# An analysis of instructional accommodations for students with visual impairment in Sirigu Senior High School in Ghana

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## Abstract

The qualitative case study explored the instructional accommodations provided for students with visual impairment in Sirigu Senior High School in Ghana. Data was obtained from a sample size of 36 participants. Focused group semi-structured interviews and observation were the instruments used to collect data. The data was coded and analyzed using the thematic approach. Trustworthiness, of the data was ensured through member checking and reflexivity. Results of the study indicated that teachers of Sirigu Senior High School employ interactive teaching strategies to teach. However, the school environment and most facilities were not adapted to the needs of students with visual impairment which made it difficult and unsafe for the students to move about and to freely access information. It was recommended that teachers in the school should employ teaching strategies like, concreteness of experience, unifying experience, and learning by doing and task analysis to teach students with visual impairment. Also, management of the school and the teachers should ensure that they prepare and adapt every learning environment in the school to suit the needs of students with visual impairment to enable them move freely and independently to access information.

*Keywords:* analysis; accommodations; instruction; visual impairment; general education

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## 1. Introduction

The qualitative case study explored the instructional accommodations provided for students with visual impairment in Sirigu Senior High School in Ghana, so as to establish whether or not such accommodations enable students with visual impairment to learn effectively, because the sense of sight is one of the primary distance senses which plays a major role in an individual access of information for learning. According to, Dogbe (2005) vision is the faculty through which one perceives the visible external world to obtain vital information to be able to make informed decisions about their lives. Therefore, visual impairment would have negative implications on one's learning, because vision is the main channel by which an individual perceives the world. Most things people learn are through the sense of sight. Essentially, some concepts are learnt incidentally through observation and imitation without one being taught. However, without vision one becomes disadvantaged, and would, therefore, need to be taught methodically and sequentially to enhance their understanding of concepts. The degree of vision loss determines the degree of adjustment and the type of instructional accommodations that would be required to enhance learning (Best, 1992).

Accommodation in this study refers to changes made in the teaching and learning processes to suit the learning needs of the learner with special educational needs. The changes could be done on the way the student is taught or tested without changing the standard of learning or performance as well as the requirements that the student need to meet. In this study, accommodation has been contextualized in the field of instruction to mean the changes that are made to help students with special need overcome or work around their disability during the teaching and learning process (Hayford & Yekple, 2015). Some examples of instructional accommodation in the education of students who are visually impaired therefore include the provision of extra time for students to complete assignments, providing students with braille or large-print materials, students with visual impairment having their assignments or tests broken up into smaller parts, or completing assignments in a quiet setting away from other students (America Foundations for the Blind, 2018).

Accommodation does not change what the student is expected to know; the differences are about scheduling of the instructional time, assessment procedures, the learning environment, materials, as well as the instructional activities based on the unique needs of the student (Lewis & Doorlag, 2010; Hayford & Yekple, 2015). Ghana adopted the inclusive education policy in 2015 after the Salamanca Accord in 1994. The adoption of the policy is purported to educate all learners with special needs in the general school system and support them to learn alongside their peers in the neighborhood educational institutions. Sirigu Senior High School has been educating students with visual impairment alongside their sighted peers since 2006. The initiative of Sirigu is in line with the Ghana Government Education Strategic Plan (2010-2020) and the Government of Ghana Inclusive Education Policy (2015), which are designed to ensure the achievement of quality learning outcomes for all learners through appropriate curricula, organizational arrangements, appropriate strategies for teaching, resource use through partnerships with all educational stakeholders and for the improvement of the well-being of every learner.

Fundamentally, for students with visual impairment to succeed in the general education system, much is expected from teachers. Teachers working one-on-one with the students or providing students the opportunity to present their answers in alternative ways would enhance their understanding of the concepts taught. Again, providing learning materials in appropriate media also help to compensate for the loss of vision for the visually impaired. Essentially, adapting the learning environment removes barriers and allows independent movement of students with visual impairment thereby making information accessible to them. The environment impacts either positively or negatively to the way students learn. Adaptations to the environment can be made to the physical

environment and the learning facilities like the classrooms and furniture. These adaptations promote independent movement of students with visual impairment and makes information accessible to them, which eventually enhances their achievement.

However, in most Senior High Schools in Ghana where both students with and without visual impairment are educated, it appears the instructional processes are not accommodated for the students with visual impairment therefore providing them with little opportunity to access information and to effectively participate in the teaching and learning processes. Studies carried out by Pontomprom (2013), Owusu-Amoako (2015), Baah (2016), Vuuro (2016), and Worlanyo (2012) on the education of students with visual impairment in Ghana were on the general inclusion and the support students with visual impairment receive in the general education classroom settings. The different studies respectively, established the barriers and inherent challenges the students face in the general education setting but did not highlight how instructional accommodations as essential components in the education of students with visual impairment are provided for the students especially in Sirigu Senior High School. Therefore, very little is known about the instructional strategies' teachers employ as well as how the school environment has been adapted for students with visual impairment in the school to facilitate their learning. This study therefore, sought to explore the views of teachers, students with visual impairment, and resource teachers in the school on how instructional accommodations are provided for students with visual impairment.

## 2. Results discussed with previous literature

### 2.1 Teachers' instructional strategies

The analysis of the data collected from the teachers and students respectively identified elements that showed the instructional strategies teachers employ to teach students with visual impairment in Sirigu Senior High School. The comments of the teachers indicated that they have been using different methods to teach their students depending on the situation, because they believe students with visual impairment have diversified learning needs and so require different methods of teaching to enable them learn effectively.

On teaching methods which involve students with visual impairment in class, the teachers acknowledged that there is no single method of teaching to teach students with visual impairment because they demonstrate different learning needs. The teachers considered the questions and answers method and the discussion method as most appropriate methods of teaching in general education classrooms where students with visual impairment are educated because these methods according to the teachers make students active during lessons. In line with this finding, Cameron (2014) pointed out that students with visual impairment require positive interactions that meet their needs to enhance their achievement in learning. What it means is that, teachers need to have an understanding of the needs of students with different disabilities to facilitate their learning needs.

This confirms Mmbaga (2002) statement that teachers need to move away from the traditional teaching approaches to modern ones by making their teaching interactive. Questions and answers are useful in revealing learning difficulties in conceptual experiences of students with visual impairment. The teachers' comments points to the fact that they considered the question and answer method as an important method to be used for teaching students with visual impairment. Additionally, observation of three lessons teachers in class showed that teachers use the question and answer method. This suggests that, what was said by the teachers during the interview is what they practice in class. The teachers noted that it is simple to use the question and answer method during teaching. There was evidence of accommodation in the teachers' methods. One of the teachers observed, used oral questions to get oral answers instead of using written ones. Using oral questions and responses instead of written ones can be a good approach of adapting questions. This statement harmonies with what Spungin (2002) stated that assessment tools need to be adapted if they are to work appropriately for students with visual impairment.

Similarly, from the views of the students with visual impairment, about how they are involved in the teaching and learning process in class, the students' responses revealed that most teachers involved them in discussions during teaching and this corroborate what the teachers mentioned in their response. Though the students said they were involved, few students held an opposing view about the way their teachers involve them in class. They commented that the teachers' way of teaching does not favor students with visual impairment. Regarding this, Lowenfield (1973) asserted that teachers should provide opportunities for students to integrate parts into wholes and facilitate interactive teaching and learning through the use of oral questions to stimulate discussions. Besides, it was evident from the comments of the teachers and responses of the students that students with visual impairment are supported in class during the teaching and learning process through the use of alternative ways. For example, the blind is supported with braille materials while; those who are partially sighted are supported with enlarged print. The findings of the study again correspond with Owusu-Amoako's (2015) study, which found that resource teachers provide additional instructional support in the form of braille writing, transcription of class work, and enlarged prints to help meet the needs of students with visual impairment.

Also, the teachers' comments showed that they use and encourage cooperative learning among the sighted students and students with visual impairment. According to Mitchell (2008) cooperative learning allows students to help each other to carry out and accomplish different tasks particularly in mixed ability groups, especially in third world countries with large class sizes. In those situations, the visually impaired are helped by sighted students to organize their works, find correct pages and repeat teachers' instructions and guidelines (UNESCO, 2001). Additionally, the analysis of the teachers' responses made clearly indicate that teachers support students with visual impairment by using alternative assessment procedures to assess them. The teachers again mentioned that they give students with visual impairment written questions while exempting them from some forms of questions. For example, the teachers stated that students with visual impairment are allowed to respond to questions involving calculations, drawing, in an alternative format. The students also acknowledged the teachers support for them in class during teaching and learning. However, the students were of the view that most of the support they receive from their teachers is given to them by the teachers through the resource teacher. This finding confirms Owusu-Amoako's (2015) study, which found that teachers introduced adaptations in the curriculum while resource teachers provided additional instructional support in the form of braille writing, transcription of class work and enlargement of prints which helped to meet the needs of learners with visual impairment.

Again, the teachers' comments revealed commonness of frustrations and challenges regarding the assessment processes of students with visual impairment. They mentioned the challenge of their inability to read and to mark braille scripts of students with visual impairment, the slow pace of work by students, and the issues of reading to students with visual impairment during assessment processes. As a result, they rely on the resource teachers to be able to do some of the things, which mostly delay the processes. This finding confirms what Peters (2003) stated that teaching in an inclusive setting is not easy, since the teaching and learning process needs to be more individualized as compared to general classrooms, where there are little diversities among students. Despite the teachers' frustration, it was observed that they fairly do their best in assessing students with visual impairment and to ensure their active participation in the teaching and learning processes. The teachers had employed alternative medium of assessments to assess students with visual impairment. It was noted that different mechanisms such as individual work, group work, quizzes and end of term examination were employed to assess the students.

Also, about how students with visual impairment would describe how they are assessed, the students noted that the process is a good one because, even though they are always given the same questions like their sighted colleagues, they are given additional time of the allocated time for the task and they write at the resource center. The additional time given to students with visual impairment is in line with what Best (1992), Spungin (2002), Salisbury (2008), and Mastropieri and Scruggs (2010) asserted; that, reading and writing in braille, as well as accessing information from tactile sources for students with blindness, consumes a lot of time and therefore, it is

internationally recommended that half of the time for students with low vision, and twice as much be given to students with blindness. In confirming, what the teachers commented on earlier, the students noted that there is the need for the additional time for them because working with braille is quite difficult and if additional time is not provided to them, it is likely that they will not finish or complete the task given to them. They added that brailling is quite difficult, as such it slows down the speed of work (Best, 1992; Spungin, 2002; Salisbury; 2008; Mastropieri & Scruggs, 2010).

It was also made obvious from the observation that teachers find it difficult in meeting the needs of students with visual impairment in the general education classroom settings, since most of the time teachers use teaching methods common to all students. This finding corresponds with Herold and Dandolo's (2009) findings, those students with visual impairment experienced inequitable learning situations, because the teachers used and adopted general inclusion materials for learning that were not favorable to the special need student. However, Kemp and Carter (2002) and Lee, Wehmeyer, Soukup, and Palmer (2010) argued that studies conducted on teacher–student interactions have consistently revealed that students with special needs receive a greater proportion of one-to-one teacher attention than do students without disabilities receive.

Though, this argument was raised, Cameron's (2014) study found out that teachers struggled with the dilemma of which student need the adapted instruction and who does not, so that they could balance their attention towards ensuring that the class as a whole made adequate progress. It can therefore be said that, this was the reason for the observed situation, of the teachers using common strategies to teach all students in Sirigu Senior High. Again, the non-participation and involvement of students with visual impairment can also be interpreted as the teachers' lack of knowledge of teaching in inclusive classrooms was the reason for their use of the common methods. This finding is consistent with Peters' (2003) assertion that teaching students with visual impairment in general education classrooms is not easy; it is a challenge since teachers need to focus their teaching on individuals, aiming at meeting their individual specific needs.

In sum, the results showed that teachers employ interactive teaching strategies to teach students with visual impairment which enable these students participate in most classroom activities in the school. This supports Vygotsky (1978) social constructivist theory which underscored the need for peers, teachers, parents and community members to work collaboratively to help the learner master concepts which they would not have known or understood if they were learning on their own.

*2.2 Environmental Adaptations*

Regarding how the school environment was adapted to accommodate students with visual impairment in the school, the responses of the interviewees indicated that the school environment and its facilities were not adapted to meet the needs of students with visual impairment. Comments from the teachers disclosed that most facilities in the school are not visually-impaired-friendly. They mentioned poor arrangement of the classroom furniture, open gutters and potholes, steep stairs to most learning facilities, and inaccessible notices which sometimes make it difficult for the students to move about freely and to access information. They added that students sometimes fall off the stairs and in the open gutters and potholes and this affects students psychologically. This finding is similar to Vuuro's (2016), which discovered that the physical environment in Wenchi was not disability friendly. However, contrary to the present findings and that of Vuuro's findings was Samson (2011) that the needs of students with disabilities were being met as students were able to physically access library facilities with little or no difficulties.

Furthermore, the respondents reported that signs and doors in the school were not labelled in braille for students with visual impairment to also access information on their own. This compels students with visual impairment to depend on their sighted colleagues for some information, which in the absence of the sighted colleagues; they miss very important information and events such as lesson time, classes, change of rooms for lessons and important announcement that concerned them. This finding, therefore confirms Knouwds's (2010)

study, which discovered that students with visual impairment are physically integrated in the mainstream classes, they are not yet truly included, in the sense that the physical environments within the classes and school grounds are not truly accessible to students.

Again, the analysis pointed out that the stairs to some classrooms are steep thereby putting the lives of students who are visually impaired in danger. Similarly, the students confirmed what their teachers, noted that the physical environment itself is full of potholes and open gutters, which if not fixed will make them fall. These findings of the study confirms Boateng's (2007) study, which found that students found it difficult to move around freely in the environment due to barriers such as stones, potholes and open gutters in the schools, as well as the findings by Worlanyo (2012), that students find it difficult to move about in the school owing to potholes on the school's road network and many of them who move about alone thereby gets lost or fall into the open gutters.

The students however stated that there has been an improvement in the environment over the years. Form 3 students expressed that the environment has been improved as compared to the past two years. This implies that the awareness level of people in the school about students with visual impairment has been raised and efforts made to improve the environment and make it accessible for students with visual impairment. This finding contradicts those by Worlanyo's (2012), that since 1970, the infrastructure has not seen any major maintenance work on the old structures to make them user-friendly, more accessible and also lessen the challenges faced when moving about on campus by students with visual impairment.

Regarding the assistance students with visual impairment receive from teachers and the sighted students to access the environment, it was noted that students with visual impairment benefited from a variety of support from teachers and their sighted colleagues, depending on the needs of the students. These supports included guidance to the dormitory, to the classroom, to the resource center, notice board, sitting places in the classroom, and other important school gatherings. However, it was observed that much more support for students with visual impairment came from sighted students than from the teachers. This however contradicts conclusions by Worlanyo's (2012) that interaction between students with visual impairment and sighted students in major school gatherings such as morning assemblies, dining hall sessions and Saturday entertainment programs, clearly portray an unfriendly relationship between the two groups of students.

Furthermore, it was noted that apart from the general orientation given to all first years, there was no orientation and mobility services for first year students with visual impairment in order to enhance their independence in the school. Therefore, students with visual impairment were relying on the experiences of previous orientation and mobility training they had from their basic school, as well as resource room support and their sighted colleagues to be able to move alone. This suggests that orientation and mobility skills training, though very critical in the lives of students who are visually impaired, is not addressed as it should for students with visual impairment in Sirigu Senior High School. However, the British Columbia Ministry of Education (2008) and Student Support Services (2001) advocate that before the student is enrolled/admitted into the school, a familiarization visit to the school would help them familiarize themselves with their new surroundings. Meanwhile, Palmer (2005) also commented that schools should provide opportunities for students who are visually impaired to feel safe and secure in their school and with a substantial amount of a sense of belonging. This is in line with Nasiforo's (2015) study findings which revealed that majority of the students with visual impairment in two colleges in Rwanda were not trained in orientation and mobility and did not have white canes.

On classroom furniture arrangements, it was revealed that senior students - Form 2 and Form 3 students do not face any challenge regarding that. Accordingly, their seats are always placed in the front row of their classes which makes it easier to locate them when they get into the class. However, Form 1 students faced challenges in the arrangement of their desks in class. They noted that the sighted students in their evening studies disarrange the furniture therefore making it difficult for them to locate their tables and chairs when they get into the class in the morning. It could be noted from the analysis of the expressions of the students that management of the school

either did not sensitize the first-year sighted students or the school does not have enough furniture to satisfy all students. Various authorities however have argued that in order to successfully achieve positive learning outcomes for students with visual impairment it is necessary to consider the classroom environment. Accommodation in the classroom environment makes the most of opportunities for students with visual impairment to learn alongside their sighted peers (Allan, 2002; Pagliano, 2005; Palmer, 2005; Student Support Services, 2001).

The discussion again, confirmed that students with visual impairment, although, have the mobility cane, they were not using it. The analysis concluded that some students lack the skills to use it while others feared they might receive mockery from their sighted peers when they use it. This finding is contrary to Worlanyo's (2012) study results which found that there was unavailability of white canes for the students to use in trailing gutters or detecting objects as they move about. Worlanyo findings could also be interpreted to mean that the students had the canes but did not want to use them as is the case in Sirigu.

From the resource teachers' point of view, educating students with visual impairment in an unfriendly environment can even impair the student the more and that may not provide them the opportunity to acquire academic knowledge and skills they were supposed to acquire. It was pointed out that the inaccessibility of the school environment and its facilities to the visually impaired poses a challenge in their movement and in accessing information from these facilities. This finding confirms Hatlen (2005)'s contention that general education school environments themselves can be a barrier for students who are visually impaired if the environment is not adapted to suit their specific needs.

Apparently, the physical infrastructure or most facilities of the school were not easily accessible and negative to student with visual impairment. The resource teacher stated, and added that the safety of students with visual impairment was compromised. This is in line with Acheampong's (2017) finding where students with visual impairment were not pleased with their experiences relative to access to the physical infrastructure and furniture of the university library. Accordingly, the students had difficulty accessing the library's building and furniture. Contrary to the present finding and Acheampong's finding, Samson (2011) found that the libraries had multiple entryways with ramps, elevators, adjustable computer tables, universal adjustable keyboards, accessible study desks, stand-up study or computer tables, adjustable seating and aisles for easy movement.

On adaptations made to the physical environment, the resource teachers stated that the physical environment and its facilities where students with visual impairment and their sighted colleagues both interact with to access information for learning were not adapted and mostly not suitable to the needs of students with visual impairment. However, the school has started and still is in the process of converting all stairs of major buildings of the school to ramps to make them accessible to all students with disabilities. Back at the dormitories too students with visual impairment are given beds only in the ground floor to avoid any trouble of ascending/descending any stairs to their rooms. This corresponds with the EFA Global Monitoring Report (2008) which states that "one of the most important requirements for sustained improvement in education quality is an adjusted learning environment" (p. 20), and also in line with Johnsen and Skjorten (2001) who asserted that, Environmental adaptation can be very important for the provision of learner-friendly or learning-promoting environment.

## 3. Method

### 3.1 Research approach

In social research, researchers are bound to make choices with regards to the most suitable method to be used that will enable them to collect rich data to answer the research questions. A research method is defined as "simply a technique for collecting data. It can involve a specific instrument, such as self-completion questionnaire or a structured interview schedule, or participant observation whereby the researcher listens to or

watches others" (Bryman, 2008, p. 31). In my study, I reasoned in line with the ontological position of the constructionists which asserts that "social phenomena and their meaning are continually being accomplished by social order" (Bryman, 2008, p. 19). This implies that, social phenomena and realities are produced and achieved through a constant state of interaction and revision. Again, the constructionists also argued that researchers' findings or conclusions of the social world (reality) can only be regarded as a construction rather than what is definitive.

Contrary to what is pertained in quantitative research which is based on the objectivist ontological position, they assert that, social phenomena and their meanings have an existence that is independent of social actors (Bryman, 2008). This means that the social categories that we interact with in our day to day activities are separate from their actors, which therefore depict reality as external and research to be driven by theory. Constructionism however, impresses upon the social researcher to consider that social reality is an on-going process being accomplished by the social actors rather than reality being seen as external. Since my study was aimed at constructing knowledge, I have sought to understand how students with visual impairment who are educated in the Ghanaian general education school settings are provided with instructional accommodations to enable them participate effectively in the teaching and learning processes.

So, having seen knowledge as something been constructed and an on-going process being accomplished by the social actors, a qualitative research design was deemed appropriate in line with the purpose of the study based on interpretivist epistemological assumptions. Interpretivism according to Bryman (2008, p. 366) "stresses on the understanding of the social world through an examination of the interpretation of that world by its participants". In order to be able to explore how instructional accommodations are provided for students with visual impairment, the researcher employed a qualitative approach to enable him collect information from teachers, students with visual impairment, and resource teachers in the Sirigu Senior High School, in order to get an understanding of their perspectives as well as have a detailed account of how instructional accommodations are provided for students with visual impairment in the school (Ary, Jacobs, & Sorensen, 2010).

Moreover, qualitative approach was considered relevant due to its nature of providing data from the respondents in the natural settings (Gall, Gall, & Borg, 2007). The natural setting for this case was Sirigu Senior High School where students with visual impairment are educated. Since different people hold different opinions and views about the world (Creswell, 2009; Johnson & Christensen, 2012), it was ideal to get these different individuals' views and opinions on how instructional accommodations are provided for students with visual impairment. Due to its characteristics of providing detailed information from the research participants, which is also a characteristic of a qualitative research, an embedded case study design was considered useful in this study (Gall et al., 2007). An embedded qualitative case study was employed to collect information from teachers, students with visual impairment, and resource teachers of Sirigu Senior High School, in order to get an understanding of their perspectives as well as have a detailed account of how instructional accommodations are provided for students with visual impairment in the school.

### 3.2 Sample and sampling technique

The study analyzed and drawn conclusion on the views of 14 general education teachers and 2 resource teacher and 20 students with visual impairment, who provided information on how instructional accommodation are provided for students with visual impairment in Sirigu Senior High School in the Upper East Region of Ghana. The participants were sample from a total population of 95 participants comprising 75 teachers (69 male) and (9 female) and 20 students with visual impairments (11 male) and (9 female). Participants consent was sought before involving them in the study. Confidentiality was assured with regards to information participants gave. Purposive and census sampling techniques were used for selecting the respondents for the study. The teachers and the resource teachers were purposively sampled while students with visual impairment were sampled using the census technique. Cohen, Manion, and Morrison (2007) noted that, in purposive sampling, the researcher handpicks the cases to be included in the sample on the basis of their judgment. The census approach

was used to select the students with visual impairment. A census sampling technique, according to Creswell (2012), permits conclusions to be drawn about the entire population. The census technique was used as the sample size selection technique for the students with visual impairment because the number was small and had simply reported the descriptive statistics of the entire population of students with visual impairment in the school.

*3.3 Material*

Two instruments were used in collecting the data. In the interview, oral questions were used to elicit responses from the interviewee. Using the semi-structured interview method, it was possible for the researcher to make follow up to answers, as the respondents were available to clarify immediate concerns and ambiguity of statements of responses (Ary et al., 2010; Gall et al., 2007; Gay, Mills, & Airasian, 2009). Participants responses were tape-recorded, using the Olympus LS-10 Linear PCM recorder to maintain the originality of the data, The recording was also done because it ensured the continuity of the interview, and speeded up the interview session and thereby saving time (Cohen, Morrison, & Manion, 2007; Gall et al., 2007; Gay et al., 2009).

*Procedure -* Participants were interviewed face-to-face in focus groups in six (6) different times. The interview questions were prepared based on the key themes raised in each of the four (4) research questions. Three (3) days were used for the interview. The interview was tape-recorded and notes taken down as well to aid in the analysis. The duration of the interview session for every focus group ranged from 35minutes to 40minutes. Teachers were put into two different focus groups of seven (7) each for the interview. The students were also put into three focus groups of class basis while the resource teachers had also formed one group. One teacher group was interviewed with one class group every day, while the last class was interviewed on the third day with the resource teachers' group.

The researcher also assumed the role of non-participant observer, to observe three (3) different lessons from three (3) teachers. The researcher assumed this role because of the limited time for the researcher to engage with the teachers in the school (Bryman, 2008). The observation was made possible by the use of an observation schedule which the researcher used to guide and maintain the focus of the observed behavior of teachers during teaching in class. The behaviors observed from teachers were recorded through checking the corresponding behavior in the observation schedule immediately as the behaviors had occurred. Interim or preliminary data analysis was done after every interview session to check if there was critical information from the study that was missing. When the process of data collection was over, raw data were then transcribed. The interview notes, observational notes, and audio recording were transformed into texts (Johnson & Christensen, 2012). The researcher analyzed and reported the results based on the occurrence of themes in the data collected from the field (Braun & Clarke, 2006).

*Trustworthiness of data -* In order to ensure trustworthiness of this qualitative study and to represent the realities of the research participants as accurately as possible, as a way of evaluating the worth of the study, member checking and reflexivity were used to ensure the credibility of the study (Guba & Lincoln, 2005). Member checking involves whether what is recorded by a researcher matches with what the participants said or did, during the interview or observation sessions. Reflexivity on the other hand is a self-reflection of one's own biases, recognizing these biases and eliminating them from the study (Ary et al., 2010; Bryman, 2008). The researcher also used method triangulation. Hence, the used of interview and the observation for the data collection. Reflexivity or self-reflection of my own biases was done, as this was considered important in this study. The intention was to remain as objective as possible in the collection and interpretation of the data. Although the researcher used two methods of data collection instruments, the member checking strategy was considered appropriate for ensuring the trustworthiness of the interview data. I asked the interviewees to review the interview data to check whether what was recorded represented what they said during the interview. Reflection on my own biases was also done several times to ensure neutrality, and avoidance of those biases in the data collected, and in the analysis processes. Again, in order to ensure the truthfulness of the study the

findings were reported as honestly and as straightforward by the use of direct quotes from the research participants as well as participants' verbatim statements to maintain the original content (Gall, et al., (2007).

### 3.4 Data analysis

The raw data collected from the field did not give the researcher much meaning. So, it was important to analyze the data by describing and interpreting these raw data, in order to obtain the meaning and views of the respondents (Bell, 2005). The analysis began immediately after the first data was collected in order to discover if there was some relevant information that was missing. This gave the researcher the chance to review, and restructured the tools for the data collection in order to obtain information that reflected the research questions, and also develop a deeper understanding of the phenomenon under study. This process of alternating data collection and data analysis in qualitative studies is known as interim analysis (Miles & Huberman, 1994). In this study, interim analysis of the data was unavoidable. This interim or preliminary data analysis was done after every interview session to check if there was critical information from the study which was missing. When the process of data collection was over, raw data were then transcribed. Transcription is the process of transforming interview notes, observational notes, and audio recording into texts (Johnson & Christensen, 2012). The data was transcribed using thematic analysis. Thematic analysis is the process that identifies, analyze and report the occurrence of themes in the data collected from the field (Braun & Clarke, 2006). The interview data was transcribed based on the code for each interview. Thematic contents were formulated based on the research questions and the data gathered were grouped together and analyzed under each of the thematic content, and then discussed with the findings of other related studies. Participants' verbatim responses were also used where necessary. Analysis of the data from the observation was done after the interview data was analyzed. The observation data was meant to serve as a confirmation of responses from the interview.

## 4. Results

### 4.1 Teachers' instructional strategies

The study pointed out that teachers in Sirigu Senior High School considered the questions and answers, and the discussion methods as the most appropriate methods which make students with visual impairment active during lessons. Also, students with visual impairment are supported in class during teaching and learning process through the uses of alternative strategies. Teachers also provide students with visual impairment handouts and dictate notes to them to copy. Similarly, the study revealed that teachers use and encourage cooperative learning among the sighted students and students with visual impairment. Another finding was that teachers faced many challenges in the assessment of students with visual impairment, because of their inability to read braille to mark students' braille scripts. Accordingly, students with visual impairment work in a slow pace, and teachers read to them during tests and examination. The resource teachers too, sometimes delay the transcription of braille scripts for marking. Furthermore, it was revealed that, during examinations or class tests students with visual impairment write theirs at the resource center and are always given an additional time. In sum, the results showed that teachers employ interactive teaching strategies to teach students with visual impairment which enable these students participate in most classroom activities in the school.

### 4.2 Environmental adaptations

It was found that the school environment and most facilities have not been adapted to suit the needs of students with visual impairment. Poor arrangement of classroom furniture, open gutters and potholes, steep staircases to most learning facilities, and inaccessible notices were the things identified as barriers to the free movement of students with visual impairment and to freely access information for learning. A resource teacher specifically stated that students sometimes fell off the staircases and in open gutters and the potholes which affected them psychologically. Again, signs and doors in the school were not labelled with braille and this

compelled students with visual impairment to depend on their sighted colleagues for information, and in the absence of the sighted colleagues, students with visual impairment miss very important information such as lesson time, classes, change of rooms for lessons and other important announcements.

Again, it was observed that students with visual impairment received support from both teachers and their sighted colleagues. The support includes guidance to the dormitory, resource center, notice boards, as well as their sitting places in the classroom, and other important places in the school. Additionally, the study pointed out that there was no orientation and mobility specialist to provide special orientation and mobility training for first year students with visual impairment. Students with visual impairment therefore, have to rely on previous orientation and mobility training experiences from their basic school, as well as resource room support and their sighted colleagues to move about. Again, the studies revealed that, students with visual impairment although, have the mobility cane, they were not using it. Their comments showed that some students lacked the skills to use it, while others feared they might be mocked by their sighted peers.

The results also indicated that senior students (Forms 2 and 3) do not face any challenge while junior students (form 1) have challenges regarding the arrangement of their desks in class. Accordingly, Year 2 and Year 3 students have their tables and chairs, placed in the front row of their classes which makes it easier to locate them when they get into the class while Year 1 students normally experienced their tables and chairs being disarranged therefore making it difficult for them to locate them when they get into the class in the morning. The study also found the physical environment and its facilities not adapted and unsuitable to the needs of students with visual impairment; the school was taking steps to address these challenges, and so has converted some stairs of most buildings, especially the classrooms into ramps to make them accessible to all students with disabilities in the school. Meanwhile, new structures starting up in the school have ramps at the ground floor instead of stairs.

## 5. Discussions

### 5.1 Implication for practice (learners and teachers)

The results of the study have revealed the instructional strategies teachers employ to teach students with visual impairment in the school. This would therefore enable teachers of the school to adopt appropriate teaching strategies to suit the needs of students with visual impairment in the school. Also, the results have provided information about how the school environment is adapted to accommodate students with visual impairment. The information would enable the school authorities and teachers to identify areas of the school environment which needs to be adapted, and they would always prepare and adapt every learning environment in the school to suit the needs of students with visual impairment, to enhance the participation of students with visual impairment in the teaching and learning process.

### 5.2 Significance and contributions

The current study contributed significantly to knowledge especially in the area of the education of the visually impaired in the general education setting. This is because very few studies in Ghana were available on the provision of instructional accommodations for students with visual impairment. The study delved into the instructional strategies' teachers employ to teach students with visual impairment in the general education classroom in Ghana. Secondly, the study underscored the various environmental adaptations that should be made to include students with visual impairment in the general education setting. Finally, this study adds to already existing research findings on the variables that contribute to provision of instructional accommodation for students with visual impairment in the general education school setting.

*5.3 Compared to previous literature reviewed*

Comparatively, a review of previous studies showed that a descriptive survey approach was employed for most of the studies which focused on the general inclusive practices for the visually impaired in the general education classroom setting. Creswell (2009) argues that researchers, who employ descriptive survey approach often study large samples and aim to generalize their findings. The survey approach is, however, inappropriate when there is the need to investigate a phenomenon in depth. Thus, the survey approach fails to explore the complex interactions existing in societies and between individuals in those contexts (Walliman, 2005). The current study however, has shifted away from the survey design to an embedded case study design; this enabled the researcher get an understanding of the perspectives of the participants as well as has a detailed account of how instructional accommodations are provided for students with visual impairment in the school. The design was an embedded case study design, because, it consisted of more than one unit of analysis. It involved fourteen (14) general education teachers, twenty (20) students with visual impairment, and two (2) resource teachers who provided information under the same phenomenon of study of which each of the participating group stood as an independent unit during the analysis (Yin, 2003).

## 6. Conclusion

The study found that teachers in the school are aware students with visual impairment required different methods of teaching to enable them learn, and so employ interactive teaching strategies to teach, which enhances the students with visual impairment participation in most classroom activities. Also, study pointed out that the school environment and most facilities have not been adapted which makes it difficult and unsafe for students with visual impairment to move about and to freely access information. Therefore, based on the findings, the study finally concluded that instructional accommodations for students with visual impairment are inadequately provided in Sirigu Senior High School to enable students with visual impairment effectively participate in the teaching and learning processes. Based on the conclusion, it is recommended that, teachers in the school should employ teaching strategies like, concreteness of experience, unifying experience, and learning by doing and task analysis to teach students with visual impairment. Also, management of the school and the teachers should ensure that they prepare and adapt every learning environment in the school to suit the needs of students with visual impairment to enable them move freely and independently to access information.

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