TECHNOLOGY AND MAJOR INNOVATIONS IN NIGERIA

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Abstract

The paper examined five major areas technology that have contributed in Nigeria for the past 10 years. The five identified and discussed areas were innovation in communication sector, innovation in banking; innovation in teaching/learning (e-learning), innovation in JAMB and admissions processing and innovations in production and manufacturing sector. The paper further discussed on the ease with which communication with mobile means of (GSM), emailing system of communication, electronic means of banking and money transfer, withdrawal and depositing of money with ATM Cards and phone numbers, assessing and processing of results status of prospective candidates for admission, payment of school fees with scratch cards, design of building drawing with computer Auto Cards system, electronic teaching and learning with power point, students registrations with electronic system among others. At the end of the discussion, the following recommendations such as Federal government should maintain and improve upon the achievements so far in the communication industry, Federal government and specifically the Central Bank of Nigeria should continue to bring in new ideas and improve upon the existing banking policies in the country, the issue of the use of electronic means of aided teaching and learning should be maintained, the use of computers and other gazettes by government in the processing of admissions by candidates should be encouraged and maintained, the government of Nigeria should continue to promote the innovations introduced in the production and manufacturing sectors of the economy.

Introduction

In a bid to present the five cardinal potential areas that innovation has impacted in Nigeria technologically and educationally, it is wise to briefly explain the word innovation and technology. According to Edafiogho (2007), innovation is the process of adding new ideas and methods to an already existing situation so that the new product or substance becomes better than before. However, it means that, a new product or thing is due to the introduction of innovation or new ideas. Innovation brings about better ways of life and living. New production methods introduced into a system is due to innovative

thinking.

According to Nevkar (2007), technology is the application of knowledge of science, mathematics and engineering in the design, analysis, synthesis and production of goods and services as a means of solving societal problems.

For the purpose of this assignment, the following areas of innovations were discussed:

- (1) Innovations in Communication Sector.
- (2) Innovations in the Banking Sector.
- (3) Innovations in Teaching and Learning

- (4) Innovations in Admission processing
- (5) Innovations in Production and Manufacturing Sector.

Innovation and Communication System in Nigeria

Communication according to Adamu (2006), is the process of passing or exchanging information between persons through a medium. According to him, if any thing has changed the world in recent times, it is information and communication technology. The concept of globalization is about information and computer communication, which have reduced the entire world into the much-talked about global village. This has been made possible as a result of technological advancement brought about by technological literacy. Improvement in communication system has had a palpable impact in Nigeria recently are very few technologies have had great impact on human life as the discoveries and inventions in the field of communication technology.

The technological advancement and development in communication technology have greatly influenced various aspects of human endeavours in the positive way such as in trade and commerce the world over. The introduction of Global System of Mobile Telecommunication (GSM) has gone a long way to improving communication in Nigeria and the world: thus boosting the social economic activities of the country; the E-mail and internet network have certainly enhanced international trade (Korb, 1999). The communication industry is developing at a very fast rate that Nigeria as a nation cannot afford to be left out.

Methods of Information Communication

Modern computers are increasingly being connected to one another and thereby conveying information in order to serve a public that is widely spaced for a variety of applications. Two separate locations can be connected for the purpose of information exchange via two broad media headings.

The internet is the most useful world-wide area network of computers. Essentially, it is a combination of computer networks consisting of millions of heterogeneous computers of various sizes are variety brands. System integration of the variety of computers in the internet was achieved through the Internet Protocol (IP).

Thus, the usual means of communication through postal means of letters and non digital telephone system of communication have changed to the mobile phone, internet, e-mail and others as quickest forms of communication innovation in Nigeria (Fayose, 1997).

Innovation in the Banking Sector

Prior to this time, the mode of banking in Nigeria had been with the use of pass books and cheques for depositing and withdrawals of money. This system had been very cumbersome and time wasting or consuming (Harg, 2001). Withdrawals and depositing processes had made situations in the banking hall very urgly and unattractive. However, today with the introduction of ATM cards, money can be paid and withdrawn in seconds from financial house.

In addition, before now, people usually travel with huge sums of money from one location to another for business transactions but most had lost the money and their lives in transit by robbery attacks. However, today money can be withdrawn, transferred and deposited by electronic

means which helped to transact businesses easily and safey. Also, most banking doors, halls are electronically computerized and controlled as security measures.

Innovation in Teaching and Learning

The aspect of teaching and learning has shifted in recent times from the academic traditional method to a more sophisticated method through an electronic learning system (e-learning). This system includes the use of Excel, power point, macromedia fireworks, macromedia free hand or macromedia flash. Another form of electronic device is the Web Cams which is a computer that allows users to take pictures of themselves or others, transmit them across the internet and place into email or on the web net to create a personal photo album.

The broadcasting option is another device for an e-learning process where a user can create live broadcast also known as video conferencing. A teacher may use this medium to connect a class to another class in a different location over the internet (Grabe, 2000).

Besides, Electronic Resources are some other means that can be taken off the computer and used to the advantage (Melinger, 2002). These include search engine, electronic discussions chat rooms, uploading reports and presentations to a computer and using an electronic library to final resources for a paper. These forms of research are all important for students and teachers. One important electronic resource is exploring library information on the web. Many tertiary institution are making their entire wide catalogs for searching on the World Wide Web.

Also electronic portfolios are very common now in educational institutions and are designed entirely on the computer. Here all presentations, personal documents, essay, photographs and print out can be made and posted to web sites. This is very useful to students and teachers as they develop their portfolios to showcase their professional development. Provenzo (2002), gives several hints on how to create an electronic portfolio such as innovation in curriculum web.

Innovation and Curriculum Webs

A curriculum web is a web site designed by a teacher containing links which are for teaching and learning of specific curricula (Cunningham, 2003). In addition, IT can play the role of a teacher in imparting to the learners, it consistently works at the learners space, assisting him to acquire sets of information, skills are facts. It can present drill and practice to the learners in this context. Ojo (2008), reported that the teachers can take advantage of the dynamism of information technology to demonstrate some difficult concepts, theories and principles. This will give meaning to his classroom and thus enhance his teaching and make his class presentation an exciting one. Some programmed instructions software are capable of feeding back very accurate information to teachers about the individual questions posed. In Nigeria context, the school can have a set of software that provide a variety of choices of computerized subjects.

Innovation in Admission Processing

Before now, the registrations for JAMB Examinations were done manually by various institutions as centres. This entails the collection of JAMB forms and payment for such forms and subsequent registration. This process had in the past been very bad and time wasting. In the circumstance, some prospective JAMB candidates had lost their moneys and had

withdrawn severally (Edafiogho, 2007). However, today, the situation has charged for the better in that, registration of candidates payment of JAMB forms fees and notification of Examinations Centre names and towns can now be accessed online in the internet. This has greatly saved the lives of candidates who had died by road accidents. In addition, results of successful candidates and their scores can be obtained within seconds as well as names of institutions where admissions are offered candidates. This is an innovation which has come to stay and ease the problems of candidates.

Besides, payment of admission acceptance fees, registration of courses, payment of school fees and other necessary processes can be done on-line which in the past was not there but today is readily adopted and adapted by most if not all tertiary institutions.

Innovation in Automotive Production and Manufacturing Sector

With the advent of word processor, the production of typed documents by typist becomes very much easier because, the typographical errors are easily corrected without using eraser or correction fluid. Records are traditionally kept in the cabinets, but with modern database management software (DBMS) computer programmes can be stored and retrieved with very much ease. Computer controlled photocopies that can reduce or enlarge the size of documents have now replaced duplicating machines, computer presentation graphics and projections.

The named process of designing of buildings has now been replaced with autocards architectural designs. With the computer aided geographic information system (GIS) software, map-making becomes much easier and maps of any part of the world including streets of major towns can be drawn.

In the manufacturing industry, computer aided manufacturing (CAM) can be used at every stage of the manufacturing process from the time of a product is conceived, until it is finished (Fapohunda, 1986). Most robots are single mechanical arms controlled by computers to accomplish tasks such as painting, welding, picking and placing etc.

Industrial robots are made for tasks that are repetitive in nature and for those that require high degree of precision. For example, they are used in connecting chips to circuit boards in the electronic industry.

Conclusion

From the above presentation, it is very obvious that, there had been a lot of new ideas, ways, methods and processes of doing things in the world over and Nigeria in general. The innovations cut across the private, public and educational sectors of our society. The areas of innovations are in the communication, banking, educational sector, social sector and the industrial sector. These innovations have changed peoples lives and made things very easy.

Recommendations

Based on the discussions, the following recommendations were made:

- (1) Federal government should maintain and improve upon the achievements so far in the communication industry.
- specifically, the Central Bank of Nigeria should continue to bring in new ideas and improve upon the existing banking policies in the country.
- (3) The issue of the use of electronic means of aided teaching and

- learning should be maintained.
- (4) The use of computers and other gazets by government in the processing to admissions by candidates should be encouraged and maintained.
- (5) The government of Nigeria should continue to promote the innovations introduced in the production and manufacturing sector of the economy.

References

- Adamu (2006). Communication and Technology in Nigeria CADDNEWS, (1) 12-21.
- Cunningham, C. A. (2003). Curriculum Webs: A practical guide to Weaving Web into Teaching and Learning. Boston, Allyn.
- Edafiogho, D. O. (2007). Educational Reforms in Tertiary Institutions through Application of Information and Communication Technology (ICT). In Nworgu B. G. (ds) Optimization of Service Delivery in the Education Sector: Issues and Strategies: Nsukka: University Trust Publishers.
- Fapohunda, A. (1986). Introductory Computer Science for Children and Adult Beginners (1st Ed). Aflon Books, Abuja Pp 1-100.
- Fayose, W. (1997). Telecommunications.

 An Introduction Textbook for

- Engineering Students California": McGraw-Hill, USA.
- Grabe, M. (2000). Integrating the Internet for meaningful learning. Boston: Koughten Miffin Company.
- Harg, S. (2001). Information Technology, Tomorrows, Advantage Today. New York: McGraw-Hill Company.
- Korb, G. (1999). Concepts of Technology in Nigeria and the consumer. Harper Magazine (35) 18, 19 and 21.
- Melingen, H. (2002). Technology and Teacher Education. A guide for Educations and Policy Makersi Boston. Houghton Miffin Co.
- Nevkar, D. (2007). Life Patterns and Technology Literacy in Nigeria, NACNW, (3) 20, 23.
- Ojo, M. O. (2008). Information and Communication Technology (ICT) and Teacher Preparation for Basic Education. *Journal of Teacher Education*. 8(1) 39-43.
- Provenzo, E. F. (2002). The internet and the World Wide Web for Teachers (2nd Ed). Boston. Allyn and Bacon.

GENDER PATTERN OF ENROLMENT IN BUSINESS EDUCATION AND ITS INFLUENCE IN ANAMBRA STATE OF NIGERIA

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Abstract

The study assessed the gender pattern of enrolment in business education and its influence in Anambra State of Nigeria. Three research questions were answered while two hypotheses were tested at 0.05 level significance. A descriptive survey with a sample size of 200 respondents was adopted. The data were collected through structured questionnaire, and analyzed with the aid of Statistical Package for Social Science (SPSS) 17.0 using mean with standard deviation for answering the research questions and t-test for testing the hypotheses. The study revealed that peer group influences and parental preferences accounted significantly for the female gender domination of business education courses and also that it had negative influence on the society as the dual role of working women was seriously diminished. It was recommended that proactive measures be taken by relevant authorities to provide adequate incentives for effectiveness of guidance and counselling unit which should be established in schools to help students make their career choices.

Introduction

The issue of gender education has often been looked at from the perceptive of equality in accessibility, that is, to say equal opportunity should be given to learners irrespective of sex. In that light, one of the eight Millennium Development Goals (MDGs) clearly sought to ensure equal

enrolment of boys and girls of school age in primary school before the year 2015. The underlying argument here is to remove all barriers to the girl child education.

Boys seem to outnumber girls in enrolment at the primary school level and perhaps at secondary education level the story is not the same in colleges of education in general and business education courses in particular. According to National Commission on Colleges of Education (NCCE) Statistics Digest (2006), business education courses are dominated by female students in recent time. Since colleges of education are teacher training institutions, the implication is that the female teachers will continue to dominate the teaching profession. This has many implications to Anambra State in particular and South-Eastern states in general.

Number, equality, devotion to duty and effectiveness are, no doubt, some of the cardinal requirements for the educational system to meet up with aims and objectives. Indeed, some studies suggest that there is a boundary line between sex and teacher effectiveness. According to Okwuanaso and Igwebuike (2001), teaching as a profession used to be an activity of men right from Greek civilization. Men were thought to possess innate qualities of a teacher who is recognized by the society as role model. The woman was seen and expected to play passive roles in the society, she was thought to be feeble minded, intellectually low and inherently not disposed by nature to carry out the sacred duty of imparting knowledge and skills.

While the above notion has been challenged and proven wrong in the light of emerging realities, women's roles as wives and mothers do not predispose them to carry out with the same devotion and effectiveness as men do in teaching. Israel (2004) observed that women combined domestic work with office duties, and this dual roles had enormous challenges. The process of learning presupposes that there is a teacher to facilitate, direct and guide the learner. Educationists such as Ukeje (1992) and Ijeoma (2007) believed that the success of any educational system depended

largely on the quality of the teachers.

It is in the light of the foregoing contention that colleges of education are established primarily to train future teachers. It is required of male and female teachers to bear on the teaching profession for the benefit of the society. For the society to reap the fruit of these diverse and distinct qualities, equal or nearly equal enrolment between the sexes should be seen to exist. It appears there is male candidates' apathy in registering into business education courses, thus leaving the females in the absolute majority. The implication of this pattern of enrolment is that female teachers would continue to dominate the teaching of business subjects in Anambra State and Nigerian secondary schools. This study, therefore, sought to determine the gender pattern of enrolment in business education and its influence on the society. Specifically, this study was undertaken:

- 1. To find out the gender pattern of enrolment in business education in tertiary institutions in Anambra State.
- 2. To identify causes of female gender domination in enrolment in business education in tertiary institutions in Anambra State
- 3. To determine the influence of female gender domination of business education in tertiary institutions in Anambra State.

Research Questions

The following research questions were answered by the study:

- 1. What is the gender pattern enrolment in business education over the years?
- 2. What are the causes of female gender domination of enrolment in business education?
- 3. What are the impacts of female

gender domination of business education on our society?

Hypotheses

The following null hypothesis were tested at 0.05 level of significance:

- H₀ 1. Peer group influence and parental influence are not significantly different in determining the pattern of enrolment in business education courses in tertiary institutions in Anambra State.
- H₀2. There is no significant difference between societal influence of dual role of working mothers and possible improvement in their office management.

Methods

The study employed descriptive statistical analysis on the data gathered mainly through structured questionnaire administered to a sample of 200 students and lecturers of business education in colleges of education in Anambra State, Nigeria. The data analysis was carried out with the aid of Statistics Package for Social Science (SPSS) 17.0 and results discussed were based on questionnaire returned. The mean with standard deviation was used to

answer the research questions, student t- test was used to test the hypotheses.

Reference to the research questions, the necessary decision were made according to the degree of limits revealed by the results while the null hypothesis were rejected when the t-calculated was greater than or equal to t-tabulated. Any item with a mean score of 2.50 and above were not rejected while any item with a mean score below 2.50 were rejected.

Results

Table 1 reports the sample data on the assessment of gender pattern of enrolment in business education and its implications to the society. From Table 1, all the items are agreed except for item 1 with mean and standard deviation of 2.20 and 1.02, respectively. From the table, items 1,2,3,4 and 5 measured the causes of female gender domination of enrolment in business education. Items 6,7,8,9 and 10 measured the kinds of influence that women domination in business education is likely to have society and last cluster from item 11-14 highlight the measures that provide solution to the situation.

Table 1: Descriptive Statistics

S/N	Items	SA	Α	D	SD	N	Mean x	S.D.	Decision
1	Business education is viewed as female course	30	43	72	55	200	2.24	1.02	Disagreed
2.	Peer groups tend to influence male students' choice	85	51	34	30	200	2.96	1.09	Agreed
3	Parents find business education a favourable course for their female children		61	12	44	200	2.95	1.29	Agreed

4	Students are not properly guided in their choice and this affects them	123	65	12		200	3.56	.61	Agreed
5	Male students are more ambitious and tend to pursue courses that appear more lucrative to them	183	14	3	-	200	3.90	.35	Agreed
6	Teachers of business education subjects will be mainly female	191	9		_	200	3.96	.21	Agreed
7	There will be high incidence of absenteeism that females are known for	161	32	4	3	200	3.76	.56	Agreed
8	Dual role of working mothers mean less efficiency in work output	122	44	21	13	200	3.38	.92	Agreed
9	There will be improvement in office management as women tend to have better attributes to work	54	47	44	55	200	2.50	1.16	Agreed
10	Female graduate teaching business subject will handle children better especially at primary education level	95	74	28	3	200	3.31	.76	Agreed
11	Guidance counselling unit should be established in schools to guide students properly in their choice	141	51	7	1	200	3.66	.57	Agreed
12	Practitioners in business education should professionalize in order to accord the course its pride of place	164	18	18	+?	200	3.73	.62	Agreed

13	Facilities necessary for	155	17	19	9	200	3.59	.84	Agreed
	the teaching and								
	learning of business								
	education should be			.					
	provided in colleges to								
	expose students to the								
	course								
14	Business education	188	12			200	3.94	.24	Agreed
	should be made more								
	lucrative to attract the								
	male gender								

The t-test result based on the comparison of the mean rating of peer group influence and the parental influence is presented below. The result in Table 2 shows the t-calculated (0.064) is less than the critical t-critical t-value of 1.960 at 398 degree of freedom and 0.05 level of significance. Given that the t-calculated is less than the t-tabulated the null hypothesis is not rejected and it is

concluded that peer group influence and parental influence are not significantly different in determining the gender pattern of enrolment in business education courses in tertiary institutions in Anambra State.

Table 2: t-Test Statistic for Null Hypothesis 1

Group	No. of Cases	Mean	S.D.	df	t-cal	t-cri	Decision
Peer group influence	200	2.96	1.09	398	0.064	1.960	NS
Parental influence	200	2.96	1.92				

S = Significant

NS = Not significant

Similarly, table 3 reveals a t-calculated statistic of 8.4 and t-tabulated of 1.960 at 398 degree of freedom. From the table, the t-calculated is greater than the critical t-value. Therefore the null hypothesis is rejected and it is concluded that there is a significant difference between

the influence of dual role of working mothers and their improvement in office management.

Table 3: t-test Statistic for Null Hypothesis 2

Group	No. of Cases	Mean	S.D.	df	t-cal	t-cri	Decision
Dual role of working mothers	200	3.38	0.92	398	8.4	1.960	S
Improvement in office influence	200	2.50	1.16				

S = Significant

NS = Not significant

Discussion of Findings

Causes of female gender domination of enrolment in business education, from table 1 items 1-5 helped to answer the Research Question One. Given that the first item was rejected and others not rejected indicated that the causes of female gender domination involved not its being viewed as a female course rather simply due to peer group influence, female students' parent preference for their children, improper guidance and male students' ambition and preferences for courses perceived to be more lucrative. These findings were consistent with Okeke (2002) and Okoli (2007) who found that peer group to a significant extent influenced the career choice of their members. Similarly, Isyaku (2003) found that parents equally exert substantial influence on their children's education. The fact that respondents rejected that business education was a feminine course was suggestive of need to de-emphasize stereotyping in assigning education (including business education) and training roles (World Bank, 1992; Amao-Kehinde, 2004).

Research Question Two was answered based influence of female gender domination of business education in Anambra State. The implication of these findings was that the teachers of business education courses would be mainly females if adequate measures were not taken to address the issue. This result further refute the argument and notion that vocational education was a domain of male as this may not apply to business education, which is also a vocational area of study.

Research Question Three ought to answer the measures of guidance and counselling, professional approach, provision of necessary teaching and learning facilities and making business education lucrative to attract male gender were not rejected as possible measures capable of achieving balance in the enrolment in business education. These measures were not rejected on the basis of the measure of variability which indicated that the spread of the data from its mean are quite small that it does not undermine the reliability of the mean.

The t-test for H₀₁ revealed that the peer group influence and parental influence were not significantly different in determining the gender pattern of enrolment in business education courses. This finding differed from the earlier findings of Okeke (2009) that parental influence had less accounts for the course choices of students at tertiary institutions. That was a strong indication that female gender dominated the business education due to factors that included the influence of peer group and parental influence, as they perceived it more of a better course for their female children. That was further explained by the work of Okeke (2009) who found that female students continued to dominate the programme for ten consecutive sessions (1999-2008) during which the study was carried out.

The t-test for H₀₂ indicated that there was a significant difference between the impact of dual role of working mothers and their improvement in office management. That implied that the dual role of working mothers meant less efficiency in work output and as such could not amount to improvement in office management and therefore contradicted the notion that women tended to have better attitudes to work. That constituted serious danger for the society if drastic measures were not taken to address the situation and bring about a gender balance of enrolment in business in Anambra State.

Conclusions

Given the findings above, the following conclusions were reached in order to address the circumstances:

Some of the causes of female gender domination of business education courses include: the parents, peer groups, interest of the students among others. Secondly, issues like female graduates teaching business subjects will handle children better especially at primary education level and females have high incidents of absenteeism are some of the impacts of female gender domination of business education in the society. Moreso, male enrolment at colleges of education in Anambra State appears abysmally low when compared to female enrolment. This may affect the generalization of the study to other states in Nigeria. However the study still remains valid.

Recommendations

Based on the findings and conclusions of this study, the researchers proffered the following recommendations:

- 1. Proactive measures should be institutionalized to ensure that guidance and counselling units in schools should be made more effective to help students in their career choice, as this was found to be of great importance and significance in addressing the situation
- 2. Facilities for teaching and learning of business education courses should be provided at the grassroots with clear emphasis of secondary schools to determine the extent of students' interest in the subject.
- 3. Professionalism should be of great emphasis in teaching and learning of business education courses as this will give the students sense of self-esteem as students and consequently graduates of the course. This will go

a long way to militate against the perceived non-lucrativeness of the course.

References

- Amao-Kehinde, A.O. (2004). Women in higher education management: Issues, problems and prospects.

 Journal of Women in Colleges of Education, 8, 18-28.
- Ijeoma, T.N. (2007). Gender Education: Implication for national development. Journal of Social Sciences, 1(1), 55-67.
- Israel, J.A. (2004). The Career woman and home responsibilities: Coping strategies. *Journal of Women in Colleges of Education*, Vol. 8 October.
- Israel, J.A. (2005). Causes of students' low enrolment in Chemistry: A case study of Federal College of Education (Technical), Umunze. Journal of Empirical Research in Science and Technology Education, 1(1), 32-41
- Isyaku, R. (2003). Controlling quality in education. *The Nigeria Teachers*, 7(1) 26-31.
- Mangal, S.K. (2005). Advanced psychology of education. New Delhi: Prentice-Hall.
- National Commission for Colleges of Education (2005). Digest of statistics, 7.
- Njoku, C.U. (1992). Implementation

- constraints to business education programme and implication for manpower development. *Nigerian Vocational Journal*, 5, 97-105.
- Nworgu, B.G. (1991). Educational research: Basic issues and methodology. Owerri: Totan.
- Okeke, E.I. (2002). *Introduction to sociology*. Onitsha: Mid Field Publishers.
- Okhawere, P.V.O. (1999). An evaluation of business education resources in colleges of education in Niger State. Kotangora Journal of Education, 2(1), 59-67
- Okoli, A.C. (2007). Career choice and gender. *Journal of Social Sciences*, 1(1), 41-45
- Okoli, D.I. (2005), Factors influencing career selection of pre-NCE students: case study of FCE (T), Umunze. Journal of Empirical Research in Science and Technology Education, 1(1).

- Okwuanaso, S.I & Igwebuike, S. A (2001). Gender attitude to work, African Journal of Research in Education, 1(1), 126-133
- Oladebo, S.A. (1998). Towards greater promotion of gender balance in business education. An unpublished Term Paper. Department of Vocational Education, University of Uyo, Awka-Ibom State.
- World Bank (1992). Towards a gender strategy for Nigeria: Integrating women into the development. World Bank.