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Material resource in inclusive schools: A critical need for the implementation of inclusive education in Ghana

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Abstract
Presbyterian College of Education, Akropong in Ghana, was one of the pilot institutions that has undertaken inclusive Education programme for students with special needs share the same facilities with their non-disabled counterparts. It is the only institution among the pilot schools that admits three categories of students with disability; visual impairment, hearing impairment and the physically challenged. The aim of the study therefore was to assess Presbyterian College of Education as an inclusive educational institution. A case study design under the qualitative approach was adopted for the study. A purposive sampling technique was used to recruit 35 students with disabilities and 15 tutors at Presbyterian college of education in the Eastern region of Ghana. In-depth interview and observational techniques were used to assess the views of the participants about inclusive education with regards to the availability of material resources. The study revealed students lack adequate material resources. The study also found out that the inadequate resource negatively affects the student' performance. Based on this finding, it is recommended that efforts should be made to stock the resource centre with enough materials to suit the needs of persons with disabilities at the College of Education level to facilitate inclusion.

Keywords: Material Resources, Assistive Devices, Disability

1. Introduction

The aim of inclusive education is to ensure that every child of school age is able to access the mainstream school of his or her choice and be able to learn successfully. To this end, the learning needs of all categories of students including those with disabilities need to be addressed. The concept of inclusive education is centered on the fundamental right to education for all as well as the right to non-discrimination and participation (Schultz, 2004) [24]. The tenet of inclusive education was adopted at the Salamanca World Conference on special education held in Spain from 7th to 10th June, 1994 and was reaffirmed at The World Education Forum in Dakar, Senegal, 2000 (Avoke, 2001) [3]. Subsequently, inclusive education has become a worldwide concept and has also become the overriding principle of the main dimension of school development. As a result of the World Education Forum, the challenges of getting all children into school has been put on the political agenda in many countries including Ghana and is reflected in Education for All (EFA) National action plans (Avoke, 2001) [3]. The Presbyterian College of Education, Akropong, has been one of the first colleges of education in Ghana to practice inclusive education and it sought to produce better scholars who are visually impaired, hearing impaired and physically challenged. These individuals now stand better chances in life and have benefited a lot from inclusive education as reflected in employment acquisition (Oppong, 2003) [17]. With quality inclusive education, persons with disability can contribute to the socio-economic development of the country.

According to Avoke (2001) [3], historically, special needs children were set apart from schools until the arrival of the Missionaries in Ghana. Prior to the missionaries' arrival, traditional beliefs influenced the attitudes of the communities to reject, abuse and kill the children with disabilities in Ghana. In 1945 the missionaries established the first segregated school for children with disability (Ocloo, 2000) [16]. These segregated schools at that time saved and protected the disabled from hunger and death. Some parents for fear of stigmatization and other hazards genuinely sent their disabled children to be trained at the various segregated school established in the country. The world declaration on Education for All, states that equal access to education should be provided to all categories of disabled persons. Ghana being a signatory to this declaration is obliged to make attendance of regular schools possible for children with disabilities.

Ghana's educational strategic plan for 2015 was focused on including all persons with disability in the main stream schools by 2015-2016 academic year. As a preparatory strategy, some schools including Presbyterian College of Education, Akropong-Akwapem, were running the inclusive education programme on pilot basis until 2015 when it was fully implemented all over

the country. Government is expected to provide equal educational opportunities for children and youth with special needs at pre-tertiary and tertiary levels to promote access and participation, quality and inclusion (National Report, 2004). This implies that as a result of providing education for all children, teachers in general schools must provide instruction and other educational services to meet the needs of a diverse student population. Also, teachers must be prepared to teach all kinds of pupils, including those who present special needs in the classrooms. This duty will depend on material resources available to support learners.

1.1 Statement of the problem

The right to be educated as stipulated by both international laws and declarations and that of Ghana has made it necessary for the Government of Ghana to provide access to formal education for all school aged children. This does not exclude children with disabilities. In their case, the Government of Ghana and for that matter the education ministry settled for the provision of segregation school for children with disabilities. In effect, special schools such as schools for the blind, schools for the deaf, and schools for the intellectually challenged are dotted around the country. Due to the few numbers of these schools, the distance between the schools and children with disabilities, coupled with human right issues; thus, the right to education, it was agreed at the Salamanca world conference that all children regardless of their disability should be allowed to school in the mainstream system in 2003. The Government of Ghana took up the challenge and began to implement this directive by piloting few schools in the country as inclusive schools. Subsequently, Ghana is now running inclusive education system.

The provisions in the Persons with Disability Act 715 section 17 enjoins the ministry of education to provide the necessary facilities and equipments that enables students with disabilities to benefit from education (Disability Act 715, 2006). Although Presbyterian college of Education is practicing inclusive education, we do not know how effective it is being implemented and the associated constraints to the implementation are also not known. It is not known and clear whether the College is equipped with adequate resources which are required in teaching students with special needs. The study is therefore to assess the material resource capacity of Presbyterian College of Education, Akropong Akuapem, as an inclusive institution.

1.2 Research questions

The following research questions were formulated to guide the study:

1. What is state of material resource available to disable student?
2. What are the effects of resource material on student academic work?

2. Literature review

Forms of instructional material for the disable

Salisbury (2008) [22] categorized instructional materials for the disable into two. To him, there are visual materials, made up of reading and non-reading materials and audiovisual materials including electrically operated and non-electrically operated materials. Hence Ikerionwn (2000) [9] therefore believes that students with such a range of challenges requires a flexible, teaching material centred course of study that would provide an enabling environment for overall development of their three domains- cognitive, affective and psychomotor. Since some of the students with impairment such as visually impaired rely mainly on verbal information for their learning, audio devices should be incorporated to aid the teaching process. Some of these resources include things like Olympus recorders and compact discs (Salisbury, 2008) [22].

Moreover, a lesson can be tape recorded and given to students with visual impairments for later playback at their convenient time (UNESCO, 2001) [28]. However, if a videotape for example has to be shown, it is wise to show it to students with visual impairment so that through a resource teacher's or a classmate's explanation, they would follow all the visual concepts in it before the class watches it. The same principle applies to the hearing impaired. For a film with sub titles, a classmate or resource teacher can read aloud and/or interpret to the class to help those with hearing or visual impairment (Spungin, 2002) [26]. The role of both optical and non-optical devices is to improve vision and increase functionality of students with visual impairments through the use of other senses. It is the role of a teacher to encourage students with visual impairment to use visual devices and assistive technologies to help them with vision (Spungin, 2002) [26]. Teaching with instructional materials is critical in teaching and learning because these resources help learners to appropriate have the perception about what they learn. Instructional resources enhance communication and makes the teacher's work easier because he or she talks less (Ocloo, 2011) [15]. Most pupils with special needs need some form of materials or equipment in order to learn. For example, working papers and books with enlarged print will ease the task of reading for most children with low vision.

According to Govinder (2009) [8], the term ''assistive technology'' encapsulates a broad range of assistive devices from ''low tech'' to ''high tech'' learning materials. To him, low-tech examples include pencil grips, highlighters, paper stabilizers etc, and high-tech examples include computers, voice synthesizers and Braille readers. Rose (2006) [21] noted that assistive technology device are any item, piece of equipment, or product system (software) used to increase, maintain or improve the functional capabilities of a student with disabilities. Ikerionwn (2000) [9] indicates that assistive technology is any piece of equipment, or product, whether it is acquired commercially, modified, or customized, that is used to increase, maintain or improve the functional capabilities of a student with disabilities. Kapperman and Stiken (2000) [10] comment that the ability to access information is important for good performance in education, employment and life. Therefore, much of the development of assistive technology must focus on providing access to information. Computer assistive and technology are often cited as the means to overcome limited access to print and other environmental barriers for non-print readers (Gerber, 2003) [7]. He notes that many researchers and practitioners in the field of disability and for that matter visual impairment have acknowledged that the use of computers and assistive technology can improve the lives of persons with disability to a great extent by opening education and employment opportunities, enhancing social network and facilitating independence. Assistive technology helps to omit grammatical structure, spelling and traditional text formats.

Effect teaching material on performance

In any teaching and learning situation, teaching materials are essential. For student teachers, teaching materials offer valuable insights into key theoretical concepts, and should convey practical, real-life experiences that help to put the theories into context (Kaplan & Ingrid, 2013). It is imperative therefore, that teacher education materials are student-friendly, high quality, contextually relevant and accessible. Hence, alongside any efforts to reform teacher education curricula to prepare teachers for inclusive education there need to be matching revision of the materials use in the programmes.

In the light of above, (May 2007) concluded that the allocation of a resource space or room is a useful start to building awareness to staff. Similarly, Akcamete (2005) [2] is of the view that as we try to include children with special needs in the general classroom, modified materials, support services and tool/devices should be provided to teachers to support their inclusion. Stubbs also recommends that Teachers should focus most on learners who are vulnerable to be excluded with more resources (Stubbs, 2008) [27]. Variety of materials for all subjects such as Mathematics materials made from new papers, or posters and puppets for language classes should be available to enhance inclusion of all students (UNESCO, 2005) [29]. Similarly, Michael *et al.*, (2006) [12] concludes that the use of materials of different sizes, textures, and shapes to help each child actively manipulate the object for learning is crucial in educating children with special needs.

According to Ikerionwn (2000) [9], instructional materials are objects or devices which help the teacher to make learning meaningful to learners. Aduwa-Ogiogbaen and Imogie (2005) [1] claim these materials and resources including audio tape recorders, video tape recorders, slide projectors, opaque projectors, overhead projectors, still pictures, programmed instruction, filmstrips, maps, charts, graphs and many more offer a variety of learning experiences individually or in combination to meet different teaching and learning experiences. Similarly, (Michael, 2006) [12] sees teaching materials and equipment for supporting pupils with low vision to include tables, chairs vehicles, tape recorders, earphones, Braille machines and papers, large print materials, CCTV, felt-pens, resource teachers among others.

In conclusion, the reviewed literature has largely established that teaching and learning materials are indispensable in inclusive schools. This is why it is imperative to assess the existence of these qualities in the inclusive schools in Ghana. Most studies have discussed the need of the above qualities in inclusive schools but it appears there is no study on their existence and practice. So, this study seeks to assess the existence of these qualities and practices of inclusion in Ghana.

3. Methodology

Research design

The design is a case study in which tutors and students with special needs of Presbyterian College of Education Akropong were interviewed. Case studies involve empirical investigation of a particular phenomenon within its real context using multiple sources of evidences (Robson, 2002) [20]. The researcher settled on this design since he intended to undertake an in-depth study of the phenomenon in the real-life situation in order to unravel the actual perspective of the participants regarding inclusive education at Presbyterian College of Education.

Population and sample size

The study population comprised of all teachers and students with disabilities in the Presbyterian College of Education, Akropong. Overall, sixty (60) teachers and fifty-five (55) students with disabilities constituted the population. The purposive sampling technique ws used to select 15 tutors of the College and 35 students with disabilities for the study. Thus; 15 visually impaired, 10 hearing impaired and 10 physically impaired. Even though there were students with several forms of needs only those with visual, hearing and physical disabilities were included in the study. In the case of tutors all of them were qualified because they (tutors) all teach students with disabilities. Therefore, study participants were selected for interview until saturation was reached.

Instrumentation

The following instruments were used for the study; observation and interview

Observation

Observation of tutors and students in their classroom activities, during break and college activities was conducted. Observing students during the classroom activities enabled the researcher to examine the kind of activities and interactions that go on during teaching and learning as well as dealing with material resource.

Observation was used because it enables the researcher to obtain information in its primary form, besides, observation put little or no pressure on the respondents. The observation also gives the researcher the opportunity to investigate things on the ground personally and to crosscheck the results with other instruments. Additionally, observation affords the researcher the opportunity of recording events spontaneously as they occur and provides data that relate to the typical behavioural situations. The observation was naturalistic using an observation guide to collect information on the following issues: location of school and physical environment, architectural design of building, material resources available and their efficiency, classroom activities, out of classroom activities and interaction between tutors and students.

Interview

In-depth one-on-one interview was conducted for tutors and students in the College. Robson (2003) [19] stated that interviews typically involve a researcher, asking questions and hopefully receiving answers from people being interviewed. Although interview involves asking series of questions and following a procedure decided upon beforehand, the interviewer is largely free to arrange the form and timing of the questions. Also, the interviewer can rephrase the questions, modify them and add some new questions to the list (Robson, 2002) [20].

The interview guide was in two sections. The first section specifically sought demographic data of respondents: gender, number of years of teaching, educational qualification and grade levels taught. In section two, the items sought information on how accessible the material resources were. The interviews were recorded by the researcher using audio tape recorder. In addition, important

points raised by respondents were written down by the research assistant. Each interview lasted for 50 minutes.

Validity of the instrument

Validity is one of the basic principles of research and it is the ability to produce findings that are in agreement with the theoretical or conceptual values, in order words, to produce accurate results and to measure what it is supposed to measure (Sarantakos, 2011). A valid measure produces true results that reflect the true situation and condition of environment it is supposed to study. After the instruments were designed, they were read over several times to identify mistakes that might have been overlooked during the setting stage. Ambiguous items were restructured or deleted. To ensure validity of the findings, respondents' views, which was recorded manually, was read to them. This gave the respondents the opportunity to determine if their views were accurately recorded.

Furthermore, the use of in-depth interview and observation in the study, allowed triangulation of the data. According to O'Donoghue and Punch (2003) [14], triangulation is a method of cross-checking data from multiple sources to search for regularities in the research data. The use of triangulation in the research therefore increased the credibility and validity of the result.

4. Results

Material Resources Available to facilitate inclusion at Presbyterian College of Education.

In inclusive educational settings, material resource refers to any device or equipment that helps students with disabilities to learn and perform learning tasks easily. In the case of this study, the researcher focused only on the material resources available at Presbyterian College of Education to facilitate inclusion. Two major themes emerged in relation to material resources that help to facilitate inclusion: personal learning enhancing materials for students with special needs and efficiency of the institution's resource centre to enhance inclusion of special needs students. Personal learning enhancing materials are simple devices and equipments that students with special needs use individually in their everyday academic activities. Without these materials students with special needs cannot perform any academic exercise. Such materials include Braille frame and style, Braille sheets, Perkins braillers, recorders, magnifiers, hearing aids, Intellikeys, Speech recognition software, Touch screens among others.

The hearing-impaired participants expressed that some of them still have some reserve hearing but the lack of hearing aid has hampered their effects to follow lessons especially whenever the interpreter is not available. One participant shared his view "*as for me I can hear a bit but I need hearing aid to help me hear well. I would be glad if we can be provided with this device*" (a male hearing-impaired student, aged 23). The physically challenged lucked requisite materials that would enable them to participate and learn due to their impairment. Some of them would need speech recognition software to assist them to control a computer keyboard by talking to it. One physically challenged participant said "*I find it difficult to type using the computer keyboard. I wish I can get an alternative means of using the computer*" (A physically challenged student aged 21)

It was as well noted that, there is always malfunctioning and sometimes sudden failure of the use of Perkins braillers and JAWS application as is being used and the students believed it retards progress in their studies. In expressing this frustration, one of the students indicated, *"At times, the JAWS could stop working while being used and misplacement of keys in the use of Perkins brailler hence reducing efficiency*" (A second year blind student aged 23). Upon further interaction, they explained that the type of Perkins braillers used in the school are old and easily breakdown without anybody repairing them. Sometimes too there is malfunctions of the JAWS that is being used in the College. This is because it is unlicensed and there are limitations in some of its applications or functions. The students are therefore, limited to access other uses of JAWS because they use the "cracked version" coupled with it inefficient functioning.

Another category of the students said the white cane available in the school are not enough as 38 visually impaired used 5 white canes and the computers in the school too are not enough. This is typified in one student expressing: "*We pair some time at the ICT lab whenever we have computer lessons and also when doing our project work*." (A first-year blind student, aged 21). A student with visual impairment indicated that the white canes are very few hence reduces his confidence in interacting with the environment these categories of students were much concerned with the inadequacy of these materials and devices. Another student who is partially sighted said that assistive device like close circuit television, hand held magnifiers or any other low vision devices could enhance his reading skill but these devices are not enough in the school to facilitate inclusion.

Also, it was evidenced through the researcher's personal interactions with some of the students that the College doesn't have any orientation and mobility specialist to train these individuals, hence students are left in the mercies of their sighted counterparts in the College. They opined that had it not been the help they derive and proper used of their remaining senses, they wouldn't have survived in the College. It should be noted that gaining familiarity with one's environment does not come handy but with great deal of exercise.

It was found that the school has a resource centre with three perkins braillers, three sign language interpreters, ten hand frames, two close circuit television sets for the low vision, no braille sheets and five installed desktop computers which are supported with JAW software, ten stylus and 5white canes. The resource person reported that these material resources were provided by some benevolent societies and other philanthropists. It was further established that all the students were introduced to the use of these materials at the primary school level and currently they used them in learning, Brailling, reading, typing, assessing information and also assessing their learning environment. It was also realized that most of the students with disability at Presbyterian College of Education express their views on the types of material resources available in the College to facilitate inclusion. Their concerns are organized broadly into four, namely: the state of the available devices, training of student's in the use of these devices, inadequate material resources, and qualified personals.

Whereas the assistive technology when in good state enables students with disabilities interact with his or her environment and assess information in the same way those

without disabilities would, it was realized that students at Presbyterian College of education have difficulty in using the devices in the College. This is because the devices there are outmoded and hence reduce efficiency when using them. A student said that when using the computer, the speech was too fast and the pronunciation of certain terms and words deviates from their conventional understanding and this poses a challenge.

Effect of resource material of academic performance

Interview revealed that most of the visually impaired lack these basic materials. The participants expressed that they are unable to make adequate notes due to non-availability of Braille sheets. One of the participants said: "*we are always behind our counterparts because we are not able to make notes accurately due to the lack of Braille sheets. We have to buy them ourselves from Accra and we do not have enough money*." (A male blind student, aged 22). A second participant said: "*I have to borrow a Braille frame and style from my mates which implies I have to wait until they finish their work. This worries me because it makes me to submit my assignment late*." (A female blind student aged 20).

Again, among the hearing impaired they said that there are few sign language interpreters in the school and there seems not to be any collaboration between the tutors and the interpreters. A student stated that: "*Whiles teaching the tutors can stop the activities of the sign language interpreters since they perceive it as very interactive and capture those without disabilities attention hence reducing efficiency in teaching*" (a second-year hearing impaired student, aged 24).

The hearing impaired also complained about the size of the resource centre. The participants expressed that the resource centre is shared by students with the three categories of disability in the College so it becomes congested and not all of them have access to the needed equipment at times. One participant said: "*the resource room is too small for us. We do not even get chair to sit on. This affects our studies*." (A third-year hearing impaired student, aged 20).

On the part of tutors, they are of the view that it is the responsibility of the government through the Ministry of Education to furnish the College with the needed materials for the use of these students with disabilities. The tutors added that once the government has accepted to roll out the inclusive programme, it should be committed to providing to support it. One tutor said "I think it is the duty of government through the Minitry of Education to make the necessary provision of these materials" (A tutor aged 43)

Findings from the Structured Observation

In addition to the in-depth interview, a structured observation was conducted to supplement the findings from the qualitative interviews. The structured observation focused on the availability of material resources and their efficiency.

Observation revealed that most students with special needs especially those with visual impairment struggle with basic necessities such as Braille sheets, frames and style in the College. This is because most of them were found idle when their mates were taking notes during classes. The hearing impaired could hardly put down something because of the lack of hearing aids and the absence of interpreters during some of the classes. The physically challenged were seen struggling in the areas of taking notes, computing and mobility.

With regard to the efficiency of the resource centre, the researcher observed that the centre is not adequately accessible to students with special needs because the path that leads to the centre is very narrow and has depressions at both sides which could be precarious to the students.

The materials are woefully inadequate in terms of their numbers and quality as compared to the number of the students. Most of the perkins braillers have broken down. The computers are only two and students were found rushing for them. The Jaws software was problematic because it was giving poor translation. No recorder was seen during observation. Furthermore, the resource teachers are allotted courses to teach which keeps them absent from the special needs students during the time they needed them most for interpretation and guidance. Again, the resource centre was stocked with inadequate teaching and learning materials designed to facilitate illustrations during lesson by tutors.

5. Discussion

Identification of material resources and the assistive devices available and how it affects the inclusion at Presbyterian College of Education.

With regard to basic learning enhancing materials, it was realized that most of the students with special needs at Presbyterian College of Education expressed how limited these material resources and assistive devices were in the school. Their concerns were much particular with inadequacy of these materials in terms of numbers. This development in the College is contrary to the view of Rose (2006) [21], WHO (2011), Govinder (2009) [8], Ocloo (2011) [15], UNESCO (2005) [29] and Stubbs (2008) [27] that variety of basic materials for students with special needs such as braille sheets, Braille frame and style, tape recorders, hearing aids and perkins braillers are essential resources which should be available to enhance inclusion of all students. This emphasizes the fact that material resources and assistive devices have become essential tools for students with students with special needs without which they would be extra handicap when it comes to participation in education.

Studies show that material resources and assistive devices have a positive impact on students with disabilities' lives, such as motivating students (Cooper & Nichols 2007; Strobel *et al*., 2006) and developing positive relationships in their academic achievement (Trucano, 2005). Material resources and assistive devices are essential for students with disabilities to enhance learning, cognition, and social development (Size *et al*., 2004; Wong & Cohen, 2011) [25, 31]. Researchers and practitioners acknowledge that the use of material resources and assistive devices could change the lives of students with disabilities. These devices have a positive impact on educational performance, including helping students access and understand their environment when it is in a good state (Cahil *et al*., 1996). It therefore implies that the academic performance of students with special needs in the College is largely affected as a result of this basic material deficiency. Urgent effects should be made to ameliorate the situation by making these essential materials available.

Another important aspect with regard to material resources that was found deficient in the College is the resource centre. The centre was too small and cannot contain all

students with special needs in the College. A resource centre is supposed to very spacious enough to contain all kinds of persons with disabilities and well-furnished for proper accommodation. The centre has only few assistive technological equipments and devices such as computers with internet connection, quality perkins braillers, CCTV and audio/ video recorders. This is not in consonance with Gerber (2003) [7], Kapperman and Stiken (2000) [10], Spungin (2002) [26], and Hayward & Lynch (2003) who maintained that a resource centre should be equipped with assistive technology device or product system (software) used to increase, maintain or improve the functional capabilities of a student with disabilities.

The authors indicated that assistive technology is any equipment such as computers, audio and video recorders, earphones, perkins braillers and embossing machines among others. At the college level, the availability of these equipments would enable students with disabilities to conduct research, be able to complete their assignments and also emboss textbooks into Braille. The hearing-impaired students would use the video systems to watch recorded demonstrations for better understanding. Ability to access information is important for good performance in education, employment and life. Therefore, much of such assistive technology equipments must be sufficient for all students. Furthermore, whereas the assistive technology and material resources when in good state enables the disabled to interact with his or her environment and access information in the same way those without disability would, it was realized that students at Presbyterian College of Education have difficulty in using the few devices in the school. This is because the devices in the centre are too old and hence reduce efficiency when using them and perceived by the students to encounter many problems.

When using the computer, the pronunciation of certain terms and words was perceived by the students to be different from their conventional understanding and this poses a challenge. It was as well noted that, there is always malfunctioning and sometimes sudden failure of the use of Perkins and JAWS application as it is being used. The students are therefore limited to access other uses of JAWS because they use the "cracked version" coupled with it inefficient functioning. In order to bridge the identified gab, it is imperative the outdated equipments are replaced with new ones and in the right quantity so all students can access. The resource centre is also supposed to be stuffed with teaching and learning material that teachers could use to illustrate concepts during classes for better understanding. Resource teachers are supposed to be available at the centre to guide the special need students in the use of the equipments.

6. Conclusion and recommendation

It was found out that material resources and assistive devices such as perkins brailler, hand frame and stylus, white cane, computer assistive devices available in the school are not enough and are also not in good condition to facilitate inclusion. Considering the fact that the College has only two perkins braillers to be used by 35 students.

Based on the findings of the study, it is recommended that: The management of the College in collaboration with special education division of Ghana Education Service (G .E .S) should appeal to the Ministry of Education to improve upon the number and quality of material resources and assistive device available in the school to facilitate inclusion.

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