

# **Assistive Technology for Students'-with-Disabilities' Entrepreneurial Development During the COVID-19 Era in South-South, Nigeria**

Elijah, P.T.\* and Obaseki, M.

Department of Mechanical Engineering, Nigeria Maritime University, Okerenkoko, Delta State, Nigeria.

Corresponding Author Email: paul.elijah@nmu.edu.ng

## **Abstract**

The study investigated assistive technology for students'-with-disabilities' entrepreneurial development during the COVID-19 era in South-South, Nigeria. The need for the entrepreneurial development of students-with-disability is essential as a result of the harsh effects of the COVID-19 Pandemic. Three research questions and three hypotheses were answered and tested in the study. Descriptive survey design was adopted in the study. Population of the study comprised all the special schools in South-South, Nigeria while purposive as well as random sampling technique was used to draw two public and private special schools as sample for the study and 246 special students were drawn as respondents for the study in two states (Rivers and Delta) in South-South, Nigeria. One public and one private school was selected in each state. Instrument adopted for data collection was a 15-item questionnaire tagged "Assistive Technology Adoption for Entrepreneurial Development of Special Needs Students Questionnaire" (ATAEDSNSQ). The instrument was face and content validated by two experts (one in Measurement and Evaluation and the other in Special Education). Reliability of the instrument was determined using Cronbach alpha reliability with an index of 0.79. The research questions were analyzed using mean and standard deviation while the hypotheses were tested using z-test statistics at 0.05 level of significance. Findings of the study showed that the schools did not differ significantly in the available emerging assistive technologies, its adoption and the challenges to the adoption of these emerging technologies for students'-with-disabilities' entrepreneurial development during the COVID-19 era in South-South, Nigeria. It was recommended among other needs that a technology policy should be enacted to guide the operations of these schools.

**Keywords:** Assistive technology, Students', Entrepreneurial development, Disabilities, COVID-19

## **Introduction**

The COVID-19 pandemic that broke out in 2019 and became a global concern in 2020 brought in a new dimension into how businesses are conducted and also brought about a new normal into daily life and living pattern around the world. The business world was not left out as several businesses were forced to make their employees work from home. Similarly, several entrepreneurial opportunities were also created for old and new entrepreneurs who were able to take advantage of the expansion in technology to create new business frontiers.

Technology played a major role in taking businesses to a new normal as several activities; academic, entrepreneurial and otherwise were transacted via the internet. However, the place of these technologies in enhancing the entrepreneurial development of students-with-disabilities remains uncertain. If students who have disabilities must achieve entrepreneurial development in this new normal, the place of the use of assistive technology in meeting their needs must be ascertained.

Assistive technology plays a very important in assisting students and other people-with-disability to bridge existing gaps limiting them from fulfilling their potentials. Supporting this assertion, Nkwoagba (2011) agreed that technology can actually open doors as well as remove barriers for all classes of people including those with disabilities.

Therefore, maximizing the entrepreneurship interest and potentials of students-with-disabilities in the new normal has a lot to do with the availability and adoption of assistive technologies especially in schools for the disabled. Lopez *et al.*, (2018) mentioned that assistive technology to a great extent compliments the strengths of people by bringing about major changes in people especially disabled students. Investigating into the availability and enforcement of the use of these assistive technologies for the development of the entrepreneurial interest of students-with-disabilities therefore becomes imperative in this new era.

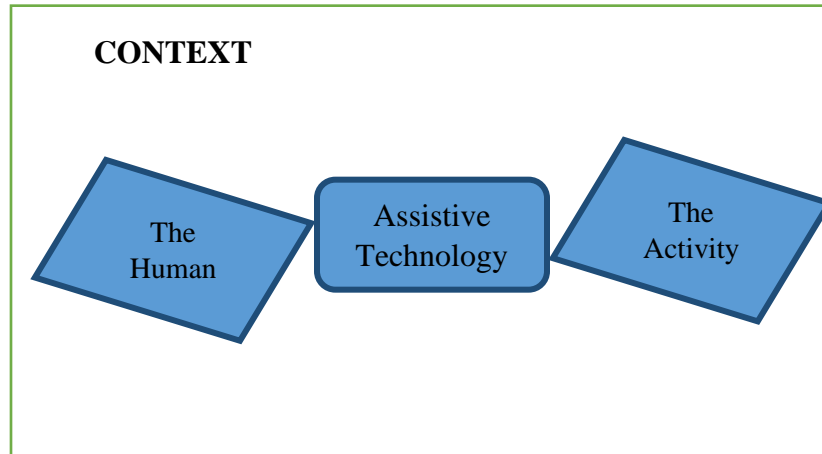
## **Conceptual Clarifications**

Technology is generally understood as the application of scientific findings in solving human problems. It can be deduced from here that assistive technology is the use of any scientific product to aid an individual in the discharge of one's regular activities. Echendu and Okafor (2021) mentioned that these technologies often come in the form of information and communication technologies (ICTs). These tools are put to use to upscale the number of activities

that an individual can carry out par time and also to improve efficiency and effectiveness in the line of duty (Amini-Philips and Elijah 2019).

Disability in the past was seen as the inability to carry out an essential task. However, a more professional conceptualization was proffered by Neal Halfon as cited in Wise (2012:170) as he stated that “a disability is an environmentally contextualized health-related limitation in a child’s existing or emergent capacity to perform developmentally appropriate activities and participate, as desired, in society”. This means that disability is occasioned by the inability to carry out an activity in the normal way it is done by others. It is on this note that several scholars have mentioned that disability can be social, mental, emotional, physical, cognitive or even behavioural and this can also be from simple to complex.

### Theoretical Underpinning



**Figure 1:** Modified Human Activity and Assistive Technology (HAAT) Model. (Source: Authors idea 2022)

The theoretical framework for this study is the Human Activity and Assistive Technology (HAAT) model which was developed by Cook and Hussey in 1995. This model was developed specifically for the purpose of assisting people-with-disabilities to operate at optimum. Cook and Hussey (1995) understand that technology plays an important role in the success of people-with-disabilities within their work context. The theory was built on four basic nodes which are the human, the activity, the assistive technology and the context. This four interplay to ensure that people with any form of disability are able to operate at optimum.

It is believed that people are humans, doing something (activity) within a context. However, in order for anyone to succeed in whatever context he or she is operating, there is need for assistance where necessary and this is where the issue of the assistive technology plays an important role in the efficiency of these three other nodes. The nature and type of technology available and accessible impact significantly on the other three nodes. The importance of these technologies has made experts to concentrate on the development of modern technologies to improve on the performance of people who need help in the course of discharging their duties.

The importance of this model to this study cannot be over-emphasised as the nature and type of technology that students-with-disabilities have access to will significantly determine how well they can perform in whatever context they operate in. The inability to access the right technology will make the human, the activity and the content to be less productive. In fact, Kim *et al.*, (2018) mentioned that experts must collaborate in the development of these technologies for better performance. However, in furtherance and for the purpose of maximizing available technologies, experts are also needed in the implementation, maintenance and evaluation of these technologies to make meaningful impact on the performance of these individuals in whatever context they operate (Elijah *et al.*, 2020). Therefore, the success of students-with-disabilities in their entrepreneurial development aspiration can be further strengthened when they have access to these assistive technologies irrespective of the nature of the disability and the context in which they operate.

## Assistive Technologies

There are several emerging technologies that are used as assistive technology to support the ability of students-with-disabilities to carry out a range of activities including those that will contribute to their entrepreneurial development in the new normal. Some of these devices are often provided for special need students who cannot afford to go to a regular school so as to improve their chances of learning. These technologies can also range from the simple ones which are commonly found in all schools to the sophisticated ones made specifically for the special need students. In their assertion, Viner *et al.*, (2020:241) stated that:

The field of Assistive Technology (AT) over the past three decades has been growing by leaps and bounds from slides, filmstrips, and overhead projectors to current 21st century technologies, such as 3D simulations and virtual reality (VR). Both low-tech to high-tech devices are used consistently to assist students with a wide variety of learning challenges

Today, there are varieties of soft and hardware technologies that are developed to assist the learning of students-with-disabilities so as to enhance their potentials. In some schools, there are several cases of applications of artificial intelligence, augmented reality, virtual reality and robotics. The assistive technologies which are also known as enabling technologies come in different forms and specifications. These devices enable the learner to be able to access relevant learning contents on and offline and often include diverse technologies that can assist in the teaching and learning process. These technologies are very essential in building the potentials of students-with-disabilities so as to improve on their entrepreneurial competence and chances in the new normal. Other technologies such as the web accessibility initiative have also been developed to make learning seamless for special need students.

Despite the growth in technology, several special schools are yet to awake to the reality that the implementation of these technologies is essential to the attainment of educational goals and objectives in these schools. The successful implementation of these technologies is majorly dependent on the ability of teachers and students to use these technologies for a range of activities (Elijah, 2019). The coverage of the use of these technologies should cut across activities inside and outside the classroom. This will provide the opportunity for the students using these technologies to be able to interact with the outside world effectively.

In addition to this, relevant stakeholders must ensure that meaningful contents are developed that will meet the needs of students and the essence of the programme. The assistive technology must have contents that are able to develop the cognitive, affective and psychomotive abilities of the learner so as to make them very effective and useful to the society. Content specialists must be engaged in this process to ensure that the learners are able to contribute value to the society (Elijah and Obaseki, 2022). Furthermore, adequate training must also be provided for the users of this technology to make them very effective in the usage.

Other scholars also believe that relevant assistive technology services must be provided to complement the devices available. The devices must be provided in the right quality and quantity and required services for this smooth integration must also be provided. The implementation of the assistive technology in these schools cannot be so effective when any of these steps is not taken and this calls for adequate collaboration among all relevant stakeholders.

The adoption of assistive technology in any school hinges on a number of factors and dealing with any possible barrier is essential for the attainment of the purpose of adopting this technology in schools. The challenges faced by disabled students in the adoption and application of these technologies can differ from one student to another and from one school to another. However, Adebisi *et al.*, (2015) identified the fact that skills problem is one of the major challenges that affects the disabled in the adoption of some of the available assistive technologies. When students lack requisite skills, it becomes very difficult for students to make use of devices available.

However, Johnson *et al.*, (2016) also mentioned supportively that the lack of devices is also a challenge that must be addressed if assistive technology adoption must be successful. Teachers and students in like manner must have access to relevant devices so as to participate in the teaching and learning process. Supporting this assertion, Mishra, Sharma and Tripathi (2010) summarized that problems relating to lack of relevant training, lack of policies and legislations, financial inadequacies, attitude of the disabled students, are among the challenges that makes the adoption of this technology difficult. These challenges must therefore be addressed for any meaningful success to be achieved in the adoption of these technologies for the entrepreneurial development of students-with-disabilities in the new normal.

Empirically, Bruinsma (2011) conducted a study on the implementation of assistive technology in the classroom in suburban school districts located in Western New York and it was revealed that at least half of the participants had used pencil grips, interactive whiteboards, personal computers, word processors, calculators, and projectors in the classroom while less than half of the participants had used netbooks, translating devices, adjustable desks, FM systems, tilt table, voice recognition products, electronic organizers, communication aids, and large print books within the classroom. On the other hand, Ari and Inan (2010) carried out a survey on access and use of assistive technologies for students-with-disabilities in Turkish Universities. The result of the study indicated that students-with-disabilities utilized assistive technology for different purposes, such as writing and conducting research, when the resources and support were available and the resources used included computer, internet, special software, reading aid, speaking watch, hearing aid and tape player among others. These assistive technologies were essential in the implementation of assistive technology in these schools and for different intentions.

On the other hand, Dominic *et al.*, (2020) carried out another study on the assessment of availability, adequacy and condition of high-tech assistive technology resources in special education schools in North-West Nigeria. The result of the study pointed out that 56% of the high-tech assistive resources necessary for quality teaching and learning in special education schools were not available. The study also showed that 44% of high-tech assistive resources found available were grossly inadequate to guarantee better special education service delivery for students-with-disabilities. This points to the fact that the implementation of these technologies is still below average in these schools and as such becomes an issue of concern.

Furthermore, Oyewole *et al.*, (2019) investigated residents' awareness and aspiration for smart building features in Okota, Lagos, Nigeria and reported that the awareness of smart building technologies was just fair in the study area as almost half of the respondents (49.21%) were not aware of smart building features. It was also indicated that internet facility was highest as the medium of awareness for the residents who were aware of smart building features. The study also indicated that features mostly aspired were security and safety such as CCTV, intrusion detection system and fire detection and alarm Preston *et al.*, (2014) conducted a related study on the benefits and challenges of technology in high schools located on Prince Edward Island (PEI) (Canada) and it was indicated that challenges regarding the impact of technology at the high school level, decline of literacy skills, policy and lack of policy were major challenges. It is only when these challenges are addressed that the gains of assistive technology can be harnessed for the entrepreneurship development of students-with-disabilities in the new normal.

The study investigated assistive technology for students'-with-disabilities' entrepreneurial development during the COVID-19 Era in South-South, Nigeria. The objectives of the study were to: identify the emerging assistive technologies required to support the entrepreneurial development of students-with-disability; examine the adoption of assistive technologies for the entrepreneurial development of students-with-disability; and determine the challenges faced by students-with-disabilities in the adoption of assistive technologies for their entrepreneurial development during the COVID-19 era in South-South, Nigeria.

### **Research Questions**

The following research questions were answered in the study:

1. What are the emerging assistive technologies required to support the entrepreneurial development of students-with-disability during the COVID-19 era in South-South, Nigeria?
2. What is the rate of adoption of assistive technologies for the entrepreneurial development of students-with-disability during the COVID-19 era in South-South, Nigeria?
3. What are the challenges faced by students-with-disabilities in the adoption of assistive technologies for their entrepreneurial development during the COVID-19 era in South-South, Nigeria?

### **Hypotheses**

The following hypotheses were tested at 0.05 level of significance:

1. There is no significant difference between private and public schools on the emerging assistive technologies required to support the entrepreneurial development of students-with-disability during the COVID-19 era in South-South, Nigeria.
2. There is no significant difference between private and public schools on the adoption of assistive technologies for the entrepreneurial development of students-with-disability during the COVID-19 era in South-South, Nigeria.

- There is no significant difference between private and public schools on the challenges faced by students-with-disabilities in the adoption of assistive technologies for their entrepreneurial development during the COVID-19 era in South-South, Nigeria.

### Methodology

The design adopted in the study was descriptive survey. The population of the study comprised all the special schools in South-South, Nigeria while purposive as well as random sampling technique were used to draw two public and private special schools as sample for the study and 246 special students (124 public and 122 private) were drawn as respondents for the study from Rivers and Delta states (One public and one private school in each state). The instrument used for data collection was a 15-item questionnaire titled “Assistive Technology Adoption for Entrepreneurial Development of Special Needs Students Questionnaire” (ATAEDSNSQ). The instrument was face and content validated by two experts (one in Measurement and Evaluation and the other in Special Education). The reliability of the instrument was estimated using Cronbach alpha reliability with an index of 0.79. The entire questionnaire was administered by the researchers and four research assistants and retrieved on the spot. All the copies of the questionnaire were retrieved and the research questions were analyzed using mean and standard deviation while the hypotheses were tested using z-test statistics at 0.05 level of significance.

### Findings

**Research Question One:** What are the assistive technologies required to support the entrepreneurial development of students-with-disability during the COVID-19 era in South-South, Nigeria?

**Table 1: Mean and standard deviation scores on the assistive technologies required to support the entrepreneurial development of students-with-disability during the COVID-19 era in South-South, Nigeria**

S/No	Items	Public Schools n=124		Private Schools n=122		Mean Set	
		Mean $\bar{X}_1$	SD	Mean $\bar{X}_2$	SD	X $\bar{X}$	Decision
1	Provision of speech to text devices	2.45	1.03	2.51	0.98	2.48	Agreed
2	Access to computers	2.57	0.96	2.95	0.82	2.76	Agreed
3	Availability of projectors	2.50	0.97	2.69	0.93	2.60	Agreed
4	Provision of virtual reality	2.38	1.05	2.50	0.99	2.44	Agreed
5	Supply of internet services	2.32	1.06	2.53	0.96	2.43	Agreed
	<b>Grand Mean and Standard Deviation</b>	<b>2.44</b>	<b>1.01</b>	<b>2.67</b>	<b>0.94</b>	<b>2.54</b>	<b>Agreed</b>

Table 1 shows the produced mean scores for the public and private schools. Using the criterion mean score of 2.50, all of the items were agreed by the private schools while that of the public school indicated that they disagreed that speech text devices, virtual reality and internet were assistive technologies made available for the entrepreneurial development of students-with-disabilities. The grand mean score of 2.44 from the public schools and 2.67 from the private schools indicated that they disagreed and agreed respectively on assistive technologies required to support the entrepreneurial development of students-with-disability during the COVID-19 era in South-South, Nigeria while the average mean set of 2.54 supported the assertion that the respondents averagely agreed on the phenomenon being discussed.

**Research Question Two:** What is the adoption of assistive technologies for the entrepreneurial development of students-with-disability during the COVID-19 era in South-South, Nigeria?

**Table 2: Mean and standard deviation scores on the adoption of assistive technologies for the entrepreneurial development of students-with-disability during the COVID-19 era in South-South, Nigeria**

S/No	Items	Public Schools n=124		Private Schools n=122		Mean Set	
		Mean $\bar{X}_1$	SD	Mean $\bar{X}_2$	SD	X $\bar{X}$	Decision
6	Adoption of these technologies in and out of the classroom	2.41	1.04	2.72	0.88	2.57	Agreed
7	Training of students on how to use these technologies	2.51	0.97	2.64	0.94	2.58	Agreed

8	Provision of support services for the use of these technologies	2.48	1.02	2.83	0.86	2.66	Agreed
9	Access to basic technological devices	2.46	1.01	2.62	0.95	2.54	Agreed
10	Relevant contents are created for use in these technologies	2.51	0.97	2.55	0.95	2.53	Agreed
	<b>Grand Mean and Standard Deviation</b>	<b>2.47</b>	<b>1.00</b>	<b>2.67</b>	<b>0.92</b>	<b>2.57</b>	<b>Agreed</b>

Table 2 revealed that although all the items were agreed by the private schools and items 6, 8 and 9 disagreed by the public schools, the public and private schools both agreed on the training of students on how to use available assistive technologies and the creation of relevant contents to be used with these technologies. The grand mean score of 2.47 from the public schools showed that they disagreed while the private schools with grand mean score of 2.67 indicated that they agreed on the adoption of assistive technologies for the entrepreneurial development of students-with-disability during the COVID-19 era in South-South, Nigeria while the average mean set of 2.57 indicated that they averagely agreed on the issue above.

**Research Question Three:** What are the challenges faced by students-with-disabilities in the adoption of assistive technologies for their entrepreneurial development during the COVID-19 era in South-South, Nigeria?

**Table 3: Mean and standard deviation scores on the challenges faced by students-with-disabilities in the adoption of assistive technologies for their entrepreneurial development during the COVID-19 era in South-South, Nigeria**

S/No	Items	Public Schools n=124		Private Schools n=122		Mean Set		Decision
		Mean $\bar{X}_1$	SD	Mean $\bar{X}_2$	SD	X $\bar{X}$		
11	Lack of technological skills	2.66	0.91	2.63	0.94	2.65	Agreed	
12	Inadequate funds for assistive technology implementation	2.92	0.84	2.75	0.87	2.84	Agreed	
13	Lack of relevant assistive technological devices	2.69	0.90	2.66	0.93	2.68	Agreed	
14	There are no meaningful technological regulations in place	2.70	0.89	2.54	0.96	2.62	Agreed	
15	The attitude of the students is averse to assistive technology adoption	2.49	0.98	2.55	0.95	2.52	Agreed	
	<b>Grand Mean and Standard Deviation</b>	<b>2.69</b>	<b>0.91</b>	<b>2.63</b>	<b>0.93</b>	<b>2.66</b>	<b>Agreed</b>	

Table 3 showed that all of the items were agreed except for item 15 from the public schools with mean score of 2.49. However, the grand mean scores of 2.69 from the public schools and 2.63 from the private schools corroborated the average mean set score of 2.66 that the respondents agreed on the challenges faced by students-with-disabilities in the adoption of assistive technologies for their entrepreneurial development during the COVID-19 era in South-South, Nigeria.

### Test of Hypotheses

**Hypothesis One:** There is no significant difference between private and public schools on the assistive technologies required to support the entrepreneurial development of students-with-disability during the COVID-19 era in South-South, Nigeria.

**Table 4: z-test analysis of the significant difference between private and public schools on the assistive smart technologies required to support the entrepreneurial development of students-with-disability during the COVID-19 era in South-South, Nigeria**

Variable	n	Mean	SD	df	z-cal.	z-crit.	Level of Significance	Decision
Public Schools	124	2.44	1.01	244	1.85	1.96	0.05	Not Rejected
Private Schools	122	2.67	0.94					

Table 4 showed that the null hypothesis was not rejected and this implied that there was no significant difference between private and public schools on the assistive technologies required to support the entrepreneurial development of students-with-disability during the COVID-19 era in South-South, Nigeria.

**Hypothesis Two:** There is no significant difference between private and public schools on the adoption of assistive technologies for the entrepreneurial development of students-with-disability during the COVID-19 era in South-South, Nigeria.

**Table 5: z-test analysis of the significant difference between private and public schools on the adoption of assistive technologies for the entrepreneurial development of students-with-disability during the COVID-19 era in South-South, Nigeria**

Variable	n	Mean	SD	df	z-cal.	z-crit.	Level of Significance	Decision
Public Schools	124	2.47	1.00	244	1.64	1.96	0.05	Not Rejected
Private Schools	122	2.67	0.92					

Table 5 indicated that the null hypothesis was not rejected and this meant that there was no significant difference between private and public schools on the adoption of assistive technologies for the entrepreneurial development of students-with-disability during the COVID-19 era in South-South, Nigeria.

**Hypothesis Three:** There is no significant difference between private and public schools on the challenges faced by students-with-disabilities in the adoption of assistive technologies for their entrepreneurial development during the COVID-19 era in South-South, Nigeria.

**Table 6: z-test analysis of the significant difference between private and public schools on the challenges faced by students-with-disabilities in the adoption of assistive technologies for their entrepreneurial development during the COVID-19 era in South-South, Nigeria**

Variable	n	Mean	SD	df	z-cal.	z-crit.	Level of Significance	Decision
Public Schools	124	2.68	0.91	244	0.51	1.96	0.05	Not Rejected
Private Schools	122	2.63	0.93					

Table 6 indicated that the null hypothesis was not rejected and this implied that there was no significant difference between private and public schools on the challenges faced by students-with-disabilities in the adoption of assistive technologies for their entrepreneurial development during the COVID-19 era in South-South, Nigeria.

### Discussion of Findings

The result of the study indicated that the public schools disagreed while the private schools agreed on the assistive technologies required to support the entrepreneurial development of students-with-disability during the COVID-19 era in South-South, Nigeria. It was also revealed that there was no significant difference between private and public schools on the assistive technologies required to support the entrepreneurial development of students -with-disability during the COVID-19 era in South-South, Nigeria. This study slightly differ from a relates study conducted by Bruinsma (2011) which showed in its findings that at least half of the participants had used pencil grips, interactive whiteboards, personal computers, word processors, calculators, and projectors in the classroom

while less than half of the participants had used netbooks, translating devices, adjustable desks, FM systems, tilt table, voice recognition products, electronic organizers, communication aids, and large print books within the classroom. This result in relation with the outcome of this study reveal the need for public special schools to further be equipped with emerging assistive technologies to enable students -with- disabilities perform at optimum across all educational programmes.

The difference in the required emerging assistive technologies simply suggests that public and private special schools still differ in their disposition towards the use of emerging technologies in meeting the learning needs of social students. Since no meaningful learning can take place in a vacuum, all of these schools need to scale up their resources base to be able to meet the educational need particularly that of entrepreneurship of their clientele. These resources will be essential in building the capacity of students-with-disabilities. This agrees with the position of the study conducted by Ari and Inan (2010) on access and use of assistive technologies for students-with-disabilities in Turkish Universities which indicated that students-with-disabilities utilized assistive technology for different purposes, such as writing and conducting research, when the resources and support were available and the resources used included computer, internet, special software, reading aid, speaking watch, hearing aid and tape player among others. This means that a lot can be achieved by students-with-disabilities both entrepreneurially and otherwise if these students are equipped with the right technologies in the school environment.

Furthermore, related findings from the study indicated that the public schools disagreed while the private schools agreed on the adoption of assistive technologies for the entrepreneurial development of students-with-disability during the COVID-19 era in South-South, Nigeria. There was also no significant difference between private and public schools on the adoption of assistive technologies for the entrepreneurial development of students-with-disability during the COVID-19 era in South-South, Nigeria. This result partly agrees with a related study conducted by Dominic *et al.*, (2020) on the assessment of availability, adequacy and condition of high-tech assistive technology resources in special education schools in North-West Nigeria which revealed that 56% of the high-tech assistive resources necessary for quality teaching and learning in special education schools were not available. There is therefore an urgent need for special schools in the country as a whole to promote both in practice and policy the adoption of emerging assistive technologies in enhancing the educational outcome and opportunities of students-with-disabilities across all levels and states.

In their responses, the public and private schools both agreed on the challenges faced by students-with-disabilities in the adoption of assistive technologies for their entrepreneurial development during the COVID-19 era in South-South, Nigeria. Furthermore, the result of the study showed that there was no significant difference between private and public schools on the challenges faced by students-with-disabilities in the adoption of assistive technologies for their entrepreneurial development during the COVID-19 era in South-South, Nigeria. This implies that both private and public schools are confronted with similar challenges that hinder their ability to meet the needs of disabled students to develop entrepreneurially through the adoption of emerging assistive technologies. Some of the challenges identified in this study agree with a similar indicators reported in the study by Oyewole *et al.*, (2019) which indicated that internet facility was highest as the medium of awareness for the residents who were aware of smart building features but was scarcely available. This also agrees with the position of the study carried out by Preston *et al.*, (2014) on the benefits and challenges of technology in high schools located on Prince Edward Island (PEI) (Canada) which showed that decline of literacy skills, policy and lack of policy were major challenges. Therefore, if special need schools must equip students-with-disabilities to develop entrepreneurially in the new normal occasioned by the COVID-19 pandemic, a mirage of challenges part of which have been identified in this study must be tackled by relevant stakeholders for the overall good of the society both in the short and long run.

## **Conclusions**

The study concludes as follows:

The result of the study lucidly revealed that there was no significant difference in the emerging assistive technologies required and adoption of assistive technology among public and private schools in the entrepreneurial development of students with learning disabilities in the new normal. This implies that these schools did not significantly differ in the availability of these technologies and the adoption of assistive technologies for promoting the entrepreneurial chances of students-with-disabilities in the states. This implies that both in the private and public schools sampled, their level of assistive technology needs was the same and the adoption of these technologies was also similar in both cases.



Furthermore, it was revealed that challenges such as shortage of devices, lack of training and absence of technology policies and legislations were among the challenges that affected the adoption of assistive technology in the entrepreneurial development of students-with-disabilities in the states. This implies that the entrepreneurial development of these students may remain hindered in the new normal except this identified bottlenecks are adequately addressed. This means that these challenges limit the capacity of these schools in meeting the technological need of students for addressing their entrepreneurial needs in the new normal.

### Recommendations

The following are recommendations proffered from the findings of the study:

The government needs to invest in the development of local technologies that will meet the needs of students-with-disabilities in special schools in the states. These technologies which should be produced in the right quality and quantity should be developed to meet the entrepreneurial needs of these students and should be affordable for the gains of these technologies to be sustainable in the states.

Additionally, there is need for the government to develop relevant technology policy and legislations that will meet the needs of students with special needs. These policies should be made to be a working document that will guide schools in the implementation of assistive technology in such a way that the benefits of the technology can be accruing to the students and the society as a whole.

Furthermore, adequate financial resources also need to be committed to special education by the government across all levels as this will make it easy for schools to procure relevant technologies and expertise that will make the adoption of assistive technologies seamless and beneficial to all relevant stakeholders in the short and long run. This can be achieved by making budgetary adjustment to meet this need.

### References

- Adebisi, R. O., Liman, N. A. & Longpoe, P. K. (2015). Using assistive technology in teaching children with learning disabilities in the 21st century: *Journal of Education and Practice*, 6(24), 14-20
- Alshabeb, A. M., & Alharbi, O. (2019). Critical analysis of the benefits and drawbacks of assistive technology with special needs: *Advances in Social Sciences Research Journal*, 6(8), 210-215
- Amini-Philips, C. and Elijah, P. T. (2019). Impact of Information and Communication Technologies (ICTS) On Higher Education in Nigeria in the 21st Century. *Journal of Humanities and Social Science*, 24(10), 837-845. DOI: 10.9790/0837-2410110107
- Ari, I. A. & Inan, F. A. (2010). Assistive technologies for students with disabilities: A survey of access and use in Turkish Universities. *The Turkish Online Journal of Educational Technology*, 9(2), 40-45
- Bruinsma, A. M. (2011). *Implementation of assistive technology in the classroom*. <https://core.ac.uk/download/pdf/48615561.pdf>
- Cook, A. M., & Hussey, S. M. (1995). *Assistive technologies: Principles and practice*. Mosby. Chicago: St. Louis
- Dominic, S., Joshua, C. E. & Eytayo, B. A. (2020). Assessment of availability, adequacy and condition of high-tech assistive technology resources in special education schools in North-West Nigeria: *International Journal of Research and Innovation in Social Science*, 4(1), 185-190
- Echendu, A. J. & Okafor, P. C. C. (2021) Smart city technology: A potential solution to Africa's growing population and rapid urbanization? *Development Studies Research*, 8(1), 82-93
- Elijah, P.T. and Obaseki, M. (2022). Quality Assurance Management for Higher Education Harmonization Agenda's Sustainability in Africa. In: Mojekwu J.N., Thwala W., Aigbavboa C., Bamfo-Agyei E., Atepor L., Oppong R.A. (eds) Sustainable Education and Development-Making Cities and Human Settlements Inclusive, Safe, Resilient, and Sustainable. ARCA 2021. Springer Cham. [https://doi.org/10.1007/978-3-030-90973-4\\_14](https://doi.org/10.1007/978-3-030-90973-4_14)
- Elijah, P.T., Obaseki, M., Oyefidein, D.T., and Paul-Tamaragaibi, F.Y. (2021). Emerging Educational Issues in Nigeria. In: Oluwuo, S.O., Onyeike, V.C. and Eseyin, E.O. (Eds.), Evolution of SMART Classrooms in Nigerian Schools. Ibadan: Constellation Nigeria publisher pp. 286-296.
- Elijah, P. T. (2019). Problems and Prospects of Using Digital Devices for Learning Engineering Drawing in Public Universities in Delta State. *Trends in Educational Studies*, 11(3), 220-231.
- Jemni, M. L. M., Ayed, L. J. B., Brahim, H. B. & Jemaa, A. B. (2013). Learning technologies for people with disabilities: *Journal of King Saud University: Computer and Information Sciences*, 1, 29-45

- Johnson, A. M., Jacovina, M. E., Russell, D. E., & Soto, C. M. (2016). Challenges and solutions when using technologies in the classroom. In S. A. Crossley & D. S. McNamara (Eds.) *Adaptive educational technologies for literacy instruction* (pp. 13-29). New York: Taylor & Francis
- Kim, A. J., Kim, J., Hwang, D. &Kweon, O. (2018). *A study of roles and collaboration in the development of assistive devices for people with disabilities by clinical experts and design experts*. <https://dl.designresearchsociety.org/cgi/viewcontent.cgi?article=1654&context=drs-conference-papers>
- Lopez, S. J., Pedrotti, J. T. & Snyder, C. R. (2018). *Positive psychology: The scientific and practical explorations of human strengths*. USA: Sage Publications
- Mishra, M. P., Sharma, V. K. &Tripathi, R. C. (2010). *ICT as a tool for teaching and learning in respect of learner with disability*. New Delhi: GNOU Press
- Nkwoagba, O. S. (2011). Independent living for persons with special needs through assistive technology. In A. Olabisi (Ed.), *Child care and special needs education in Nigeria*, (pp. 16-25). Jos: Centre for Learning Disabilities and Audiology
- Oyewole M. O., Araloyin, F. M. &Oyewole, P. T. (2019). Residents' awareness and aspiration for smart building features: The case of Okota, Lagos, Nigeria. *Nigerian Journal of Environmental Sciences and Technology*, 3(1), 30-40
- Preston, J. P., Wiebe, S., Gabriel, M., McAuley, A., Campbell, B. & MacDonald, R. (2014). Benefits and challenges of technology in high schools: A voice from educational leaders with a Freire Echo. *Interchange*, 46, 169–185
- Viner, M., Singh, A. & Shaughnessy, M. F. (2020). Assistive technology to help students with disabilities. <file:///C:/Users/User/Downloads/Assistive-Technology-to-Help-Students-With-Disabilities.pdf>
- Wise, P. H. (2012). Emerging technologies and their impact on disability: *The Future of Children*, 22(1), 169-191