



Emerging Trends in the Education of Students with Visual Impairment in Nigeria

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Abstract

Teaching students with visual impairment requires new teaching skills, strategies, innovations, as well as the application of assistive technological devices and software due to their disabling condition and educational needs. It discusses the concept of students with visual impairment and highlights the challenges in teaching students with visual impairment. It enumerated and discussed the principles of teaching students with visual impairment as well as the strategies for preparing teachers of students with visual impairment. It dealt with instructional considerations for students with visual impairment and the instructions for teaching students with visual impairment. The paper also discussed the emerging trends in the education of students with visual impairment and lastly, a conclusion was drawn. The paper suggested that adequate specialized equipment, materials and technological devices like assistive technology devices should be provided to students with visual impairment to facilitate their teaching and learning; also, adequate funds should be allocated to the education of students with visual impairment at all levels.

Keywords: Emerging trends, Education, Students with visual impairment, and Nigeria

Introduction

Students with visual impairment are students in whom the sense of vision is defective, and this could range from the ability to see a little to total blindness. These students are visually disabled when they cannot perform visual tasks like print reading. They are visually impaired when they encounter difficulties that prevent them from total integration into society. For the teacher, a student is blind if he cannot read ordinary or bold print.

Sequel to the above reasons, teaching students with visual impairment requires special planning, special instructional strategies, special instructional materials and equipment, as well as curriculum modifications. Moreover, teaching students with visual impairment involves specialized instruction, environmental modifications, and utilization of assistive technology

devices and software to enhance their understanding and participation. Jonson-Jones (2017) affirmed that students with visual impairments require specific interventions and modifications of their educational programming. Students with visual impairment can learn, but the access of their visual senses is impaired. As such, they require different ways to interact with information, relying on touch, taste, and hearing to gather information. Furthermore, teaching this category of students require patience and enough time, because their learning is sometime very slow. The teacher will need to employ other senses apart from sight to include touch, smell and hearing (Danlami, 2023). Students with visual impairment learn better, when they manipulate objects. They should be exposed to the curriculum designed for sighted students but with some modifications to suit their learning needs and capabilities.

Teaching students with visual impairment require instructional planning, adaptation of teaching resources, modifying classroom materials and learning environment, utilization of assistive technology devices and collaboration with other professionals in the field of special education. In addition, students with visual impairment should be exposed to learning with the use of the braille to enable them read and write and should be trained to move around (mobility) and given orientation on their environment (Danlami, 2020). This category of students should be taught using different technological devices and software due to their disabling conditions and learning needs.

The Concept of Students with Visual Impairment

The term students with visual impairment have been defined by various specialists in the field of special need education according to their perception to the term. Danlami (2023) defined students with visual impairment as people having problem with their sight. This involves the low vision and the partially sighted. The writer further explained that, the blind are people with little or no sight or people with profound visual loss to the extent that they cannot read or write ordinary print (small, medium or large) but use Braille as their means of communication. The low vision refers to those who are certified as visually impaired because they have some residual vision that could be useful within a few inches. Such sight is always minimal for the performance of any schoolwork without special adaptations such as low vision aids or magnifiers and specialized help. The partially sighted are those whose vision is not severely defective. They can read large prints or regular prints under special conditions. Some of them suffer from errors of refraction such as myopia (short sight) or hypermetropia (long sight). The blind, is not very difficult to detect who is blind. Certain external characteristics help one to infer that somebody is blind. Blind according to Ugbo (2017) are those that have a visual acuity

20/200 ft. In addition, students with visual impairment are defines as those who have difficulties in seeing which necessitates the use of special educational methods or adaptations to materials and who needs to use special aids and equipment for learning.

Willings (2025) added that the concept of students with visual impairment refer to those with visual problems ranging from low vision, partially sighted to errors of refraction. Persons with blindness are those who have severe visual loss or complete loss of vision. Persons with refraction errors in their view are those suffering from either myopia (short sight) or hypermetropia (long sight) all of which interfere with learning. Dafwat and Dada (2018) also conceptualize students with visual impairment as referring to persons with some amount of visual problems that could be remediated by either surgical operation or optical correction. All these forms of eye disorders can affect the academic performance of students with visual impairment if there is no adequate and appropriate educational intervention in their education, like technological intervention.

Challenges of Teaching Students with Visual Impairment

Teaching students with visual impairment is not an easy task, which is full of challenges. The challenges occur because of many factors. The challenges, according to Jonson-Jones (2017), include: under-identification of students with visual impairments, inadequate teacher training, lack of appropriate support services, lack of modification of curricula focusing on the needs of students with visual impairments, general education environments which are highly visual and teacher perceptions of these students.

Other challenges facing students with visual impairment in education as identified by Timothy (2022) include:

- i. **Academic Barriers:** Accessing standard learning materials, such as textbooks and visual aids, remains a major challenge for students with visual impairment. These facilities are often designed with accessibility in mind, making it difficult for students with visual impairment to fully engage with the curriculum. For instance, students with low vision or blindness require additional time to read or write using Braille or tactile facilities, which can delay their teaching and learning compared to their sighted peers. Additionally, the lack of incidental learning opportunities that is learning through observing others limits their ability to develop abstract thinking and language proficiency, which directly affects their teaching.
- ii. **Inadequate Institutional Support:** Lack of institutional support further compounds the challenges facing teaching students with visual impairment. Many teachers lack training in inclusive practices and the use of assistive technology devices and software, making it

difficult for them to meet the specific needs of these students. Schools often fail to provide accessible infrastructure like tactile maps or mobility aids and a flexible curriculum designed that accommodate diverse learning needs. Delays in providing assistive devices or alternative formats for educational materials also place students with visual impairment at a disadvantage.

Principles of Teaching Students with Visual Impairment

The principles of teaching students with visual impairment are many, but Danlami and Sani (2026) identified some of them as follows:

- i) Unified instruction: all areas of instruction should be related so that learning is integrated.
- ii) Individualization: the needs of the students with visual impairment should determine the nature and type of programme to be used while teaching them.
- iii) Concreteness: knowledge about concrete objects should be obtained through hearing and feeling.
- iv) Additional stimulus: learning should extend beyond the classroom into experiences that should sensitize other senses.
- v) Additional activities: encourage the students to perform most activities by themselves.

Students with visual impairment require specialized instruction to access and understand concepts in a predominantly visual world. Effective teaching for students with visual impairment emphasizes concrete experiences, hands-on learning, and thematic integration. Willings (2025) identified the following as guiding principles of concept development for students with visual impairment:

- a) Concrete experience: Concrete experiences are important in assisting students with visual impairment to build meaningful, real-world knowledge. These experiences involve direct interaction with actual objects and environments, allowing students to use all their senses, particularly touch, hearing, and smell, to explore, understand, and make cognitive connections.
- b) Learning by Doing: Students with visual impairment learn best through active involvement. Learning by doing enhances the independence and confidence of students with visual impairment. To support this principle, the teacher should involve students in everyday routines, assign meaningful responsibilities, teach full processes, encourage problem-solving, and promote self-sufficiency.
- c) Unifying Experience: Thematic instruction is especially effective for students with visual impairment, as it helps them form connections between related ideas and concepts. Rather

than teaching topics in isolation, thematic units allow for deeper exploration and broader understanding. The benefits of this strategy include expanding vocabulary and conceptual knowledge, intentional lesson design, direct instruction, challenging all learners, and individualized approach. Through this approach, the teacher can provide meaningful, interconnected learning experiences that promote understanding and retention.

The above teaching principles assist greatly in the effective teaching of students with visual impairment in Nigeria, especially students with visual impairment in an inclusive setting.

Preparation for Teachers of Students with Visual Impairment

There is consensus that teaching children with visual impairments requires certain skills in their teachers and related service providers, there appear to be no detailed studies of the number of trained teachers of students with visual impairment qualified to provide such services in most of the schools in some countries (Adebiyi, 2016).

Adequate personnel preparation programs must be in effect to train staff and to provide specialized services that address the academic and non-academic curriculum (Johnson-Jones, 2017). However, there are increasing apprehensions that students with visual impairments are not receiving the concentration of services needed to develop adequate skills to successfully include them in school. Research by (Jonhson-Jones, 2017) supports the essential elements that teachers of students with visual impairments should possess, including effective communication skills, the ability to correctly place students in appropriate settings, and knowledge of the educational implications of eye conditions (Johnson-Jones, 2017). These competencies, aligned with the development of personnel preparation programs, have provided a foundational structure for future teachers. Experts contend that students with visual impairments need instruction by a teacher with expertise in the areas of visual disorders and sufficient training in effective use of strategies.

Instructional Considerations for Students with Visual Impairment

Several factors must be considered while teaching students with visual impairment, as opined by Garguilo (2016), that instructional goals for most students with visual impairment include communication skills, social competency, employability, and independence, in addition to academic progress. He further said that the individualized education programme (IEP) team must decide how these goals will be accomplished; often, an array of low vision devices will be required depending on the needs of the students. The team will have to decide whether the

students require materials to be read, enlarged, or put into Braille and whether low vision devices or technology such as an abacus or calculator will be used.

Students with visual impairment encounter various obstacles throughout a lifetime that call for distinct planning of instructional goals and specific strategies. Dubose (1979) in Garguilo (2016) identified the following development concerns that must be addressed as part of a total educational programme for students with visual impairment: basic cognitive and academic skills, sensory perception skills, orientation and mobility skills, social and emotional skills, daily living skills, self-help and advocacy skills, recreation and leisure time skills and transition skills.

Moreover, Garguilo (2016) stressed that adaptations of materials and the environment may be necessary to enable students with visual impairment to participate in the learning process and derive maximum benefits from the experience. Adaptations may vary according to individual needs, which should be assessed before making special provision available to the students.

In teaching students with visual impairment, consideration of the learning environment is very vital. This is because visual impairment requires a special learning environment both at home and school. Timothy (2022) posited that visual impairment requires special learning environment that includes three vital areas of the environment which require careful attention. These are visual environment, the sound environment and the tactile environment. This consideration is much more for children who have low vision and are partially sighted.

Students with visual impairment have learning needs, such as Braille system for reading, writing and a typing machine as a means of communication. Mathematical aids and equipment, such as abacus, Taylor's frame, cubarithm, adapted aids for physical education and motor development, Special equipment for learning elementary and integrated science, adapted materials for learning creative and cultural art, and other subjects (Ugo, 2017). Similarly, Azanor, Isola and Ajobiewe (2015) state that large felt pen, pencil and Manila paper with raised and bold lines can be of benefit to students with visual impairment. In addition, a computer and a large screen can be introduced to facilitate independent writing and reading.

Instructions for Teaching Students with Visual Impairment

Teaching students with visual impairment requires careful planning due to their disabling condition. Therefore, Azanor, Isola and Ajobiewe (2015) identified the following instructions for teaching students with visual impairment. They are:

- i. Ensure access to qualified teachers (specialists in visual impairment).

- ii. Provision of appropriate resources.
- iii. Provision of opportunity and experiential learning involving the use of real objects that the students with visual impairment can touch.
- iv. Provide information through oral or tactile means

Emerging Trends in Educating Students with Visual Impairment

Education is dynamic; it changes with time and human needs. Students with visual impairment have learning needs that can be achieved through innovations in teaching and learning processes. Therefore, the trends in teaching students with visual impairment cover some areas such as early identification of visual impairment, technology and transition training for students with visual impairment (Adebisi, 2016).

A. Early Identification and Prevention of Visual Impairment: Early identification and intervention are a two-step process for identifying children with visual impairment as early as possible and providing specialist intervention services to children with visual impairment between the ages of zero and six years (Sense International, 2018). Early identification is extremely important because early intervention will be most effective. Sometimes it is unclear whether a child has a vision problem or not. Atteng and Danlami (2024) opined that physical signs of vision problems include eyelid drooping over one or both eyes, or eyelids that do not completely cover the eyes when the child closes them. If a child has a clear squint, has jerky eye movements, or eyes that do not move together, parents should see a pediatric ophthalmologist. Other signs include: not looking others in the eyes, reading in front of or very far to see them, turning or tilting his head when he uses his eyes, etc.

After the identification of students with visual impairment under three years of age, parents should begin working with an early childhood interventionist. Young children who are visually impaired are eligible for early intervention services, which can help a family through the child's first few years of life. Early intervention for students with visual impairment is vital in enhancing social, physical, and intellectual development of this category of students (Atteng and Danlami, 2024).

When the child is over three years old, he will qualify for special education services if the visual impairment impacts his education. Parents should contact the school district special education officer to locate services for their visually impaired child. A child with visual impairment may qualify for services from teachers of students with visual impairment, an orientation and

mobility specialist, a physical therapist, a speech therapist, or a psychologist, depending on individual needs. Children with visual impairment should also be provided with modifications in an inclusive classroom (Ajobiwe, 2016).

B. **Assistive Technologies:** Any adaptable device or service improving participation, success or independence of students with visual impairment is regarded as assistive technology. What devices, tools and technologies would be appropriate for meeting the learning needs of students with visual impairment must be determined based on the personal needs of the student (Kizilaslan, 2018). Assistive technology must provide students with visual impairment with independence, instead of giving them an unfair advantage, to compete with their peers effectively. Assistive technologies help students with visual impairment access the general curriculum and improve their academic performance. Some of these technologies ensure access to information provided in an electronic environment, and others are devices to be used independently (Michael, 2018). Talking calculators, talking computers with printout, Braille printers, and Braille computers with no paper produced based on technological advances are some of the electronic assistive technologies assisting students with visual impairment (Johnson-Jones, 2017). The majority of students with visual impairment can use various assistive technologies, including reader cassette-recorded books and sometimes Braille materials. Furthermore, students with visual impairment can also be taught using assistive materials such as diagram schemes, pictures, embossed maps and three-dimensional models of physical organs and drawings of figures and microscopic organisms. Some of the assistive technologies to be used in teaching students with visual impairment, according to Kazilaslan (2018), are as follows:

Braille Image Device: Braille image device is an electronic environmental tool improving interaction of students with visual impairment with a computer, connecting to a standard computer with a special cable, and converting Braille characters sent to the computer monitor to normal text. Students with visual impairment transform this text to normal writing when writing a text by using Braille characters.

Braille Printer: A Braille printer is a printer used to generate a copy of Braille text, and it works when connected to a computer. Examples of Braille printers include Braille embosser, Index Braille Printer, etc. Students with visual impairment can print Braille copy of their personal notes, written questions and documents about the class by using Braille printer. Thick A4-size paper must be used in the printer, and only one side of the paper can be used for printing.

Electronic Braille Note Taker: students with visual impairment may take notes in class by using this device supported by Braille keyboard. These notes may be transferred to a computer later on for saving or may be printed in Braille print formats. The majority of note-taking devices, like Braille Sense on Hand, have word processors, calculators or clocks. They have almost any features of a computer. Some note-taking devices have Braille talking programmes as well. In other words, students with visual impairment transform a text they have written in Braille format into an audial language used daily. Note-taking devices are in the size of a book in general and can be carried by students with visual impairment easily.

Braille EDGE 40: The Braille EDGE 40 is a 40-cell Braille display to be used by students with visual impairment. Students with visual impairment use the device to do the following. It is used as a Braille display terminal for Windows, such as Mac, iOS, or Android screen readers. Students with visual impairment use the built-in “notepad” to create and edit Braille and text documents, or read BRF books, utilize several built-in utilities including a schedule manager, calculator, alarm/clock, stopwatch and countdown timer. They connect the device with a USB mouse and use the wheel to quickly scroll documents and click to open menus (Danlami and Isa, 2018).

Talking Books: This technology offers unmatched opportunities to students with visual impairment to make information more accessible. Books read vocally are recorded in an electronic environment or on cassette and prepared for students with visual impairment. Access websites having a talking book collection and are designed specifically to enable students with visual impairment to access information about specific disciplines without the need for any special hardware. These websites may be accessed by means of smartphones or tablets.

Golden Point Braille Software: is software that performs functions such as Braille input and output, which enables students with visual impairment to read information board appearing on the computer screen. It is capable of converting what appears on the computer screen to Braille touch board that students with visual impairment use to read information. It also allows them to send e-mail or to conduct information searching and retrieval. This system is easy to use. With little training, students with visual impairment can type about 50 to 60 words per minute (Michael, 2018).

C. Transition Training: Transition training is a support service aimed at helping students with visual impairment accumulate pertinent life skills that will be put to use as soon as the students with visual impairment transition from nursery school, primary school, secondary

school to post-school life. The transition training is an integral part of the school curriculum, especially the child's Individualized Education Programme arrangement (Danlami, 2020). So that students with visual impairment become self-dependent in various post-school environments. Such environments include the home, workplace and other community situations such as offices, restaurants, markets, etc. Through transition training, students with visual impairment are empowered to face the realities of the post-school environment (Danlami, 2020). This training is crucial because transition years from school to adulthood are more difficult for young people with visual impairment.

- D. Use of Artificial Intelligence: An example of an artificial intelligence application that helps in teaching students with visual impairment is TapTapSee. It uses AI algorithms to recognize objects and environments such as animals, colours, plants, and text. By taking a photo or video with a mobile photo camera, users can recognize objects. Then, the voice-over reader provides information through voice messages within seconds. In addition, WiYG (Write-It-Yourself Guide) allows students with visual impairment to write on printed documents without the help of others. Furthermore, AI offers significant support in reading, which is a critical skill for students with visual impairment. Students with visual impairment benefit from text-to-speech tools like Speechify and NaturalReader. These programmes not only read content aloud but also use AI to create summaries and outlines, helping them review key concepts and check their understanding. General AI tools can break down large assignments into smaller steps, create personalized schedules, and set reminders to keep students on track (Learner, 2026).
- E. Expanded Core Curriculum: Expanded core curriculum refers to the concepts and skills that often require specialized instruction with students with visual impairment in order to compensate for decreased opportunities to learn incidentally by observing others. In addition to the general education core curriculum that all students are taught, students with visual impairment, starting at birth, also need instruction in the expanded core curriculum. The nine areas of expanded core curriculum are assistive technology, career education, compensatory skills, independent living skills, orientation and mobility, recreation and leisure, self-determination, sensory efficiency, and social interaction skills (Texas School for the Blind and Visually Impaired, 2026).

Conclusion

In an attempt to identify and discuss the emerging trends in the education of students with visual impairment, the paper sought out the challenges of teaching students with visual impairment and the principles of teaching students with visual impairment. The strategies for preparing

teachers of students with visual impairment were identified and discussed. Instructional considerations for teaching students with visual impairment as well as instructions for teaching students with visual impairment are highlighted.

The emerging trends in teaching students with visual impairment are many, but a few discussed in the paper are early identification of visual impairment and its prevention strategies, using assistive technology devices in teaching students with visual impairment and transition training for students with visual impairment.

Suggestions

The paper suggested the following:

1. Adequate specialized equipment, materials and technological devices like assistive technology devices should be provided to students with visual impairment to facilitate their teaching and learning.
2. Adequate transition training programmes or services should be provided to students with visual impairment for them to face and tackle the challenges of post-school life.
3. Adequate funds should be allocated to the education of students with visual impairment at all levels.
4. Government should provide adequate training to teachers of students with visual impairment on the implementation of the emerging trends in the education of students with visual impairment.

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