Tabulation of DI Strategies with Teacher Experience

The effect of teacher experience on the implementation and utilisation of differentiated instruction (DI) strategies was investigated through cross-tabulation. The results indicate that there are distinct patterns regarding how different levels of experience affect the implementation of various DI strategies.

DI Strategy	3–5 years	6–10 years	10+ years
Use of tactile materials (Braille)	35%	25%	40%
Use of assistive technologies	30%	25%	45%
Peer tutoring	30%	35%	35%
Flexible grouping	40%	30%	30%
Use of verbal instructions	45%	35%	20%

Researcher's Field Survey (2024)

Cross-tabulation revealed that teachers with over 10 years of experience were more likely to utilise assistive technologies (45%) and tactile materials (40%). Yet, peer tutoring and flexible grouping were more frequently practiced by teachers with 3–10 years of experience. More recent teachers (3–5 years) were particularly likely to experiment with flexible grouping (40%) and verbal instructions with visual aids (45%). These trends suggest that veteran teachers may have had more access to specialty training or materials, while early-career teachers may be utilising collaborative and adaptive methods founded on less exposure to advanced tools.

Teacher Training and DI Strategy Use

Correlation Analysis between DI Strategies and Teacher Training

A Pearson's correlation coefficient was utilised to examine the relationship between teacher training in inclusive education and the implementation of various DI strategies. The result, tabulated below, is the measure of the correlation between the degree of teacher training and implementation of specific strategies.

DI Strategy	Correlation with Training
Use of tactile materials (Braille)	+0.68
Use of assistive technologies	+0.59
Peer tutoring	+0.40
Flexible grouping	+0.45
Use of verbal instructions with visual aids	+0.60

Researcher's Field Survey (2024)

The results of the correlation analysis revealed a strong and positive relationship between teacher training and the use of differentiated instruction (DI) strategies. Notably, there were very high correlations with the use of

tactile materials (r = +0.68), assistive technologies (r = +0.59), and verbal instructions supported by visual aids (r = +0.60). In addition, moderate positive correlations were observed for peer tutoring (r = +0.40) and flexible grouping (r = +0.45), suggesting that teacher training also plays a significant role in encouraging these inclusive practices.

They highlight the significance of training in providing an enabling environment for the utilisation of resource-intensive techniques, such as Braille and assistive technology. Teachers with training in inclusive education were found to use such aids in instruction more frequently, agreeing with previous research (Gheyssens et al., 2020; Sharma et al., 2022). The lower peer tutoring and flexible grouping correlations infer that these approaches may be more natural or simpler to apply without explicit training. However, systematic professional development can still make them more effective. In the aggregate, results indicate that although teachers apply various DI strategies, their application varies with experience, training, and resource availability. Frequent usage of verbal prompting, tactile, and peer-tutored strategies is indicative of the responsiveness of teachers to learner needs on a limited level.

However, the under-use of assistive technologies reflects more general systemic issues, such as inadequate training, prohibitive costs, and shortages, issues also reported in global studies on DI in low-resource contexts (Owino, 2015; Kisanji, 2015). Also, the evidence supports the necessity of ongoing professional development in equipping teachers with the tools to effectively differentiate instruction for learners with visual impairment. Techniques like Braille and assistive technologies, although effective, require targeted support to be regularly applied.

Qualitative Data and Analysis

Implementation of Differentiated Instruction (DI)

Teachers in the three schools determined five key DI strategies to support students with visual impairment: assistive technologies, tactile materials, peer tutoring, verbal instruction with visual supports, and flexible grouping.

Tactile Materials (e.g., Braille, manipulatives)

Braille and tactile materials were utilised in all schools for literacy and numeracy. Teachers adapted materials like charts, maps, and worksheets to provide a multisensory learning environment. "*We create Braille worksheets and tactile manipulatives so that students can engage with the material*," an ABS teacher noted.

Assistive Technologies

While assistive technologies such as screen readers and audio devices were used, their use was not widespread. Teachers shared devices or used outdated software, which took away from effective utilisation. "*We do have tablets and screen readers, but not all students have access*," a GNBS teacher explained.

Peer Tutoring and Collaborative Learning

Peer tutoring was done on a large scale, fostering collaboration and inclusivity. Its effectiveness, however, depended on training and the willingness of peers. "*It works best when peers are trained; otherwise, it can be ineffective*," an ABS teacher remarked.

Verbal Instructions with Visual Aids

Teachers routinely supplemented detailed verbal explanations with visual or tactile resources to help students with abstract and spatial concepts. "*In science, I draw diagrams and explain them in words so blind students are not at a disadvantage*," an SJIBS teacher explained.

Flexible Grouping

Flexible grouping was employed in all schools to adjust instruction based on student needs. Teachers grouped students with classmates who could help or created activities for different ability levels. "*We group by learning*

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needs so that learners with visual impairment receive help but also work independently when they are able," reported one GNBS teacher.

Challenges in Implementing DI

Despite a commitment to inclusive teaching, four major challenges were confronted by teachers:

1. Resource Limitations

The lack of Braille materials, tactile aids, and functional assistive technology was a concern. "*We lack sufficient Braille textbooks and up-to-date computers. This slows down the learning process*," clarified an SJIBS teacher.

2. Insufficient Training

The majority of teachers lacked specialised training in Braille or assistive technology but relied on informal learning. "*Most of us learned by trial and error. We need proper training*," emphasised a GNBS teacher.

3. Diverse and Large Classrooms

Managing multiple disabilities in large classrooms stretched teacher capacity, and ongoing DI was difficult. "*It's overwhelming with so many diverse needs in one room*," said an ABS teacher.

4. Limited Peer Support Systems

While peer tutoring was utilised, most non-disabled peers lacked the skill or sensitivity to assist appropriately. "*Peer support works only when students know how to help*," said an SJIBS teacher.

Support Needs for Effective DI

To improve DI practices, teachers are required:

1. Specialised Training

Teachers adamantly asked for ongoing professional development in Braille literacy, assistive technology, and inclusive lesson planning. "*Workshops on practical strategies would help us better serve our students,*" reported a GNBS respondent.

2. Provision of Resources

Participants emphasised the need for Braille textbooks, audio devices, and contemporary assistive devices. "*We need more materials, Braille paper, audio books, and devices that work*," noted an ABS teacher.

3. Professional Collaboration

Half of the respondents appreciated collaboration with special educators and school psychologists to enhance inclusive practices. "W*e need a support network. It's hard to do this alone*," explained a teacher at GNBS.

Briefly, Tactile aids and peer tutoring were the most accessible DI strategies, but training and resources were inconsistent. Assistive technologies, while effective, were underutilised due to expense and maintenance concerns. Specialised training and more resource support were urgently required by teachers to facilitate their ability to use DI on a regular basis. In-school collaborative models were recommended to build capacity and promote sustainable, inclusive practices.

DISCUSSION OF FINDINGS

The study examined the implementation of Differentiated Instruction (DI) in three inclusive primary schools in Ghana. The findings reveal both widespread use of DI strategies and persisting challenges due to resource limitations, training gaps, and classroom diversity.

Incidence and Patterns of DI Practices

Both quantitative and qualitative data revealed that DI was used extensively, but not with uniform implementation across the three schools. The most used strategies included peer tutoring, tactile materials (specifically, Braille), flexible grouping, and verbal instruction with visual supports. The use of assistive technologies was less prevalent, primarily due to a lack of access. These findings align with arguments by Tomlinson (2014) and Fuchs and Fuchs (2006) that the success of DI is also dependent on the availability of instructional materials and tools, not only pedagogical content knowledge. Teachers in Ghana National and St. Joseph schools used Braille and tactile materials daily. Avakpedome Basic teachers reported incidental access to these materials, which limited daily DI application.

Peer Tutoring and Collaborative Learning

Peer tutoring was one of the most popular and successful DI strategies across all the schools. Sighted students helped their blind and partially sighted classmates with reading, note-taking, or explanation. It promoted inclusion and compensated for the lack of technology access.

This supports Rosenshine and Meister (1994) and Cohen and O'Connor (2017), who argue that peer tutoring facilitates academic involvement and social inclusion for students with disabilities. Teachers also brought out the social-emotional benefits of this strategy, especially in cases where teacher capacity is overwhelmed.

Use of Assistive Technology

Assistive technologies (screen readers, Braille printers, audio devices, etc.) were used sporadically. Teachers valued these tools but reported extreme restrictions in availability and functionality. Some utilised shared or outdated equipment, which tended to interfere with learning continuity. This corroborates the findings of Al-Azawei et al. (2016) and Sapp (2012), who emphasise that assistive technologies are crucial to inclusive education but require adequate infrastructure and teacher training to be effective.

Flexible Grouping and Verbal Instruction

Flexible grouping was employed to differentiate instruction according to student needs. Teachers built groups around students' ability levels or needs for particular support so that individualised attention could be addressed within cooperative groupings. Similarly, verbal instruction augmented with tactile or visual supports helped to address content accessibility gaps. Teachers related that they applied this strategy particularly in science, geography, and math, which are subjects with high spatial and abstract demands. These strategies echo Tomlinson's (2001) advocacy for flexible grouping and varied presentation in DI, and Gajria et al.'s (2007) findings that flexible grouping in classrooms enhances peer interaction and instructional quality in inclusive classrooms.

Key Implementation Challenges

Despite best efforts, three main barriers emerged:

a. Resource Constraints

The majority of teachers indicated a lack of Braille materials, manipulatives, and functional assistive devices. This presented a barrier to providing adapted instruction on a regular basis.

This agrees with Swanson and Deshler (2003), who found that limited access to instructional materials is a substantial barrier to DI in low socioeconomic school settings.

b. Insufficient Training

Though most of the teachers had undergone general inclusive education training, they lacked specialist training in the use of Braille, assistive technology, and adaptation of content for learners with visual impairment. This

aligns with Florian and Black-Hawkins (2011), who emphasise that specialist training is necessary to enhance inclusive teaching.

c. Overcrowded Classrooms and Managing Diversity

Teachers struggled to cater to students with various disabilities, including visual, hearing, and intellectual disabilities, within large classes. Workload and time pressures affected the consistency and level of DI implementation. This supports Zigmond (2006), who identified classroom diversity and size as considerable obstacles to differentiated pedagogy in inclusive education.

d. Inconsistent Peer Support

Though peer tutoring was widely used, its quality varied according to the willingness and sensitivity of non-disabled peers. Teachers indicated a lack of enough peer training programs to support this initiative. This validates Cohen and O'Connor's (2017) call for structured peer mentoring in an attempt to create consistency and impact within inclusive classrooms.

Coping Strategies and Adaptive Practices

In response to the challenges they faced, teachers employed a range of practical strategies to support inclusive teaching. Peer tutoring emerged as a key approach, often serving as a substitute when assistive devices were unavailable, thereby helping to bridge gaps in access for learners with visual impairments. Teachers also expressed a strong desire for collaborative support, emphasizing the need to work alongside special educators, psychologists, and fellow teachers to enhance lesson planning and delivery. Additionally, many advocated for increased access to resources and training, particularly in the use of assistive technology and Braille instruction, as well as the provision of essential teaching aids. These strategies highlight the creativity and resilience of teachers operating in low-resource settings. Despite ongoing challenges, their adaptability reflects a significant potential for advancing inclusive education, particularly when supported by broader systemic investment in professional development, educational technology, and inter-professional collaboration.

CONCLUSION

This study established that while teachers of Ghana National Basic School, St. Joseph Integrated Basic School, and Avakpedome Basic School are actively employing differentiated instruction (DI) strategies to support learners with visual impairment, they are significantly hindered by a lack of resources, inadequate training, and insufficient systemic support. The findings point to the urgent necessity for investment in assistive devices, Braille materials, and teacher training to facilitate improved implementation of DI and inclusive learning outcomes. These findings have important implications for stakeholders committed to building inclusive education in Ghana and other resource-scarce contexts.

Implications for Policy and Practice

To strengthen inclusive education for students with visual impairment, there has to be a balanced method in which both Braille and digital approaches are utilised. Policymakers and educators should ensure that both are delivered through curriculum coverage and supported through teacher training and resource provision.

• The need for ongoing professional development opportunities in inclusive pedagogy, Braille competence, and harnessing assistive technologies in optimum manners is highly imperative. These programs should give teachers immediate on-the-job proficiency to differentiate instruction based on student needs.
• Provision of Assistive Resources: Ensuring access to Braille books, screen readers, and tactile learning devices is paramount. Equitable distribution mechanisms, especially for low-resourced schools and rural schools, play a key role in bridging the gaps in access.
•DI should be included in national curriculum standards as a core principle of inclusive education. School systems should institutionalise collaboration between general and special educators to build inclusive teaching practices.

RECOMMENDATIONS

On the strength of the research, the following is recommended:

1. The Ghana Education Service and the National Council for Curriculum and Assessment must integrate DI strategies for students with visual impairment into the national curriculum. Teacher resource packs must contain exemplars of lesson adaptation and assessment.
2. Continuous training should focus on inclusive pedagogy and assistive technology usage. Training modules should be experiential, using Braille, tactile aids, and computer-based platforms.
3. The Ministry of Education and development partners should accord very high priority to the procurement and equitable distribution of assistive devices, such as Braille books and screen readers. Budgetary special allocations must be reserved for underfunded schools.
4. General and special educator collaboration and formal peer tutoring programs should be encouraged by school leadership as part of inclusive classroom practice.
5. Establish systems for monitoring school-wide implementation of DI. Collect data on student performance, resource use, and instructional approaches to guide policy refinement.

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Conflict of Interest Statement

The author declares no conflict of interest. The research was conducted independently, and no financial, personal, or professional relationships influenced the outcomes of the study.

Data Availability Statement

The data supporting the findings of this study are not publicly available due to confidentiality agreements with participants and ethical guidelines set by the Ghana Education Service. However, anonymized data may be made available upon reasonable request to the corresponding author, subject to approval by the appropriate ethical review board.

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