AN OVERVIEW OF ICT AND COMPUTER EDUCATION: CHALLENGES AND OPPORTUNITIES IN CHIPATA, EASTERN PROVINCE, REPUBLIC OF ZAMBIA.

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Abstract
The ICT (Information Communication Technology) is one of the major challenges that emerges in Zambian society, is that of lack of national policy on Information and Communication Technologies. It notes that there is a weak stakeholder base to ‘champion’ the cause of, and advocate for enhanced ICT capabilities in all sectors of the economy. The information further makes a case for private sector involvement into the sector. The constraints and problems that face the sector is in themselves opportunities that must be taken advantage of in addressing the re design of the entire education sector with popular participation of the entire school curriculum system.
This studies gives the information of the basic requirements of computer studies and implementation of Zambian government to develop the computer education in school levels. The study also discuss the Zambia experience with ICT in the different sub-sectors of education. On the basis of the background information we can identify the opportunities for ICT to meet the challenges of ICT in the educational sector.

Keywords: ICT, Challenges, Opportunities, Curriculum and Computer education.

INTRODUCTION
Considering the fact that English is becoming the dominant home language in most Zambian households, there is a need to do more to help children from households who have little exposure to computer studies. Therefore, there is a need to review how we teach Computer education, especially at the primary level, so that our students do not lose interest in the computer education. In particular, teachers need to concentrate on teaching oral communication skills to the younger generation so that they can make use of computers in their life confidently, effectively and in greater depth, and will be motivated to use computer within and outside of school. Our children have grown up very comfortable with Computer technology - they use mobiles, phones, play computer games and surf the net we should tap on their IT literacy as well as the excellent infrastructure in schools to teach the computer.

Education forms the backbone for every society. This has been recognized by the subsequent Zambian governments and indeed huge investments have been made in the educational sector by the Zambian government and other organizations. ICT can play an important role in the educational sector by improving the access to education (one of the major problems in the Zambian education), the quality of education and the management. In order to explore and define the challenges of ICT in the educational sector, it has been decided by IICD and its main Zambian partners to develop a second process of project formulation in the educational sector. In the project formulation, the Round Table workshop is playing a pivotal role. The Round Table is a participative process whereby an analysis is made of the major challenges in the educational sector and what role information can play in meeting those challenges. During the workshop the agents of change will define their needs and formulate those needs into project ideas. The aim of the Round Table is to transform those ideas into realistic projects. In order to stimulate the thought process about what could ultimately become potential project ideas this reference paper is written. The reference paper discusses the state of the education sector in Zambia and attempts to reflect the infusion and role of ICT in the sector. The illiterate, the physically challenged and the facility-challenged, all of them need some support or the other to be accepted in society and enjoy the fruits. The traditional methods and practices are invariably driven by us, human beings, and therefore tend to be biased.

The introduction of computer (also known as ICT or IT) has changed the scenario to that of an interactive, collaborative environment where the quest for information knowledge is created actively by students. It is here that ICT can help by providing independence, flexibility and variety to the “less privileged learner”.
This is yet another virgin field, where ICT could have a lasting impact, in terms of enhancing the teaching and learning capabilities, respectively, of the agents of change (teachers) and the beneficiaries (the students). Now days Computer technology is emigrant communities around the world. The use of technology for Computer education for students is very minimal. This is due to lack of confidence, Financial, Resources, demand for the use of English in the application of technology. Even though the students appreciate the application of technology in learning and teaching of Computer science.

ICT IN ZAMBIA OVER VIEW.

Computer-aided education was initially introduced in Zambia as an innovative activity under the District Primary Education Programme (DPEP). ICT entered the education sector through DPEP, which spearheaded the design of school information systems. Zambian states emphatically that the challenges of digital opportunities are giving Zambians the chance to break the prison walls of isolation and exclusion from the global economy and to join the race for sustainable development based on efficient use of ICT. Literature on the role and efficacy of ICT in education is replete with insightful studies. Resnick (2002) opined that computer was akin to finger painting. In the realm of learning, technology could be
employed by students for “making” things, i.e., usage of technology to design and build things of importance. This would consequently increase the acceptance and adoption of technology in the classrooms. Computer knowledge’s elaboration on multiple perspectives in day today life South Africa to incorporation of ICT in teaching and learning processes: simulation, visualization and modeling constituted the pedagogical perspective; assessment forms cognition perspective; e-learning and virtual learning environments comprise content delivery perspective; and finally, project work, research work, documentation preparation and task perspective ICT with a combination of pedagogy & software design everything depends on Computer Studies, so this can incorporate with school education could lead to a collaborative environment in Zambia.

ANALYSIS

Challenges of ICT in education

(i) The Challenges of ICT in Management Information System:

This theme presupposes that schools and educational organizations exist and are operating in more formalized manner with support services being provided by players such as government, business enterprise Non-Governmental Organizations (NGO) and the other stakeholders. This does not preclude the informal delivery or provision of education. The challenge therefore is how these institutions are being introduced to ICT tools to improve not only production efficiencies, but also effectiveness in operations. How these tools are being or can be used in the provision of products and services emanating from the sub sector.

(ii) Curriculum Development:

The focus is to enhance knowledge and emphasize the ICT felt needs in the institutionalization process. This means studying the existing trends in the promotion of the use and application of ICT, problems they are posing to the institutions and the kind of opportunities these tools avail for effective curriculum development. The expected output is ultimately how they [ICT] impact on the performance of schools and educational business operations.

(iii) ICT and Distance Learning

The focus is to analyze what the tradition distance learning methods have been able to provide in instituting efficiency and effectiveness in learning. Contradict the same with the possible outcome as a result of using ICT. Establish if policies exist that are aimed at promoting e-education; what are the best opportunities that the education offers and who should provide the leadership in instituting it.

(iv) ICT and Special Education

Many differently able pupils and students are at the mercy of cutting edge technology because of the absence of exposure to ICT. Yet, these tools could provide them with the quickest entry to the body of knowledge in a special way. Advances have been made to ease the learning process and it is probably time Zambia took serious steps to advance the use of ICT in special education. The question of policy becomes crucial and so is the quest for resources to support the initiative.

(v) ICT in Technical and Vocational Training:

ICT represents a new technology paradigm that has emerged mainly due to expanded functional capabilities of computers. Some of the reasons advanced with regard to the integration of ICT in Vocational Education, are based on research findings pointing to improved efficiency, accessibility, affordability and quality of the learning process.

The Challenges behind

The Human Resource Development department along with the Department of Information Technology has developed a report on technology in education. The report has identified four issues in integrating technology in education in government schools, namely, ICT infrastructure, and quality content that is locally. Relevant teachers training and education delivery through public-private partnerships. These four interdependent issues need to be addressed if technology has to be integrated to formal education to improve quality of education in government schools. A typical rural school has a number of inherent limitations viz., limited number of qualified teachers, archaic classrooms, chalk-and-talk methodology, variations in curriculum (state to state and board to board), unreliable power supply and lack of interactions with the rest of the world. The advent of cyber cafes and CD-based courseware has opened up possibilities of alleviating the problem. But, the problem still persists i.e., the non-availability of curriculum- and language-specific material backed up by suitably-trained teachers.

Opportunities in the educational sector in Zambia

Virtual learning

ICT is a generic term referring to technologies, which are being used for collecting, storing, editing, and passing on information in various forms. A personal computer is the best-known example of the use of ICT in education, but the term multimedia is also frequently used. Multimedia can be interpreted as a combination of data carriers, for example video, CD-ROM, floppy disc, Internet, and software in which the possibility for an interactive approach is offered. Virtual Learning Environments can be a combination of the following features:

1) Communication tools such as e-mail, bulletin boards and chart rooms,
2) Collaboration tools such as on-line forums, internets, electronic diaries and calendars,
3) Tools to create on-line content and courses to create learning modules,
4) On-line assessment and marking tools that track student activity and achievement,
5) Integration with school management information systems,
6) Controlled access to curriculum resources,
7) Student access to content and communications beyond the school.

Modle is one of the e-learning software to create course content for any level of students, this software also used for interact with instructor and learners to share the documents, files, software and notes etc.

Equity

In all its official documents, the Ministry of Education has recognized the importance of ICT in delivery and improvement of quality of its education offered to learners. The main Policy document “Educating Our Future National Policy on Education” (May, 1996) refers to the need to not only improve the quality of education but use of technology to ‘solve problems’.

Improving Quality and Efficiency of Education Delivery

Since the emergence and popularization of the formal education system in Zambia brought into the country largely by missionaries,
education has taken place in formalized classrooms in schools, colleges, and Universities. The most popular mode of delivery has been through learner teacher interaction. An early teaching aid that generation upon generation has used to get its citizenry get educated was a slate, a black board and a piece of chalk. Over the years, a few more slightly advanced ‘teaching aids’ such as videos, overhead projectors, transparencies, etc. have been used, but the chalkboard has dominated the teaching/learning world for ages. The emergence and impact of technology globally on the education sector both in the processes and practices ought not to leave Zambia an island. Sadly, the exponential growth of scientific knowledge continues to widen the gap between developed and developing nations. Zambia therefore needs to find ways and means that will enable the country come out of this isolation and exclusion and should join the race for sustainable development based on effective and efficient use of modern technologies.

Possibilities of ICT in Zambian Vocational Education System

Globally, the establishment of Virtual colleges and Virtual classrooms devoid of geographical limitations is the ultimate in as the integration of ICT in Vocational Education is concerned. For Zambia however, our initial targets have be to rather modest. Opportunities and possibilities do exist though. The existing population of computers and related software, within the Vocational Education sector can be used for a range activities. Starting with collaborative Curriculum development using the existing e-mail capabilities. Subject experts need not assemble together even for preliminary work. Various technical experts in the system can use the existing e-mail and Internet capabilities to participate in networking with peers in different parts of the world.

Zambian based training providers can also start to explore the feasibility of developing Distance Education delivery packages using ICT; perhaps to counter foreign training providers. The Northern Technical College (NORTEC) has started to explore the use of classroom based Computer assisted learning packages that will go a long way to advancing the integration of ICT in Vocational Education. One of the concepts uses a computer based Lego toy platform. The activities use simple and use commonly available software such as Microsoft Power Point. They also provide sufficient flexibility for teachers to modify them according to their objectives, class or pupils abilities. Much consideration went in the designing of the software such that each lesson constitutes of only a few slides. It was essential that the pupils are not intimidated by the software and hence simple navigation tools were used.

Increasing access to equipment and software for computer studies

- Currently high taxes should be reduced on imported ICT equipment and software, and tax breaks should be used where appropriate to accelerate ICT adoption.
- The government should encourage local software developers to develop small-scale packages that are suitable for local market conditions.

Opportunities of ICT in Curriculum Development

Zambians have of late not only expressed the need for curriculum reform, but the ministry of education has in fact engaged in curriculum reform that will result in an outcome based or competence based learning experience. In order to successfully see the process through it will be prudent to want to employ the opportunities brought about by ICT in the area of curriculum development. The new skills expected of teachers in carrying through the new curriculum will require re-skilling of serving teachers and training of pre-service teacher trainees in the new methodologies. A lot can be learnt from the international community where this experience is available via the Internet. On the other hand newly developed syllabuses are often available to schools only in hard copy form and only after they have been approved and printed.

Basic requirements for using ICT system

In Zambia current education system consists of the following categories:

- Basic education
- High School Education
- Tertiary Education
- Vocational Training
- Special Education

All kinds of educational system the instructor and learners must have the following Basic computer skills for effective teaching and learning process,

1) Pupils have
   - Basic IT knowledge
   - Basic knowledge of Microsoft Office and its application
   - Usage of recording and playback features in MS-Office

2) Teachers have
   - Comfortable knowledge in MS-Office platform
   - Interaction and group discussion about ICT

The design and use of the software took into consideration the following:

1) Prior IT knowledge of pupils
2) Time needed to complete the lesson.
3) IT equipment generally found in Singapore schools.
4) Various skills required for the teacher to design the software

Human Factors experts have researched the strengths and limitations of different types of the physically challenged and come out with norms and standards for equipment design and HCI interfaces.

Experts and researchers have exploited the following methods to make the physically challenged as independent as possible:

a) Audio cues to help the blind
b) Rich graphics to help the deaf
c) Combination of the visual and audio cues to help the partially deaf/blind
d) Flexible input and output devices for the users with limited movements of the limbs and the body
e) A variety of cues to keep up the interest and excitement in children with learning disabilities

Conclusion

ICT can help bridge the rural-urban divide, as has been demonstrated by projects that have been successfully rolled out across the globe. Most teachers do utilize programs such as MS-Office but only as a presentation facility in their IT classes (as a cognitive tool). Apart from this, commercially available software including e-learning platforms, emphasis lies in self-paced learning. Hence, by using IT as an Effective tool to develop the Meta cognitive skills, we hope to improve their oral and aural performance of Zambian pupils. ICT can use for all education system. Through this effective content Zambia creates tremendous changes in the IT
sector and school curriculum in ICT world and Computer Education system in Zambia.

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