MRS Journal of Multidisciplinary Research and Studies
Abbreviate Title- MRS J Mul Res Stud
ISSN *(Online) 3049-1398*
Vol-2, Iss-7(July-2025)

OPEN ACCESS

AN INVESTIGATION INTO THE TEACHING OF SCIENCE TO LEARNERS WITH DISABILITIES IN SELECTED SCHOOLS IN ONDO STATE, NIGERIA

ANTHONY, Kolawole Israel, Ph.D[1*], IDEMUDIA, Eferetin Stanley, Ph.D[1], AKINBOBOLA, Akinyemi Olufunminiyi Ph.D[2]

[*1]Department of Special Needs Education, Adeyemi University of Education, Ondo, Ondo State, Nigeria

[2] Department of Curriculum and Instruction, Adeyemi University of Education, Ondo, Ondo State, Nigeria

Corresponding Author **ANTHONY, Kolawole Israel, Ph.D** (Department of Special Needs Education, Adeyemi University of Education, Ondo, Ondo State, Nigeria)

Article History: Received: 13 / 06 / 2025:, Accepted: 29 / 06 / 2025:, Published: 02 / 07 / 2025

Abstract: This paper investigated the teachers' perceptions on the teaching of science to learners with disabilities in selected special and regular schools in Ondo State, Nigeria. The study population comprised all secondary school science teachers in Ondo State. Out of this, a sample of eighty-five (85) science teachers was selected through multistage sampling technique made up of purposive and stratified random sampling. The instrument used to collect data for the study was a questionnaire which consisted of variables pertinent to the study. The reliability coefficient of the questionnaire using Cronbach alpha was 0.85. The data collected were analysed using the t-test statistical analysis. The results showed that, science teachers from special and regular schools perceived that science should be taught to learners with and without disabilities. Significant difference existed as observed in the study's outcome that girl-child with disabilities should be more exposed to the world of science. It was however; found that regular education (science) teachers were unprepared to work with learners with disabilities. Based on these findings, it was recommended among others that all teachers (special and regular educators) should stay abreast of new information because they are the most important determinants of the quality of educational programmes.

Keywords: *Teaching, Science, Learners, Disabilities.*

Cite this article: ANTHONY, K. I., IDEMUDIA, E. S., AKINBOBOLA, A. O., (2025). AN INVESTIGATION INTO THE TEACHING OF SCIENCE TO LEARNERS WITH DISABILITIES IN SELECTED SCHOOLS IN ONDO STATE, NIGERIA. *MRS Journal of Multidisciplinary Research and Studies, 2 (7),8-12.*

Introduction

The provision of effective education for learners with disabilities has been the subject of considerable debate, legislation and development. Effective education is a complex process particularly for learners with learning disabilities. There was no functional legislation on Special Needs Education, the kind of laws that existed then were mainly that of grants-in-aid. Some of the laws in some states are now moribund. What exist now are policies which must be backed by legislation and the role of Special Education teachers in the context of the policy highlighted (Federal Ministry of Education, 2015).

All children, including learners with special needs, have a right to an education which is appropriate to their needs. The aims of education for pupils with special educational needs are the same as applying to all children. Education should be about enabling, to live full and independent lives so that they can contribute to their communities, cooperate with other people and continue to learn throughout their lives. Education is about supporting children to develop all aspects of their lives such as spiritual, moral, cognitive, emotional, imaginative, aesthetics, social and physical. The last quarter of the 20th century has been significant developments in special education. There have been major changes in thinking about how to provide education for children with special needs, and these changes have had far-reaching effects upon professional practices (Gilbert, 2001).

Special education had focused for many years upon children's handicapping conditions rather than individual needs. This focus often detracted attention from the children's abilities and aptitude and served to set children with disabilities (Portwood, 1995). It is noteworthy that, there are many more children with disabilities particularly learning disabilities in the education system than the relatively small number attending special schools. The researchers are of the opinion that persons with disabilities are important members of the society. However, the cognitive domain for the child with special needs is not often well addressed especially for the child who possesses outstanding cognitive abilities (gifted, creative and talented children) and others who experience intellectual deficits, that is, learning disabilities. In other words, techniques and strategies such as curriculum, compacting, enrichment and bibliotherapy that gifted education are not generally being practiced (FME, 2015).

Science has so much to offer to all learners including those with disabilities, however, observably, instructions in this subject

has often been overlooked in the quest to better understand and improve learning. Several decades ago, there has been overconcentration of efforts in the teaching of science to learners without disabilities while little or nothing is being done to ensure that learners with disabilities are brought into the world of science. The reason perhaps for this is anchored on the fact that, Nigeria is involved in Special Needs Education but the present practices are not fully consistent with existing global practices. More so, the Special Needs classroom laboratories in the country are not yet technologically driven. (FME, 2015).

Despite the fact that learners with disabilities possess diverse abilities, competences, and skills to compete favourably with persons without disabilities, over the years, content area learning including science, has received less emphasis in special education literature than basic instruction in the form of literacy and early mathematics skills (Mastropien, et al., 2006). Nevertheless, with the increased emphasis on inclusion, accountability and high stakes testing, content area instruction has acquired renewed importance (Lenz, Deshler & Kiassam, 2004).

Scruggs, Mastropien and Okolo (2008) argue that although the focus of much special education has been on the acquisition of basic skills that are essential to academic learning, we have no doubt that science is of particular importance to students with disabilities, which in fact provides important insights into our general understanding beyond the sensory and physical limitations that affect and challenge us not simply those with disabilities.

Science is a product as well as a process. Science teaching at any level is principally aimed at helping students to develop or form correct scientific concepts, principles and theories as well as to acquire the accompanying science skills. Imparting in the students the process skills of science and correct scientific concepts and theories presupposes the knowledge on the part of the teachers, of the nature of science (scientific concepts) and science education and being guided by such knowledge in their classroom activities with the students (Akinbobola, 2018). The relevance of science for learners with disabilities is enormous, that science education is not necessarily a kind of pre-training for those who would pursue career in the sciences, but that it can broaden understanding of the universe and our role in it, and that science can enhance our lives directly at the time we learn it (Scruggs, 2004). Science also helps to advance our knowledge. It has always been important for us to develop adaptations and enhancements to our own senses and physical abilities, these adaptations have helped us develop our ability to think and logical explanations for the observed universe (Scruggs, 2004).

In order for all students to have equitable opportunities to engage in science, there is a need for classroom practices which remedy injustice or provide access to material resources and instructional supports (National Research Council (NRC), 2011). According to Lee (2005), equitable learning opportunities take place when school science values respects the experiences that students bring from informal settings, articulates their prior knowledge with science disciplines and provides adequate resources and support comparable to mainstream students. Villanueva and Hand (2011) and Akinbobola (2015a), reported similar ideas, but also suggest that in order to achieve science literacy for all, the learning environments for which students are expected to engage in and about science must be non-threatening.

As a goal of science literacy, students should be able to use science knowledge to think critically about important decisions that affect their well-being in and out of the school context. Yet, how students develop proficiency in science and engage in thinking that centres on questioning and critiquing information largely depends on the type of learning opportunities students are afforded in the classroom (Akinbobola, 2015b). Teaching science to all learners irrespective of their sensory, physical, and emotional capacity should be seen as a priority or of great concern. Scientific skills are very crucial for everyday functioning. They are required for effective running of day-to-day activities. Imagine a world without science, it would have been characterised with a lot of confusion and disasters (Akinbobola, 2018; Akinbobola & Bada, 2022).

Furthermore, teaching science to learners with disabilities presents a challenge to regular classroom teachers who must develop confidence and competence in dealing with the personal, social and educational needs of such students, and who often feel inadequate when face with students with special needs. However, there is actually very little which is unique and special about teaching the required by learners with mild or moderate difficulties. Therefore, in an attempt to attain educational excellence and higher standards, we must provide learners with disabilities with instruction to help them become problem-solvers and move beyond rote application of basic skills.

As you have probably discovered, teaching science to children with disabilities especially learners with visual impairments is an exciting endeavour. This awareness of science education emanated from the government policy on education, which mandated the inclusion of science subjects in the primary school curriculum (FME, 2015). Eniola and Adesoji (2001) posit that, blind need science not necessarily to produce sciencetists out of the blind, but rather to give necessary scientific background for the understanding of everyday occurrences and thereby increase the fullness of living. They went further to argue that examining the individual disciplines indicates that Physics offers the opportunity of understanding the world around while Biology covers many of the personal problems and finally Chemistry explains the chemical reactions of the digestive system.

Statement of the Problem

The persistent low enrolment of learners with disabilities in science subjects despite the increase in demand for the teaching of science at all levels of education; a subject (science) that derives economic and technological advancement in Nigeria is worrisome. In addition, it may be impossible for any nation such as Nigeria to fulfil her policy of developing potentials of her youths when learners especially with disabilities are excluded from science subjects because of sensory and physical limitations.

Observably, in Nigeria, the attitude of some teachers to the teaching of science to learners with disabilities has always been negative, the general feeling is being that it cannot be done; it is too dangerous; and even if it were possible, of what relevance and importance is it to these learners? Unfortunately, in Nigeria, no science curriculum development effort has made provision for disabled students in general. In the same vein, curriculum developers and implementers perhaps perceive this category of learners as individual characterised with less ability in science subjects hence, they should be exempted from science subject that is considered as a discipline that drives the growth and development of the country. However, research in this regard have not enjoyed much attention in the past research activities in Ondo State. Based on the foregoing, this necessitated carrying out this

study to investigate teachers' perception to teaching of science to learners with disabilities in selected schools in Ondo State, Nigeria.

Hypotheses

- Ho1 There is no significant difference between the perceived teaching of science to learners with disabilities and those without disabilities.
- Ho2 There is no significant difference between the perception of teachers on teaching science to male and female learners with disabilities.
- Ho3 There is no significant difference between the perception of teaching science by teachers in special schools and teachers in regular schools to learners with disabilities.

Methodology

The population for this study was made up of teachers drawn from five public special and regular secondary schools in Ondo State, Nigeria.

- Special School for the Deaf, Akure
- School for the Blind, Owo
- School for the Physically Handicapped , Ogbagi-Akoko
- All Saints Secondary School, Oka, Ondo City
- Stella-Maris Secondary School, Okitipupa,

The subjects in this study were teachers who teach learners with and without disabilities. Multistage sampling techniques was adopted for the study. Purposive sampling was adopted to select eighty-five (85) science teachers from three special schools and two (2) regular secondary schools respectively. Forty-five (45) special education teachers and forty (40) science teachers without special education background were selected from regular schools. From the selected teachers, fifty (50) were female while thirty-five (35) were males. The subjects' background in terms of educational qualifications and social status is virtually the same. A 15-item questionnaire was developed by the researchers to collect data for this study. This was designed essentially to probe into the factors that informed the teaching of science to learners with disabilities. Before the questionnaire was administered, it was validated and the reliability coefficient using Cronbach was 0.85. The questionnaire was personally administered on the participants in their various schools following due permission by the school heads. The instrument was collected back three days after the administration to allow teachers have enough time to fill the questionnaire. All the eighty-five (85) copies of questionnaire were correctly filled and retrieved by the researchers for onward analysis.

Results

- **Hypothesis 1:** There is no significant difference between the perceived teaching of science to learners with disabilities and learners without disabilities

Table 1: t-test analysis of the perceived difference between teaching science to learners with disabilities and learners without disabilities.

Variable	N	Mean	SD	df	t-Cal	t-Cri	Decision
Learners with disabilities	45	68	10.5	83	4.61	1.96	S
Learners without disabilities	40	76.4	5.01				

S = significant at 0.05 alpha level

As indicated in Table 1, the calculated t-values of 4.61 is greater than the table t-value of 1.96. Hence, hypothesis 1 is rejected. This implies that, there is significant difference between the perceived teaching of science to learners with disabilities and learners without disabilities.

Hypothesis 2: There is no significant difference between the perceptions of teachers on teaching science to male and female learners with disabilities.

Variable	N	Mean	SD	df	t-Cal	t-Cri	Decision
Male	43	65.05	8.5	83	0.73	1.96	NS
Female	42	62.20	5.8				

NS = Not significant at 0.05 alpha level

Table 2 shows that, the calculated t-value of 0.73 is less than the table t-value of 1.96. Hence, hypothesis 2 is accepted. This implies that, there is no significant difference between the perceptions of teachers teaching science to male and female learners with disabilities.

Hypothesis 3: There is no significant difference between the perception of teaching science by teachers in special schools and teachers in regular schools.

Table 3: t-test analysis of the perceived difference between teachers in special schools and regular schools

Variable	N	Mean	SD	df	t-Cal	t-Cri	Decision
Teachers in Special Schools	43	65.05	7.4	83	2.31	1.96	S
Teachers in Regular Schools	40	68.05	9.5				

S = significant at 0.05 alpha level

Table 3 shows that, the calculated t-value of 2.31 is greater than the t-value of 1.96. Hence, hypothesis 3 is not accepted. This implies that, there is significant difference between the perception of teaching science by teachers in special schools and teachers in regular schools.

Discussion

Undoubtedly gleaned from the observed trend in the participants responses, particularly as the participation in and teaching science to learners with disabilities. The finding from hypothesis one revealed that, there is significant difference between the perceived teaching of science to learners with disabilities and learners without disabilities. This finding disagrees with the report of Scruggs (2004) who posited that, providing students with science education is not necessarily a kind of pre-training for those who would pursue careers in the science but that it can broaden the understanding of the universe and our role in it and again, that science could enhance our lives directly at the time we learn it. This study's finding also confirms Eniola and Adesoji (2001) position that, blind need science not necessarily to produce scientists out of the blind, but rather to give necessary scientific background for understanding of everyday occurrences and thereby increase the fullness of living. This finding corroborated that of Bybee and Fuchs (2006) that reported the importance of teaching science which is believed to be crucial to life, career skills, adaptability, problem-solving and system thinking that are said to be critical to compete in a global economy that demands innovations. It can therefore be deduced that, teaching science to all students regardless of physical, sensory, health impairments, speech and language disorders to mention just a few has become a global imperative for the acquisition of scientific skills.

Significant difference was also recorded in the incidence of teaching science to male and female learners with disabilities. The finding further revealed statistically significant difference in the teaching of science in the sample. This finding is in contrast with the report of (WHO, 2010; Groce, 2004; Fahd, Maiji & Makara, 2007) that gender bias is the major barrier to educating girl-child who is disabled. They posit that, girls with disabilities are less likely than boys to receive care and food and are more likely to be left out of family interactions and activities. In fact, girls and young women with disabilities are 'doubly disabled'. It can be inferred in the study that, girls with disabilities are less likely to be educated, receive vocational training or find employment than the boys with disabilities or girls without disabilities. Further, some families often assume that a daughter who is disabled will not marry, which may add to her devaluation, since in some cultures, the prospect of a good marriage is the primary value to girls. Despite this bleak picture, the finding of this study revealed that all students regardless of their conditions still require a central set of knowledge and skills to be scientifically literate citizens. This report is in agreement with American Association for the Advancement of Science (AAAS, 1993).

The outcome of results on perception of teachers in special and non-special (general) schools revealed that there are significant variations in their views. This study's finding showed that general education teachers (science teachers) are unprepared to work with students disabilities. This corroborated the reports of Soodak, Podell and Lehman (1998) and Patton, Polloway and Crown (1990) that, general education teachers had expressed they are not adequately trained to teach students with special needs in inclusive setting especially in science related disciplines. Yet, teaching science to learners with disabilities presents a challenge to regular class teachers however, these teachers are encouraged to develop confidence and competence with the personal, social and educational needs of such students and teachers who often feel inadequate when faced with students with special needs. It can be deduced in the study that there is actually very little which is unique or special about the teaching required by learners with for example mild or moderate difficulties.

Conclusion

This study has revealed that learners with disabilities who score significantly below still need basic concepts of science. It should be noted for example that, the blind students need science not necessarily to produce scientists out of the blind but rather to give necessary scientific background for the understanding of everyday occurrences and thereby increase the fullness of living. It also showed that, there was doubt on why girls and young women with disabilities should be educated. The study further revealed the puzzle of general education teachers who were not trained to work with learners with disabilities. Learners with disabilities are commonly referred to special needs. They are students who require additional supports for learning and instruction. They may be categorised under these groups such as intellectual disabilities, learning disabilities, visual impairment, hearing impairments, and chronic health impairments, gifted, emotional or behavioural needs. They are also referred to as exceptionalities.

Recommendations

Based on the findings of this study, the following recommendations were made:

- Access to education should be made compulsory at all levels of education for children with disabilities in Nigeria. Science teachers are therefore advised to develop additional skills necessary to increase their effectiveness with learners with and without disabilities.
- Special needs students should not be excluded from science, Technology and Mathematics (STM), especially when their challenge is visual.
- Varied scholarship programmes/facilities should be put in place to assist disabled persons who are already enrolled in academic programmes.
- Equity in and access to education for all should be the vogue.
- Appointment of educated persons with disabilities to political positions should be doggedly pursued to stimulate the disabled interest in politics.
- Teachers should stay abreast of new information because they are the most important determinants of the quality of educational programmes for learners with and without disabilities.

References

1. Akinbobola, A.O. (2015). Evaluating science laboratory classroom learning environment in Osun State of Nigeria for nation development. *Journal of Resources Development and Management*, 9, 14-19.
2. Akinbobola, A.O. (2015b). Enhancing transfer of knowledge in physics through effective teaching strategies. *Information and Knowledge Management*, 5 (6), 85-92.

3. Akinbobola, A.O. (2018). Teaching techniques, study habits, school environment and gender factors as determinants of cognitive achievement of physics students in Nigerian senior secondary schools. *Journal of Global Research in Education and Social Science*, 12 (1), 43-53.

4. Akinbobola, A.O., & Bada, A.A. (2022). The acquisition of science process skills through entrepreneurial physics education in senior secondary schools. *Research and Evaluation in Education*, 8 (2), 181-192.

5. American Association for Advanced of Science (AAAS) (1993). *Benchmarks for science literacy*. New York; NY; Oxford University Press.

6. Bybee, R.W., & Fuchs, B. (2006). Preparing the 21st century workforce: A new reform in science and technology education. *Journal of Research in Science Teaching, 43 (4,) 349-352.*

7. Eniola, M.S. & Adesoji, F.A. (2001). Essential ingredients for teaching science effectively to the visually impaired students at the secondary school level in Nigeria. *Nigerian Journal of Applied Psychology, 6 (1&2) 209-213.*

8. Fahd, N., Marji, M., Myfti, N.,Masri, M. & Makara, A. (2007). A double discrimination: Blind girls' life chances. In Abu-Habib, L., *Gender and disability, Women's experiences in the Middle East,* UK and Ireland; Oxfam. 46-52.

9. Federal Ministry of Education (2015). National policy on special needs education in Nigeria. Abuja, NERDC,

10. Gilbert, J. (2001). Science and its other looking underneath woman and science for new directions in research on gender and science education. *Gender and Education, 13, 291-305.*

11. Groce, N.E. (2004). Adolescents and youths with disabilities: Issues and challenges, *Asia Pacific Disability Rehabilitation Journal, 15(2), 13-22.*

12. Lee, O. (2005). Science education and students diversity: Synthesis and research agenda. *Journal of Education for students Placed at Risks, 10(4), 431-440.*

13. Mastropien, M., Scruggs, T.E., Norland, J., Berkeley, S., McDuffie, K., Tornquist, E.N. & Connors, N. (2006). Differentiated curriculum enhancement in inclusive middle school science: Effects on classroom and high stakes tests. *The Journal of Special Education, 40(30, 130-137.*

14. National Research Council (2011). *A framework for K-12 science education: Practices, crosscutting concepts and core ideas*. Washington, D.C: National academy of science.

15. Patton, J., Pollooway, E., & Crown, M. (1990). *A survey of special education teachers' relatives to science for the handicapped,* Honolulu H I: University of Hawaii, Unpublished manuscripts.

16. Scruggs, T.E. (2004). *Science for students with disabilities: Good for students, good for science.* Paper presented at the secretary's summit on science, US Department of Education, Washington D.C.

17. Sruggs, T.E. & Mastropien, M.A., & Okolo, A. (2008). Science learning in special education. The case for constructed versus instructed learning exceptionality. *Special Education Journal*, 15(2), 57-74.

18. Soodak, L., Podell, D., & Lehman, L. (1998). Teaching students and school attributes as predictors of teachers response to inclusion. *The Journal of Special Education, 31(4), 480-497.*

19. Villanueva, M.B., & Hand, B. (2011). Science for all. Engaging students with special needs in and about science. *Learning Disabilities Research and Practice*, 26(4), 233-240.

20. World Health Organisation (2010). Community-based rehabilitations guidance, Geneva: WHO.