

Historical Research on Computer Education in Gashua, Yobe State, Nigeria

Iyanda Kamoru Ahmed^{1,*}, Fatima Muhammad Dikko²

Abstract

This paper investigates and compares the implementation of computer education in Yobe state, Nigeria, as guided by the national computer policy of 1988. The study focuses on the educational practices within Gashua's educational zone, specifically examining six secondary schools, comprising four public schools and two private schools. Data were collected through the administration of questionnaires and interviews conducted with teachers and students. The collected data were subjected to simple statistical analysis. The findings revealed a significant gap between the existing state of computer education in schools. Prior to the inauguration of the national computer policy, computer education was not included in the curriculum of any government-run secondary schools. However, some private institutions had already introduced computer education, albeit as co-curricular activities. The introduction of computer education in these private schools primarily served public relations purposes to attract students. With the implementation of the national computer policy, the Nigerian government aimed to integrate computer education into the formal educational system, leading to raised expectations and potential impacts on the government and society as a whole. Based on the comparative analysis of the current state of computer education in schools, the researchers draw conclusions regarding the existing disparities. Additionally, the study puts forward recommendations to address the identified gaps and improve computer education in Yobe state. The ultimate goal is to bridge the divide and ensure that computer education becomes an integral part of the curriculum in all secondary schools, thereby equipping students with the necessary skills for the digital age. The study highlights the significance of integrating computer education into the educational system and offers insights for policymakers, educators, and stakeholders involved in shaping the future of education in Yobe state, Nigeria.

Keywords: Computer, computer education, Gashua, Yobe state, Nigeria

*Author for Correspondence

Iyanda Kamoru Ahmed

E-mail: ogiyanhistonet@gmail.com

¹Senior Lecturer, Department of History and International Studies, Federal University, Gashua, Yobe State, Nigeria

²Professor, Department of History and International Studies, Federal University, Gashua, Yobe State, Nigeria

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INTRODUCTION

From the foregoing, it is necessary to investigate how well this laudable technical goal has been achieved knowing fully well that similar goals by other countries were not without some inhibitions. Specifically, the study will assess the following: the availability of competency of computer teaching personal in secondary school; the extent to which necessary facilities and equipment such as hardware, computer laboratories, teaching materials and relevant textbook are available in our schools; how funding and maintenance of computer hardware/software are carried on; to examine how well the designed training curriculum is implemented in school; Hence government attitude to computer education is also inclusive.

STATEMENT OF THE PROBLEM

Computer education was introduced into the nation's secondary school system, more especially, Yobe state, with some inadequacies. As the country moves into the 21st century, Nigeria's post-colonial secondary schools continued to experience diverse forms of educational reforms. One of such reforms, which has since 1988 pre-occupied the education, agenda of the country, has been then problem of action on computer education based on the principles, goals and objective set forth for achieving the philosophy of the national policy on computer education.

Against this background therefore, this study is designed to assess those antecedents surrounding the practice of policy pronouncement on computer education in Gashua educational zone and by extension, Yobe state. The teacher training and associated personnel, hardware facilities, curriculum development, software evaluation; funding and maintenance culture fall within the area of study.

OBJECTIVES OF THE STUDY

1. To determine to the extent at which the policy objectives been achieve in Yobe state secondary schools with particular reference to Gashua educational zone.
2. To examine how congruent is the hardware provisions in school with policy dictates.
3. To study the available and competent teachers compared to policy expectation.
4. To identify the types of teacher training curriculum development that is available compared to policy provision.
5. To examine to what extent computer facilities, maintenance and funding are consistent with the policy.

RESEARCH QUESTIONS

This study raises the following five importance research questions:

1. What is the extent to which policy objectives are being achieved in school?
2. How well does the hardware that schools provide align with the rules?
3. How competent are the teachers and the availability of teachers compared to policy expectation?
4. What kind of curriculum development for teacher training is accessible in comparison to policy provision?
5. To what extent are computer facilities, maintenance and funding consistent with the policy?

LITERATURE REVIEW

Meaning of Computer

Encyclopedia Britannica [1] define computer as a machine capable of sorting array of problems, from balancing to a checkbook to even in the form of guidance system for robots and not just routine calculations. Other authors see computer as high-speed electrical device that processes, retrieve and stores programs.

However, Onabanjo [2] looked at computer as an instrument that is reshaping our world, and which will continue to reshape it. The computer is more deeply involved in many areas of our lives than any other dominant technology ever invented.

While Gonzalez et al. [3] see the computer as an electronic device use for solving commercial and scientific problems by undergoing series of steps procedures known as program computing system, Esan [4] defines computer as an electronic machine or a set of machine which accepts row data presented to it in a specific format, carries out some operation on the data and produces result in a specific format as information for:

1. Human decision making
2. Signal to control some other machine or processor
3. Putting input into some other machine for processor

Computer in Education

Computer education is an independent discipline which dates back to only about 1960; although the electronic digital computer that is the subject of this study was invented some two decades earlier. Since 1960 therefore, an application of computer in education have been “unrevealed of particular not in this subheading are online tutorial application, off-line application like CD-ROM as in the case of computer assisted instruction (CAI) or in the use of diskettes”. These applications will be extended to individualized instruction, library service, and distance learning and so on.

Internet Research/Education and Learning

The world of research and education is drastically altering because of the internet. However, students of computer education would have to learn skills on internet to fully transform their learning and research effectively. One of the emergent communication resources in this information technology era is the global interconnection of network of computer (internet). It is regarded as the world’s widest connection of computers and their networks. It is a connectivity that has made the entire world a global village and as such a football whistle in New York can be clearly heard in a sitting room in Gashua. Thus, the internet harnesses the power of thousands of computers globally and places them and their users within the reach of anyone who can access the network through their computer [5].

Online educational services are only possible when the user is logged on to the internet. Accordingly, tutorial and other forms of communication are hindered if there is no link. This also depends on some factors such as effective communication systems. Information generated from a computer or from one station can travel from one network to another under the direction of the internet software encountered at each point (i.e., node) until it arrives at its final station which may be in a different city or country. The world of education has been tremendously affected by the arrival of this technology.

The services provided by the internet include:

1. E-mail
2. Teleconferencing
3. Website hosting
4. Topic searching and library application
5. File transfers

The Online Tutorials

This aspect can be achieved via the use of:

1. Teleconference or audio conferencing
2. Video-conferencing

The Use of Disk in Education

There are lots of storage facilities that are used to store, transfer or play in education. Such storage facilities include hardware disk, floppy disks (diskettes) and special compact disks called CD-ROM. In this aspect however, the researcher shall examine their relevance to education and in what ways they are used. While those who are online can use internet, those who are off-line can also use CD-ROMs. Accordingly, the use of CD-ROMs can make possible all that are unattainable through internet. Though it has the problem of having to obtain the information or materials from elsewhere and sometime not recent in term of data and time of production, it can be very facilitative in teaching-learning process.

The floppy disk simply helps to store and transfer (formulated) typeset work from or to a hard disk. It therefore implies that information stored or transferred from it can be displayed on the screen for learners to read, gives command to learners to follow or can be used as a source of individualized instructional package in education. Audio and motion aspects are not usually accompanied in this case.

Computer in Teaching and Learning

Two popular strategies are in place in the involvement of computer in the teaching and learning processes:

1. *Computer assisted instruction (CAI)*: This is the use of a computer system to deliver instruction directly to learners by allowing them to interact with the lesson program into the system. The teacher packages relevant instructional content on computer, and the student learns using the computer instruction. The teachers' and the students' interactions are done purely through the computer system.
2. *Computer managed instruction (CMI)*: This is the use of computer system for record-keeping, managing information on student performance, time-tabling and other school sport services. It actively provides prescriptive and diagnostic guidance to the learner, and emphases is on management of learning.

Modes of Using Computer in Teacher-Learning

Five basic mode of using computer resources in teaching and learning include:

1. *Support mode*: Technology is utilized in word processing programs, email services, computer-aided drawing and design desktop publishing, and other ways to improve accuracy and presentation of work.
2. *Exploration and control mode*: Students can explore, examine experiments with and build stimulation using software packages. These may include statistical analysis packages, database, simulation, etc.
3. *Tutorial mode*: Information is delivered to the user at an appropriate level and location, allowing the students to get feedback on their development.
4. *Resources mode*: Computer is used to access the information and other resource either as online through internet or as off-line using CD-ROMs and other storage media. Testing and research skills are thus promoted.
5. *Link mode*: Computer is used for communication between individuals, for example, email and desktop video conferencing.

PROBLEMS OF COMPUTER IN TEACHING AND LEARNING

The following prospects were justified by Gloria and Abimbade [6] in their study:

1. It is a platform for quick exchange of ideas, learning materials and teaching strategies among teacher and student especially in science.
2. Enhance exploratory learning through the hosting of website.
3. Instance and updating knowledge through information dissemination to both teachers and learners.
4. Quick access to current references, especially library materials.
5. Distance learning generally can be easily implemented with internet.
6. Use of computer makes research easy, faster and reliable. It has wide applications in pharmacy, medicine, biochemistry, physics and astronomy.
7. Help individualize instruction through CAI (or computer assisted learning) data analysis, storage and retrieval in education.
8. Appropriate software is installed for analysis of data in education.

PROBLEM OF COMPUTER APPLICATION IN EDUCATION

Gloria and Abimbade [6] further conclude that following are some of the challenges of computer application in education:

1. The use of computers to replace human beings in teaching does not encourage good classroom interactions.
2. Computers are expensive and only few schools can afford to buy them.

3. There is the fear that in the near future our children may not be able to solve any problem on their own unless they consult the computer.
4. There are numerous environmental problems facing the application of computers in education ranging from insecurity, harsh weather, in adequate supply of power.
5. Inadequate training on computer ITT processor difficult for computer integration in our school.
6. Total resort to computer application leads to unemployment on the part of the teachers.

METHODOLOGY

The design for this study is a survey type. Survey design was considered appropriate based on the fact that it helps to describe characteristic of population for the purpose of generalization.

Population and Sample

The population of the study consists of all secondary schools in the study area; that is, all public secondary schools and the private secondary schools. The classification above is based on the proprietorship of the school and the roles each class play in the implementation of computer education policy as follows.

Table 1 gives the details of secondary schools both junior secondary schools (JSS) and senior secondary schools (SSS) in the study area.

However, considering the secondary school involved in the study area it is practically not possible to collect data from all schools due to some constraints like financial and time factors. As a result, a subset of the population was used for the gathering and processing of data. The outcome is applicable to the entire population as a whole. The total population is indicated in Table 1 and the total enrolment is provided in Table 2.

However, Krajie and Morgan [7] indicate in their table that: “out of 1,000 populations, 384 sample size can be used as the sample size for the study”, that is, about 38.4% of the total population. This made the researchers to use six secondary school each from the two separate groups, that is, public and private schools, respectively, as sample size for the study (Table 3).

Table 1. Total number of school (JSS/SSS).

Type/LGA	Bade	Jakusko	Total
Public	16	10	26
Private	05	-	5
Total	21	10	31

JSS, junior secondary school; LGA, local government area; SSS, senior secondary school.
Source: Field survey, 2014 Zonal Education Office.

Table 2. Total number of school enrolment (JSS/SSS).

Type/LGA	Bade		Jakusko		Total		
	Male	Female	Male	Female	Male	Female	Total
Public	18,436	10,828	20,061	11,110	38,497	21,938	60,435
Private	3,625	2,312			3,625	2,312	5,937

JSS, junior secondary school; LGA, local government area; SSS, senior secondary school.
Source: Field survey 2014 (Zonal Education Office) Gashua.

Table 3. School types and their sample size.

School type	No. of schools	Population	Sample size
Public	4	2439	937
Private	2	712	273

Source: Field survey 2014.

Instrument for Data Collection

The most important method/instrument for data collection in this study was the use of structure questionnaire items and interview method. The questionnaire was formed from the objectives of the study upon which the research questions were based.

Administration of the Instruments

Self-administered method of questionnaire administration was used in this research work. Thus, the researchers distributed the questionnaires and collected them back by themselves for analysis.

Thirty teachers in the six secondary schools, four public and two private schools, completed the questionnaires and oral interviews were conducted. The questionnaire consisted of four part with 24 items. Five questions concern general information such as sex, qualification and computer experience. Another set of six question concern facilities like type of hardware, computer laboratory, and textbooks. Eight questions concern training proficiency and number of teaching personnel and six questions concern maintenance and funding. Fifty students were interviewed regarding their computer experiences.

DATA ANALYSIS

The respondent's questionnaires were analyzed using a simple statistical method of percentages, that is, descriptive statistics.

FINDINGS/RESULTS

Research Question 1: What is the extent to which policy objectives are being achieved in school?

To do this, there are still very few private schools that offer computer education. In the public secondary schools, which make up more than 90% of the institutions in the study area, it is hardly ever offered. Despite the fact that some private schools have integrated computer education into their curricula, the proportion of private schools that do so is insignificant when compared to the number of general or public schools in the research area. According to the questionnaire, the only public and private school in the research area that offers computer education is a junior secondary school (JSS). Nearly 90% of the students who were interviewed acknowledged their inability to use computers.

Therefore, the use of computers in education is rare in Yobe state secondary schools, more especially in the study area.

Research Question 2: How congruent is the hardware provision in school with policy?

The policy dictates eight personal computers per school. This figure is based on the premise that there are 40 pupils in each computer class, or one computer for every five learners. The following is further specified in policy as the typical computer setup for schools:

1. The 16-bit microprocessor (INTEL compatible)
2. Monochrome graphic monitors
3. Floppy diskette drives
4. 640 KB memory capacity
5. Standard keyboard which is suitable for graphic and word-processing
6. MS-DOS version 3.0 and above
7. 80 column printer

The quantity and kind of computers in the school were gathered in order to assess how well school practises complied with these requirements.

From Table 4, 62.5% of the schools have at most two computers and only 37.5% of the school have three to five computers.

Table 4. Number of working computer and their percentage.

No. of working computers	No. of schools			Percentage		
	Private	Public	Total	Private	Public	Total
0-2	1	3	5	50%	75%	83.33%
3-5	1	1	2	50%	25%	33.33%
6-8	0	0	0	0%	0%	0%
12 and above	0	0	0	0%	0%	0%
Total	2	4	6	100%	100%	100%

Table 5. Computer systems in school.

Types of computer system	No. of schools			Percentage		
	Private	Public	Total	Private	Public	Total
IBM compatible (old version i.e. PBC Acorn, 486)	2	1	3	20%	20%	20%
Gateway 200 (Pentium 233)	2	2	4	20%	40%	26.67%
Conpag Pentium 233	3	1	4	30%	20%	26.67%
Pentium 233	3	1	4	30%	20%	26.67%
Apple 2E	0	0	0	0%	0%	0%
Total	10	5	15	100%	100%	100%

In these schools, the eight computers per school are not a reality. The recommended number of computer classes in schools is 40, but public schools significantly surpass this amount with an average class size of around 70. The actual student-to-computer ratio in public schools, which is 70:5 or 14:1, is substantially below the requirement set forth in the policy, and Table 4 shows that the policy's recommended computer configuration is not implemented.

It is clear that most computers are out-of-date (Table 5). This is hardly a significant departure from the policy that required the use of outdated computers, though.

Research Question 3: Compared to policy exceptions, how accessible and knowledgeable are the teachers?

According to the policy, three teachers must be chosen from each pilot school to get training as computer teaching staff. In cases when specialists are not easily accessible, these instructors should preferably come from the fields of mathematics, physics, or chemistry. Each team of three teachers should have one trained as the lead teacher. When possible, the institution should hire qualified computer education graduates for further instruction (Table 6).

Table 6 presents the teacher qualification that were observed.

Table 6. Computer teachers' qualification.

Qualification	No. of schools			Percentage		
	Private	Public	Total	Private	Public	Total
Computer graduates	0	0	0	0%	0%	0%
Computer with Ed. graduates.	1	0	1	10%	0%	6.25%
N.C.E	4	2	6	40%	40%	37.5%
Degree on applied courses	2	3	5	20%	60%	31.25%
Other (i.e., OND/HND)	3	1	4	30%	20%	25%
Total	10	5	16	100%	100%	100%

HND, higher national diploma; NCE, national certificate in education; OND, ordinary national diploma.

Table 7. Computer teachers programming language proficiency.

Programming language	Number			Percentage		
	<i>Private</i>	<i>Public</i>	<i>Total</i>	<i>Private</i>	<i>Public</i>	<i>Total</i>
BASIC	10	8	18	100%	80%	90%
LOGO	0	2	2	0%	20%	10%
NONE	0	0	0	0%	0%	0%
Total	10	10	20	100%	100%	100%

From Table 6, it is crystal clear that, there are no computer graduates in both private and public schools within the area of the study. However, there are graduate diploma holders in computer science. Holders of national certificate in education (NCE) constitute at least 36.7% while holders of degree in applied courses, for example, mathematics, physics etc. constitute 35% of the computer teachers. Nevertheless, 23.3% of the teachers were having ordinary national diploma (OND) or higher national diploma (HND). This shows that the NCE holders constitute the majority of computer education teachers as observed.

As the programming languages specified by the policy, LOGO and BASIC, computer education teachers are expected to be fluent in these languages. Table 7 lists the number of teachers who said that they were skilled in these languages.

A total of 90% of computer education instructors, whether in the public or commercial sector, are knowledgeable in BASIC programming, only a few instructors are skilled in LOGO, which made up the remaining 10%.

Research Question 4: What kind of teacher training and development is offered in comparison to policy provision?

The policy considers training logistics from two angles. First, the national teachers' institution in Kaduna hosted the initial basic training for teachers in the pilot school for the launch of computer instruction from October 25 to December 16, 1988. The following is a refresher course for school-based computer teachers.

Less than 20% of the teachers who were observed acknowledged receiving any in-service training. About 75% of the private school teachers who were observed said they had received in-service training in computer instruction. Additionally, the policy's promised in-service training on computer-assisted instruction for all instructors in government schools was never delivered.

Research Question 5: How closely do curriculum, instructional software, and hardware maintenance follow the policy?

According to the guideline, only a few computer teachers are authorized to perform minor repairs and maintenance on the computers. Additionally, it stipulates that technical maintenance work be done, giving public schools regular access to repair services. According to the policy, educational software centres are to be used to gather educational software for assessment and evaluation as well as newly generated educational software. No technical centre within the area of study has been established for service or equipment and maintenance.

Table 8 shows the regularity of computer maintenance and repair in all the selected schools.

Public school computers were never maintained while the observed private schools reported 100% regular maintenance. The study's findings also indicate that instructors performed the majority of the repairs in the few instances where public schools reported them to need maintenance (i.e., 90% of the time), while 10% of the time computer technicians were called in. However, all maintenance and repairs

Table 8. Computer maintenance in school.

Computer maintenance	Number			Percentage		
	Private	Public	Total	Private	Public	Total
Regular maintenance	2	1	3	100%	25%	50%
Seldom maintained	0	2	2	0%	50%	33.33%
Never maintained	0	1	1	0%	25%	16.67%
Total	2	4	6	100%	100%	100%

indicated by private institutions were completed by computer specialists. A centre for evaluation of educational software has been established. Although computer-aided instruction is not used in any public institutions, it is at least present in 10% of private schools. Thus, it becomes evident that there is little to no need (if any) to purchase any educational software, and insufficient finance becomes a significant barrier.

The promised curriculum has not yet been made available to instructors in schools. What is available in school is the new 9-year basic education computer education syllabus for JSS to SS3, which is being implemented to some extent in public schools. However, the syllabus's substance does not align with the goals and objectives of the policy [8–10].

CONCLUSION

The findings of this study have shown that there is a wide disparity between policy pronouncement and its implementation in the study area, That is, Gashua education zone, Yobe state. The study also agreed that the awareness level is very low on government's part and hence the government of Yobe state has not shown much enthusiasm to pay realistic attention to computer education in the study area and the state at large. This is expressed by the inadequate hardware, computer educator/teacher and instructors; computer education is not emphasized in Yobe state secondary school curriculum, and after other computer facilities in schools. This also contributes to the reason why computer studies have not been popular in secondary school in Gashua education zone.

It is strongly believed that if there is commitment on governments in funding computer studies and making the subject examinable. Computer education in Gashua education zone of Yobe state will be heightened in such a way that its objective will be realized in not too distance future.

Recommendations

Based on the findings of the study, the following recommendations are offered:

1. Federal Ministry of Education should make computer education compulsory at all levels of education.
2. Ministry of Education, Yobe state, should encourage the teaching/implementation of computer education by:
 - i. Posting computer education graduates teachers/educators/instructors to secondary schools.
 - ii. Buying improved computers and their accessories for secondary schools.
 - iii. Organizing refresher courses/seminars and workshops on computer education.
 - iv. Constructing computer laboratories and classrooms in secondary schools to reduce overcrowding.
3. To bridge the gap, both policy and practice need to be implemented. The current policy is obsolete and needs to be updated within the dynamic world of computer. For example, hardware configuration of 16-bit micro-processor, 640KB memory capacity and 80-column printers stated in the policy is outdated. Hence the outdated policy must be popular and deliverable to all the computer teachers in schools, so that the teachers will be able to implement the philosophy and objective of the computer instruction.

4. Regular in-service training for teachers must be in place. This should include basic computer operation, programming and teaching methodologies. The training should be open to private schools as well as to ensure uniform standards.
5. Furthermore, deliberate effort should be made by the government to fund the purchase of new hardware to meet the stipulated 8:1 student to computer ratio. Provision of hardware in schools should be the priority of the government of the day.
6. The shortage of teachers is a nation-wide problem but designated colleges of education and universities should be assisted in the formulation of successful computer education programmes, so that within few years, qualified computer teachers will be available to schools.
7. There is the need to employ computer technical personnel in the zonal offices in the Ministry of Education to take care of the maintenance and repair services of the computer, since it is difficult and expensive to repair computer using firms. Private schools will only have the option of resorting to computer firms.
8. Above all, adding computer studies examinations in junior secondary school certificate examination (JSSCE) as well as senior school certificate examination (SSCE) will catalyze serious commitment. Cameroon, for example, has introduced computer education as an examinable subject at the General Certificate of Education level which has increased computer awareness. Putting these types of practice in place will reduce, if not entirely close up, the gap between policy stipulations and school practice.

REFERENCES

1. Computer. Encyclopedia Britannica. Vol. 3 Chicago, IL: World Book Inc; 2000; 16–38.
2. Onabanjo T. Need for examinable national computer curriculum education in Nigeria. In: COAN (Computer Association of Nigeria) Conference Series No. 8. 1997.
3. Gonzalez R, Gasco J, Llopis J. Information and communication technologies in food services and restaurants: a systematic review. *Int J Contemp Hospitality Manage*. 2022; 34 (4): 1423–1447.
4. Esan F. Computer literacy for national development. *Nigeria J Computer Literacy*. 1996; 1 (1): 10–14.
5. Qi C. Training teacher educators: a case study of integrating information technology into teacher education. In: Passey D, Samways B, editors. *Information Technology. IFIP Advances in Information and Communication Technology*. Boston, MA: Springer; 1997. pp. 184–192.
6. Gloria A, Abimbade O. Teachers' awareness and readiness for using mobile phones as support and tutorial tool in teaching. In: *Society for Information Technology and Teacher Education International Conference 2013 March 25*. Waynesville, NC: Association for the Advancement of Computing in Education (AACE); 2013. pp. 3718–3724.
7. Krejcie RV, Morgan DW. Determining sample size for research activities. *Educ Psychol Meas*. 1970; 30 (3): 607–610.
8. Achor EE. Concretization of concepts in primary science using ICT as an adaptor. In: Akale MAG, editor. *ICT and Science, Technology and Mathematics Education*. Ibadan, Nigeria: STAN Pub; 2003. pp. 244–246.
9. Chapelle CA. *Computer Applications in Second Language Acquisition*. Cambridge, UK: Cambridge University Press; 2001.
10. Gould JD, Boies SJ, Lewis C. Making usable, useful, productivity-enhancing computer applications. *Commun ACM*. 1991; 34 (1): 74–85.