

Value Reorientation in Computer Studies: The Use of Common and Available ICT Devices

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Abstract: The teaching of computer science courses in Colleges of Education and Secondary Schools face the same challenges. Chiefly, lack of computers for teaching practical.

Studies have shown that greatest percentage of staff in a tertiary institution has a personal laptop with internet connectivity. Federal and state institutions have internet services provided by governments and functioning too. Most academic staff uses their mobile phones to access the internet. Incidentally however, only few of the population uses their mobile phones for academic and instructional purpose. Consequently, this paper is aimed at re orientating teachers in the use of available resources such as mobile phones and other domestic “computers” for practical purposes. Interpretation of computer science curriculum to suit Nigerian situation is put forward as indispensable if we must move technologically like other nations. Integrating the use of mobile phones in teaching computer courses will go a long way in ensuring that learners understand and utilise what knowledge gained in the classroom.

Keywords: Value, Reorientation, Computer, ICT, Devices.

Introduction

Technology is unique, ubiquitous and evolving. It demands its teachers and learners to be ready to keep abreast of its ever changing nature. The curriculum designers in ICT knows this very well and structured some computer courses in such a way that the basic rudiments and fundamentals are to be taught at all levels. The students are expected to be able to build or adapt to new languages, programs and applications by building on the foundations they have been taught. However, these fundamentals are codes and programs which must be well understood and applied severally in class and during examinations. Teachers must ensure their students understand and can use these applications. However, one of the problems of teaching ICT has always been availability of facilities for practicing what has been taught.

The first general objective of the Nigerian National Computer Policy was to ensure that general populace appreciate the impact of information communication and computer technology in present society; the importance of the effective use and the technologies that process, manage and communicate information.

The second objective was to ensure that the people understand how to use and program computers, develop software packages, understand the structure and operation of computers; and appreciate the economic, social and psychological impact of the computer.

As the world increasingly moves towards an information age, computers will always play the leading role in the transformation. According to Makinde, (2014), computer literacy is not necessarily computer science; the concept is to make all students computer literate since not everyone wants to have a job in IT. But computer literacy can raise the efficiency of businesses as well as leading to more self-sufficiency within the local computer related industry. However, Eboka, Yerokun and Nwankwo (2012) stated that computer science students have the desire and ambition to build respectable careers in IT but the foundational courses are not being taught relatively to reality. They taught computer courses like abstract, far-away and unreachable goals. It ought not to be so. Of course teachers lament the unavailability of infrastructures and “computer” with which to teach the practical, but this paper is strongly pointing out that the available computers are sufficient to teach some fundamental courses in practice. All we need is a reorientation of our classroom and laboratory values.

Teaching of Computer Courses

Teaching computer literacy classes and computer sciences courses actually overlap in contents. The same curriculum is being used in secondary schools, 100 level and 200 level undergraduate courses. Courses

such as computer appreciation, numbering systems, computer graphics, word processing, spreadsheets, introduction to programming languages and introduction to networking are common to these classes. This means that the world of ICT is the same at some levels.

Eboka (2012) defines computer as any electronic machine that can accept data, process the data and produce an output, and has the capacity to store information for future use. It means that computer is not restricted to any particular shape, size or location. Ezoem (2014) opines that teachers use desktop and laptop computers to teach computer science because those are the ones available in the computer laboratories of most institutions and colleges, and when these are not sufficient or they break down, the schools say there are no computers to use for practical classes. But there are various other presentations of computers found as domestic and industrial appliances which can be improvised for teaching by simply directing the learner's attention to the components and various parts of these appliances when they see them around.

Basically, any electronic device with a microprocessor inside is a microprocessor-based appliance and can be used as teaching aid in the teaching of computer studied (Makinde, 2014). They all have hardware and software, modem, user interface, internal storage units and several system robotics that receives electronic commands to process and produce an output. Table 1 shows five common electronic devices and their various components.

Table 1: Common Electronic Devices

S/N	Electronic Device	Input	Output	Process	Storage
1	Mobile Phone	Keypad, camera, touch screen, headset, microphone	Screen, speakers' headset.	Sim card, sensor, phone card	Memory card
2	Washing Machine	Water inlet ports or valves, water pump	Water pump drain pipe	Inner and outer tubs, agitator or rotating disc, motor, timer, printed circuit board	Settings, timer (internal)
3	Point of Sale Terminals	Laser scanner, keypad	Screen (customer display)	Proprietary Software, receipt printer	Internal Memory, cash drawer
4	Automatic Teller Machines	Card, reader, keypad	Speaker, display screen, receipt printer, cash dispenser, control board	Card reader (processor), modem, vault, conveyor belt	Vault (cash boxes)
5	Digital Video Devices	Remote control, disc tray	Screen	Conveyor belt, rotating scanner (lens)	Timer, internal memory

Teaching of computer courses, especially in tertiary institutions should be reality classes with active participation and involvement of all students. Researchers have propounded various ways to bridge the gap between classroom teaching in computer science and the real ICT world (Ojugo et.al, 2011). Students need to know exactly which knowledge is needed in what situation and be prepared to face the constant changes in ICT world.

Challenges in Teaching ICT

Educational systems are often slow to changes due to policies and protocols; (Ezoem, 2014). Specialists are often reluctant to give up old curriculum for a more improved version, and this does not really encourage growth. The real situation in ICT however shows a light in the tunnel with every student having computer system. Every student has a computer that he or she can use for the practical classes. These are not provided by the government nor maintained by the management but, owned by the student themselves. Functional computer education should be taught with physically available systems and means. Every student has at least one mobile phone, almost every student interviewed has a hand held device with facilities to make calls, send and receive text messages, browse and navigate through the internet, surf, roam and all the ICT stuff online. This implies that teachers should not rely only on the government or management to provide desk top

and laptop computers before computer courses can be taught well. The available palm top computers and other hand held devices should be tapped into and used in the classroom.

Curriculum and its Adaptability

One descriptive definition of curriculum from Akilaiya (2010) is “to run” or “run a course” as a course of study; syllabus or collection of syllabuses containing the body of subject matter officially taught in schools. Pragmatically, Eboka, Yerokun and Nwakwo (2012) defines curriculum as “this is the way things should be” they confirmed curriculum should be “a programme of activities designed so that learners will attain as far as possible, certain educational ends or objectives”; the contrived activity and experience organised, focused, systematized that life unaided, would not provide.

Focusing on these definitions, Ojugo (2011) summarised that curriculum should in reality be defined according to the situation. If life gives you a lemon, make lemonade out of it. Since implementation of policies seems to be one of the major challenges of ICT education, teachers should therefore learn to apply the rules of survival in teaching when inevitable: adaptation via improvisation. Whatever is available should be rearranged to meet the need at every point in teaching.

The acquisition of fundamental ICT skills among teachers and students helps knowledge sharing, thereby, multiplying educational opportunities which expected infrastructures from the government put in place. Personally owned and maintained infrastructures by students can be explored maximally to fulfill most educational objectives (Binitie, Anujeonye and Okwugala, 2014). This factor was listed as responsiveness in mentoring (Ayemhere, Idowu and Mayah 2014). This encompasses that teachers need to help their students on how to learn, how to grow in future, how to develop study skills, how to conduct fundamental research and most importantly, how to interpret theoretical facts into practical and real life possibilities, especially in ICT.

Binitie et al. (2014), clearly stated that peer coaching and peer dialogue definitely leads to active involvement of both the teachers and learners and most definitely leads to ownership of the innovation. They went further to say that embracing a broader vision and philosophy, schools should revise present teaching programs, practices and resources.

Responsiveness, in the words of Ayhemere et al (2014), is one dynamic major factor required for change in teachers-learners impact-ability to take responsibility for their own development and commitment to working through on-the-job issues, were cited as very important qualities a good teacher (especially in ICT) must possess to bridge the gap between theory and reality.

Dynamism of Classroom Teaching of ICT

Agu (2014) stated that a teacher “uses diverse resources to plan and structure engaging learning opportunities; monitor students’ progress formatively, adapting instructions as needed”. The availability and accessibility of internet has revolutionized teaching and learning all over the world. Any persons with a few kilobytes of data and connectivity (recently given as bonuses at every recharge by service providers), can access the latest information on any subject at any time. Exchange of ideas, peer instruction, peer coaching and synergy of efforts can all best be achieved in the modern classroom.

Findings

The challenge of lack of infrastructures has been lamented over and over at various school levels but, this paper is aimed at changing the orientation of ICT teachers and learners through the adaptation and improvisation in classrooms. In a study by Agu (2014), it was discovered that 88% of staff in a tertiary institution has a personal laptop, 68% with laptop has internet connectivity. 95% of Federal and state institutions have internet services provided by governments and functioning. In a recent survey of 100 academic staff of the Federal College of Education (Technical) Asaba, 56 respondents use their mobile phones to access the internet. 85 are connected to professional colleagues on the internet and are subscribers to various journals on-line. In the same study, the researcher discovered that 91% of the student population in FCE (T) Asaba has personal mobile phones or other hand-held devices with internet access. 82% of the population send and receive mails regularly while 76% browse for music, jokes and use social media such as twister, Face book, Instagram and Whatsapp. Incidentally however, only 20% of the populations use their mobile phones for academic or instructional materials 90% agree they visit cyber cafes or business centre’s to browse, download and access educational materials when needed. 95% of assignments and tests are done and submitted on paper and chalkboard in computer department while all (100%) is done on paper in other departments.

Joining |Issues

It is very discomfoting to find out that a large population of the students have personal computers yet, cannot use it for their studies both in and outside the classroom.. This is primarily because they were not taught to see their assets as computers. Akilaiya (2010) said a functional literacy is that type of literacy that is both practical and practicable. If students (ICT) cannot use the resources they have functionally to assist their class work they may not be able to translate what they are learning to functional living invariably, widening the gap between the classroom and reality.

Fears and limiting factors of using mobile phones in classroom teaching/learning

In the survey of 100 academic staff of the FCE (T) table shows the reasons why mobile phones and other hand –held devices should not be used as teaching aids in class.

Table II: Why phone and other Hand-held devices are not used.

	Reason	Details	Rate
1.	Distractions	If students are allowed to use their phones in class, personal calls and messages will be uncontrollable at such times and may generate more noise and indiscipline in class.	92%
2.	Individual differences	Slow learners will lag further behind and drag the class slower than should be.	65%
3.	Unstable network	Unpredictability and unavailability of network access as at when needed may course a form of limitation to how much can achieved on some topics per lesson duration	63%
4.	Competition and show-off	Unhealthy competition may arise among learners trying to outshine one another with sophisticated mobile phones.	55%
5.	Loss/theft of devices	There will be an increase in the rate of thefts and loss of devices during teaching which may lead to more civil disturbance.	75%

As genuine as these concerns might be, the rewards of using available hand-held devices such as mobile phones to teach greatly outweigh these concerns. Putting in full operation the class management skills, the teacher can curb some of these challenges.

In summary, these problems may arise but the teachers also need to weigh the options at every point of the teaching/learning process and be in total control of the class.

Conclusion

The value attached to personal computers and hand held devices should conform to its academic importance to all learners. The entry behaviour for almost all computer courses should be that each student has a mobile phone (personal computer). The teachers should learn to teach the curriculum by translating applicable courses to reality. They should show the students how to use what they have to get what is necessary to learn, at very little or no extra cost. Integrating the use of mobile phones in teaching computer courses will go a long way in ensuring that learners understand and utilize the knowledge gained in the classroom.

Recommendations

The following suggestions were put across to teachers:

- Computer should be defined relatively in classes so that the learners can associate their classes with day-to-day activities outside the classroom.
- The vast resources available in terms of mobile phones and other microprocessor based appliances should be used in teaching and learning ICT courses.
- Peer coaching and assessment should be encouraged by giving class work on-line, sending assignments on-line and networking tests to be taken, at least 75% practical.
- Teachers should build study groups for their courses to encourage peer coaching and peer dialogue. Application and reality skills of students would be greatly increased if their continuous assessment works are submitted, marked and assessed on the internet.
- Using ICT to record/edit notes and lectures, presenting lectures in ICT format and interacting via ICT groups should be encouraged in class.
- Expansion of time and space is very crucial to enable teachers' access course materials faster, thereby enabling student/teacher interaction to be expanded and robust beyond two hours lecture in a week.

References

- [1]. Agu N.N. (2014). The Professional Practices of the Nigerian Teacher and Contemporary Issues for Quality Assurance. *Journal of Education: the Teacher and Professional Practices, Vol. 1 1, November 2014.*
- [2]. Akilaiya, O. (2010). Refocusing Functional Literacy for National Development. *Journal of Refocusing Education in Nigeria June 2002.*
- [3]. Ayemhere, S; Idowu, O and Mayah, E. (2014). Mentoring Teachers in Business Education For Quality Assurance. *Journal of Education: the Teacher and Professional Practices, Vol. 1 No. 1, November 2014.*
- [4]. Binitie, A.P; Anujeonye, N.C and Okwugala, F. (2014). The Role of Information and Communications Technology in Enhancing Teacher Education in Nigeria. *Journal of Education: the Teacher and Professional Practices, Vol. 1 No. 1, November 2014.*
- [5]. Eboka, A.O; Yerokun, O.M. and Okonkwo, N. (2012). Evaluation of the Level of Implementation of the Nigerian National Computer Policy in Government Secondary Schools in Delta State Submitted to Computer Education Department of Enugu State University of Science and Technology, Enugu.
- [6]. Ezoem, M.N. (2014). The Impact of Modern Technology on Quality Assurance in Office Technology and Management (OTM) Education. *Journal of Education: the Teacher and Professional Practices, Vol.1 No. 1, November 2014.*
- [7]. Makinde, S.O. (2014). Effect of availability and Level of Use Internet Services on the Professional Development of Academic staff in Tertiary Institutions in Lagos State. *Journal of Education: the Teacher and Professional Practices, Vol. 1, November 2014.*
- [8]. Ojugo, A.A Osika, A.A Iyawa J.I.B and Yerokun O.M (2011). Information and Communication Technology as a Means for Alternative Delivery in the Nigerian Educational.