LEVEL OF PLANNING TOWARDS IMPLEMENTATION OF TECHNOLOGY-BASED EDUCATION FOR LEARNERS WITH SPECIAL NEEDS IN UPPER BASIC PUBLIC SCHOOLS IN CROSS RIVER STATE, NIGERIA

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Abstract

The paper found out the level of forethought towards implementation of technology-based education for learners with special needs in upper basic public schools in Cross River State, Nigeria. Descriptive survey research design was used in the study. Four research questions were posed for the study while 5,290 upper basic public-school teachers in Cross River State's eighteen local government areas formed the population of the study. 533 teachers, representing ten percent of all the teachers that formed the population of the study, were selected for the study. Provision of Specific Special Needs Educational Goals and Vision of Learning through Technology Questionnaire for Teachers (PSSNEGVLTQT); Provision of Evolving Professional Development for Teachers Questionnaire (PEPDTQ); and Provision of Structural Changes in the School Day Teacher Questionnaire (PSCSDTQ) constituted the instruments for data collection. The data were analyzed using descriptive statistics involving simple percentages. Results showed that the level of planning towards implementation of technology-based education for upper basic public school learners with special needs is quite stubby or squat as the responses of most teachers/respondents fall within "Not Reflected"

scale with disagreement aggregate percentage scores ranging between 73.73% - 96.50% for all the variables. Thus, planning towards implementation of technology-based education for upper basic public school learners with special needs in Cross River State, Nigeria is very poor. In other words, there is no proper organization towards implementing technology-based education for upper basic public school learners with special needs in the state.

Introduction

Research has revealed that today's students, surrounded by digital technology since infancy, are fundamentally different from previous generations (McHale and Kapur, 2005) and are no longer the people our educational system was designed to teach (Prensky, 2001). Over three decades ago, Will (1986) identified the need for a change in instructional direction that better served children, especially those with special needs. The reasons for new direction were that such change must reflect current technologies and also societal realities through lasting and responsible changes in the education offered students generally and those with learning problems in particular, in order to prepare and meet the challenges of projected economic, demographic, and technological realities. Technology, such as computers, has changed over time, particularly in their uses in schools (Edybum, 2019).

Globally, teachers, educators and educationists have realized the importance of technology, in teaching students in regular or special education classrooms (Pratt, 1999; Balmeo, Nimo, Pagal, Puga, Aristdal-Quino & Sanwen, 2014; Hew & Cheung, 2010; Will, 1986). With the development of computers and related devices, technology in education has dramatically changed and a variety of opportunities have emerged to support teaching and learning processes. The use of technology in education today has made it possible to deliver the instructional content with supportive multimedia elements like interactive images, videos, animations, simulations, and computer games (UNESCO, 2015), which has made technology as a highly invaluable supporter of students and teachers (Rutten, Van Joolingen and Van der veen, 2012). Constant developments in information and communication technologies (ICT) also have their share in the instructional technologies (Cagiltay, Cakir Karasu, Islim and Cicek, 2019).

Upper basic school level in Nigeria refers to Junior Secondary School level of education that covers the first 3 years of secondary education for children aged 12 – 14 years-plus (Federal Republic of Nigeria, 2015). As at 2019, Nigeria ranked 124th out of 140 countries in the world and 25th out of 38 in Africa among the countries with the best education systems globally or in the world (Top 10 African Countries with the Best Education Systems/After School Africa, 2019). As of 2015, Nigeria ranked 103 out 188 countries in UNESCO's EFA Development Index, which takes into account Universal Basic Education, quality of education, among others. A 2015 review of education in Nigeria for basic school education by UNESCO revealed a decrease of 4%, which led UNESCO to conclude that much remains to be done both in quantity and quality. Similarly, the SDG Index and Dashboards for all UN member states presented by the Sustainable Development Report (2019) points out Nigeria as one of the countries with the greatest remaining challenges to meeting the SDGs. Nigeria ranks 43 out of 54 African countries with an SDG Index score of 47.07 while her SDG Africa Dashboard and Trends indicate increasing distance from SDG achievement. ****

It is not a surprise, therefore, that Nigeria's ICT Development and Growth Index and ICT Adoption Reports from 2015-2019 have remained consistently poor or low. In 2015, International Telecommunication Union (ITU) reported that Nigeria dropped in ITU Annual ICT Development Index Ranking and ranked 14 out of 39 African countries and 134th globally with IDI of 2.48 percent. According to the 2016 edition, Nigeria was on the 143rd position but with the value of 2.44 percent while the regional position remained 14 out of 39

countries. Again, ITU Development Index 2017 rated Nigeria very poor, ranking her 143 with just 2.60 percent value far below most African countries. The average value for Africa in the IDI 2017 was 2.64 points. All the countries that ranked in the upper half of the global IDI distribution have competitive ICT markets that have experienced high levels of ICT investment and innovation over many years. Furthermore, the Global Competitiveness Report 2018 Rankings put Nigeria at 115 out of 140 countries with a score of 47.5 and difference from 2017 rank of -3 and score of +0.5. In the same manner, Nigeria's 2019 SDGs ranking was 159 out of 162 countries with SDG Index Score of 46.4, while in the Global competitiveness Report for 2019 ranked 116 out of 162 countries with a score of 48.3 and difference from 2018 rank and score of -1 and +0.8 respectively (Global Competitiveness Report, 2019; Africa SDG Index and Dashboard Report, 2019).

In addition, ICT growth index for Middle East, Turkey and Africa (META) also ranked Nigeria low. According to International Data Corporation (IDC), the META region holds greater development keys, especially for the adoption of new or emerging technologies. This implies that emerging technologies have neither been put on the national mandate in Nigeria nor are there innovation and mature markets in Nigeria (Ikwen, Olayi & Akpan, 2020).

Although effective use of technology must be supported by significant investments in hardware, software, infrastructure, support services, among others (Bates, 2011), without putting in place specific educational goals and a vision of learning through technology, ongoing professional development, structured changes in the school day, and ongoing evaluation, effective implementation of technology into classroom teaching and learning will be a mirage (North Central Regional Educational Laboratory, 2005; Bertelsmann Foundation and the AOL Time Warner Foundation, 2012; CEO Forum on Education and Technology, 2014). While today much of research in developed and developing countries focus on instructional technologies to be used to improve active learning and interactions among teachers and students in regular, special and inclusive settings or learning environments, teachers and students in Nigeria have not benefitted from these developments and are not likely to enjoy the benefits of these developments in the nearest future. Nigeria's current state of ICT in education as reflected in item 1.1,p.3 of the National Policy on Information and Communication Technologies in Education (NPICTE) (2019) is still at policy formulation stage more than three decades after the introduction of technology in education. As shown in item 1.1.2 on pages 7-9 of NPICTE (2019), technology education in Nigeria is plagued by a myriad of challenges ranging from inadequate policy framework, absence of policy implementation, lack of institutional and administrative capacity, including absence of proficient teachers and ICT professionals to complete absence of ICT infrastructure for teaching, learning, research and educational administration in virtually every institution; absence of regulation which has culminated in ICT education at the private and/or non-informal education sector to be largely non-standardized, uncoordinated and unsupervised; lack of ICT curricula to meet changing societal needs as well as absence of capacity of curriculum developers and implementers; among others. Consequently, the teaching and learning process in Nigeria has not embraced current educational paradigm which emphasizes student-centered instruction with the teacher as the facilitator rather than teacher as the source of knowledge.

The National Policy on Information and Communication Technologies in Education (NPICTE) (2019), like both the National Policy on Education (NPE) (2015) and National Policy on Special Needs Education (NPSNE) (2015), has failed to clearly spell out such key cogitations that supports the effective use of technology for learners with special needs as educational goals and a vision of learning through technology, professional development of

teachers, structural changes in the school day, technical infrastructure and technical support, and evaluation.

Investigations into successfully developing, evaluating, studying, and implementing a wide-range of technology-based educational programmes suggest that the value of technology can only be realized if attention is paid to the above-mentioned important cogitations that support the effective use of technology (ISTE, 2002; UNESCO, 2015; UNGA, 2013; Drigas, 2016; Byrom & Bringham, 2001).

It is very necessary to establish the educational goals for students prior to acquiring technology or teachers engaging in their first expert growth plenary or meeting (UNESCO IITE, 2018). Educational goals and a vision of learning through technology should reflect what students need to learn, how technology can promote those learning goals; and emphasize the need for each school to have a planning team involving teachers, other instructional staff, administrators, students, parents, technology coordinators, and community representatives (North Central Regional Educational Laboratory, 2005). It is the primary responsibility of the planning team to first develop/outline a clear set of goals, expectations and criteria for students learning based on national and state standards, the student population and community concerns (Byrom and Bingham, 2001; University of Texas, 2017). In addition, the planning team ascertains the types of technology that can be used to achieve those goals. The contributions of parents and community members assist in providing information on students' needs in terms of skills that they require to be successful on leaving school (Byrom and Bingham, 2001). As noted by the UK Department of International Development (2010), the involvement of the entire community in establishing the schools' technology goals is beneficial to the whole educational process. Without the planning team, it is difficult to guarantee that certain educational objectives are realized better systematically, increased profoundly, or with better pliability or adaptability (UNESCO, 2015).

Mangal and Mangal (2009) note further that the planning team also evolves a vision of how teaching and learning can be enhanced by technology, pointing out that enduring school advancement or upgrade is difficult in the absence of vision. The way technology is used to support the vision for learning depends on the harmony that exists among team members (Kolb, 2012). According to UNESCO IITE (2018), the significance of every student, regular students, students with special educational needs and learning disabilities, having equitable access and use of technology is also stressed in the school's vision of learning through technology. Currently, educational goals and a vision of learning through technology issues highlighted in the preceding paragraphs are non-existent in Nigeria's education policy documents such as the NPE (2015), NPSNE (2015) and NPICTE (2019). Therefore, it is extremely difficult to decipher what the Nigerian government, including her educators, practitioners, and educational policy makers, are after or think about technology-based education. Nigeria needs to come up with clear goals to guide educators on how much to spend, for what purpose and under what conditions. Nigeria needs technology-based educational goals with a clear understanding of the purpose of and type of technology to be used. It is only then that the influence can be assessed with ease and better valued. Presently, it is difficult for Nigerian schools to successfully integrate technology because of the absence of educational goals with a clear and meaningful connection between technology and larger educational goals. Similarly, Nigeria's education policy documents listed above have a blurred vision as the vision is silent on meaningful, engaged learning with technology, in which students can be actively covered in the learning process. Consequently, technology-based education in Nigeria is not effective because of lack of clarity of the learning objectives and the scattered basis of technology application.

The establishment of educational goals and vision of learning through technology as a pre-requisite for expert or professional growth of teachers is crucial for teachers to be able to

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select relevant technologies and instructional strategies to meet the goals (Starr, 2011). Students can only benefit from technology if their teachers are conversant and comfortable with it (UNESCO, 2015). Thus, it is important teachers are assisted as they make efforts to apply technology. Teachers' lack of experience with technology constitutes a significant barrier to application of technology in the classroom (Kolb, 2012; Drigas, 2016). For these teachers to be able to incorporate technology-based activities and projects into their curriculum, it is crucial to create the opportunity to learn to use the tools and understand the terminology necessary for participation in the projects and activities (Starr, 2011). This requires evolving or continuing expert growth of teachers to enable them study or gain an understanding of how to use new technology and how to provide meaningful instruction and activities using technology in the classroom (Kanaya, Light and Culp, 2005). This calls for teachers to be trained in using computers (Prensky, 2001) which must not be restricted to the instructional strategies required to instill technological skills into the learning process (Pratt, 1999) but involve continuing expert growth on practical applications of technology (Mutalac, 2013). Meeting the evolving expert growth of teachers requires in-depth, sustained assistance in the application of technology, in the efforts to integrate technology into the classroom (Sebastian, 2019) as well as embedded opportunities for professional learning and collaborating with colleagues in order to overcome the challenge of time and their daily schedules (Kanaya, et al, 2005). Thus, there is urgent need to focus on skills training and other forms of ceaseless support that takes care of diverse matters, such as teachers' changing practices and curricula, new technologies and new resources, and changing assessment practices (Mahesh, 2016). These constitute pedagogical support that enables students to use technology to accomplish learning goals.

Research has shown that teachers also need time to become familiar with available products, hardware/software, online resources, as well as to discuss technology use with other teachers (Starr, 2011; Kolb, 2012). This is what Koller, Harvey and Mognotta (2010) implied by "transferring schools into 21st century learning communities means recognizing that teachers must become members of a growing network of shared expertise". Hechter and Vermette (2012) affirm that professional collaboration includes communicating with educators in similar situations and others who have experience with technology.

Presently, professionals in both the areas of technology and special needs education are significantly few in Nigeria. It is the general education teachers that dominate the fields of technology and special needs education in Nigeria. Graduates of special education are faced with the challenge of relevance on graduation because the curriculum in place is not skill-relevant after school life. While the school curriculum may be said to have limited space for special needs education service educators, technology-based education does not have space in the curriculum, hence professional development or expert growth of teachers of technology is very silent in all of Nigeria's education policy documents such as NPE (2015), NPSNE (2015) and NPICTE (2019).

Among the benefits of technology-based education is its potential for structural changes in the school day. Such changes in structure have the potential for achieving significant improvements in productivity (US Department of Education, 2013). Technology has the capacity to infuse classrooms with digital learning tools, including computers and hand held devices; expands course offerings, experiences, and learning materials; supports learning 24 hours a day, 7 days a week; builds 21st century skills; increases student engagement and motivation; and accelerates learning (US Department of Education, 2013; Fullan, 2016; Ikwen, Olayi and Akpan, 2020).

Without structural changes in the school day these gains cannot be realized (Mahesh, 2016). Therefore, it is crucial that time be built into the daily schedule in order for teachers to have time to collaborate and to work with students, embark on engaged learning, secure

longer class periods and have more allowance for team teaching and interdisciplinary work (European Agency for Special Needs and Inclusive Education, 2020). The daily 35- or 45-minute lesson period cannot be enough for students to find, explore, and synthesize the materials for their research projects involving the use of online resources as noted by ISTE (2002). With the acquisition of more technologies by schools for student use and with improvement in teachers' ability to find more ways to incorporate technology into their instruction, the teachers will need more time for teaching (Fernandez-Batanero and Colmenero-Ruiz, 2016).

In Nigeria today, the need for changes in the structure of the school day to accommodate the demands of the technology-based education is not only ignored by Nigeria's education policy documents, technology does not have a place in the school time-table. Consequently, there are no computers in Nigerian public schools for student consumption currently.

Statement of problem:

Research has shown that any nation planning to use technology to improve learner performance in school must consider such key cogitations that support the effective use of technology as specific educational goals and a vision for learning through technology; evolving professional development; structural changes in the school day; a robust technical infrastructure and technical support; and continuing evaluation, before successful implementation of diverse technology-based educational programmes can be attained. A situation analysis of Nigeria's National policy on Special Needs education (2015) indicates that Nigeria is involved in special needs education but the present practices are not consistent with existing global best practices. More so, the special needs classroom laboratories are not yet technology-driven. Facilities and materials that enhance such learning are lacking, and in private schools where some exist, are inadequate and/or obsolete. Besides, many special needs education practitioners, like their regular school counterparts, lack the technical knowhow to operate specialized special needs education gadgets.

More than 30 years after the introduction of ICT in education, Nigeria's National Policy on Information and Communication Technologies in Education (2019) is stressing that the nation's current state of ICT in education is still at policy formulation stage. Consequently, technology-based education in Nigeria today is confronted with inadequate policy framework, no policy implementation strategies, lack of institutional and administrative capacity (including absence of proficient teachers and professionals), complete absence of ICT infrastructure for teaching, learning, research and educational administration in virtually every institution, and lack of ICT curricula to meet changing societal needs, etc. Thus, Nigerian education policies over the years have fallen short of such vital implementation provisions as appropriate technology-based educational programmes or appropriate technologies at all school levels, a computer laboratory with basic multimedia equipment, electronic library systems to all schools, training of public basic and secondary school teachers in basic computing and internet skills and in Computer-Aided Instruction (CAI), integration of ICT in all learning areas, when appropriate, and private sector support. Currently, such Nigeria's Policy documents as National Policy on Education (2015), National Policy on Special Needs Education (2015) and National Policy on Information and Communication Technologies in Education (2019) are bereaved of specific educational goals and a vision of learning through technology, evolving professional development of teachers, structured changes in the school day, a robust technical infrastructure and technical support, and continuing evaluation. Nigeria's education policy documents offer only a rationale for technology investment in Special Needs Education, not as a basis for ICT integration. Therefore, the level to which planning towards implementing technology-based education for

leaners with special needs at the upper basic public school level embraces or covers key cogitations that support the effective use of technology in the face of the aforementioned implementation issues associated with technology-based education inherent in Nigeria's education policy documents is the focus of this study.

Purpose:

The purpose of the study was to determine the level of planning towards implementing technology-based education for learners with special needs at the upper basic school level in CRS, Nigeria. The specific objectives of the study include:

i.   Examining the level of provision of specific special needs educational goals and vision of learning through technology in Nigeria.
ii.   Examining the level of provision made for evolving professional development of special needs education teachers in Nigeria.
iii. Examining the level of provision made for structural changes in the school day to enhance collaboration between teachers and students/colleagues in Nigeria.

Research questions:

The following questions guided the study:

1. What is the level of provision of key cogitations that support effective use of technology for upper basic school learners with special needs in Nigeria's NPE, NPSNE and NPICTE?
2. What is the level of provision of special needs educational goals and a vision of learning through technology towards the implementation of technology-based educational programmes for learners with special needs at the upper basic school level in Nigeria?
3. What is the level of provision of evolving professional development for teachers towards implementation of technology-based educational programmes for learners with special needs at the upper basic school level in Nigeria?
4. What is the level of provision of structural changes in the school day towards implementation of technology-based educational programmes for learners with special needs at the upper basic school level in Nigeria?

Methodology

Design:

The design adopted for this study is descriptive survey design which refers to a research that is used to gather information about population groups to learn about their characteristics, opinions, attitudes, and/or previous experiences (Salaria, 2012). This involves administering a written or oral questionnaire to a group of respondents while the responses to the questions form the data of the study (Gay, Mills & Airasian, 2009). In a survey research, the questionnaire is the instrument used to collect data that describe the characteristics of the population. This study, like most survey research, is conducted with a sample of respondents from the target population. However, ideas or information from the sample will be generalized to the larger population.

Population:

The population of the study comprised all the 5290 upper basic school teachers, made up of 3210 and 2080 male and female teachers respectively in Cross River State, Nigeria which comprises of 18 local government areas (see table 1). All the teachers have Bachelor of Education (B. Ed) degree as minimum qualification with at least seven years of teaching experience in upper basic school level.

Sampling Technique:

The sampling technique adopted for this study was a stratified sampling technique. This is a probability sampling technique in which the researcher divides the entire population into different sub-groups or strata, then randomly selects the final subjects proportionally from the different strata (Explorable.com, 2009).

One good fact about stratified sampling is that the strata do not overlap which makes it impossible for some individuals to have higher chances of being selected as subject. The strata used in this study include gender, nationality, level of education/class level, type of subjects and educational attainment. Again, by using this sampling technique the researcher was able to highlight specific sub-groups within the sample. Furthermore, the use of stratified random sampling enabled the researcher to observe the existing relationship between the sub-groups as well as the opportunity to sample the rare extremes of the population. Finally stratified sampling technique has the potential to guaranty a higher statistical precision compared to simple random sampling since the variability within the sub-groups is lower compared to the variability when dealing with the entire population. Consequently, a small sample size can be used, thus saving a lot of the researcher's time, money and effort.

The variation of stratified sampling technique used in this study is the simple random sampling technique. This variation provides each member of the population equal chance of being selected as subject as the entire process of sampling involves one step with each other subject chosen independently of the other members of the population. Among the merits of simple random sampling include the ease of assembling the sample, fairness in selecting a sample from a given population as every member enjoys equal opportunity of being selected, unbiased and representativeness of the population which is important in drawing conclusions from the study as well as the generalizations from the results of the sample back to the population.

Sample:

The sample for this study was 533 teachers, representing ten percent of all the teachers that form the population of the study. This sample includes 323 male and 210 female upper basic school teachers respectively as shown in table 2.

Instrument for data collection:

The instrument used for data collection in this study was a structured questionnaire presented in three sections. The first set of the questionnaire was on Provision of Specific Special Needs Educational Goals and Vision of Learning through Technology Questionnaire for Teachers (PSSNEGVLTQT); the second one was Provision of Evolving Professional Development for Teachers Questionnaire (PEPDTQ), while the third set of questionnaires was Provision of Structural Changes in the School Day Teacher Questionnaire (PSCSDTQ). The questionnaire contained four (4) items in each section, totaling 12 items probing different specific special needs educational goals and a vision of learning through technology, evolving professional development of teachers, and structural changes in the school day technology-based educational programmes planning and implementation issues. Content validity of the instruments was obtained using the judgments of four expert lecturers in the

University of Calabar and Cross River State University of Technology respectively. While one teacher each was picked from the Departments of Special Education and Educational management, two lecturers were picked from the Department of Measurement and Evaluation.

The upper basic school teachers in the eighteen (18) local government areas in Cross River State used for the study were sensitized on the modality for responding to the questionnaire after which the PSSNEGVLTQT, PEPDTQ and PSCSDTQ instruments were administered on the teachers to ascertain their opinions on availability/ provision of specific educational goals and a vision of learning through technology, evolving professional development for teachers and structural changes in the school day to ensure successful planning and/or implementation of technology-based educational programmes for upper basic school learners with special needs. The teachers' responses were collected, organized and analyzed using percentages.

Table 1.: Population Distribution of Upper Basic School Teachers in Cross River State, Nigeria.

L.G.A	M	F
Abi	150	106
Akamkpa	198	121
Akpabuyo	159	104
Bakassi	145	112
Bekwara	159	98
Biase	199	121
Boki	204	123
Calabar Municipality	209	122
Calabar South	207	123
Etung	160	112
Ikom	168	115
Obanliku	158	111
Obubra	162	119
Obudu	211	124
Odukpani	148	113
Ogoja	170	114
Yakurr	197	120
Yala	206	122
Total	**3,210**	**2,080**
Grand Total		**5,290**

Source: Directorate of Personnel, Research and Statistics, State Universal Basic Education Board (SUBEB), Calabar, Cross River State.

Table 2: Sample Distribution of Upper Basic School Teachers

L.G.A	M	F	Total
Abi	15	11	26
Akamkpa	20	12	32
Akpabuyo	16	10	26
Bakassi	15	11	26

Bekwarra	16	10	26
Biase	20	12	32
Boki	20	12	32
Calabar Municipality	21	12	33
Calabar South	21	12	33
Etung	16	11	27
Ikom	17	16	33
Obanliku	16	11	27
Obubra	16	12	28
Obudu	21	12	33
Odukpani	15	11	26
Ogoja	17	11	28
Yakurr	20	12	32
Yala	21	12	33
Total	**323**	**210**	**533**

Table 3: Results of Responses on the Level of Reflection of Key Cogitations that Support Effective use of Technology for Upper Basic School Students with Special Needs in Nigeria's NPSNE and NPICTE

Variables	Not Reflected	Reflected	Very Much Reflected
Educational goals and a vision of learning through technology	392 73.54%	96 18.01%	45 8.44%
Evolving professional development	376 70.54%	105 19.69%	51 9.56%
Structural changes in the school day	411 77.11%	83 15.57%	38 7.12%

From table 3, it can be observed that 392 representing 73.54% of the total respondents agreed that educational goals and a vision of learning through technology as one of the key cogitations that support effective use of technology for basic school students with special needs are not reflected in Nigeria's National Policy on Special Needs Education and National Policy on Information and Communication Technologies in Education. While 96 representing 18.01% of the respondents agreed that the educational goals and a vision of learning through technology are reflected, 45 representing 8.44% of the respondents agreed that educational goals and a vision of learning through technology are very much reflected.

Table 3 has also revealed that 376 representing 70.54% of the teachers/respondents agreed that evolving professional development as one of the key cogitations that support effective use of technology for basic school students with special needs is not reflected in Nigeria's NPSNE and NPICTE. Also, 105 representing 19.69% of the respondents agreed that evolving professional development is reflected in Nigeria's NPSNE and NPICTE; while 51 representing 9.56% of the respondents agreed that evolving professional development is very much reflected in Nigeria's NPSNE and NPICTE.

The result from table 3 further shows that 411 representing 77.11% of the respondents agreed structural changes in the school day as one of the key cogitations that support effective use of technology for students with special needs is not reflected in Nigeria's

NPSNE and NPICTE. Again, while 83 representing 15.57% of the respondents agreed that structural changes in the school day are reflected in Nigeria's NPSNE and NPICTE, 38 representing 7.12% of the respondents noted that structural changes in the school day is very much reflected.

The results of the analysis shown in table 3 indicate that the percentage of disagreement with an aggregate score of 73.73% for all the three items is much higher than 50. This implies that the level of provision/reflection of key cogitations that support effective use of technology for upper basic school students with special needs in Nigeria's National Policy on Special Needs Education (NPSNE) and National Policy on Information and Communication Technologies in Education (NPICTE) is significantly low. In other words, the level of planning towards implementation of technology-based education for learners with special needs in upper basic schools in Cross River State, Nigeria, is remarkably stunted.

Table 4: Results of Responses on Level of Reflection of Specific Educational Goals and a Vision of Learning through Technology in Nigeria's NPSNE and NPICTE

Variables	Not Reflected	Reflected	Very Much Reflected
Teacher pre-and in-service training includes determining technology educational goals for students with special needs.	440 82.55%	60 11.25%	33 6.19%
The need for a clear and meaningful connection between technology and larger educational goals	437 81.98%	66 12.38%	30 5.62%
Developing a clear vision of how teachers can use technology to improve teaching and learning	398 74.67%	88 16.51%	47 8.81%
Providing vision of learning through technology for all students to have equitable access and use of technology.	429 80.48%	67 12.57%	36 6.75%

The result in table 4 shows that 440 representing 82.55% of the respondents noted that teachers pre- and in-service training that includes determining technology educational goals for students with special needs is not reflected among specific educational goals and a vision of learning through technology in Nigeria's NPSNE and NPICTE; 60 representing 11.25% of the respondents agreed teacher pre- and in-service training that includes determining technology educational goals for students with special needs is reflected, while 33 representing 6.1% of the respondents noted that teacher pre- and in-service training that includes determining technology educational goals for students with special needs is very much reflected among specific educational goals and a vision of learning through technology in Nigeria's NPSNE and NPICTE.

For item 2, which is on the need for a clear and meaningful connection between technology and larger educational goals, 437 representing 81.98% of the respondents noted

that a clear and meaningful connection between technology and larger educational goals is not reflected among the specific educational goals and a vision of learning through technology in Nigeria's NPSNE and NPICTE; 66 representing 12.38% respondents agreed that a clear and meaningful connection between technology and larger educational goals is reflected in Nigeria's NPSNE and NPICTE; while 30 representing 5.62% of respondents noted that a clear and meaningful connection between technology and larger educational goals is very much reflected.

For item 3 which involves developing a clear vision of how teachers can use technology to improve teaching and learning, 398 representing 74.67% of respondents agreed that developing a clear vision of how teachers can use technology to improve teaching and learning is not reflected in the specific educational goals and a vision of learning through technology in Nigeria's NPSNE and NPICTE for students with special needs. While 88 representing 16.51% respondents noted that developing a clear vision of how teachers can use technology to improve teaching and learning for basic school students with special needs is reflected among specific educational goals and a vision of learning through technology in Nigeria's NPSNE and NPICTE; 47 representing 8.81% of respondents agreed that developing a clear vision of how teachers can use technology to improve teaching and learning for basic school students with special needs is very much reflected among specific educational goals and a vision of learning through technology in Nigeria's NPSNE and NPICTE.

For item 4, 429 representing 80.48% of respondents agreed that providing vision of learning through technology for all students to have equitable access and use of technology is not reflected among specific educational goals and a vision of learning through technology for upper basic school students with special needs in Nigeria's NPSNE and NPICTE; 67 representing 12.57% noted that providing vision of learning through technology for all students to have equitable access and use of technology is reflected, while 36 representing 6.75% of respondents noted that providing vision of learning through technology for all students to have equitable access and use of technology is very much reflected among specific educational goals and a vision of learning through technology for upper basic school students with special needs in Nigeria's NPSNE and NPICTE.

On aggregate, 96.50% agreed that specific educational goals and a vision of learning through technology is not reflected in Nigeria's NPSNE and NPICTE.

Table 5: Results of Responses on Level of Reflection of Evolving Professional Development of Teachers in Education of Upper Basic School Students with Special Needs in Nigeria's NPSNE and NPICTE

Variables	Not Reflected	Reflected	Very Much Reflected
Ensuring teacher pre-and in-service training provides professional development that enables teachers choose appropriate technologies and instructional strategies to meet educational goals.	453 84.99%	58 10.88%	21 3.93%
Teachers use technology to provide meaningful instruction and activities in the classroom	446 83.67%	62 11.63%	27 5.06%

Supporting teachers to enjoy in-depth, sustained assistance in the use of technology and to integrate technology into the curriculum	449 84.24%	56 10.50%	30 5.62%
Ensuring teachers are familiar with available products, software, and online resources as well as have opportunity to discuss technology use with other teachers	439 82.36%	63 11.815	31 5.81%

From table 5, it can be observed that 453 representing 84.99% of respondents noted that ensuring that teacher pre- and in-service training provides professional development that enables teachers choose appropriate technologies and instructional strategies to meet educational goals is not reflected in Nigeria's NPSNE and NPICTE for evolving professional development of teachers of upper basic school students with special needs; 58 representing 10.88% respondents agreed that ensuring that teacher pre- and in-service training provides professional development that enables teachers choose appropriate technologies and instructional strategies to meet educational goals is reflected in Nigeria's NPSNE and NPICTE, while 21 representing 3.93% noted that ensuring that teacher pre- and in-service training provides professional development that enables teachers choose appropriate technologies and instructional strategies to meet educational goals is very much reflected in Nigeria's NPSNE and NPICTE for evolving professional development of teachers in education of upper basic school students with special needs.

For item 2, teachers use technology to provide meaningful instruction and activities in the classroom – 446 representing 83.66% of respondents agreed that it is not reflected in Nigeria's NPSNE and NPICTE for evolving professional development of teachers in education of upper basic school students with special needs; 62 representing 11.63% of respondents agreed that Nigeria's NPSNE and NPICTE reflects that teachers use technology to provide meaningful instruction and activities in the classroom for evolving professional development of teachers of upper basic students with special needs; while 27 representing 5.06% noted that it is very much reflected in Nigeria's NPSNE and NPICTE.

Regarding item 3, 449 representing 84.24% of respondents noted that supporting teachers to enjoy in-depth, sustained assistance in the use of technology and to integrate technology into the curriculum is not reflected in Nigeria's NPSNE and NPICTE for evolving professional development of teachers of upper basic school students with special needs; 56 representing 10.50% of respondents agreed that supporting teachers to enjoy in-depth, sustainable assistance in the use of technology and to integrate technology into the curriculum is reflected in Nigeria's NPSNE and NPICTE for evolving professional development of teachers of upper basic school students with special needs; while 30 representing 5.62% agreed that supporting teachers to enjoy in-depth, sustained assistance in the use of technology and to integrate technology into the curriculum is very much reflected in Nigeria's NPSNE and NPICTE for evolving professional development of teachers of upper basic school students with special needs.

For item 4, 439 representing 82.36% respondents noted that ensuring teachers are familiar with available products, hardware, and online resources as well as have opportunity to discuss technology use with other teachers is not reflected in Nigeria's NPSNE and NPICTE for evolving professional development of teachers of upper basic school students

with special needs, 63 representing 11.81% of respondents noted that ensuring teachers are familiar with available products, hardware, and online resources as well as have opportunity to discuss technology use with other teachers is reflected in Nigeria's NPSNE and NPICTE for evolving professional development of teachers of upper basic school students with special needs; while 31 representing 5.81% of respondents agreed that it is very much reflected.

On aggregate, 83.82% noted that evolving professional development of teachers in education of upper basic school students with special needs is not reflected in Nigeria's NPSNE and NPICTE. The result of the analysis shown in table 5 indicates that the percentage of disagreement for all the four items is higher than 50. This implies that the level of reflection or provision of evolving professional development of teachers in education of upper basic school students with special needs in Nigeria's NPSNE and NPICTE is significantly low.

Table 6: Results of Responses on Level of Reflection of Structural Changes in the School Day in Education of Upper Basic School Students with Special Needs in Nigeria's NPSNE and NPICTE

Variables	Not Reflected	Reflected	Very Much Reflected
Teachers' daily schedule includes time to collaborate and work with students	462 86.67%	49 9.19%	22 4.12%
Teachers enjoy longer class periods during technology instruction	462 86.67%	47 8.81%	24 4.50%
Technology instruction enjoys more allowance for team teaching and inter-disciplinary work	466 87.42%	47 8.81%	20 3.75%
Teachers lack adequate time to incorporate technology into classroom instruction	471 88.36%	44 8.25%	18 3.37%

Table 6 shows that 462 representing 86.67% of respondents noted that teacher's daily schedule that includes time to collaborate and work with students is not reflected in Nigeria's NPSNE and NPICTE; while 49 representing 9.19% of respondents agreed that teacher's daily schedule that includes time to collaborate and work with students is reflected in NPSNE and NPICTE, 22 representing 4.12% of respondents agreed that teachers' daily schedule that includes time to collaborate and work with students is very much reflected in Nigeria's NPSNE and NPICTE in education of upper basic school students with special needs.

Item 2 shows that 462 representing 86.67% of respondents noted that the need for longer class periods during technology instruction is not reflected in NPSNE and NPICTE; 47 representing 8.81% of respondents noted that the need for longer class periods during technology instruction is reflected, while 24 representing 4.50% of respondents noted that the need for longer class periods during technology instruction is very much reflected in Nigeria's NPSNE and NPICTE for upper basic school students with special needs.

Also, in item 3, 466 representing 87.42% agreed that technology instruction that enjoys more allowance for team teaching and inter-disciplinary work is not reflected in Nigeria's NPSNE and NPICTE; 47 representing 8.81% of respondents noted that it is reflected in Nigeria's NPSNE and NPICTE for upper basic school students with special needs; while 20 representing 3.75% of respondents noted that technology instruction that enjoys more allowance for team teaching and inter-disciplinary work is very much reflected in Nigeria's NPSNE and NPICTE for upper basic school students with special needs.

For item 4, 471 representing 88.36% of respondents agreed that adequate time to incorporate technology into classroom instruction is not reflected in Nigeria's NPSNE and NPICTE in education of upper basic school students with special needs; 44 representing 8.25% respondents noted that adequate time to incorporate technology into classroom instruction is reflected in Nigeria's NPSNE and NPICTE; while 18 representing 3.37% respondents agreed that adequate time to incorporate technology into classroom instruction is very much reflected in Nigeria's NPSNE and NPICTE in education of upper basic school students with special needs.

On aggregate, 87.28% of respondents noted that structural changes in the school day in education of upper basic school students with special needs is not reflected in Nigeria's NPSNE and NPICTE. The result of this analysis indicates that the percentage of disagreement for all the four items is higher than 50. This implies that the level of reflection/provision of structural changes in the school day in the education of upper basic school students in Nigeria's NPSNE and NPICTE is significantly low.

Discussion of findings

The data for this study revealed that the percentage of disagreement for all the items as shown in table 3 – 6 is higher than 50, thus the level of reflection of key cogitations that support planning towards implementation of technology-based education for learners with special needs in upper basic school level in Cross River State, Nigeria, such as specific educational goals and a vision of learning through technology, evolving professional development of teachers, and structural changes in the school day, is significantly low or notably stubby. Aggregate negative/disagreement scores of 73.73% (level of reflection of key cogitations that support effective use of technology); 96.50% (level of reflection of specific educational goals and a vision of learning through technology); 83.82% (level of reflection of evolving professional development of teachers); and 87.28% (level of reflection of structural changes in the school day) respectively imply that all these critical items or implementation activities and/or strategies are not reflected in Nigeria's National Policy on Special Needs Education (NPSNE) and National Policy on Information and Communication Technology in Education (NPICTE) for the education of upper basic school students with special needs. The results of the analyses mean that even though literature strongly supports the importance of providing specific educational goals and a vision of learning through technology, evolving professional development of teachers, and structural changes in the school day in planning towards the implementation of technology-based education, there is no technology-based implementation plan in special needs education that clearly identifies key cogitations that support effective use of technology for learners with special needs. The absence of a comprehensive technology-based education implementation policy in special needs education in Nigeria makes it difficult to achieve accessibility and/or implementation requirements, its specific educational goals and a vision of learning through technology, evolving professional development of teachers, and structural changes in the school day as well as the best international practice. Without concrete implementation policy solutions, it can be difficult to offer leverage that support equal educational opportunities for learners

with special needs. Without technology-based education implementation plan or policy it is impossible for Nigeria to gain from a variety of opportunities which have emerged to support teaching and learning processes, improve her status in international assessment for rankings in both basic school education and technology-based educational programmes and/or ICT accessibility.

Conclusion

The absence of a blue print for sound development policies and programme that ensure the full participation of persons with special needs in all aspects of society in Nigeria constitutes a major barrier to implementation of technology-based education for learners with special needs. Nigeria's current special needs education practices are not fully consistent with global best practices. Nigeria's special needs classrooms are not technology-driven. There is no clear identification of technology-based education policy plan that addresses implementation issues, strategies and/or activities that will lead to effective use of technology to support basic school learners with special needs. All these have made it increasingly difficult for technology-based education potential benefits to be reaped by learners with special needs. Nigeria's policy initiatives have only focused on providing rationale for technology investments rather than a basis for successful technology-based education implementation or integration. There are no comprehensive special needs education policy initiatives that focus on the facilitation of implementation of technology-based mediated special needs education on the broad objectives of the policy framework to support technology-based education implementation or integration in special needs education in line with international standards or practices.

Recommendations

The following recommendations were made based on the findings:
1. Technology-based education in Nigeria needs to be reconceptualized in areas such as how technology fits into the curriculum, what teachers should know, how teachers will learn about technology, students' role in technology and how the influence of technology can be assessed.
2. Nigeria's education policy documents need to pay attention to key cogitations that support planning towards implementation of technology-based education for learners with special needs in basic school levels, such as specific educational goals and a vision of learning through technology; evolving professional development of teachers; and structural changes in the school day, among others.
3. Nigeria education policy documents need to state clearly; (a) the knowledge, skill and attitudes required to effectively implement change in ways that improve learning programmes; (b) strategies for coping with the change process; (c) strategies for democratic decision-making; (d) the inter-personal skills required to work collaboratively, among others.
4. Nigeria needs to enshrine aggressive multidimensional professional development in the area of technology-based educational programmes in order to promote changes in teachers' beliefs, attitudes, theories and pedagogical assumptions; and the possible use of new or revised materials, resources, or technology.
5. It is essential for Nigeria's education policy documents to incorporate the restructuring of the school day in order to accommodate the demands of the technology-based education.

6. Members of the National Assembly and the presidency should consider priority areas of needs encompassed in the 17 United Nations' Sustainable Development Goals, where education is one of the most important priorities and focus areas, rather than engaging in political rhetoric and promises.

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QUESTIONNAIRE

LEVEL OF PLANNING TOWARDS IMPLEMENTATION OF TECHNOLOGY-BASED EDUCATION FOR LEARNERS WITH SPECIAL NEEDS IN UPPER BASIC PUBLIC SCHOOLS IN CROSS RIVER STATE, NIGERIA

A) Nigeria's NPE, NPSNE and NPICTE identify the following as instrumental to successful planning towards implementing technology-based education for students with special needs.
   i.   Educational goals and a vision of learning through technology

ii.   Evolving professional development

iii.   Structural changes in the school day

B) Specific Educational Goals and a Vision of Learning through Technology. Nigeria's Education Policy documents (NPE, NPSNE and NPICTE) stress:

i.   Providing teachers' pre-and in-service training that includes determining technology educational goals for students/learners with special needs.

ii.   The need for a clear and meaningful connection between technology and larger educational goals

iii.   Developing a clear vision of how teachers can use technology to improve teaching and learning

iv.   Providing vision of learning through technology for all students to have equitable access and use of technology.

C) Evolving Professional Development:

Nigeria's NPE, NPSNE and NPICTE uphold the following trends of continuing professional development of teachers in education of learners with special needs:

i.   Ensuring teacher pre-and in-service training provides professional development that enables teachers choose appropriate technologies and instructional strategies to meet educational goals.

ii.   Teachers use technology to provide meaningful instruction and activities in the classroom.

iii.   Supporting teachers to enjoy in-depth, sustained assistance in the use of technology and to integrate technology into the curriculum.

iv.   Ensuring teachers are familiar with available products, software, and online resources as well as have opportunity to discuss technology use with other teachers.

D) Structural Changes in the School Day:

i.   Teachers' daily schedule to include Nigeria's education policy documents stress the need for time to collaborate and work with students.

ii.   Teachers to enjoy longer class periods during technology instruction

iii.   Technology instruction to enjoy more allowance for team teaching and inter-disciplinary work.

iv.   Teachers to have lack adequate time to incorporate technology into classroom instruction