The Inclusion of Students with Disabilities in Tertiary Institution: A Review of Related Literature on Strategies of Making Curriculum Accessible to Students Visual Impairments

Joshua Odhiambo

Academic Registrar, Kenya Institute of Special Education, Kenya

ABSTRACT

The inclusion of students with disabilities including those with visual impairment (VI) has become a popular trend in most countries of the world. However, students with VI still face challenges in accessing curriculum materials for the course they pursue at tertiary institutions. This paper provides strategies lecturers can use to enable students with VI to access curriculum materials based on literature review of varied academic research and journal articles. The paper highlights teaching methods which lecturers can use to effectively teach students with VI. Other strategies discussed in the paper include: one on one instruction, use of peers to support students with VI, use of auditory resources by students with VI and providing students with VI with handouts in Braille. Also, the paper discusses adapting methods of assessment to accommodate students with VI as well as the use of assistive technology by visually impaired students.

INTRODUCTION

The last 50 years has witnessed more students with disabilities including those with visual impairments being enrolled to pursue education in tertiary institutions all over the world as compared to few years back when such opportunities were limited to such cadre of students in the society (Butler, Holloway, Marriott, & Goncu, 2016; Morina, 2017). Consequently, more persons with disabilities have been able to acquire education alongside their abled peers in the tertiary institutions in the societies (Correa-Torres, Conroy, Rundle-Kahn & Brown-Ogilvie, 2018). The practice which is popularly known as inclusive education began in elementary and secondary school and is being adopted in the tertiary institutions (Morina, 2017).

Inclusive education has been defined in varied manners by different scholars. Lourens and Swartz (2016) defined inclusive education as a process that is concerned with improving social and learning experiences of students with disabilities in the regular classroom. On the other hand, Omukwuor and Uchechi (2017) defined inclusive education as a philosophy that advocates the education of students with disabilities in the regular classroom. Other scholars have defined it as a process that enhances the capacity of the education system in any country to reach out to students with diverse learning needs (Omukwuor & Uchechi, 2017; Asamoah, Ofori-Dua, Cudjoe, Abdullah & Nyarko, 2018). Hence, inclusive education can be considered as an educational philosophy and practice that aims to improve the learning and active participation of all the students in a common educational context (Morina, 2017; UNESCO, 2020).

The tertiary institutions have continued to witness increased number of students with disabilities over the world in recent years (Marina, 2017; Hewett et al., 2018).This new trend has been attributed to efforts by the international community and different governments of countries that have enacted policies that promote inclusion of students with disabilities in the tertiary institutions. For instance, the Convention on the Rights of People with Disabilities (CRPD) stipulate that persons with disabilities should have access without discrimination and with the same conditions as the rest to tertiary education, professional training, adult education and lifelong education (UN, 2006; Marina, 2017). In addition, a number of countries have adopted policies that ensure that tertiary institutions including universities are more accessible to persons with disabilities by becoming more progressively inclusive.

In US, Americans with Disabilities Act (1990) mandate tertiary institutions to provide access to students with disabilities (Correa –Torres, Conroy, Rundle-Kahn & Brown-Ogilvie, 2018). Similar legislation exists in other countries of the world. The UK Equality Act (HM government, 2010; University of Worcester, 2018) is central in supporting students with disabilities including those with visual impairments. The law requires tertiary institutions to make reasonable adjustments and ensure that students with disabilities are provided with appropriate accommodation (Hewett et al., 2018). In Australia, the Disability Discrimination Act (1992) safeguards students with disabilities as far as possible against discrimination on the ground of disability in education and other realms of life (Butler, Holloway, Marriott, & Goncu, 2016). Also, the Australian government had enacted the Disability Standard for Education Act (2005) that clarifies the rights of students with disabilities to access and participates in education and training. The same act also provide guidance on how education providers can meet the educational needs of students with disabilities (Butler, Holloway, Marriott, & Goncu, 2016).

In response to policies and laws many tertiary institutions have established Disability Support Service (DSS) offices to provide support in meeting educational needs of students with disabilities such as students with visual impairments (Marina, 2017; Correa –Torres, Conroy, Rundle-Kahn & Brown-Ogilvie, 2018; Amponsah & Bekele, 2022). Thus, the (DSS) have adopted the use of technologies to implement inclusive education practices in tertiary institutions in order to accommodate students with disabilities including those with VI (Marina, 2017; Amponsah & Bekele, 2022).

Statement of the Problem

Students with visual impairments have unique challenges that require unique preparation by tertiary institutions such as academic and social skills, adaptive technology and adjustments of the physical environments (Reed & Curtis, 2012). Thus, mere placement of students with VI in tertiary institution may not result into social and educational gain for the student. Instead, the placement of students with VI in tertiary institutions may result into more social and educational exclusion due to varied barriers that the student may experience. Several studies have shown that students with disabilities such as those with VI continues to encounter several barriers to access curriculum materials thereby limiting inclusive education practices despite efforts by tertiary institution to achieve social and educational inclusion for such students (Hewett et al., 2018; Amponsah & Bekele, 2022). This paper will strive to explore varied strategies that can be used by tertiary institutions to make curriculum material more accessible to students with visual impairments. The paper has been organized in terms of methods of teaching students with VI; working with peers; utilization of auditory learning resources; preparation of handouts in Braille as well as adapting assessments methods. Also, the paper explores use of assistive technology to enable students with VI to access curriculum materials in tertiary institutions.

Methods of Teaching Students with Visual Impairments

One of the hindrances in the implementation of inclusive education is the rigid curriculum employed by most tertiary institutions. This implies that most tertiary institutions use teaching and examination systems that cannot fully meet the educational needs of students with diverse abilities such as students with VI (Sinkanku, 2018). The successful inclusion of students with VI in tertiary institutions necessitates the use special pedagogical approaches and methods of teaching by lecturers in their classrooms (Mugambi, 2017). The employment of appropriate teaching methods and strategies by lecturers will result into educational gains by students with VI.

Exploratory Method of Teaching

There are teaching methodologies which are more appropriate with students with VI.   Expository teaching method is one such method. The method involves the provision of an explanation of a particular concept, thought or experience in the classroom context to the students by teacher with minimal involvement of the students (Penda, Ndhlovu & Kasondu-Ngandu, 2015). The method embraces four major techniques of teaching namely lecturing, discussion, explanation and description. The verbal outputs inherent in these techniques provide students with VI with useful information about the lesson (Habulezi, Molao, Mphutting &

Kebutlositswe, 2016). Consequently, students with VI are able to follow what the lesson is about. Thus, teachers of students with VI are encouraged to verbalize what they are writing or displaying on the whiteboard or on the PowerPoint (Stone, Kay & Reynolds, 2019). McCarthy and Shevlin (2017) observed that detailed description of complex mathematical problems will enable visually impaired students to follow the material being learned independently. The same sentiment is echoed by Mboshi (2018) who remarked that teachers must read aloud what is written on the board. According to Penda, Ndhlovu and Kasondu-Ngandu (2015), the method can be improved by use of multi-sensory learning approach such as use of varied visual aids during learning process.

Demonstration method of Teaching

Demonstration method of teaching is one of the appropriate methods of teaching students with VI. The method involves the teacher showing students how to perform a specific task until the concept or the skill is fully mastered (Penda, Ndhlovu & Kasondu-Ngandu, 2015). The method is based on the principle of directive teaching in which the teacher guide the learning process through the use of concrete experience or abstract teaching. The use of concrete materials such as tactile learning aids to teach students will VI will foster understanding of the concepts and materials being taught (Rosenblum, Ristvey, & Hospital, 2019; Stone, Kay & Reynolds, 2019). According to Penda, Ndhlovu and Kasondu-Ngandu (2015), the method embraces varied techniques of teaching such as showing, doing, experimenting, role playing, modeling, educational and field visits. Stone, Kay and Reynolds (2019) observed that the uses of low-tech tactile materials are very useful in demonstrating and clarifying concepts to students with VI. Thus, teachers can use tactile materials aids such as building blocks, toys like LEGO to create tactile versions of histograms and other graphics that include but not limited to pie charts, measures of central tendency and bar graphs.

One-on-one Instruction

Students with VI have the same curriculum needs as all students, but due to vision impairment can experience difficulties when traditional methods of teaching and learning are used in isolation from innovative practices (Quirke, McCarthy & Guckin (2018). As a result of limitation imposed by visual disability, students with VI may experience lag in several academic areas as compared to the peers who are sighted (Asamoah, Ofori-Dua, Cudjoe, Abdullah and Nyarko (2018). Consequently, there is need to put in place effective support measures to maximize social and academic development of students with VI that are consistent with the goals of full inclusion (Opie, 2018).

One way to provide support to students with VI is to provide periodical one-on-one support on the specific academic area outside the classroom (Stone, Kay, & Reynold, 2019). This could be once a week or so as may be agreed upon by teacher and the student. This kind of support is only possible when teachers are friendly and approachable. Specialist teachers for learners with VI may require one-on–one session with a leaner with VI to instruct him/her on Expanded Core Curriculum (ECC). Opie (2018) defined Core Curriculum as a body of knowledge and skills needed by students with VI. The body of knowledge that forms Expanded Core Curriculum include subjects such as (a) compensatory skills; (b) orientation and mobility skills; (c) social interaction skills; (d) assistive technology; (e) career education; (f) independent living skills and sensory efficiency skill (Opie, 2018). Tertiary institutions including students with VI should strive to provide them with ECC.

Peer Support

Peer support is one of the strategies of assisting learners with VI to access curriculum materials in the classrooms. The support given to the visually impaired students by peers in different learning context has been recognized by different scholars (Ali, 2015; Khowaja, 2021; Suraweera et al., 2022). Ali (2015) argues that students with VI who receive the support from their sighted peers are able to gain confidence to continue with their education despite the numerous challenges they could be facing in learning institution. According to Klingenberg, Holkesvik and Augestad (2019), the assistance given by sighted peers increased the sense of well-being and learning process of students with VI in the classroom.

The role of sighted peers in assisting students with VI the learning process has been echoed by other scholars.

According to Stone, Kay and Reynold (2019), having students with VI to work together with the peers is one of the best educational practices which is highly recommended in institutions with large classes. In learning context, the students with VI are guided by the sighted peers on how to gain access to course materials and how to understand the course (Ali, 2015).

The cordial relationship that exists in the learning institution community will assist the visually impaired students to establish friendship with the sighted students that may go beyond the period of schooling (Suraweera et al. 2022). Thus, tertiary institutions including students with VI must strive inculcate a conducive social atmosphere that will enhance the acceptance the visually impaired students by the sighted peers. Consequently, the feeling of belonging to the institutions coupled with emotional and instrumental support from lecturers and peers will provide a positive outcome on well-being of students with VI (Khowaja, 2021).

During a learning session, a sighted student may be able to verbalize components of the problem and the students can learn from each other (Stone, Kay & Reynold, 2019). Also, the sighted peers can read the sheet or the white board or PowerPoint presentation for the students with VI (Parvin, 2015). For students with VI to work alongside their peers, the lecturer must provide an appropriate learning environment that ensures the optimal development in the course for all the students (Mugandi, 2017). Thus, the lecturer must ensure that learning materials are available and adequate so that sighted and students with VI can work together (Stone, Kay & Reynold, 2019). Also, it is important for the lecturer to check in during group work to ensure smooth communication and collaboration between students with VI and sighted peers (Stone, Kay & Reynold, 2019).

Utilization of Auditory Resources

The upward trajectory in the inclusion of students with disabilities including those with VI in tertiary institutions has been attributed to several factors that include but not limited to the application and use of assistive technologies to access curriculum materials with ease (Sikanku, 2018; Klingenberg, Holkesvik & Augestad, 2019). According to Sikanku (2018), the use of technological assistive devices promotes acquisition of skills amongst students with disabilities such as those with VI through access to more information. The use of audio devices such as audio cassette, impact disc and tape recorders to listen to recorded lecturers has been echoed by many scholars (Bhalalusesa, 2016; Kapur, 2018; Mboshi, 2018).

Students with VI rely more on auditory and kinesthetic senses to receive information from the environment in the absence of sight (Agesa, 2014). However, information coming from auditory channel has limitation: it cannot be revisited like the visual and tactile information unless the information has been recorded (Mboshi, 2018; Stone, Kay & Reynold, 2019). Thus, one of the strategies used by students with VI to access curriculum materials is the use of tape recorders to record the lecture and class discussions (Bhalalusesa, 2016). The tape recorders are later played back at home, thus allowing the student to revisit the lecture (Mboshi, 2018). This provide students with VI with opportunity to listen to the lecture in a relax atmosphere. Also, students who experience difficulties with writing can audiotape their responses that can be assessed by the respective lecturer (Mboshi, 2018).

Students with VI can make use of audio versions of text books available in libraries and resource rooms to access curriculum materials (Mboshi, 2018; Stone, Kay & Reynold, 2019). Consequently, the students with VI are able to listen to the content of the textbooks without necessarily relaying on a reader or having the textbook translated into braille. In addition, there are innovative technologies that combine auditory and tactile information for teaching students with VI (Stone, Kay & Reynold, 2019). The auditory feedback with tactile clue can provide students with a great deal of information.

Handouts and Braille Version

One of the strategies used by students with VI to access curriculum is the use of Braille (Stone, Kay & Reynold, 2019). Braille enables students with VI to access useful information like their sighted peers in an inclusive classroom. Thus, a lecturer can prepare a Braille version of handout to students with VI to enable them access the content of print handout availed to sighted peers during the lecture (Dakwa, 2014; Mng'ong'ose, Ngoboka, Kavenuke & Ndekwa, 2017; Sikanku, 2018).

The preparation of the Braille handout, however, is a tedious and a complicated process especially if the institution has to source for translation services by outside agency (Fast. 218; Sikanku, 2018). This may result into institution of higher learning experiencing delay in receiving Braille version of the textbook of handout required by students with VI. Consequently, students with VI may develop a sense of rejection as a result of experiencing delays in receiving Braille version of handouts being given to all students (Sikanku, 2018). However, the use of refreshable Braille equipment means that students with VI can access print handout without having to go through translation process (Stone, Kay & Reynold, 2019).

Braille has several limitations as a medium of writing and reading by students with VI. According to McCarthy and Shevling (2017) many lecturers are not conversant with Braille mathematics notation. Thus, they are not able to assist students with VI in their courses. Therefore, lack of knowledge of Braille mathematics notation account for myriad of problems experienced by students with VI in mathematics. Similarly, studies have shown that majority of lecturers in the institution of higher are not conversant with writing and reading Braille (Dakwa, 2014; Mng'ong'ose, Ngoboka, Kavenuke & Ndekwa, 2017; Sikanku, 2018). Hence, they are not able to effectively assist the visually impaired students in those institutions.

The acute shortage of course textbook in Braille is one the problems facing students who are blind (Dakwa, 2014; Mboshi; 2018). The shortage of textbook in appropriate medium for students who are blind will result into many students not being able to access useful information from prescribed course books. Consequently, students are forced to rely on their notes to revise for examinations (Mboshi; 2018). Quite often, the notes written by students with VI are incomplete due to high pace of teaching by most lecturers who are generally not versed with teaching the students with VI. Also, the pace of writing of students who write in braille is reduced by the time the students take to insert a new paper into their Braille Machine. However, students using refreshable Braille are not confronted with the same problem.

Adapting Methods of Assessment for Students with VI

The adaptation of the assessment methods is one strategy of accommodating students with VI in the tertiary institutions. The standard examination procedure and format are likely to pose challenge to students with VI (McCarthy & Shevlin, 2017; McCarthy & McGuckin, 2018). Consequently, lecturers need to adapt their examinations to this cadre of students who generally require extra-time to execute a task as compared to the sighted peers (Agesa, 2014; Kapur, 2018; Asamoah et al., 2018). Hence, giving students with VI extra-time during formative and summative assessment will provide them with opportunity to complete similar task given to their sighted peers (Kapur, 2018).

Scholars attribute several factors to the slowness in executing academic task among students with VI. Firstly, tactual learning is slow as students have to consecutively touch different parts of an object in order to understand its qualities as compared to sight that allows one to understand all the qualities of an object at a glance (Agesa, 2014). Therefore, it is more difficult to read Braille that involves perceiving individual dots and then forming a mental picture of the letters and words formed by the braille dots (Lourens & Swartz, 2016; Korir, 2015). On the other hand, sight allows a student see the whole word at a glance. Thus, students who read print are faster as compared to their counterparts who read Braille (Kapur, 2018). Studies have also shown that many students with low vision who use print as their media of reading and writing usually read at slower pace as compared to the sighted peers (Rukwaro et al. 2018; Kapur, 2018).

McCarthy and Shevlin (2017) emphasized that there are varieties of strategies that can be used by lecturers to accommodate students with VI in assessment. One of the strategies is to accord students with VI an opportunity have extra-time during examinations (Bhalalusesa, 2016; Kapur, 2018). According to Kapur (2018), students with low vision may require addition of a half the allocated time during examination, while those who are blind may require as much as twice of the allocated time. In some tertiary institutions, the system automatically factor in extra-time into online timetable for students with VI (Hewett et al., 2018). That arrangement ensure that student with VI are automatically accorded extra-time.

The other strategies of accommodating students with VI during assessment in tertiary institution include providing the examination in accessible format, having spelling and grammar waiver as well as allowing them

to type their work (McCarthy & Shevlin 2017). Furthermore, tertiary institutions can accommodate students with VI by providing them with a modified exam papers or having the student sit his/her examination in a separate room and providing them with readers and scribes during examinations (Hewett et al., 2018).

Devices and Assistive Technologies used Educate Students with VI

Assistive technology is defined as any product whose primary purpose is to maintain or improve an individual functioning and independence thereby promoting their wellbeing (McNicholl, Casey, Desmond & Gallagher, 2019; Ndlovu, 2021). On the other hand, Maurya (2020) observed that assistive technology is a generic term that describe assistive, adaptive and rehabilitation devices for individual disabilities. The term is used to describe anything that may be used to compensate for lack of certain abilities.

Assistive technology has the potential to improve the functioning of students with disabilities including those with VI in their environment; promote social inclusion and increase student's participation in education by reducing activity limitation brought about by presence of disabilities (McNicholl, Casey, Desmond & Gallagher, 2019; Ndlovu, 2021). According to Lynch, Singal and Gill (2022), there are variety of low vision devices used in the education of students with VI that include reading stand, stand magnifiers, handheld magnifiers and telescopic devices which have the potential of magnifying images of the object for students with VI. Accordingly, the assistive technologies such as screen readers, braille display, speech recognition software, text to speech system and e-books enable students with VI to access curriculum materials (Klingenberg, Holkesvik & Augestad, 2019; Ndlovu, 2021; Anselimus, 2023).

Students who are blind generally write in Braille that relies in the use of Braille Machine. However, the current advancement in technology has led to inventions of equipment such as embosser, smart Braille machine and refreshable Braille display that are capable of producing large quantities of Braille within a short period of time (McCarthy & Shevlin (2017; Stone, Kay & Reynolds, 2019). Despite the usefulness of assistive technologies to students with and without disabilities, it has been observed that assistive technologies and devices generally are expensive and attract high maintenance cost (Sikanku, 2018; Ndlovu, 2021). This implies that many tertiary institutions may lack basic assistive technology and devices for the students who are blind and for those having other forms of visual impairments (Habulezi, Molao, Mphuting & Kebotlositswe, 2016; Sikanku, 2018; Ndlovu, 2021).

CONCLUSION

The inclusion of students with disabilities including those with VI has become widely acceptable practice all over the world. However, students with VI still face the difficulty in accessing curriculum materials in tertiary institutions as compared to their sighted peers. Thus, students with VI are not able to make education gains which are comparable to counteracts in the educational programs which negates the purpose of inclusive education. There are varied strategies that lecturers in tertiary institutions can use enable students with VI to access curriculum content that include but not limited to the use of appropriate methods of teaching students with VI; individualized instruction to students with VI; use of peers to support students with VI as well as utilization of auditory resources by students with VI during lecturers. Also, lecturers can provide visually impaired students with handout of their lecturers and course materials in Braille and other accessible modes. Furthermore, the use of use of appropriates assessment methods by lecturers as well application of assistive technologies during learning are other strategies that lecturers can use to enable students with VI to acquire desirable skills and knowledge in the tertiary institutions.

REFERENCE

1. Agesa, L. (2014). Challenges Faced by Learners with Visual impairments in inclusive Setting in Trans-Nzoia County. Journal of Education and Practice, 5(29): 222 -1735.
2. Ali, R. (2015). Dealing with Visual Impairments: Experiences of Youth in Tertiary Education. Social Science Review Vol 03 (01): 1-24.
3. Amponsah, S & Bekele, T. (2022). Exploring strategies for including visually impaired students in online learning. in Education and Information Technologies-Springer

4. Anselimus, S. M. (2023). Assistive Technologies and Participant of Student of Students with Visual Impairment in ECA

5. Asamoah, Dua, Cudjoe, Abdullah & Nyarko (2018). Inclusive Education: Perception of visually impaired students, Students without Disabilities, and Teachers in Ghana. SAGE open

6. Bhalalusesa E. (2016). Inclusion of Students with Visual Impairment in a Regular University Setting: Experiences, Challenges, and Coping Mechanisms

7. Butler, M., Holloway, L. Marriott, K. Goncu, C. (2016). Understanding the Graphic Challenges faced by vision- Impaired Students in Australian Universities. Higher Education Research and Development Online journal

8. Correa –Torres, S., Conroy, P., Rundle-Kahn, A. & Brown-Ogilvie, T. (2018). Experience of Students Who are Visually Impaired Receiving Services by Disabilities Support Services (DSS) offices in Higher Education Institutions. Journal of Blindness Innovation and Research.

9. Dakwa, F. (2014). Inclusion of Children with Visual Impairments in Regular Schools – A Zimbabwean Perspective. International Journal of Academics Research in Progressive Education and Development 3(1): 89 -109.

10. Hewett, R., Douglas, G., McLinden. M & Kell, S. (2018). Balancing inclusive design, adjustments and personal agency: Progressive mutual accommodations and the experiences of university students with vision impairments in the United Kingdom. International Journal of Inclusive Education

11. Lourens, H. & Swartz, L. (2016). Experiences of visually impaired students in higher education: Bodily perspectives on inclusive education. Disability Soc. 31(2): 240 -251

12. Lynch, P. Singal, N. & Gill, A. (2022) Educational Technology Learners with Disabilities in Primary School Setting in Low and Middle Income Countries: A Systematic Literature Review in Educational Review

13. Kapur, R. (2018). Challenges Experienced by Visually Impaired Students in Education. Research Gate

14. Khowaja, S. (2021). Visual Impairment and Tertiary Education in Karachi -4th International Academic Conference on Education 10-12 December 2021.

15. Klingenberg, O., Holkesvik A & Augestad L. (2019). Research evidence for mathematics education for students with visual impairment: A systematic review. Cogent education (2019),6:1626322, pp1-19 "Retrieved from https://doi.org/10.1080/1061898.2019.1677199

16. Korir, B. (2015). Challenges Encountered by Students with Visual Impairments and Teachers in An Integrated School Environment: A Case of Integrated Secondary Schools In Kericho District, Ainamoi Division, Kenya. International Journal of Education, Learning and Development 3(8): 28-40

17. Maurya, H. (2020). Assissitive Technology for Students with Visual impairment in Inclusive Education, Researcg Gate

18. Mboshi, N. (2018). Teaching Learners with Visual impairment in an Inclusive Education Setting: The Cameroon Perspective. International Journal of Education and Research. 6(2): 109- 118

19. McCarthy, P. & Shevlin, M. (2017). Opportunities and Challenges in secondary education for blind/ vision-impaired people in the Republic of Ireland. Disability & Society 32(7): 1007 -1026.

20. McNicholl, A, Casey, H. Desmond, D. & Gallagher P. (2019). The Impact Assistive Technology use for Students with Disabilities in Higher Education: A systematic Review in Disability and Rehabilitation, Assistive Technology.

21. Mng'ong'ose, W., Ngoboka, M., Kavenuke, R. & Ndekwa, A. (2017). Open and Distant Learning for the Blind: Empirical Review of the Challenges Faced by Learners who have Visual impairments. Research Journal of Education 3(12): 186 -189

22. Morina, A. (2017). Inclusive Education in Higher Education: Challenges and Opportunities in European Journal of Special Needs Education 32(1): 3- 17

23. Mugandi, M. (2017). Approaches to Inclusive Education and implementation for Curriculum Theory and Practice in International Journal Humanities Social Science and Educ Vol 4(10): 92

24. Ndlovu, S (2021). Provision of Assistive Technology for Students with Disabilities in South African Higher Education. Environmentl Research and Public Health

25. Onukwu for, J & Uchechi, M. (2017). Challenges of implementing Inclusive education of Children with visual impairments in Port Harcourt, River State. International Journal of Education, Learning and Development 5(3): 1-9.

26. Opie J. (2018) Educating students with vision Impairment today: Consideration of the expanded core

curriculum. British Journal of Visual Impairments 36(1) 75-89

27. Parvin (2015). Social Inclusion of Visually Impaired Students Studying in a Comprehensive Secondary Mainstream Schools in South England. International journal of Scientific and Research Publication 5(2): 1

28. Quirke, M, McCarthy, P., Guckin C. (2018). "I Can See What You Mean": Encouraging Higher Education Educators to Reflect Upon Their Teaching and Learning Practice When Engaging with Blind/Vision Impaired Learners. In All Ireland Journal of Teaching and Learning in Higher Education Vol 10(1):3371-33712.

29. Reeds, M. & Curtis, K (2012). Experience of Students with Visual Impairments in Canada Higher Education in Journal of Visual Impairments and Blindness.

30. Rosenblum, L., Ristvey, J & Hospital, L (2019). Supporting Elementary School Students with Visual Impairments in Science Classes in Journal of Visual Impairment & Blindness Vol. 113(1): 81-88

31. Rosenblum, L., Cheng, L, Zebehanzy, K., Emerson, R & Beeal, C. (2020). Teachers' Description of Mathematics Graphics for Visual Impairments: A Preliminary Investigation. In Journal of Visual Impairment and Blindness Vol 114(3): 231-236.

32. Rukwaro, R., Juma, S., Kibet, G., Kiarie, J., Muga, J., Wambua, T. & Chege, L. (2018). Can Optical Low Vision Devices Improve Reading Outcome among Learners with Low Vision? A Case of Thika Primary School for the Visually Impaired, Kenya. International Journal of Science Research

33. Sikanku, S. (2018). Challenges in Teaching Pupils with Visual impairment in Inclusive Classrooms: The Experience of Ghanian Teachers in Research on Humanities and Social Science Vol 8 (11):43-48

34. Stone, B., Kay, D., & Reynolds, A. (2019). Teaching Visually Impaired College Students in Introductory Statistics. Journal of Statistics Education "Retrieved from https://doi.org/10.1080/1061898.2019.1677199.

35. Suraweera, T., Bandara, S., Wickramarachi, C. Dewage, N, Gunawardana, T. NanayakkraN., Yapa, E, Thelijjagoda, S & Jayathilake R. (2022). Academic Success of Persons with Visual Impairment and Blindness in Tertiary Sector: Exploratory Model. European Journal of Special Education and Research Vol 8(1): 45-70.

36. UNESCO., (2020). Global Education Monitoring Report Inclusion and education: All means all, Paris: UNESCO

37. University of Worcester (2018). Understanding the Legal and Policy Framework for Inclusion –The Equity Act (2010)

ABOUT AUTHOR

Joshua Odhiambo Adongo is the Academic Registrar at Kenya Institute of Special Education. He holds doctoral degree (Inclusive Education) of University of South Africa (UNISA), P.O. Box 48413-00100 Nairobi