

Report of a one-day stakeholders Meeting

Creating Accessible Contents in Stem Subjects for The Blind.

By

Nigeria Association of The Blind in
Partnership with Total Inclusion
Ltd/Gte

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Office of the National Commission for Persons with Disabilities, FCT Abuja.

Report of a one-day stakeholders Meeting

Creating Accessible Contents in Stem Subjects for The Blind.

Executive Summary

1.Meeting objectives

The main goal of the meeting is to examine the issues around access to mathematics education for visually impaired primary and secondary school students.

2.Participants:

Federal and States Ministries of Education, National Commission for Persons with Disabilities, Nigerian Educational Research and Development Council (NERDC), National Teachers Institute, Teachers Registration Council of Nigeria (TRCN), Sightsavers, Nigeria Association of the Blind, Total Inclusion Ltd, The Joint National Association of Persons with Disabilities (JONAPWD), and other stakeholders.

3.Key Outputs/Results:

The meeting met the above objectives. The stakeholders created sub-committee to work on proposal, follow up on the Action plans and suggestions for the successful implementation of the project to Create Accessible Content in Stem Subjects for The Blind

4.Follow Up

Nigeria Association of the Blind in partnership with Total Inclusion Ltd is going to compile and finalize the detailed report of the meeting which will be disseminated among the sponsors, including results and comments that emanate from the stakeholder meeting will be taken into account.

5. Meeting organizers/facilitators

The meeting was facilitated and supported by Sightsavers & The International Council for Education of Visual Impaired, Africa.

Introduction

The Stakeholders meeting gathered participants, which represented key stakeholders which include:

- Sightsavers
- Nigeria Association of the Blind
- Total Inclusion Ltd
- Federal and States Ministries of Education
- National Commission for Persons with Disabilities
- Nigerian Educational Research and Development Council (NERDC)
- National Teachers Institute, Teachers Registration Council of Nigeria (TRCN)
- The Joint National Association of Persons with Disabilities (JONAPWD), and other stakeholders.

Main Objectives

The meeting aimed to:

- To look at what can be done or do together to proffer solutions to the fact that visual impaired people are having difficulty to learn mathematics.
- To provide a platform as a team for shared learning and harnessing available resources within and outside Nigeria in achieving better solutions to the problems.
- Enhancing a collaborative and coordinated approach through capacity building processes for all stakeholders.

Program Structure

The program was facilitated by Queen Effiong Adekunle-Oguntosin of Total Inclusion Ltd/Gte and It was implemented through the following process and agenda:

- Arrival/Registration & Self Introduction of participants
- Welcome Remarks by NAB President and the Director of Total Inclusion
- Overview of the meeting by Head, Education Committee NAB.
- Goodwill Messages
- Paper Presentation Teaching and Making Mathematics Accessible to the Blind; Prospects and Challenges by Prof Jurmang Isuwa J.
- Paper Presentation: Teaching and Learning Mathematics from the student's perspective by Dr Ifeolu Akintunde

- Paper Presentation: Making Mathematical Content Accessible to the Blind by Dr Ndubuisi S.I.
- Questions, Comments and Observations
- Group Discussions and presentation on proposed means to tackle issues and possible solutions in the following areas: Inclusive Curriculum development; Training teachers to teach mathematics for Blind people; Accessible Content Creation; and Inclusive Government policy on Mathematics Education.
- Creating sub-committee to work on proposal to be submitted in January
- Final Remarks and closure

Flow of the meeting

1. ARRIVAL/REGISTRATION & SELF-INTRODUCTION OF PARTICIPANTS

The workshop started at about 11:05am with the registration of participants. There were introductions to establish the calibre of participants present.

The workshop was attended by participants from Federal and States Ministries of Education, National Commission for Persons with Disabilities (NCPWD), Nigerian Educational Research and Development Council (NERDC), National Teachers Institute (NTI), Sightsavers, The Joint National Association of Persons with Disabilities (JONAPWD), Nigeria Association of the Blind (NAB), Teachers Registration Council of Nigeria (TRCN), Albino Foundation, Total Inclusion Ltd, Federal College of Education (Special) Oyo, the Education Committee of NAB, Resource Persons and the Media.

Mr David Okon, Head of the Education Committee of NAB appreciated the participants for honoring the invitation and handed over to the President of NAB, Mr Ishiyaku Adamu.



2. WELCOME REMARKS

NAB President, Mr Ishiyaku Adamu Gombe

The NAB president welcomed everyone, thanking them especially for taking out time to be part of the meeting. He apologized to those that came early for starting the program a little behind schedule, but he also appreciated those who came late. According to him, everyone present was aware that the aim of the workshop is to talk about mathematics for the blind. He however added that, for NAB, 'we are concerned with the inability of the educational system in Nigeria to teach mathematics for the blind students at primary and secondary school levels, not because Blind people cannot learn mathematics but because things are not structured in a way that the blind person will learn or love mathematics'. He gave an example of how they were told in secondary school that mathematics was not for the blind person, paving the way for issues and challenges in the labor market, gaining admissions into tertiary institutions or reading courses of their choice.

He reiterated that the Association brought all stakeholders to discuss these lingering issues in the blind community. So far, complaints have been received from blind people particularly when they are rejected by tertiary institutions. He stressed that before now, there was a waiver from the National Universities Commission (NUC) for blind people going into universities, but the waiver seems to have expired. In the meantime, NAB is trying to see how things can be improved, in terms of teachers training, equipment, curriculum, UBEC intervention, and the participation of other key stakeholders to ensure that blind people are learning mathematics in Nigeria. In other countries, blind people excel in mathematics and other sciences.

He emphasized that Blind Nigerians are willing and have the capacity to learn mathematics as a subject in their schools or as a choice in their career. He concluded by saying 'we welcome everybody and appreciate your contributions and the commitment of your organizations to ensure that we change the narrative for blind students in Nigeria. We will be here with you and follow up after this workshop through the formation of a committee for the task ahead. So I enjoin you to participate actively and be open in the discussion to find lasting solutions.

Director, Total Inclusion Ltd, Mr Ubong Udoh

The Director acknowledged the presence of the NAB president and other stakeholders during the meeting, especially the funders, Sightsavers and the International Council for the Education of the Visually Impaired (ICEVI) Africa. According to him, 'I appreciate your support and this event is jointly organized by the Nigeria Association of the Blind and Total Inclusion Ltd/GTE; as the name implies, we are looking at inclusion from a holistic perspective'.

The NAB president spoke about the blind and challenges in mathematics, the fundamental problem facing the blind in Nigeria has been identified. We are so grateful that the President of the Federal Republic of Nigeria assented to the Disability Act. If you look at Article 17, it talks about PWDs having an unhindered right to education at all levels. This invariably means

that no persons or institutions should discriminate against any PWDs, by denying them education. He continued that In Total Inclusion, 'we are looking at giving blind persons total access to education on the same page with their counterparts'. He reiterated that the NAB president had talked about blind persons denial in admission because of math's; those admitted initially had been asked to go back and rewrite math's. It's not that blind persons cannot study math's in Nigeria, but the opportunity is not there for them as in other countries.

In his words, "An inclusive curriculum is needed to look at the issues of persons with visual impairment. It is also possible to teach teachers and make the study of math's in braille compulsory for teachers to be able to teach those who are sighted and the blind, if the goal of Disability Act is to be achieved; there's the need for tertiary institutions represented here to make the study of math's accessible to persons who are blind in Nigeria.

He concluded that, at the end of the meeting, NAB and Total Inclusion will be very happy to have a communiqué which will be used to engage further, to see how these challenges can be addressed. He Implored all to contribute positively towards finding lasting solutions to these problems.

3. OVERVIEW OF THE MEETING BY MR DAVID OKON, HEAD, EDUCATION COMMITTEE NAB.

The Head, Education Committee of NAB thanked and welcomed everybody to the workshop. He said that the two speakers had gone deep into his work in their welcome remarks and made it easier. He stated that because of the late start, he would briefly point out that the purpose of the meeting is to look at what can be done to proffer solutions to the fact that visually impaired people find it very difficult to learn mathematics.

According to him, It did not start today because he personally encountered the same challenge while in College, where the teacher said that he cannot teach mathematics to the blind. The conversation ended in the blind students leaving the class disappointed. He said, that sometime ago, the Universities waived the requirement to pass mathematics for blind students seeking admission to universities. This gave opportunities for some students to graduate.

However, as the Head of education for NAB, Nigeria, he frequently receives calls from blind students who were not admitted because English and Mathematics are basic requirements; according to him, 'we pleaded with universities and colleges and sometimes they listened but others did not. Instead, they referred us to the National University Commission who responded that Mathematics can be taught and learned by blind students.

He concluded that the meeting is for stakeholders to come, think and examine how these problems can be tackled as a team, not as Nigeria Association of the Blind. ***"I am very glad to hear that Teachers Registration Council of Nigeria and other stakeholders are here. We hope that Together we'll come up with an action plan on what we are going to do from next year, by setting a timeline and the procedures to follow for every blind child to learn, study***

and pass math's; to have mathematical content in accessible formats that he or she can read". He continued that, 'i hope that we will be able to achieve this by working together, harnessing resources within and outside the country and getting more funding to the end'. Finally, we have the best resource persons to take us through in the papers to be presented.

4. GOODWILL MESSAGES:

Esther Angulu, Social Inclusion Program Manager Representing the Country Director, Sightsavers

In her goodwill message, the Social Inclusion Program Manager stated that she was representing the Country Director, who was unavoidably absent. He however sent his greetings, love and support to all participants in the program. She said that Sightsavers is always willing to support the work of organizations of Persons with Disabilities, particularly, the Nigeria Association of the Blind. She stressed that, whatever is to be discussed is possible because the limitations are from the biases that people put in front of them. It is then with pleasure that students learn mathematics and other courses in Nigerian schools. Sightsavers will do its best to support with available resources because the Country Director is passionate about issues of PWDs. She concluded by urging participants to have fruitful deliberations.

Mrs Ifeyinwa Okedo, Assistant Director (Special Education), Federal Ministry of Education

The Assistant Director applauded the funders, NAB and Total Inclusion for this great initiative. She emphasized that without mathematics, students cannot get admission into tertiary institutions. A waver is not acceptable because inclusive is the watchword. She talked about the general challenges faced by the blind and the need to include them in all facets of life. The need for best practice ensures that the discussion will yield fruitful results. It is important to bring the discussions to schools and familiarise teachers with the inclusion agenda in mathematics because they do not need pity. They should rather be shown the way; they should not be exploited but treated like other human beings. She concluded that as specialists, practicing inclusion is better than just teaching it.

Alhaji Abdullahi Aliyu Usman, National President of Joint National Association of Persons with Disabilities (JONAPWD)

The National President was quoted in his messages as saying, "Honestly, I am very happy to attend the workshop because I have been in the disability community for many years, but it was last year that I came to understand that blind students are not offering mathematics. Fortunately, there are people like Emmanuel Karami and others who studied mathematics. The only problem is who will teach them at the elementary stage? The Blind can read mathematics and perform better, so from today they will be included for future development. JONAPWD is fully ready to support the process. The association is happy to receive funding for an education programme which will be starting in January 2023; blind students will be included in the mathematics element. NAB is one of the strongest pillars of the association,

so, the door is open anytime for collaboration and assistance from JONAPWD. We thank Sightsavers and The International Council for the Education of the Visually Impaired for supporting the program”.

Stanley Onyebuchi, National Commission for Persons with Disabilities

Mr. Stanley Onyebuchi represented the Executive Secretary of the Commission and said that the Commission always preaches inclusion and makes sure that Nigeria carries everyone along. The Commission also has a department dealing with accessibility to education, health, politics etc. Therefore, it will do everything possible to support the project and ensure that persons with visual impairment offer mathematics at all levels. According to him, ‘I urge the Education Committee to encourage braille reading by the students in order to achieve the goal, because even if there is mathematics in braille and the students do not know how to read, it is a challenge already’. The Commission has a braille center that is open for any translation assistance at any time. Projects that are PWDs friendly and inclusive are welcome in the commission. God Bless you.

5. PAPER PRESENTATION: Teaching and Learning Mathematics from the student’s perspective by Dr Ifeolu Akintunde

This was commenced immediately after the goodwill message by the key stakeholders. The Resource Person made sure he used all the opportunities at his disposal to ensure the participants were carried along and understood in detail the aim of the session. He summed up his presentation by sharing the experience of students. He pointed out some challenges from the student perspective: that most students do not know the implication of not doing well in math’s. It was not his best subject but he did well enough in Pacelli school for blind students; the difference between Arithmetic and mathematics, especially the complexity of finding X and Y; misconception of math’s and disinterest of the teachers; students not ready to offer the subject; teacher’s laxity in teaching the blind students etc.

According to him, he helped his mother in addition and subtraction in the shop; his classmate taught him, but it was too late. In his words, ‘Achievement builds confidence, the less achievement, and the less confidence’. He observed that many blind people are doing well in mathematics in other countries, including the English mathematician, Nicolas Anderson (1682-1739).

He stressed that the problem of having to pass mathematics before university entry is distressful; Blind people are struggling to get jobs after their universities because achievement in life is determine by educational attainment. He shared how he excelled, including getting awards in the UK for services to the community.

Finally, the resource person suggested that, something has to be done because if there is no teaching or equipment for the blind, the problem will be enormous. Until there are

guarantees that they will be well taught, Blind people would be forced to take desperate measures to pass exams; Government has to be satisfied that teachers are well trained to teach blind people; specialist equipment has to be available and accessible to aid blind students; and researchers, government, teachers, students and other stakeholders have to work together to achieve the goal of inclusion.

**PAPER PRESENTATION: Teaching and Making Mathematics Accessible to the Blind.
Prospect and Challenges by Prof Jurmang Isuwa J.**

According to the Professor, a number of people have given different definitions of mathematics. Forcards (2022) said that mathematics is the size of structure, order and relation that has evolved from the metric practices from counting, measuring and describing the shape of objects. Another scholar said that mathematics is all about puzzle, games. So, why are blind people not allowed to play puzzles? He asked. It's not just sitting and describing shapes but practically, they can learn about shapes.

He outlined the difficulties in learning and teaching mathematics for learners with visual impairments or blindness:

- The greatest is negative attitude and rejection from the community.
- Many materials have to be imported. There can be delays in the importation and delivery of the equipment and materials.
- High cost of Materials
- Lack of training for teachers
- Mathematics is misconceived by students, especially those with visual impairment
- Lack of assistive devices for the blind

He suggested the following:

- There is the need for Government to encourage local material production of the braille machines etc.
- Organize national conference for mathematics for blind students
- There is the need for regular training on how to use equipment through collaborations with International Nongovernmental Organizations
- There is the need for frequent visits to schools of blind people to create awareness on the set goal.
- Teachers should be trained in the principles of teaching blind students.
- Practical ways to teach the blind should be encouraged by using mathematics braille text books, carved wooden materials, needles, measuring cylinders, tactile diagrams, etc.

PAPER PRESENTATION: Making Mathematical Content Accessible to the Blind by Dr Ndubuisi S. I.

The resource person started by asking which word is right between visually impaired and blind. He argued that for the purpose of advocacy, the blind should be used to avoid imagination from people. According to him, when a person is blind, the most appropriate means of communication is through the use of braille. How will these materials be made available and accessible to the blind? The braille press of NERDC had just been upgraded with state-of-the-art equipment. Therefore, transcription should be easy. There is a scarcity of braille versions of any material and increasing the volume is key.

He emphasized the need to push for policy change, if any material or mathematical content is to go to schools in order to achieve inclusion; it is paramount to train teachers on the principles.

6. Questions, Comments and Observations

During the session, many participants lamented the challenges and suggested ways forward. Some were captured as follows:

Dr Rasheed Adekunle Abilu: He thanked NAB and Total Inclusion, hoping that solutions will be put forward. He however advised that if there must be success, questions should address issues peculiar to blind people: He observed that many braille machines in government institutions have been abandoned. NAB and Total Inclusion should also ensure the curriculum is clearly spelt out for the blind.

Andrew Gani from Knowledge for the Blind: He appreciated the organizers of the program and said that an attitude problem is across the entire spectrum of service provision; he noted the importance of access to learning materials.

Osho Jamiu Olawale: He pointed out that the problem of math's for the blind can be classified into two: The first is unclear instructions, there is the need for special instructions which must be clear or explicitly spelled out. Secondly, the use of concrete materials should be encouraged.

Ossai Lawrence: He said that on training and re-training, the major problem is that the right people may not be involved. Instead, others will be selected who have no relationship with the subject matter, because of the incentives they want to collect. These people will deliver nothing to the students.

7. GROUP DISCUSSIONS AND PRESENTATION ON PROPOSED MEANS TO TACKLE ISSUES AND POSSIBLE SOLUTIONS:

In this session, the Head, Education Committee set out the guiding principles for the group discussions. These include ways teachers should handle blind persons; policies needed to help achieve the work; sustainable ways that the actions will last; also, ways to develop inclusive curriculum. The participants were divided into four (4) groups to deliberate, discuss and develop action plans in Stem Subjects for The Blind. At the end, the group presentations were conducted in the following manner:

Inclusive Curriculum Development:

The participants in this group comprised of Dr Ndubuisi S. I., Dr Abilo Adekunle and Mr. Ishiyaku Adamu. They made the following recommendations:

- Resource Room-based subjects' curriculum for Learners with Visual Impairment at the Basic Education level. This has been taken care of by NERDC and is presently being revised, almost at the stage of completion.
- Adaptation of the revised 9-year Basic Education Curriculum. This has been done by NERDC, and is awaiting transcription into braille and other accessible formats.
- Development of curriculum for certificate or diploma for resource room-based subjects in tertiary institutions and National Teachers Institute in collaboration with NERDC, so that teachers who can teach in the resource room-based subjects will be available.
- Review teachers training curriculum for teachers of learners with visual impairment by NCCE, NUC in collaboration with NERDC.
- There is the need to advocate for the adaptation, production and distribution of the Senior Secondary school curricula.

Training teachers to teach mathematics for Blind people

The participants in this group were Dr Magaji Waziri, Hamzat Ibrahim, Joseph Orunuzi, John Paul, Agada Jacob, Abdullahi Ishaka and Emmanuel Karami. They proposed the following:

- Sponsorship of teachers training by Federal Ministry of Education, Universal Basic Education Commission and National Senior Secondary School Education Commission.
- Empowerment of National Teachers Institute (NTI) to train and re-train in-service teachers in regular schools on teaching mathematics to the blind.
- To ensure sustainability of the training program, Government should collaborate with Non-Governmental Organizations like Sightsavers, Total Inclusion Ltd etc.
- In the short term, National Teachers Institute to engage local experts to train teachers in regular schools as well as in colleges of Education and Universities in the use of braille and other technologies. In the long term, NCCE/NUC should facilitate the

inclusion of courses that train pre-service teachers on teaching mathematics to the blind. National Teachers Institute should improve on its already existing content that train regular school teachers; it should also send staff abroad for further training or invite experts from outside the country (Sightsavers and International Council for Education of the Visual Impaired Persons to partner with NTI to train its staff).

Accessible Content Creation

The third group consisted of Prof Jurmang Isuwa, Mr Ossai Lawrence, Mr Andrew Gani, and Mr Adeola Aina. They outlined the following recommendations for curriculum content creation in mathematics:

- Braille materials: Production of braille mathematics reading materials EG. Available Mathematics text books. Children should be taught how to use tactile diagrams and graphs. There should be government subsidy and collaboration with International Non-Governmental Organizations.
- Production and provision of teaching aids: abacus braille machines, braille/embosser, drawing board, rubber mats, polythene sheet, embossed rulers, tapes, T-squares etc.
- Curriculum: Adaptation of mathematics textbooks into accessible formats.
- Training/workshops: Special education teachers, mathematics teachers, visually Impaired teachers and blind children.
- Counselling: Encouraging blind children on the need and importance of offering mathematics at all levels
- Provision of Assistive devices: screen readers, braille translators etc.
- Adaptation: Mathematical equipment, classroom settings etc.
- Mathematics braille code, intensive teaching of the mathematics braille code.
- Library, virtual library, equipping physical libraries with mathematics textbooks.
- Access right: Copy Right to brailing mathematics materials.
- Subsidy: Custom tax waivers on imported mathematics equipment and assistive devices for the blind.
- Presence of mathematics teachers: Employment of teachers willing to work with blind children.

Inclusive Government policy on Mathematics Education

The participants in this group were Mr Kinsley Mbagwu, Ms Anne Ekandem, Mr Osho Olawale, Ms Okpara Oluchi, Ms Okedo Ifeyinwa and Mr Ubong Udoh Daniels and they recommended:

- Awareness: All Ministries, Departments and Agencies should carry out periodic awareness programs in their immediate environment.
- Materials: The educational materials for persons with blindness should be subsidized because they are expensive.
- Curriculum: Content knowledge and mathematical reasoning should be emphasized

- Staffing/Recruitment: Employment opportunities should be provided for experts including criteria such as representation, selection and qualification.
- Examination/Timing: The examination time for Visually impaired candidates should be increased by 50% because they take more time to access and answer questions.
- Motivation/Incentive: Scholarship or free education for blind students should be encouraged; Teachers allowances should be improved from 30% to 50% of basic salary.
- Monitoring and Evaluation: Regular M&E by special units at federal, State and Local levels should be mandated in schools where mathematics is taught to visually impaired students.
- Attitude: Teachers and learners should be stimulated by teaching methodology, reinforcement to increase interest in learning, motivation, good orientation to teach the blind etc.
- Accommodation policy/Accessibility: Curriculum should make provision for everything that is needed for teaching and learning mathematics.

8. CREATING SUB-COMMITTEE TO WORK ON PROPOSAL TO BE SUBMITTED IN JANUARY

The following persons were selected to champion and follow up on the Action plans and suggestions for the successful implementation of the project to Create Accessible Content in Stem Subjects for The Blind:

- Mrs Ifeyinwa Okedo: Federal Ministry of Education (Chairman)
- Dr Magaji Waziri: Teachers Registration Council of Nigeria (Secretary)
- Dr Ndubuisi S.I.: Nigerian Educational Research and Development Council (Member)
- Dr Rasheed Adekunle Abilu: Federal College of Education (Special), Oyo (Member)
- Mr Osho Jamiu Olawale: Special school, Jabi (Member).

9. CLOSING REMARKS BY MR DAVID OKON, HEAD, EDUCATION COMMITTEE NAB

In his closing remarks, Mr Okon said that this was a huge sacrifice from the participants. He thanked Sightsavers and International council for the Education of the Visually Impaired for funding the project. He appealed to participants for cooperation in the subsequent programs so that blind students can feel the legacy. He sent a special thank you to Prof. Jurmang Isuwa for attending despite the short notice and other resource persons for their presentations.

The meeting ended by 4:15pm with a group photograph at the commission



Thank you!!!