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Information and Communications Technology in Education for Persons with Special Needs (ICTEPSN)

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Abstract: Education is a prerequisite to and national development. The level of availability and use of information and communications technology (ICT) in Nigeria school settings, particular, for persons (children and adults) with special needs education. The paper investigates the level of using ICT for the development of persons with special needs to meet up with the contemporary educational system in Nigeria school settings. Development in special needs education including availability and adequate use of ICT basic facilities namely: online portal, network service, internet service and ICT devices. The survey questionnaire was developed through a Centre for Visually Handicapped and selected respondents from Department of Adults Education (Federal College of Education Obudu) in Obudu Local Government Area of Cross River State, to collect data. The results revealed that impacts of ICT policy implementation in Nigeria schools for special needs would paves way for standard educational development in Nigeria school settings, inclusion of education for modern stage of using ICT as tools is possible in Nigeria educational system for ICT cutting-edge transformation. Also, it was revealed that inadequate use of ICT facilities for teaching and learning contributed to the limitation of overall performance of persons with special needs, particularly in academic and extra-curricular activities in national development. The conclusions and recommendations amongst others were as follows: the need to teach the persons with special needs (PSN) by using ICT facilities as a tool and computers technology in the Nigerian schools' settings for achieving educational development goals of Nigeria school settings.

Keywords: Online Portal, Network Service, Internet Service, ICT, Teaching, Learning

1. Introduction

Education is a prerequisite to national development. Seen in this light, education is an indispensable means of unlocking and protecting human rights, since it provides the environment required for securing good health, liberty, security, economic well-being, and participation in social and political activities. Recent educational development of nations has opened up a wide range of channels for using ICT to teach, learn, research and including information seeking and sharing [1]. Implementation of ICT policy in schools for special needs enhanced good performance in education, training and research sectors immensely contributes to any country's national development. However, performing education sectors produce appropriate human resource capital that is integral in spurring productivity. In case of persons with special needs, improving their productivity is an important channel in the elimination of poverty, disease and ignorance, hence improving their welfare.

As ICT role and usage become increasingly important, a number of studies have been conducted to examine availability and use of ICT in Colleges of Education and Universities in Nigeria and some parts of African [2-5]. Most of those studies, however, investigated the use of ICT and its impacts (positive or negative), social network sites and social media [3, 4] rather than policy making without fullest implementation. Less than 10% population of persons with special needs is now educated through use of ICT as teaching, learning and researching tool [5]. Focusing on level of availability and use of ICT by and for persons with special needs, this study aims to investigate the use and impacts of

ICT policy implementation and usage by children and adults with special needs.

2. Background: Inclusion of Persons with Special Education Needs in Implementation of ICT Policy

The government of any nation required to be committed to the protection and provision of equal opportunities to persons with special needs and disabilities. Many nations such as Kenya has developed a number of policy guidelines for persons with special needs education (PSNE) immediately after the end of second world war and has since been offered categories of children with disabilities, namely; children with hearing impairment, mental handicap, visual impairment and those with physical handicap [5]. Also, Nigeria as a nation policy has been established in such a way that education of the children and adults with special education needs are only offered in special schools, however, Federal Ministry of Information and Federal Ministry of Communications have not been included in the list of recognized stakeholders in order to maximize service provisions for persons with special needs in national policy on person with special needs [6, 7].

Special needs education has continued to expand and currently includes learners with or who: hearing and visual impairment. However, global best practices of Special Needs Education occur in: (a) School-bound settings, (b) Home-bound settings; and (c) Hospital. Whilst, special needs education takes place largely in school bound setting with exclusion of home and hospital settings [7]. In addition, the school curriculum has limited or no space for Special Needs Education particularly in areas of ICT adoption as a result of the other competing courses.

2.1. Adoption of ICT Role in Education for Persons with Special Needs Education

Adoption of ICT roles in education for persons with special needs is important and requires for fully consistent with existing global best practices. ICT has been referred to as a generic term of technologies that are being used for collecting, storing, editing and communicating information in different media [2, 8]. The computer systems and multimedia (e.g. internet and software) are the best known examples of the use of ICT in education [9, 10].

ICT has a revolutionary impact and become key tools that the global and the habitants are live in it. In addition, ICT has been a revolutionary impact on all sectors such as educational sector globally for teaching, learning and researching [11, 12]. However, educators at the teaching professional levels especially at tertiary institutions and secondary schools have not been able to exploit the potential of ICT to meet the teaching objectives [10, 12, 13].

Also, educators and trainees have not equipped themselves to evaluate use of ICT as a tool both during their training and in their future employment; to make sound judgments about when, when not and how to use it, and how to become confident and competent users of it [13]. The field of education has been unaffected by the penetrating influence of information and communications technology in Nigeria school settings, particularly Special Needs Education [7, 8, 12].

2.2. ICT Policy Implementation for Persons with Special Needs Education

The government of Nigeria is committed to the protection and provision of equal opportunities to persons with special needs and disabilities. The situation analysis on the national policy on education revealed five areas to do with; challenges, prospects, needs, the way forward meeting the needs and prioritizing the needs. However, national policy has included Special Needs Education but the present practices are not fully consistent with existing global best practices. Also, the Special Needs learning environment such as classrooms, laboratories and educational technology facilities in the country are not yet ICT driven [8-11].

Further, it has been revealed that the cognitive domain for the child with special needs is not well addressed especially for the child who possesses outstanding cognitive abilities namely [15]; gifted, creative and talented children, and others who experience intellectual deficits, that is, learning disabilities, visual impaired, etc. however, the Special Needs Education programme in Nigeria is organized unlike that of a regular school [7, 8, 13]. In other words, ICT adoption and strategies such as curriculum compacting, enrichment, bibliotherapy, etc. that drive special needs education are not generally being practiced [5, 6]. However, there are two areas namely; classroom activities, rehabilitation and adoption of use of ICT as a tool that the practice of Special Needs Education is deficient.

2.3. Monitoring of ICT Usage in Education and Persons with Special Needs

The use of ICT in mainstream education is unlike that of people with special need educational school settings. Although, it has only been in recent years that government has recognized the importance of use the ICT in special needs education [8, 10]. Perceived benefits and use of some ICT specific applications including the internet, virtual environments and adaptive devices for persons with special needs education has been revealed of how various systems have been used for persons having various conditions, and outlines a number of usability studies mainly web and internet technologies. However, some aspects and areas of the specific applications of ICT with persons with special needs education have not received enough attention and need to be better studied. The six uses of ICT reviewed in literature are namely [8]: (a) facilitating tutor programmes, (b) improving exploratory learning, (c) using ICT as a tool, (d) help in communication, (e) used for assessment purposes and (f) used as a management tool.

In general, ICT could bring peculiar benefits to persons with emotional and behavioral difficulties by facilitate access to learning that increases motivation, foster self-competition

and confidence and improves self-esteem [13-15].

3. Methods

To find out how and level of persons with special needs use ICT as a tool in their education for learning, data were collected using structured questionnaire survey. The survey questionnaire was developed through two steps. First, students with special needs at Saint Joseph Centre for Visually Handicapped and tutors with substantial experiences with teaching methodology of people with special needs education, and they were involved in developing a list of strategies and data elements used for evaluating information from visual impaired perspective. Second, based on the list developed in step 1, and questionnaires were distributed to the staff and teachers teaching adults with special education. The survey questionnaire was finalized after two rounds of pilot testing. However, pilot-test participants were students recruited from different classes (St Joseph Centre for Visually Handicapped). The questionnaire consisted of twenty items constructed for the study. Two sections have been used to capture data from the respondents: Section A, consisted location (Urban or Rural), School type (Public or Private), Sex (Male or Female) and Age (from 30 through 55 above). Section B, consisted of twenty items of four points (options); SA – strongly agreed, A – agreed, D – disagree and SD – strongly disagreed. The respondents were required to tick the option they deemed most approximate for an item.

3.1. Data Analysis

The scores of the respondents on each item were collected and the statistical mean method in percent of analysis was used to analyze the data collected. Normal values were assigned to the response options namely; SA and A are 1 and 2, whilst D and AD are 3 and 4, respectively. The analyses were done using Microsoft Excel.

Participants: A total 500 responses were received: the response rate was around 5%. About 40% of the respondents were female and 60% were male. A majority of the respondents (70%) were between 30 and 34 years old. Thirty percent of them were under 34 years old. In terms of their locations, most of the respondents were in urban (65%) and rural (35%) rural. The mean problem-solving inventory score of the sample was 86.50, with a standard deviation of 19.38.

3.2. Findings

3.2.1. Research Question 1: Inclusive Education for Modern Stage of Using ICT Tools

Figure 1 presents how respondents rated on inclusion of education policy for modern stage of use ICT as a tool for teaching, learning and researching by persons with special needs education. The answers ranged from 1 to 4, with 1 indicating "strongly agreed" (SA) for: statement-1 indicating "statement item 1", statement-2 "statement item 2", statement-3 "statement item 3", statement-4 "statement item 4" and statement-5 "statement item 5". The top five platforms in

inclusive education for modern stage of use ICT as a tool were: statement-1 (50%) "Inclusive education policy has been encouraged to use ICT" and statement-5 (50%) "Modern stage of use ICT is the only way out for reducing educational challenges facing with persons with special needs", statement-2 (10%) "Public and private partnership for educating persons with special needs for using ICT is poor", statement-3 (20%) "Person with special needs cannot compete with their counterparts by using ICT as a tool" and statement-4 (40%) "Inclusive education is possible in Nigeria educational system for ICT cutting-edge transformation". For 2 indicating "agreed" (A), statement-1 (40%), statement-2 (80%), statement-3 (50%), statement-4 (20%) and statement-5 (40%).
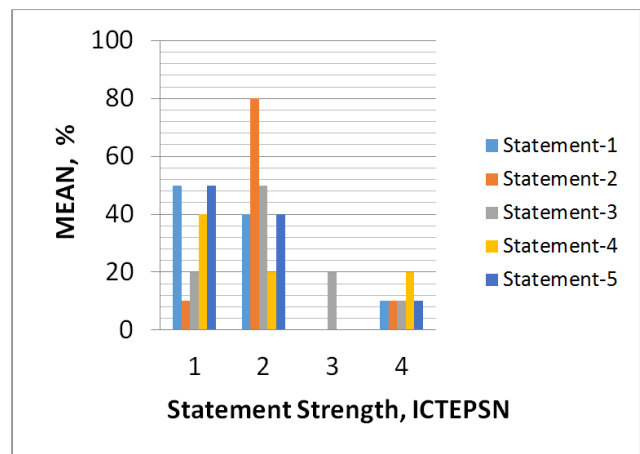

***Figure 1.** Inclusive education policy for modern stage of using ICT tools.*

Also, 3 indicating "disagreed" (D), statement-3 (20%) is only the statement that has significant consideration which shows that persons with special needs education cannot actually compete with their counterparts in areas of modern stage of use ICT as a tool. While, 4 indicating "strongly disagreed" (SD), statement-4 (20%) has a strongly disagreed point and as others statements-1, 2, 3 and 5 having 20% each respectively. This shows that present inclusive education in Nigeria educational system as a cutting-edge transformation for persons with special needs is very slim and negligible.

3.2.2. Research Question 2: Role of ICT in Education of Persons with Special Needs

Figure 2 shows how respondents have been rated for the role of ICT in education of persons with special needs educational development. Similarly, the answer scale ranged from 1 to 4, with 1 representing "strongly agreed" (SA). Mean score in percentage of role of ICT in special education, the top five evaluation points were: ICT improves life standards of persons with special need "statement-6" (80%), children with special needs do not show interest on use of ICT as a tool for learning and through ICT persons with special needs are now good web developers and programmers, that is, statement-7 and 8 (20%) each respectively. Statement-10 (20%) of respondents strongly agreed that less than 10% population of persons with special needs are now educated through using ICT as teaching and

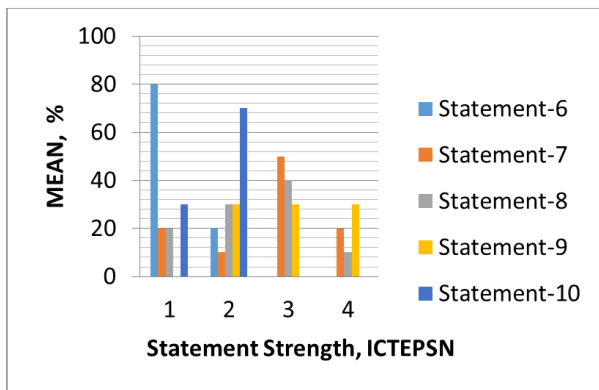learning tools. Statement-9 has no point as in terms of strongly agreed platform.

Figure 2. Mean score of roles of ICT in Special Needs Education.

In agreed platform (2), statement-10 (70%) indicates that high population of persons with special needs required significant attention by government of Nigeria for adopting ICT as a tool in teaching and learning activities in school settings of person with special needs. While, others of statements-6, 7, 8 and 9 are of 20%, 10%, 30% and 30% respectively, are less agreed from respondents' points of view. In case of platforms 3 and 4 "disagreed" and "strongly disagreed", show that it is not agreed that children or adults with special need education do not have interest on use of ICT as a tool for teaching and learning, and has no significant negative effect on the special needs' education development.

3.2.3. Research Question 3: Implementation of ICT Policy in Nigeria Schools for PSN

Respondents rated how important implementation of ICT policy in Nigeria schools for persons with special needs (PSN) as shows in Figure 3. Platform 1 of strongly agreed indicating that implementation of ICT policy would actually paves way for standard educational development and inadequate fund has been poorly affects persons with special needs, that is, statement-12 (70%) and statement-13 (70%), respectively.
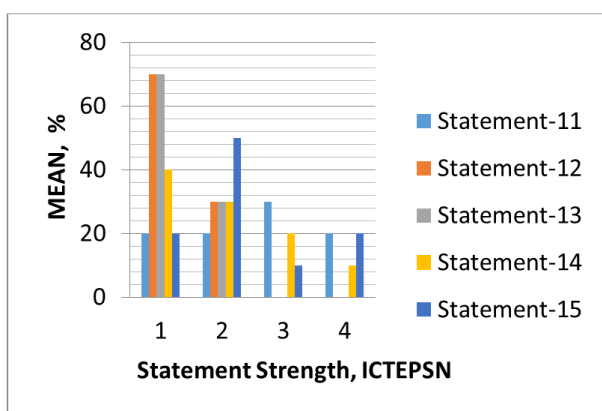

Figure 3. Implementation of ICT policy in Nigeria Schools for special needs education.

In platform 2 "agreed", statement-15 (50%) showing that

poor teaching and learning of persons with special needs is due to lack of use of ICT in our special need school settings compared to statements 12 (30%), 13 (30%) and 14 (30%) poor implement of ICT in Nigeria school settings of people with special needs, whilst statement-11 (10%) means that exposing persons with special needs is hazardous. While, in platforms 3 and 4 statement-11 (30%) for disagreed and (20%) for strongly disagreed respectively, indicating that by exposing persons with special needs to the use of ICT is not hazardous rather positively impacts on their educational development.

3.2.4. Research Question 4: ICT Usage for Persons with Special Needs in Education

Respondents rated how often persons with special needs use ICT as information sources for academic and everyday information seeking. The answers ranged from 1 to 4, with 1 indicating "strongly agreed". The five platforms in ICT usage for persons with special needs context: statement-16 (70%) "Persons with special needs have the ability to use ICT facilities" compares to other statements 18 (20%), 19 (20%) and 20 (10%) which indicate that there is a ICT facilities demand and drive among persons with special needs and their counterparts for participating in most of national activities, persons with special needs are encourage on the use of ICT and children and adults with special needs are always discouraged on the ICT usage. However, it is strongly observed that children with special needs do not have the ability to use ICT facility.

In platform 2 which signifying "agreed", statement-19 (70%) shows that persons with special needs are encouraged on the use of ICT than that people (children and adults) with special needs that are discouraged on the ICT usage as illustrates in Figure 4. Other platforms 3 and 4 which indicating "disagreed" and "strongly disagreed" the answers have shown that the ICT usage for persons with special needs education have impacts on their educational development.
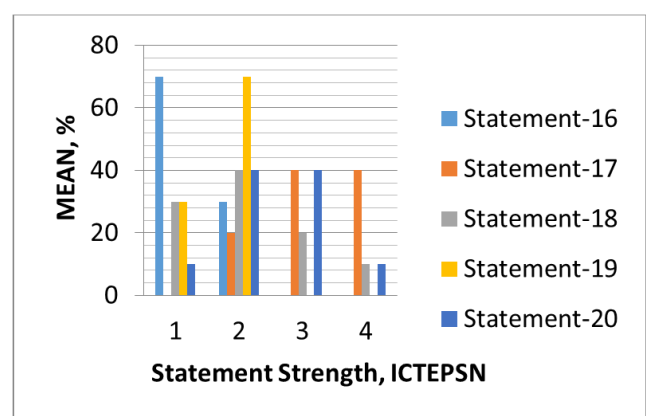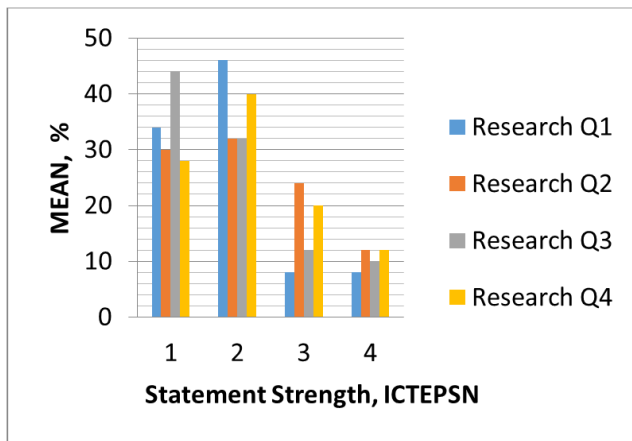

Figure 4. ICT usage for persons with special needs in education.

Generally, the results of situation analysis in the context of ICT in education and persons with special needs (ICTEPSN) differ from general believe that persons with special needs do not have the ability to use ICT facilities compare to their counterparts, see Figure 5.

Figure 5. *Situation analysis of ICT in Education and Persons with Special Needs.*

In platforms 1 and 2 which indicating "strongly agreed" and "agreed" (Figure 5), implementation of ICT policy in Nigeria school settings for special needs would paves way for standard educational development (Research Q3, about 43%). Compared to inclusive education for modern stage of use ICT as a tool in Nigeria educational system for persons with special needs education (Research Q1, about 46%) in platforms 3 and which indicating "disagreed" and "strongly disagreed". However, total implementation of use ICT and National Policy on Special Needs Education in Nigeria would have significant impacts and improve the persons with special needs education development.

4. Discussion and Conclusion

Nigeria in involved in Special Needs Education but the present practices is not fully consistent with existing global practices. For example, the study environment such as classrooms has not been technologically driven by ICT. At present time, ICT is recognized as a pressing consideration in educational establishment worldwide.

However, this study proved to be valuable to teachers in Special Educational Needs, that is, teaching staff and leaders in schools. The viewpoints of this work show that ICT implementation policy to adoption use of ICT for learners with special needs education in overall learning settings. Also, unlike the mainstream school environment, teaching has not always been modified in line with the students with special educational needs, with assistive technology commonly implemented by learners in private environments. To ensure the use of ICT is more wide-ranging, there is need to ensure the equipment, knowledge and time available to teach students with special needs are fulfilled, with teachers' and teacher educators' implications including that teachers need to be better educated in regard to ICT for special education teachers.

In conclusion, adoption of various ICT equipment, materials and facilities; sensitization and awareness creation and advocacy and mobilization have to be carried out to determine the relevance of ICT tools usage before equipment or materials and facilities are procured or built.

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