Information and Communication Technology and Persons with Special Needs in Calabar Municipality in Cross River State, Nigeria

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Abstract - The main purpose of this study is to determine Information and Communication Technology and persons with special needs in Calabar Municipality in Cross River State, Nigeria. To achieve the purpose of this study, three hypotheses were formulated. Survey research design was adopted for the study. A sample of one hundred and fifty persons with disabilities was randomly selected for the study. The selection was done through the simple random sampling technique. This was to give equal and independent opportunity to all the respondents to be selected for the study. The questionnaire was the major instrument used for data collection. The instrument was subjected to both face and content validation by expert in measurement and evaluation. The reliability estimate of the instrument was established through the test-retest reliability method Pearson product correlation analysis and independent t-test were employed were adopted to test the hypotheses at .05 level of significance. The result of the analysis reveals that Information and Communication Technology (ICT) significantly relate with persons with hearing and hearing impairments. The result also revealed that there is a significant difference between male and female persons with learning disabled on their perception of information and communication technology (ICT).

INFORMATION AND COMMUNICATION TECHNOLOGY AND PERSONS WITH SPECIAL NEEDS IN CALABAR MUNICIPALITY IN CROSS RIVER STATE, NIGERIA

Strictly as per the compliance and regulations of:

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I. Introduction

Information and communication technology (ICT) has been applied to every facets of human endeavour including special education. This is because it has been found useful as it offers improved method and ways of doing things. According to (Ozoji (2003) the use of information and communication technology has made learning more meaningful in inclusive education system.

Disabled children are able to do better in the inclusive setting through the use of information and communication technology. Building of a civil society requires an increased access to knowledge including special need children the right to education. Education is an essential human need and a basic human right, which is crucial to human development. Furthermore, the major social problems of individual countries and the world as a whole cannot be solved without high grade level of education which can only be achieved

through the use of information and communication technology in the classroom.

The contribution of information and communication technology (ICT) to individuals with special learning needs is in the area behavioral objectives through computer assisted aids, its motivational technique and management procedures. (D'Alonzo, Giordano and Van Leeuwen 1997).

Children with special learning needs are those who deserve favourable attention (Turnbull, Trunbul, Shank & Leal, (1999). They require special practices for their basic learning needs to be met for them to develop to their maximum capacities. These individuals need information and communication technology (ICT) to enable them not to be denied their rights and opportunities. The masses are complaining, demanding to know how effective the information and communication technology (ICT) is to persons with special needs such as visually impaired, learning disabled, and hearing impaired.

II. What is Information and Communication Technology in Special Education?

Information and communication technology (ICT) in special education is defined as any device, piece of equipment or system that helps or compensate for an individual's specific learning deficits (Hallahan & Kauffman, (2000). Over the past decade, a number of studies have demonstrated the efficacy of information and communication technology (ICT) for individuals with learning difficulties. Ferguson & Asch (1999) stated that, it doesn't cure or eliminate learning difficulties, but it can help a disabled child reach his/her potential because it allows him or her to capitalize on his or her strengths and areas of difficulties. For example, a student who struggles with reading but who has good listening skills might benefit from listening to audio books. Information and communication technology (ICT) in special education is used to increase the maintenance and improved functional capacities of individual with special needs. It could also be seen as any tool that helps students with disabilities do things more quickly, easily or independently. The goals of ICT is to assist individuals with special learning needs work at their own

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pace, because effective teaching and learning occur through participation (Brinker and Thorpe, 2004)

III. Types of Information and Communication Technology in Special Education

Information and communication technology (ICT) in special education can be broadly divided into three (3) types namely: audio, visual and audio-visual technologies.

Audio-ICT: These refer to ICT gadgets that are only heard but not necessarily seen. They can be used to instruct disabled children through their sense of learning. Example includes audio tapes, special switches, hearing aids, ear moulds, audio books, etc.

Visual-ICT: These are technologies that provide visual access to communication and can be used to give instruction. These include video relay systems, video remote interpreting, closed circuit television, closed captioning etc.

Audio-Visual ICT: These refer to technologies that provide both audio and visual access to communication for disabled persons. These include, video phone (VP), video conference, televisions, and so on.

Video-Relay Systems: Allow a person who uses sign to communicate through an online interpreter to a person who uses spoken language, or a person who does not sign to communicate with a signer. This system facilitates more contact between the teacher and the learner.

Video Remote uses video cameras to provide sign language interpreting services. The people are in the same room and look at the computer screen for interpreting and hear the interpreter speaks. There are many possible ways of using it such as in the classrooms, at interview sites or work-study programmes, and during individualized educational programmes (IEP) team meetings.

Videoconference: Allows two individuals who sign to communicate directly. Children can take classes from geographically distant places. Itinerant staff can provide support to a child from a distance. Videoconference may also be of value in rural areas to ensure children have regular access to adult role models who use sign to provide opportunities for peers to talk with each other and take classes together. Videoconference can be used in teaching sign language, to children and adults. As videoconference becomes widely accepted, the communication need of persons should be considered as well.

Video streaming: like Signing Avatars, though not widely available, is an emerging technology which uses three-dimensional characters to communicate in sign language and use facial expressions. Many companies have used animation technologies to develop signing avatars, or cartoon characters that allow the characters to communicate in sign language. Not only does this technology have the potential for teaching literacy to young deaf children, it can be used as well to teach sign language to parents, staff, and other children. Video streaming also allows the use of video logs in which individuals can set up a visual log. Video logs provide visual commentary or news on a particular subject that involved more persons.

Videophone (VP) uses the same technology as videoconference; takes advantage of link technology to allow people to make telephone calls through the internet and see each other. Itinerant staff can provide support to a child from a distance. Videophone may also be of value in rural areas for the mainstreamed child who needs specialized instructional techniques designed for deaf education.

Closed Captioning is assistive technology designed to provide access to television for persons with hearing disabilities by displaying the audio portion on a television signal as text on the television screen. Currently, most television sets have a chip imbedded in the set to allow for the text to appear on the television set screen. This is also available on DVD; video tapes, and compact disks of commercially-made movies and programmes.

Real Time Captioning (RTC) is a method (which parallels the work of court reporters) where a specially trained capturener uses a machine that is connected to a computer with software capable of translating graphic shorthand into words in caption formats and standard spellings, writes the spoken word on the steno machine. The computer software instantly translates the steno-entries into readable English text on the computer at a near verbatim rate. It is commonly used for newscasts, lectures, presentations, meetings, and sporting events, but can be used for classroom instruction.

Communication Access Real-Time Translation (CART) involves a trained stenographer encoding spoken English that is converted to English text and displayed on a computer screen or television monitor, CART is used in some classrooms, courtrooms, and professional conferences.

IV. Uses of ICT in Special Education

Interaction between special education and ICT has help person with special learning needs to survive and reexamine issues practice for their mutual benefit.

The use of ICT to support teaching and learning is well established in current practice Adams & Papa, (2004). Since the origins of school-based computers, they have been used to support the education of pupils with special educational needs. ICT can make a significant difference to the life and learning of children with learning difficulties. There are four main ways in which ICT can be used to meet the special educational

needs of pupils. Ozoji (1993) presented some of the contributions in the following ways:

Assistive ICT: it is an ICT device, resource or service which aids the individual to improve or enhance any skills that hinder his/her functional ability (e.g. switch technologies).

Augmentative ICT: it is an ICT device that aids the individual to do something that they could not otherwise do, for example, speech and communicator devices. In essence assistive and augmentative ICT is about enhancing an individual's interaction with their environment and is most likely to be applied to physical and sensory disabilities.

Remedial ICT: it is an ICT device, resource or service that provides support to an individual for a specific cognitive or behavioural need. Integrated Learning Systems (ILS). It delivers individualized learning in mathematics, reading, writing and spelling. Each student has a learning programme continuously tailored to personal needs; all students progress at their own level and pace and are free to achieve within the security of their own private learning space. Learners, teachers and mentors are supported throughout the process by diagnosis of achievement and difficulty, delivered through continuously differentiated learning resources and clear detailed reporting.

Diagnostic ICT: An ICT device, resource or service that provides information to teachers that facilitates the identification of a special educational need and possibly suggests remedial courses of action, which includes ICT tools and other resources or the materials. The teacher of ICT is therefore in a key position to work with ICT professionals in removing some of the barriers to learning that exist in mainstream classrooms For example, they will have expertise in the use of control and switch technologies which may enable access and improve communication for those with motor impairment; they will be able to adjust hardware and modify software to accommodate those with poor sight or hearing difficulties; they could set up independent learning programmes for children with emotional/behavioral disorders who may relate better to work on a computer than when directed by a teacher. Computers often seem to provide a preferred learning medium for children who are diagnosed with an autistic spectrum condition.

V. Statement of the Problem

The following are the challenges facing the use of ICT in special education:

1. Failure of power supply: The use of ICT requires constant power supply which is not guaranteed in Nigeria.
2. Problem of differentiation: Differentiation is a method of organizing learning activities. It is the match of what is offered to what is needed. It considers the stage of learning that the learner has reached, and considers their own skills and abilities. Most teachers have problem in relating it with the needs of the children.
3. Lack of skills: the use of computer skill requires high level of skills and training on the part of the teacher which many teachers lack.
4. Limited ICT instructors: There are limited numbers of ICT experts in the field of education.
5. Technical failure: ICT equipment can sometimes breakdown due to mechanical failure thereby disrupting the lesson in progress.

VI. Methods

This study adopted the Ex-post facto research design. The target population involved in this study consisted of all persons with special needs in Calabar Municipality in Cross River State, Nigeria.. A simple random sampling technique was adopted. The research instrument, which was the questionnaire, comprised twenty (20) items, all of the Likert-type 4-point scale (strongly Agree-4 points, Agree-3 points, Disagree 2-points and strongly disagree 1 point). The respondents were required to indicate their level of agreement for each statement.

In terms of validity three experts in educational measurement and evaluation and psychology, affirmed, with 87% agreement that the entire instrument was suitable for measuring what it purported to measure. Using the test-retest reliability method, the reliability index of the instrument was found to be 0.86. Data were collected through the use of questionnaire from the sampled institutions used for the study, through the use of the questionnaire from the sampled institution used for the study. Through a very rigorous approach and with the assistance of some persons mainly, to whom the researcher is very grateful, all the 150 copies of the questionnaire were retrieved, and they were all properly completed, thus giving 100% return rate. The following hypotheses were tested in the study.

1. There is no significant relationship between information and communication technology (ICT) and persons with visual impairments.
2. There is no significant relationship between information and communication technology (ICT) and persons with hearing impairments.
3. There is no significant difference between male and female persons with learning disabled on their perception of information and communication technology (ICT).

a) Hypothesis One

There is no significant relationship between information and communication technology (ICT) and persons with visual impairments.

The independent variables involve in this hypothesis is information and communication

technology, while the dependent variable is persons with visual impairments. Pearson product correlation analysis was employed to test this hypothesis. The result of the analysis is presented in Table 1.

Table 1 : Pearson product moment correlation analysis of the relationship between Information and Communication Technology and persons with visual impairments (N=150)

Variables	Σx Σy	Σx^2 Σy^2	Σxy	r-value
persons with visual impairments	2579	4658		
			67233	0.73*
	2367	4585		
information and communication technology				

Significant at .05 level, critical r = .159, df = 148

The result in Table 1 reveals that the calculated r-value of 0.73 is higher than the critical r-value of .159 at .05 level of significance with 198 degrees of freedom. With this result the null hypothesis was rejected. This result therefore means that there is a significant relationship between Information and Communication Technology and persons with visual impairments.

c) *Hypothesis Three*

There is no significant difference between male and female persons with learning disabled on their perception of information and communication

b) *Hypothesis two*

There is no significant relationship between information and communication technology (ICT) and persons with hearing impairments.

The independent variables involve in this hypothesis is Legislation, while the dependent variable is persons with hearing impairments. Pearson product correlation analysis was employed to test this hypothesis. The result of the analysis is presented in Table 2.

Table 2 : Pearson product moment correlation analysis of the relationship between Information and Communication Technology and persons with hearing impairments (N=150)

Variables	Σx Σy	Σx^2 Σy^2	Σxy	r-value
persons with hearing impairments	2687	4753		
			67342	0.66*
Information and Communication Technology	2367	4585		

Significant at .05 level, critical r = .159, df = 148

The result in Table 2 reveals that the calculated r-value of 0.66 is higher than the critical r-value of .159 at .05 level of significance with 148 degrees of freedom. With this result the null hypothesis was rejected. This result therefore means that there is no significant relationship between Information and Communication Technology and persons with hearing impairments.

technology (ICT). The independent variable in this hypothesis is gender (male and female); while the dependent variable is perception of information and communication technology (ICT). To test this hypothesis, perception of males' and females' persons with learning disabled on information and communication technology (ICT) was compared using Independent t-test analysis. The result of the analysis is presented in Table 3.

Table 3 : Independent t-test analysis of the difference between male and female persons with learning disabled on their perception of information and communication technology (ICT). (N=200)

Gender differences	N	$\overline{x}$	SD	t-value
Male	80	18.17	2.11	
				3.38*
Female	70	17.01	2.09	

Significant at .05, critical t = 1.96, df = 198

The result of the analysis as presented in Table 6 reveals that the calculated t-value of 3.38 is higher than the critical t-value of 1.96 at .05 level of significance with 198 degrees of freedom. With this result, the null hypothesis that there is no significant gender difference in the Legislation of persons with disabilities was rejected. This result indicates that, there is a significant difference between male and female

persons with learning disabled on their perception of information and communication technology (ICT).

VII. DISCUSSION OF FINDINGS

The result of the study revealed that Information and Communication Technology (ICT) significantly relate with persons with hearing and hearing impairments. The result also revealed that there is a significant difference between male and female persons with learning disabled on their perception of information and communication technology (ICT). The finding is in line with view of Ferguson & Asch (1999) who stated that, it doesn't cure or eliminate learning difficulties, but it can help a disabled child reach his/her potential because it allows him or her to capitalize on his or her strengths and areas of difficulties. For example, a student who struggles with reading but who has good listening skills might benefit from listening to audio books. Information and communication technology (ICT) in special education is used to increase the maintenance and improved functional capacities of individual with special needs. It could also be seen as any tool that helps students with disabilities do things more quickly, easily or independently. (Rinker and Thorpe (2004) also stated that the goals of ICT is to assist individuals with special learning needs work at their own pace, because effective teaching and learning occur through participation.

VIII. CONCLUSION

The process of given orientation through ICT focused on improving academic achievement of learners with special needs.

One of the crucial debates within the ICT research and development arena at present is the application of inclusive devices Adams & Papa, (2004). Design principles that is the diverse range of users' needs are considered at the outset of designing hardware or software; their needs are not considered later and met as some form of adaptation to the already existing product. In order to build a truly inclusive information society, educational approaches and appropriate technology must be developed that meet the requirements of all users with special learning needs, including those who have special educational needs. Access to appropriate ICT can reduce inequalities in education and ICT can be a powerful tool in supporting educational inclusion. However, inappropriate or limited access to ICT can be seen to reinforce inequalities in education faced by learners with special educational needs. The digital devices that could potentially develop within countries' educational systems can be particularly significantly within the special education sector to facilitate knowledge for person with special learning needs.

IX. RECOMMENDATIONS

The followings are suggested solutions made by Epps &Tindai (2007) to Information and communication technology (ICT) in special education:

1. Information and communication technology (ICT) can be given to learners with special learning needs at an early age with the appropriate learning equipments.
2. There should be Information and communication technology (ICT) training for all special education teachers to be highly qualified to do their jobs well.
3. The government should improve on the electric power supply of the country.
4. Parents should be assured that their children receive some benefits in school through the use of ICT. This will encourage effective parental participation.
5. Measurable steps to recruit, hire, train and retrain teachers should be emphasized.
6. Teachers should endeavour to take into consideration individual differences when using ICT in special education.
7. Government should train and recruit more ICT experts in the country.
8. Government should make provision for supplementary aids and services to help learner to the maximum extent appropriate to their learning needs.
9. ICT should be included in the education of persons with special needs considering their strengths, preferences and interests. This can develop their skills appropriately.
10. There should be campaign that emphasizes more understanding of ICT to learners with special needs.
11. There should be census for learners with special needs for provision of adequate ICT equipment.

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