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Digital Literacy Skills and Assistive Technology Use as Enabler for Academic Performance of Visually Impaired Students at the Nigerian Law School

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Abstract

Education is a tool that empowers individual irrespective of gender, age, status or appearance. Academic institutions serve as channels through which formal education is acquired. This paper discusses the need to have a passionate consideration for the visually impaired students of the Nigerian Law School who aspire to become legal practitioners. Digital literacy skill is the ability to use digital technologies for information exchange across digital platforms by the visually impaired was discussed. Emphasize is laid on the need for assistive technologies such as screen readers, screen magnifiers, software for speech recognition, software that translates written text into audio files, optical character recognition software, etc were highlighted. These technologies enhance the academic performance of the visually impaired students, helping them to study with ease and less stress. Role of the teacher was also considered to be that of a care giver, supporter and an influencer who assists the students to measure up academically through teacher-student relationship. The challenges faced by the visually impaired students were also looked into. Some of the challenges include; inadequate trained personnel to teach, infrastructural deficit, stigmatization, isolation and lack of well-equipped laboratories and libraries. It is recommended that laws, policies and rules relating to the implementation of infrastructure in institutions of learning should be enforced, training of lecturers and librarians on how provide assistance to the visually impaired should be considered, libraries and classrooms should be well equipped to meet the needs of the students were highlighted among others.

Keywords

Digital literacy, assistive technology, visually impaired law school, academic performance

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Introduction

There is growing concern in the world over the need for people to acquire education especially, formal education. To achieve this goal, schools are established to serve as centres for impartation of knowledge and to ensure excellence academic performance of students. Academic institutions admit students of varying age brackets, including those with physical impairments. Sight is one of the fundamental senses required to achieve academic excellence and to live a balanced lifestyle. Visual information is critical in helping the visually impaired students observe and interpret what happens in our environment (Kapur, 2017). Visual information such as pictures, maps, videos etc are very critical to learning. Equipments necessary to magnify these textual and non-textual information resources must be made available for use.

Students with impairments require special attention in order to be at par or measure up with their mates. They face special challenges in the school environment. Not only must they be able to have access to textual information resources traversing all disciplines, but they need to fully participate in educational instructions loaded with content that can be visualized. To successfully fix this right, assistive technology and skills are required for the 21st Century Visually Impaired Students (VIS). Stressing the importance of education, Nelson Mandela once said "Education is the most powerful weapon which you can use to change the world". That is why everyone one needs education irrespective of one's condition.

It is critical to note that the teachers are also faced with some challenges in an attempt to impart knowledge to the visually impaired students. Definitely, the amount of time dedicated for the visually impaired far outweighs the time given to the non-impaired students. Kapur (2017) highlighted some of the challenges to include; difficulty in writing in straight lines, getting tired quickly due to close working distance, inability to complete the course curriculum in the required time, lack of reading and writing stands, lack of controlled lightening in the classrooms, poorly built classrooms, etc. It will be difficult to separate what affects the teachers' challenges from the students', they are directly connected.

In Nigeria, there is serious challenge with the educational system in which case most schools lack the basic educational materials to impart knowledge to the students. The worst case is the lack of consideration or poor attention given to people with disabilities. Ebuenyi (2020), reports that of the estimated one billion persons with disabilities globally, about 21 million live in Nigeria with high unmet need of assistive technology. However, the importance of assistive technology cannot be overemphasized; it is considered relevant for achieving the Sustainable Development Goals (SDGs) and most importantly, the United Nations Convention on the Rights of Persons with Disabilities which recommends that access to assistive technology is a human right (Ebuenyi, 2020). This paper therefore, aims at adding a voice to the desperate call for government and well-meaning organisations to step up action towards providing the necessary equipment and support for the visually impaired students in Nigeria.

As a matter of policy, in 2018, the Nigerian government signed into law the Discrimination against Persons with Disabilities (Prohibition) Act (DAPDA, 2018). The effective implementation of that law can still not be satisfactory due to the fact that discrimination and stigmatisation of people with disabilities still lingers in Nigeria's workspace. Deliberate action is required by higher institution of learning in Nigeria to put in place the needed technology that can assist the visually impaired students to achieve their academic targets or expectations. Majorly, the problem is not with the laws, but the implementations. To take a step further, government needs to set up a monitoring Committee that will go round in all institutions of learning in Nigeria to ensure compliance. That is the best way the visually impaired can have access to quality education.

The term "Assistive Technology" refers to the equipment, devices, apparatus and the services, systems, processes and adaptations made to the environment that support and facilitate their functions, used by persons with special education needs (Erdem, 2017). In an era where Information and Communication Technology (ICT) is playing a leading role in facilitating learning, through access to ubiquitous online information resources, students with visual impairment need the necessary tools and skills to be able to participate in the teaching and learning process. In line with this, Kisanga and Kisanga (2020) assert that access to assistive technology among students with visual impairment is highly dependent on their availability and technical-know how of the users.

In education, assistive technology serves to enhance learning and support classroom performance and participation (Satterfield, 2016). However, both those with or without disabilities have equal rights to education and must be seen as such. Both low-tech and high-tech devices are used consistently to assist students with a wide variety of learning challenges (Viner, Singh & Shaughnessy, 2020). These devices must be provided by the government or well-meaning citizens through donations for the proper education of the visually impaired.

The whole essence of acquiring digital literacy and assistive technology skills is to ensure that students with visual impairment perform academically. Academic performance can be seen as the knowledge gained by the student which is assessed with marks by a teacher and/or educational goals set by students and teachers to be achieved over a specific period of time (Kumar, Agarwal & Agarwal, 2021). This being the case, students with visual impairment need to be provided with enabling environment to thrive.

It has been observed over the years that students with visual impairments admitted for training that qualifies them to practice law in Nigeria face challenges due to inadequate or lack of appropriate technologies that could facilitate learning. The Nigerian Law School admits thousands of law graduates every year spread across the seven campuses- Abuja, Bayelsa, Enugu, Kano, Lagos, Port Harcourt and Yola campuses. These students include people with disabilities- visually impaired, hearing impairment and other disabilities. They are required to abide with the standard process

of acquiring the certificate to practice as Barristers and Solicitors of the Supreme Court of Nigeria.

Observably, during examination in the Nigerian Law School, questions are read to the hearing of the students with visual impairments in some campuses because of non-availability of assistive technology. It would be herculean task for the staff that would have to read the questions sometimes repeatedly before the students could answer.

Therefore, this study discusses how the visually impaired students at the Nigerian Law School have been coping with their academics, the effect of lack of assistive technology on their academic performance and to recommend ways to achieve this all important needs of the visually impaired students.

Visual impairment and the need for digital literacy in the era of technology

To be effective, the visually impaired must possess the capacity to use information and communication technology tools in combination with the Internet to search, apply, and produce ideas in this era of widespread adoption of technology. Digital literacy is being aware of the existence of the various technologies and how to use them to gather information that can solve human problems. It has become an integral element of everyone's life to live and flourish in the digital age where information is perceived as a factor of production.

Education in the twenty-first century is all encompassing and is driven by the idea of digital resources in addition with the analogues information resources. To adapt to the technology age, people require a diversity of skills and knowledge (Reddy, Sharma, & Chaudhary, 2020). It is now necessary to be knowledgeable about digital tools, mobile devices, computer-aided manufacturing tools, communication tools, and smart learning cities due to the digital revolution (Pea-López, 2009). Inventors of these smart learning tools left no one out of the map taking into consideration the visually impaired, other impairments and non-impaired people who should be aimed with skills in order to have access to these tools.

Digital literacy is not just computer literacy; rather it is the ability to use digital technologies for information exchange across digital platforms. Saleem and Batcha (2014) defined digital literacy as the ability to analyse information by using digital technology. The concept of literacy refers to the development of straightforward, useful skills that significantly advance and revolutionise a person's capacity for thought. After the technological revolution of the 21st century, the concept of digital literacy has reached its zenith. Due to the demand of technology abilities, this term has resulted in the creation of new literacy and increased complexity in workplace performance (Cisotto & Pupolin, 2018). The meanings of digital literacy change as per the advancement in technological devices and resources.

Education has adopted a new paradigm as a result of the usage of digital gadgets to learn literacy (Reddy, Sharma, and Chaudhary, 2020), becoming more creative and participatory while also increasing the effectiveness of both students and teachers (Ahmad, Hashmi, Shehzadi, & Nawaz, 2021). The Student's learning roles have changed as a result of the transition from traditional to virtual learning. Along with giving those with visual impairments new possibilities, rapid advancements in

computer technology also presented these students with significant challenges. The visually impaired learner now needs to rely on complicated and expensive technological tools. For some students who can afford it, these developments make a visually impaired person's life possible and give them possibilities to access information and communicate effectively through digital literacy knowledge.

Need for assistive technology for the visually impaired students in Nigerian Law School

Assistive technology, according to the United Nations, is "technology modified or expressly intended to improve the functioning of people with impairments" (Borg, Larsson, &stergren, 2011). Any item, piece of equipment, or product system used to increase, maintain, or improve the functional skills of people with impairments is considered an assistive technology device, regardless of whether it was purchased commercially off the shelf, modified, or custom-made. The term "assistive technology service" refers to any service that directly aids a person with Visual disability choice, purchase, or usage of assistive technology equipment.

It takes solid device control to use digital technology to access learning possibilities at the higher education level. For independent and effective work, students with visual impairment need the most recent assistive technologies (Tejedor, Cervi, Pérez-Escoda, & Jumbo, 2020). Any assistive device without an embedded electronic component is referred to as no-tech or no-technology. A few examples of non-tech products are a Braille slate, a Taylor-Frame, an abacus, a reading stand, bold-lined paper, and a long cane. Low-tech or low technology devices may be electronic, but they do not have highly advanced, sophisticated components. This category contains devices like an audio player, talking calculator, Braille and electronic voice recorders.

There are varieties of assistive technology available for those with visual impairments. Some of them and their functions are: Screen readers, screen magnifiers, software for speech recognition, software that translates written text into audio files, optical character recognition (OCR) software, closed circuit television (CCTV), magnifiers, transcriptions, scanners, reading machine, refreshable Braille displays, Braille writers, software for translating Braille, alternative keyboards and digital books. Of all these aids and more, the visually impaired students of the Nigerian Law School barely use one of them, hence the need for these technologies to enhance their performance.

How assistive technology enhances academic performance of the visually impaired

Academic performance in academic discourse is the aggregate academic outcome based on tested effort of students to determine the level of knowledge impartation receives during a period of learning. Higher academic performance is almost universally considered a good thing and most quantitative studies show that performance is positively, although weakly related to mental health (Hogberg, 2023). Academic performance is an intellectual cum physical activity that requires adequate concentration. Therefore, imagine the kind of intellectual energy sapping that the visually impaired students can face without assistive technology.

Assistive technology is capable of providing great support for the visually impaired students by making available devices that enhance their learning experiences and bridge the gap that exist between them and their peers that can see, it also can enable them to have access to learning materials, interact favourably with their environment and participate in other activities that can boost their learning abilities.

The students' performance can improve if raised or embossed prints are employed as a medium of instruction, for instance, if the students' educational demands can be satisfied utilising touch prints. Technologies such as Braille devices are some of the most popular devices around the world that have helped transformed the educational experience of the visually impaired students. Libraries in the Nigerian Law School ought to have these devices that help display and emboss text, images and other contents tailored towards achieving their educational needs. At present, there are few or unavailability Braille for all the courses taught in the institution. There must be a conscious effort to make these materials available for the visually impaired students.

The visually impaired students share the same classrooms with all their mates in the Nigerian Law School. Obviously, electronic devices used for teaching are the projector for slides presentation, microphones and speakers. To make the visually impaired students compete with their peers, magnification software which assists in enlarging on-screen text, images and other contents are required for the students with low vision. Special studio within the library for the visually impaired students is also required to enable them read with ease.

Visually impaired can use optical character recognition (OCR) technology which converts print text (hand out or textbooks) into digital format that can be read by screen readers and other tools. It depends on the level of impairment; most of them hardly can use reading glasses because they are not strong enough. The OCR makes it easier for them to study and perform well in their examinations.

To enhance the performance of the visually impaired students, computer gadgets need to be made available with Voice Recognition Software that enables them control computer devices using voice or spoken commands. With such technology, the students will not need someone to read examination questions, surf the net, or do research for their assignment and tests. The teachers should also allocate extra time for the visually impaired to meet up during examinations.

Non Visual Desktop Access (NVDA) is free and open source screen reader software designed to assist people with visual impairment to navigate computer systems and perform various tasks independently (Galt Foundation, 2023). This technology announces text, menus, dialogue boxes, documents, web pages, etc. Other devices include the Or Cam which a handheld device built with Artificial Intelligence for people with low vision. It converts text into audio that can be listen through Bluetooth connection, the best of the device is that it does not require Internet connection. There is also the Hable One Smartphone keyboard designed for individuals with visual impairment (Galt, 2023). It is an eight- key Braille keyboard that allows its user to control their Android or iOS devices completely.

Having access to these assistive technology will be an avenue for the visually impaired students to participate more effectively in academics and to provide meaning services to the society that has always down played their capacity to impact the world.

Role of the teacher in educating the visually impaired students

Teachers are responsible for the training of the visually impaired students. They are very special in the hearts of the students, playing the role of mentors and care givers. It is worthy of note that the visually impaired can hardly succeed in their academic pursued without the teachers' effort. Students with visual impairments have unique educational needs which are most effectively met using a team approach of professionals, parents and students (Maurya, 2016). From the day the student comes under the care of the teacher, the teacher's major role is to ensure that the educational needs of the students are properly met through effective teacher-student relationship.

The training of the visually impaired is to instil in them the ability to be independent learners and to enable them carry out their personal activities whether in school or home independently. Therefore, the teacher is required to consults regularly with students, parents and other educational personnel to ensure the goal is achieved. The teacher's aim is to ensure that the students succeed in his academic and other pursued.

The teacher has the responsibility of strategizing how to deploy these learning tools and skills bearing in mind that many of the visually impaired students do not have a lifetime of visual experience to draw upon. Some of the strategies for imparting knowledge to the visually impaired students as suggested by Maurya (2016) are: to provide clear, detailed information of the courses and how to assess them, providing reading list in advance, use a multi-sensory approach such as power point, video, audio, etc, have regular breaks in long class, verbalise what is written on the board and on overheads, giving them extra attention and time.

When the visually impaired are tested through examination, the teacher has to consider assessing them with some strategies. The teacher may consider extension of examination time and assignment datelines; provide conducive space with the necessary facilities Brails, computers with assistive software, etc. With these and more, the students will enjoy learning.

Challenges faced by the visually impaired students in Nigeria

Teaching must be impactful and result oriented particularly to the students. The challenge is that some lecturers who handle visually impaired students are less trained in teaching and handling of these students (Otyola, Kibanja & Mugagga, 2017). Therefore, they teachers must be provided with the necessary equipment, knowledge and skills that facilitate teaching and learning in our institutions. In a study by Athanasios et al (2009) on the challenges faced by the visually impaired include: lack of equipment and infrastructure, lack of adequate trained teachers, social exclusion and prejudice of the visually impaired, lack of motivation, fear and insecurity that they will fail, etc.

Observably, one of the challenges faced by students with impairment in Nigeria is unavailability or lack of implementation of infrastructural policies that are favourable to

the visually impaired students. Most buildings in Nigeria's institutions of learning are not designed with the physically challenged in mind. Therefore, the visually impaired can hardly operate independently without needing assistance from their mates to move to their classes, hostels, and other essential places. Should they be provided with censors on the roads, lifts in storey buildings, specially constructed roads mainly for the visually impaired and essential equipment, life would be much easier for them.

Other challenges revealed by researchers include lack of good reading rooms, lack of equipment, isolation, stigmatisation, lack of textbooks, lack of knowledge of Braille, movement problems, negative attitudes towards them, academic competition with other students and disturbances from non-disable students (Otyola, et al., 2017). Some of the visually impaired students, who cannot move unaided need a dedicated person that can help them read, guide and explain certain information, which is a challenge to the person rendering the assistance because they will not always be free to go about their own activities.

Libraries are supposed to have resources and facilities available for the visually impaired. However, there is a dearth of information resources in Nigeria as many libraries are not well funded and most of their resources cannot meet the demands of the 21st Century. More so, most the visually impaired cannot access the libraries because of lack of proper structural design. Challenges such as inadequate facilities, dearth of instructional materials, unfriendly environment and lack of trained personnel are still plaguing the system (Okoye & Odirika, 2019). Nigeria is full of infrastructural decay due to corrupt and unpatriotic leaders who are careless about the plight of the down trodden especially the physically challenged.

Conclusion

This paper has revealed the need for urgent provision of assistive technology to the visually impaired students of the Nigerian Law School. Policies and guideline supporting the provision of assistive technology must be strictly implemented as required by law. Every visually impaired student has equal right to education and should be treated as such without stigmatisation. Effort should be geared up in training the visually impaired on skills that will help them use the technologies effectively and efficiently. These will go a long way in giving confidence to the students and the educational system in Nigeria.

Recommendations

The following recommendations are hereby made:

1. Infrastructural policies, law, or guidelines must be fully implemented to provide access to all places of learning for the visually impaired.
2. Libraries should be equipped with adequate learning facilities and resources for the visually impaired students.
3. Librarians should be trained on how to render services or assisting the visually impaired.
4. Lecturers should be given proper training on how to effectively teach the visually impaired.

5. Special attention should be given to the visually impaired by the society at large, bearing in mind that they are also important.

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