REFERENCE PAPER

Round Table Workshop
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INFORMATION
AND
COMMUNICATION TECHNOLOGIES
IN THE
EDUCATION SECTOR

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Executive Summary

The Education Sector has over the past decade been influenced by the political changes in the management of national affairs that brought about the liberalization of the economy. During the one party reign education was the preserve of government through the Ministry of Education which was involved in planning and implementing programmes aimed at increasing both access and enhancing the quality of education. The many players in the sector has meant that more opportunities have been created for providing knowledge and lifelong skills.

This paper attempts to explore how the education sector has been affected by the changes that have taken place in the management of the national affairs. In doing so, it is divided into three parts. Part One begins with the Introduction, which provides the purpose of the ‘Round Table focussing on ICT in the Education Sector’. The main objective of the Round Table is to formulate tangible ideas from which projects will be derived. Therefore the Reference Paper aims at stimulating the thought process about what could ultimately become potential projects.

Part One has three chapters, with each chapter focusing on an aspect of influence within the education sector. Chapter One provides the Introduction and the Overview. It also provides the Overview then presents the “Current Situation within the overall sector.” It discusses the issues of access, quality, efficiency, equity and value for curriculum change. It presents the status of the Special and Inclusive Education now. The chapter also recognises the involvement into the sector of the private sector, though the private sector participation in the education policy process formulation is seriously found wanting. Then the chapter provides the situation analysis seen from the Ministry of Education- one of the key stakeholders in the education sector. The picture that the situation analysis paints raises very fundamental issues and challenges the overall government position regarding the provision of access, quality and equity of education not to mention the need for inclusiveness through the use of new technologies in the delivery of knowledge and lifelong skills.

The chapter then looks at specific sub sectors major developments such as in Vocational Education, Special and Inclusive Education, Curriculum Development, Distance Learning and Information Management. It notes that Information and Communication Technologies [ICT] have been introduced or are being introduced in many of the sub sectors or indeed the overall Education Sector progressively. The chapter notes that in Special and Inclusive Education close to 700 special teachers have been trained and that integration is key while recognising the special needs of students. It makes a case for the use of Information Management System to manage the affairs of the sector.
One of the major challenges is lack of sustainable investment in the sector. Government budget to education has been found to be the lowest in the region, with imbursements not matching the actual budget. The chapter advances the proposition that even the entry of the private sector into the sector is yet to be felt due to low level of investment. Overall as an economy, investment in education seem to be seen as a wasted investment and not as an investment aimed at wealth generation and creation. Each of the identified sub sectors catalogue the grinding need for focus and sustainable investment in the sector.

Another challenge that emerges in chapter Two, 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 chapter further makes a case for private sector involvement into the sector. The constraints and problems that face the sector are in themselves opportunities that must be taken advantage of in addressing the reengineering of the entire education sector with popular participation of the entire stakeholder fraternity.

Chapter Two also discusses **Information and Communication Technologies [ICT] in Education**. The chapter 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. It raises questions such as ‘how much ICT are being used in the expanded education opportunities and for what? Are they being used for effective and efficient use in the education system operations for better results?’

The chapter gives different aspects of ICT and their use such as ICT as an Object; ICT as an Assisting Tool; and as a Medium for Teaching and Learning; as a Tool for Organisation and Management. Further the chapter discusses the Zambian experiences with ICT in Education. It regrets the absence or lack of policy that can be articulated to guide ICT development and use within the education sector. It identifies areas that can benefit from the use of ICT such as Virtue Learning with overall attendant benefits to different stakeholders.

The chapter concludes with a challenge to the private sector for partnership in the education sector. It notes these opportunities as increased access to education. The Civil Society are also challenged to partner with government in exploiting this potential through the establishment of **Community Schools**.

The final chapter in Part One is Chapter Three. It discusses ICT and the Education Sector by discussing each of the sub themes. It notes that the Education Management Information System [EMIS] is slowly changing the ministry of education operation landscape. Now there is a training program in place training various managers on its use, and that the result would be improved information flow, systematic information planning use etc. In **Distance Education** the ICT are being used to increase enrolment, enhance adult literacy and the possible reintroduction of evening classes for basic and
high school levels. For Vocational Education the sub sector is fertile for investment to innovative programs that can be offered to learners using ICT. And so is Special Education.

Part Two has only one chapter [Chapter Four] and it analyses some of the stakeholders in the provision of education. The chapter looks at five different categories of stakeholders. These are: The Government; Private Sector; NGO System; Civil Society and Quasi-Government Institutions. Its findings reveal that knowledge exists within government institutions on the awesome need to embrace ICT and that there is a lot of goodwill from cooperating partners. However, the absence of policy is sticky in many instances hence limiting their effective use. In Private Schools tremendous progress has been made in the provision of quality education through the introduction of ICT.

The SWOT shows that Universities and Colleges are no exceptions from the problems of implementing, using and managing ICT. However, experience shows that the facility is helping solve student problems of sourcing learning materials when libraries are connected to the Internet. For Quasi-Government institutions the major problem is the linkage between customer and service providers. While the service provider is well advanced in ICT use, the customer on the other hand is lagging far behind especially in government schools.

The chapter concludes with this observation “ICT affects almost all aspects of our existence nowadays and the analysis highlights the ever-increasing importance of ICT in almost all the institutions visited. It is necessary in management especially in the following areas that stand out in the study, which include enhanced communication; promotion of proper record management; allowance for interactive learning and above all its potential for breaking the walls of isolation. It should be encouraged and supported through institutionalisation.”

Chapter Five is the only chapter in Part Three. It highlights the challenges in the Way Forward.

It is observed that eagerness has been demonstrated in the rapid changes in curriculum reform and sector wide strategic planning that is to be implemented in a restructured and decentralized management system.

Numerous attempts have been made at introducing ICT and other relevant technologies in introducing efficiency and improving productivity in the education system. Computers and related technologies have been slow to be introduced in the system partly because of poverty conditions generally prevailing in the country and partly because of lack of sufficiently trained expertise in the country coupled with poor telecommunications infrastructure.

Lack of a clear policy on ICT in the Ministry of Education in particular has exacerbated the lack of and poor utilization of the few facilities that may be available in a few learning institutions public or private. The pressure created
by the rapid technological advancement globally has dictated a re-look at the possibility of introduction and use of ICT in the education sector.

It is possible to begin to experience and benefit from the advantages of use of information communication technologies (ICT) at relatively justifiable cost. The involvement of and exploitation of the advantages found in private industry may encourage and improve the current poor picture of lack of use of ICT in the teaching and learning situations in the education sector.

The Distance learning sector tends to lend itself more easily to the use of these ICT technologies. Yet the Zambian Distance education Programmes have not yet brought themselves to a stage where distances, time and cost are all minimized by efficient use of ICT technologies. This area in the education sector ought to be explored and opportunities brought about by an existing ‘gold rush’ and eagerness to advance their qualifications taken advantage of. The teaching fraternity is especially ready to exploit any opportunities that may be availed to them.

The entire education sector needs to make concerted efforts to introduce and insist on efficient use of available ICT technologies, limited as it may be in management, curriculum reform and administrative and management programmes.

Thus the Reference Paper challenges all stakeholders to focus on possible and potential ideas that may benefit from the introduction, use and application of ICT.
General introduction

Education forms the backbone for every society. This has been recognised by the subsequent Zambian governments and indeed huge investments have been made in the educational sector by the Zambian government and other organisations.

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.

As mentioned above this is the second Round Table in education organised by IICD. The first was held in May 2000 and was mainly targeted at the major education provider – the Ministry of Education. The projects emerging from this Round Table never took off the ground. The main reasons were the limited number of stakeholders involved in the process of project formulation, the lack of mainstreaming the projects in the educational sector and the undervalue of the importance of the development process towards the definition of a strategy in the educational sector. Lessons learned have been drafted and with the organisation of this Round Table IICD wishes to implement these lessons learned.

Because of the importance of this document, it is expected that the participants will take the time to read the reference paper.
PART ONE
The educational sector and ICT

In part one we offer an overview of the state of affairs of the educational sector, including its major developments, challenges, opportunities and bottlenecks. In part one we shall also discuss the Zambian 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.

1.0 Overview of the Educational sector

In this chapter we take a closer look at the state of affairs in the educational sector by defining the educational sector, touching the main points of the strategy paper of the Ministry of Education and offering some basic information about the primary, secondary and tertiary level, including special education, vocational training and curriculum development.

1.1. Definition of the educational sector

For the purposes of this paper Education Sector has been defined as a Pool of bodies with dealings in provision and delivery of education. Included in this definition and considered as the main actors are: NGOs, Government Line Ministries, Civil societies, Charitable Organizations, Quasi Government Institutions, and Churches.

1.2. Current situation

1.2.1 Strategy Ministry of Education

Since the establishment of the third republic of Zambia the Zambian economy has been liberalized, which also had an effect upon the educational sector. Private organizations, individuals, religious bodies and local communities have the right to establish and control their own schools and educational institutions. This has contributed to the expansion of educational opportunities. However issues of quality of education being provided from these many varied institutions are a source of concern and challenge to the sector.

Even with liberalization, the education sector is greatly influenced and to some extent regulated by the National Education Policy. The Ministry of Education being the major actor in education provision, has been eager to respond to the challenges of the need to:

- Increase access to Education
- Improve quality and efficiency of Education
- Ensure equity and equality of Education provision
- Provide relevant Education via curriculum change.
The Ministry of education Strategic Plan (2003-2007) is a follow up to an earlier Basic Education Sub-sector Investment Programme (BESSIP) whose focus was on Basic Education. Both plans have been influenced, by Zambia’s national policy document on education; ‘Educating Our Future’ (1996). The vision for education reform is clearly articulated and major policy direction is indicated in this document. The major challenges for the education system are stated as:

- The achievement of Universal Basic Education for grades 1-9;
- Improvement in progression rates from Grades 7 to 8 and from Grades 9 to 10;
- Increase in retention and completion rates for grades 1-9;
- Improved access to high school and tertiary education, particularly for the poor, girls and children with special needs;
- Adequate supplies of trained and motivated teachers and lecturers for all levels;
- Reform of the curriculum at basic, high school and tertiary levels to provide relevant skills and knowledge; sufficient learning/teaching materials for all levels;
- Effective decentralization of education delivery, management/mitigation of HIV/AIDS;
- Increase in budgetary allocation to the education sector.

The strategic plan also resulted into restructuring of its operations and decentralizing some of its authority to provincial and district administrations.

One of the major challenges is the low access to education. The Ministry of education attempted to increase access to education by introducing free education in February 2002. Under this policy all user fees were abolished from Grades 1-7 and uniforms were no longer compulsory. Education Boards and Parents Teachers Associations were allowed to raise funds through various activities, but no child can be denied access to school on account of financial costs.

These measures are likely to bring about a substantial increase in enrolment in basic schools and reduce the percentage of out-of-school children. However, they also have strong financing implications for the government since government committed itself to providing exercise books, pencils, rubbers, rulers and other teaching requisites.

However, the current emphasis on basic education has meant that similar reforms needed in high school and tertiary education have not been fully implemented. In addition, it is generally recognized that expanding basic education enrolment increases demand for the next level, while even a slow-developing economy requires the higher order skills provided by post-basic education. The latter also provides the skills and competencies necessary for self-employment and enterprise, thereby contributing to economic growth and poverty reduction. The technical education institutes are meant to provide the much-needed technical education to form a backbone for national development. There are also other players contributing to education provision mainly through informal provisions. These mainly are undertaken by civil society purely for purposes of social interaction and reacting to changes in the
socio-economic paradigm, as well as NGOs, in house education programs by industry etc.

1.2.1. Basic education

The Basic Education Sub-sector is still faced with many challenges in the years ahead. The current number of basic schools in Zambia in 2001 was 5,677 of which 4,332 are government, 63 are grant-aided 133 are private, and 1,149 are community schools. 87% of the schools are located in rural areas.

Roughly 1.77 million children are enrolled in grades 1 – 7. It is estimated that 30% of children in the school-going age are not enrolled, which translates into nearly 620,000 children. The problem is particularly difficult in the rural areas and for children aged 7 with over 55% in that age group not enrolled.

The Community Schools have grown in number considerably from 38 in 1996 to 1,149 in 2001 and enrolment has increased from 6,600 in 1996 to over 140,000 in 2001. In addition, the Interactive Radio Initiative (IRI) is beginning to enroll more and more pupils because they are ‘convenient’ and flexible. The above reflect formal basic education. It is acknowledged that few statistics are available to advance the case for informal basic education, but it is assumed that it is prevalent especially by civil society and NGO.

Figure 1. Enrolment Trends for Grades 1 – 7 by Gender (1996 - 2001)

Source: Ministry of Education - Planning Unit, EBS, ZCSS (*includes figures from Community Schools and IRI

While school places do exist in the rural areas, the problem has been exacerbated by a lack of teachers and the poor conditions of the existing classrooms. There are currently over 37,000 teachers in basic schools. Over 25% of the existing classrooms are temporary or in poor condition. The Ministry is faced with two main challenges in teacher education. While it is necessary to produce more teachers, it will be equally important to re-deploy existing teachers to the rural areas. In some rural areas the pupil: teacher ratio is double that of the urban centres.
The situation is even more critical for grades 8 – 9. The enrolment rates for grades 8 – 9 are approximately 190,000 of which girls represent 46% of the total enrolment. These figures include the Academic Production Units (APU). Presently only half of the pupils leaving grade 7 are able to find school places in grade 8, while just over one-fourth leaving grade 9 are proceeding to Grade 10.

The quality of education has been compromised by various factors. The high pupil: teacher ratio of 49:1 is one factor, while the lack of sufficient educational materials has also contributed to the low quality of education. The HIV/AIDS pandemic has also had a devastating impact on the educational system. The loss of teachers through death and sickness has greatly reduced the pupil: teacher contact hours in the schools.

1.2.3. High School Education
The High School Sub-sector has been neglected in the last years due to the poor economic situation in the country and the increased allocation of resources to the basic sub-sector. The total number of schools in 2001 was 256 of which 208 are government, 33 are grant-aided and 15 are private. The overwhelming majority still have a Grade 8-12 structure with only two schools catering for only grades 10 – 12.

The enrolment rates in 2001 for grades 10 – 12 was 121,000 pupils, of which girls made up 42% of the total. These figures include the pupils enrolled in the Academic Production Units (APU). The APUs were established in 1996 to offer more places for pupils who, otherwise, would not have had the opportunity to attend the regular classes and cater for grades 8 – 12. The classes are taught in the afternoons and the pupils pay a tuition fee. By 1997 the enrolment rates had increased greatly and the system was becoming overwhelmed, which had serious effects on the quality. In 1998 the Ministry decreed that that enrolment for APUs should be limited to no more that one-third of the total enrolment for the regular classes. For this reason, enrolment dropped after 1997. This is an example of a system that spontaneously developed without it being supported by or driven by a policy provision. It was largely the pressure created by an acute need for more school places that led teachers to exploit the opportunity.
There are presently not enough school places for pupils with only 25.9% of children progressing from basic to high schools. Girls have a slightly higher rate of progression than boys. The total number of teachers in secondary and high schools was 7,588 in 2001.

This figure also includes those who are teaching in grades 8 and 9. Female teachers represent 27.7% of the total and only 18.5% of the high schools are headed by females. The pupil: teacher ratio for grades 10 – 12 was 27:1. There is particularly a lack of teachers in subjects like mathematics and sciences.

The condition of many of the existing classrooms is deplorable and laboratories and other practical study rooms have fallen into disrepair. Almost no investment has been made in the last years to counter the situation. The condition of the classrooms and the curriculum, which is considered by many to be largely irrelevant, have greatly contributed to the low level of quality in the high schools.

The low quality of education can be observed from the relatively low numbers of pupils receiving the School Certificate upon completion of their studies. In 2001, 65.7% of the pupils received their certificates, with far higher rates in private and grant-aided schools. Girls have a significantly lower rate with 59.8% receiving school certificates.

1.2.4 Tertiary Education
Two specific groups can characterize the Tertiary Sub-sector. The first, are those institutions falling directly under the Ministry of Education. These include the two universities – the University of Zambia (UNZA) and the Copperbelt University (CBU). In addition, there are 14 Teacher Training Colleges in the country of which 12 cater for the production of teachers for
grades 1 – 7 and the other two for upper basic and high schools. The Natural Resources Development College also provides teachers for agricultural science.

The second group is those colleges registered under the Technical Education, Vocational and Entrepreneurship Authority (TEVETA), which consist of 151 colleges offering diplomas in various fields. Roughly half of these colleges are private with the remaining run by the government, religious organisations or the community. The promulgation of the Technical Education, Vocational and Entrepreneurship Training (TEVET) policy in 1996, and the subsequent legislation in 1998 by the Zambian government, were partly done as counter-measure strategies for ensuring continued national development and economic growth in the face of this globalisation influence. The goal of these policy instruments was to create a national Vocational Education system that was responsive to a social-economic environment that was always in state of flux.

The number of students enrolled in these tertiary institutions numbered 24,648 in 2000. The number of females enrolled in the TTCs is slightly higher than that of males. Women account for 32% in UNZA, only 19% in CBU and 42% of the enrolment in the colleges registered under TEVETA.

Figure 4. Number of Students Enrolled in Tertiary Institutions (2000)

![Figure 4](image)

Source: Ministry of Education, Planning Unit; TEVETA; UNZA; CBU

The output of teachers has been increasing in the last years. In 2000, the total output of the 14 TTCs was 4,667 new teachers. The Zambia Teacher Education Course (ZATEC) is currently producing 4000 new teachers per year for grades 1 – 7.
Currently, the involvement of UNZA in teacher education lacks co-ordination with national initiatives, despite having initial teacher education for high school teachers, a Special Education Department and an embryonic degree programme in primary education.

The total number of professional and teaching staff at UNZA is currently at 516 and 180 for CBU. In the area of teacher training and development, the Ministry of Education currently provides 14 Teacher Training Colleges with a total enrolment of 5,878 students in 2000. The number of lecturers in the colleges totals 384.

The Ministry of Science, Technology and Vocational Training is responsible for technical and vocational education. There are 23 training institutions under this ministry, but these are supported by a large number of about 250 private colleges and institutes offering a wide range of vocational training. However the large number of grade 9 and 12 school levers completely outstrips the capacity of these institutions.

There has been in the past 3-4 years been a mushrooming of private Teacher Training Colleges and Universities. A small number of these institutions have offered tuition by distance learning. This phenomenon is probably a result of felt need to cover up a vacuum that has been created by an unsatisfied demand for education. Government alone is not able to satisfy this demand, hence the surge for private industry attempting to take advantage of the situation.

1.2.5. Vocational Training

Vocational Education may be defined as that systematic process by which an individual acquires the Knowledge, Skills, Attitudes and Values needed to practice or pursue a particular trade or profession, as a means for earning a
living. This process is characterised by sustained acts of study and practice on the part of the individual, complemented by the interactive provision of teaching or instruction by an expert in a particular trade or profession. As a functional system, any national framework for Vocational Education could be described in terms of the process activities by which Knowledge, Skills, Attitudes, and Values are acquired by the learners or trainees on one hand, and the respective inputs and outputs related to this process on the other.

The Vocational Education process activities by which the desired economic value is created, comprises academic, and academic support activities. Academic activities consist of the following facilitating elements:
Preparation of periodic Teaching plans like termly Schemes of Work;
Lesson delivery: Theory classes; Laboratory Experimentation; Workshop practice; Research assignments; Problem Solving assignments; Design and Make projects;
Industrial visits and attachments;
Assessment; Certification;
Professional record keeping.
Academic support activities, consists primarily of staff and student welfare service provision elements.
As regards inputs into the Vocational Education processes, these can be divided into three categories; namely: Control or Regulatory oriented inputs, Raw material oriented inputs, and Resource oriented inputs.
Elements of the Control or Regulatory oriented inputs include:
Government policy and legislation;
Training programme curricula;
Quantitative and Qualitative demand for skilled personnel by the labour market;
Feedback on graduate performance in the labour market;
Public and/or stakeholder opinion.

Resource oriented inputs are inputs that are there to provide the “energy” required to drive the Vocational Education process elements. These include:
Qualified and experienced staff;
Equipment, tools, and required consumables;
Buildings and general infrastructure;
Management and organisational systems and procedures;
Institutional ownership and governance systems.

Raw material oriented inputs refer to those entity inputs which undergo social-economic value enhancement after passing through the various process activities underpinning Vocational Education. The pre-dominant input in this category consists of training or educational course applicants.
Outputs of a national Vocational Education system can be quantified in terms of three basic outputs. These are: Graduates with certified qualifications, Process related information; (eg. Pass rates, relevance of curricula, promotional materials, curriculum review proposals, etc.), and artefacts like products of student design and make projects.
In discussing the ICT and Vocational Education in Zambia, one the factors to consider, is the way the sector is structured or segmented. From the policy formulation and implementation perspective, the sector is populated with the following organisations: the government ministry which is responsible for policy formulation; a Statutory Authority charged with regulating the provision of training services, Training service providers, and the labour market.

At the level of training service provision, there is scope for segmentation on a broader scale. The segmentation Criteria that has emerged is as follows:

- Type of training institution ownership;
- Geographical location (ie. urban and rural);
- Career progression target groups (ie. pre-service, in-service, or post-service career change groups.).

Reference to the structure of the Vocational Education sector is useful in that the ease with which a particular institution in the Vocational Education Value Chain has, and will be able to access and mobilise resources for initiatives like ICT development, will depend on owns that institution, where it is located, the type of training target groups, as well as role played in the policy implementation process cycle.

The detailed segmentation by training institution ownership type is as follows:

- Public or Government;
- Private-for-profit;
- Trusts;
- Company owned; (in-house training function.);
- Trade and/or Industry Associations; (eg. District Business Associations.);
- Church; Community;
- Equipment supplier and Parts Dealership networks.

1.2.6 Special Education

Education for children with special educational needs has been in existence close to one hundred years in Zambia. The first attempts were made at Magwero in the Eastern Province, in 1905. Following the success of this experiment, philanthropists from Europe jumped onto the bandwagon and established schools and centres for children with special educational needs. Sixty-six years later, the Zambian Government realized the fact that it was its own responsibility. The Ministry of Education was then mandated to take the portfolio of educating children with special educational needs in 1971.

Since this take-over, however, the Government of the Republic of Zambia has constructed not a single school of any kind of disability. The existing schools which do not number more than twenty for all disabilities, were built by the missionaries and the philanthropists of the past and modern times, for example, the International Lions Club which constructed Lions Basic School for the Blind in Ndola.

Residential special schools are still the dominant provision, while integrated/inclusive provision via resource-room treatment, especially in high
schools. Despite the long existence of special needs education there were only thirty (30) residential schools and one hundred and ten units (110), serving 2,523 children with special educational needs in 1995. This scenario does not augur well when we consider the estimated 160,000-250,000 children with special needs, which figures do not include the maladjusted or emotionally disturbed, the exceptionally gifted or talented children who require a more challenging educational environment (MoE, 1996 p.67). Apart from the listed modalities of provision, some children with special educational needs are being catered for in hospitals and the most recent experiment, which is in its embryo referred to as inclusive education. The programme’s efficacy is not yet known but efforts are being made in many districts of Zambia, modelled on the Kalulushi experiment.

Zambia’s special education system, in common with other countries, is moving from a situation where a large number of children with special needs were educated in special schools or special classes to a situation where large numbers of students with special needs are integrated/included into mainstream education. The quantity and quality of provision for integrated/included students, though increasing, is still somewhat limited.

In terms of administration, the Ministry of Education administers special education. It has administered special education close to thirty-five years since it became responsible for educating SEN children in 1971. Before that period special needs education was under missionaries and philanthropists.

Although there has been no deliberate action of building schools for children with special educational needs in Zambia, many teachers for these have been trained at various levels. Teacher training has been provided in ten Primary Certificate Teachers’ Colleges, four Diploma Teacher’s Colleges and a Degree Course at the University of Zambia, through the Department of Educational Psychology, Sociology and Special Education. Zambia Institute of Special Education (ZAMISE) an in-service college which trains teachers for special needs education at certificate and diploma levels has trained close to 700 specialist teachers as at 1999. The institute is affiliated to the University of Zambia.

1.2.7. Curriculum Development

The Basic Education Outcome Based Syllabuses\(^1\) have been produced against the background of “Educating Our Future” (1996), which puts emphasis on literacy, numeracy, life skills and competencies. In order to successfully implement a competence based approach, curriculum developers will need to explore far and wide in order to enrich their skills and get ready to move forward with confidence.

Accordingly the competence outcomes based syllabuses aim at producing a learner who will be able to among other things:-:

\(^1\) MoE, Zambia Basic Education Outcomes Based Syllabi Grades 1-7, March 2003
Identify and solve problems
Work efficiently with other
Collect, organize, analyse and critically evaluate information
Communicate effectively and efficiently
Use science at technology effectively
Explore a number of strategies to learn more effectively

2.0 Major constraints in the educational sector

In the first chapter we have described the major developments in the educational sector. As can be observed from this chapter a lot have been achieved, but the educational sector is also facing major challenges. In this chapter we shall present a very brief overview of these challenges.

2.1. Access to education

One of the major problems is the access of pupils to education. A very large number of people still do not have access to education. Many investments have been made by different institutions and organisations in order to increase access. Many private organisations also filled this niche of the market, which brought its own problems. However, the statement of the Ministry of Education ‘Quality of Education for all’ is self-explanatory.

2.2. Number of teachers (human capacity in general)

Another problem, which the Zambian educational sector is facing, is the lack of the number of teachers and has been exacerbated by the poor conditions of the existing classrooms. There are currently over 37,000 teachers in basic schools. Over 25% of the existing classrooms are temporary or in poor condition. The Ministry is faced with two main challenges in teacher education. While it is necessary to produce more teachers, it will be equally important to re-deploy existing teachers to the rural areas. In some rural areas the pupil: teacher ratio is double that of the urban centres. In addition the distribution of teachers throughout the country remains a problem.

2.3. Curriculum

In order to meet the demands of modern society there is need to reform the curriculum at basic, high school and tertiary levels; sufficient learning teaching materials at all levels.

2.4. Quality of education

Parallel with the developments in society, the different visions of learning developed. A large number of emerging educational visions are underpinned by the idea of that, learning is a social process by which knowledge is construed instead of acquired passively. Learning becomes a social and interactive process. It is substantiated in interaction with other “actors” of the learning environment such as teachers, fellow pupils, and different learning resources.
In this framework, high quality teaching is tantamount to launching, guiding, and supporting the active learning process of every pupil. This asks for an intensive and phased guidance.

When actively acquiring knowledge and skills, interaction and collaboration with fellow pupils play an important part. Collaborative learning as a way of teaching is being increasingly applied. Pupils learn from others, by copying and imitating others in socialisation processes. In this way, they get the opportunity to see their own ideas and experiences in a different light and take alternatives into account. The value of this method corresponds with the capability of the pupil to continually adapt his/her already acquired knowledge and skills by confronting them with interpretations of other group members.

Apart from the learner him/herself and the “mediators” (teachers, fellow pupils, parents…) learning resources are a third category of components of a learning environment. Moreover, learning contents are growing exponentially. As a consequence, knowledge acquisition becomes more complex. In order to convert all this information into knowledge, pupils should have the necessary reference frameworks at their disposal. In addition to education, other social networks such as the family and peers help pupils convert information into valuable and relevant knowledge.

The range of tools and learning materials is also gradually expanding. The black/chalk board and the textbook were the teaching aids par excellence for decades, but now the variety of resources has been enlarged considerably. This diversity offers the teacher additional opportunities to guide each pupil during his/her active learning process support him/her sufficiently and respond to the individual differences. Anyway, not only teachers but also a large number of pupils have several tools and teaching aids at their disposal.

Since the liberalisation of the economy so many institutions offered education in all kinds of subjects but often of a questionable quality.

2.5. Budgetary allocations to education
The poor economic base in the country has unfortunately led to poor allocation of resources to the education sector. The budget allocation to education in Zambia is the lowest in the sub-region. Just over 20% of the total disposable budget was allocated to education in 2001, compared to 25% - 30% in Malawi, Uganda and Kenya. This situation has led to serious erosion in both the quality and access to education that is available to a Zambian child.

2.6. Lack of schools
Despite the fact that with ICT not much can be done about the quality of the constructions, the condition of the buildings is a major problem. Many school infrastructure mostly in rural areas are made of mud and pole and do not induce the environment of learning. The lack of school infrastructure has compounded the resistance by teachers to be posted to rural areas.

2.7. Lack of coordination in adult literacy
Adult literacy and adult basic education has lacked co-ordination and funding for materials, tutor training and learner support. The Ministry of Education, the Ministry of Community Development and Social Services, the Adult
Education Association of Zambia, non-governmental organizations, religious organizations and UNZA are but some of the organizations that ought to coordinate and implement a gradual improvement in adult literacy provision. The current programmes are virtually non-existent or very weak.

2.8. Special education
Among other things, the following seem to limit smooth operation in the provision and administration of services to the children with special educational needs:
- Absence of specific legislation
- Lack of early intervention services
- Inadequate special needs/inclusive educational resources
- Inappropriate resource-rooms and inclusive places
- Centrally-drawn examination oriented curriculum which does not meet the needs of children with special educational needs
- Lack of understanding of specific needs of individual disabled children by administrators at different levels of service delivery
- Negative attitudes of ordinary teachers and other children in integrated/inclusive schools
- Lack of advocacy, for example, HIV/AIDS, GIRL-CHILD EDUCATION and other programmes have elicited sympathy from the civil society and the Law-makers

2.9. Management
It has been recognised that there is room for improvement in the efficiency of the management processes of the Ministry of Education, especially between Head Quarters in Lusaka and provincial, district and school level. An improvement with the management will also improve the efficiency.

3.0 ICT and the educational sector

3.1 Introduction
In chapter 1 and 2 we discussed the state of affairs of education in Zambia. In this chapter we shall focus more on the experience Zambia has with ICT in the educational sector and the opportunities there are in ICT and education.

Generally, the following functions of the use of ICT in education are described in literature:
1. **ICT as an object.** What is being learned depends on the type of education being offered and the level of the students. Education prepares the students for the use of It refers to learning about ICT. Mostly organised in a specific course, ICT in education, future occupation, and social life.
2. **ICT as an assisting tool.** ICT is used as a tool, for example, while making assignments, collecting data, and documentation, communicating and conducting research. Typically, ICT is used independently from the subject matter. ICT As A Medium For Teaching And Learning This refers to ICT as a tool for teaching and learning
itself, the medium through which teachers can teach and learners can learn. It appears in many different forms, such as drill and practice exercises, in simulations and educational networks.

3. ICT as a tool for organisation and management in learning institutions.
The efficacy and use of ICT to improve organizational capacities of institutions in the education sector and in the teaching and learning situations cannot be doubted at all. Information on school governance, finances, academic records are all essential and needed to be efficiently collected, analysed and stored for effective and timely decision making.

3.2. The Zambian experience with ICT
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 and effective use of ICT. Sustainable human development is critical to this process and in recognition of this, the Ministry of Education, being a custodian of education provision and delivery in the country, has recently defined its sector wide Strategic Plan for 2003 – 2007. Yet the questions are how much ICT are being used in the expanded education opportunities and for what? Are they being utilized for effective and efficient use in the education system operations for better results?

3.2.1. Overall development
The Ministry of Education has attempted and planned for introduction and use of ICT for example in teacher education. Indeed efforts in the past have been made to define and articulate plans to improve the management and application of information systems in the Ministry of education (see Ministry of Education & IICD Round Table Paper, 2nd -4th May 2000)

In all this, the Ministry has recognized the importance and use of ICT in the improvement of quality and accessibility of education. Numerous discussions and planning around the use of ICT have taken place. Many schools especially privately owned have introduced computer literacy and appreciation in their syllabuses, but few have gone beyond computer literacy. The number of schools, colleges and skills training institutes planning for and acquiring computers in their computer laboratories is slowly increasing; there is need therefore for a corresponding strategy for taking advantage of this situation.

What seems to have lacked in past initiatives has been the lack of a ‘champion’ to carry the process forward. Rather than introduce these technologies throughout the education system, perhaps a few ‘good examples should be chosen and used as a launch pad for further step by step development. This paper makes a case for introducing ICT in the Education Sector so that line ministries responsible for education delivery can take advantage of and employs the technological advantages brought about by Information Communication and Technologies (ICTs).
3.2.2. Management Information System at the Ministry of Education

The Ministry of Education has been active in the implementation of ICT. Most of the offices in the Ministry of Education are equipped with computers and an intensive programme is started in computer literacy.

Having established an EMIS system the Ministry of Education now is training school managers in methods of how to make use the technology. The aim is have computers and their use aid managers in making management decisions. Schools, districts and regional offices ought to start to use computers to store useful information and data for future use. Given the fact that data and information management has remained perhaps the weakest link in the Ministry of Education, EMIS is expected to bring about profound changes and improvements to both the way information is stored managed and used. Effective use of data and information at middle and lower levels is of absolute necessity. Through a carefully controlled programme schools and managers in the education system will be trained to improve not just the management of their institutions but make informed decisions based on the available information and what they are able to access on-line from other regions.

The Ministry has succeeded in establishing an EMIS system and an elaborate training program of staff in two provinces (Southern and Northern) are currently running. It is meant to improve the information management system. There is now a real opportunity to maximize the use this technology and infrastructure that is now available.

The Ministry of Education has made numerous attempts in the past to visualize and plan for an integrated approach to use of ICT in the ministry (MoE & IICD, Round Table Process 2\textsuperscript{nd}-4\textsuperscript{th} May 2000).

Following this round table activity a number of projects were planned to be embarked on to use in various aspects of education delivery and training. Most of these have however not taken off due to various reasons, one of which can be attributed to weak ownership and appreciation of the ‘power’ of ICT.

A TICADII/ICTD ZAMBIA: Action Plan for 2002-2003; RAF/01/003 was articulated but not implemented.

3.2.3. Access to education

In order to improve the access to education several initiatives has been taken:

- Distance education for secondary education provided by the National Correspondence College in Luanshya
- Open secondary schools and skills centres for grade seven school leavers
- Evening classes for both adults and younger learners
- Supervised study groups
- Schools for continuing education that offer academic and skills training
These programmes have not received the prominence and support they deserve. The unique combination of skills training through flexible time tabling has largely not been taken advantage of.

3.2.4. Interactive Radio Instruction (IRI)
This yet another form of non-formal education designed to meet the learning needs of out-of-school youth. This is the use of interactive lessons delivered via a radio with or audiocassette. Classroom activities are then carried out with the assistance of a “mentor” – a volunteer teacher. These lessons are carefully integrated. Again communities support mentors. It is estimated that when this mode of education delivery is fully operational a target of approximately 800,000 out-of-school children will be reached through the country.

Although access to educational institutions and learning technologies, especially computers, CD-ROMs and the Internet is limited, the pressure that is being exerted on the developing countries to use even the little that is available effectively cannot be ignored. In fact, the Ministry of education has on numerous occasions organized and planned for introduction of the use of ICT in management and teaching and learning situations.

MoE will start a process of establishing pilot Centres, to expand Education provision using other modes for example the Internet and Teleconferencing. Four Centres have been earmarked for the pilot, i.e EBS, ZACODL and two provincial skills training Centres (STC’s).

3.2.5. ICT in Distance Education;
Zambia like all nations has embarked on a crusade increase education provision to all its nationals. Several courses were developed by ZANED its span to influence the education sector. Although not well developed, forms of it do exist and being used in mainly tertiary level institutions:

- University of Zambia, - for diploma and degree programs;
- Zambia College for Distance Learning;
- Teacher training Colleges [ Chalimbana, Copperbelt Secondary Teacher Training College, Nkhruma Teacher Training College, Solwezi Teacher Training College.

In Mongu, Mongu teachers Training College are using it to upgrade Lecturers qualification. This sub sector of education however is not well development given the potential for.

3.2.6. Adult Literacy
In Zambia adult literacy programmes are mainly offered by the MCDSS and other NGOs and CBO’s. However, the Ministry of Education is responsible education activities in the country. MoE’s participation in Adult literacy programmes has been low. Arising from the declaration of Education for all MoE through the directorate will embark on a process of developing producing
adult literacy materials and radio programme in preparation for the establishment of adult literacy classes in all zones next year (2004).

In that sense it is worthwhile mentioning that in the urban areas a lot of courses are offered in ICT skills.

### 3.2.7. Teacher Training Resource Centres

Currently, there are 78 Teachers’ Resource Centres (TRCs) and 14 Teacher Training Colleges [10 Primary, 2 Secondary and 2 in-Service] throughout Zambia. The 78 TRCs include 14 Provincial TRCs. Plans are being developed to create Zonal TRCs. These are ‘mini-TRCs’ located in the outlaying areas in the districts. The indicative number is 600. There is a possibility that provision of basic ICT facilities in those Zonal TRCs can materialise.

### 3.2.8. Secondary Schools

In a recent research it has been shown that many schools are using ICTs. The schools are using the ICTs in different forms. Sometimes in the form of ICT in education and sometimes in the form of education in ICT. ICT skills of teachers remain a point of attention.

Often not only students are using ICTs, but often using ICTs also facilitates the administration and management of schools.

### 3.2.9. Vocational Training

With the foregoing then, it is not strange to find that existing developments pertaining to the integration of ICT in Zambia’s Vocational Education sector have been mainly a consequent of globalisation. If one considers the fact that Computer hardware and software are critical elements in ICT development and application, the number of these units that have come into the Vocational Education system through bilateral and multi-lateral collaborating partner support programmes, would tend to support this argument. This would be so because globalisation processes and activities essentially govern Zambia’s relationship with the collaborating partners.

Partly as a consequence of how ICT was introduced into the Vocational Education system, the initial and indeed present pre-dominant application has been in enabling the delivery of instruction rather than skill acquisition for labour market employability enhancement.

The scope of ICT use as a tool for delivery of Vocational Education has been fairly modest. At the level of national Curriculum development level for example, it has been limited to computer applications centred on Word Processing packages. Circulation and dissemination of curricula has continued to rely on transportation of paper-based copies. Distribution using electronic means is very occasional. The potential for collaborative development of curricula using the Internet, is to be exploited.

At training provider level, the scope of ICT application has also predominantly been limited to Word-processing level capabilities.
There have been exceptions at this level however. Take for example specialised applications tied to Vocational Education programmes like Aircraft Pilot training, where ICT application as part of classroom instruction has dictated the use of computer assisted flying simulators. Accounting, Computer Aided Design (CAD), Programmable Logic Controller (PLC), and Database Design packages provide another cluster of specialised ICT applications that are taking root in Vocational Education classroom in Zambia.

Other variations have been provided by company in-house training functions owned by multi-national companies. These are able to access proprietary ICT Vocational Education packages that are applicable for use at classroom level. The delivery of some aspects of Distance Education programmes by Technikon South Africa using Internet and fax technologies represents another major and challenging development pertaining to ICT integration in Zambia’s Vocational Education system.

Use of ICT to support institutional management within the Vocation Education sector has grown by way of increased numbers of offices with computer units. The utilisation capacity is again limited to Word-processing and basic spreadsheet packages.

With regard to ICT as a skill to be acquired through the provision of Vocational Education services, in order to enhance labour market employability, the major developments have come by way an increase in the number of computer training courses available on the market. They range from short duration courses targeting specific competencies, to Diploma award programmes of two or three year duration. The short duration courses include the following:

- Microsoft Packages; (ie Word, Excel and Access);
- Accounting packages; (eg. Pastel);
- Internet browsing and e-mail operations;
- Computer Aided Design; (ie. mainly limited to UNZA, NORTEC, and CBU);
- Computer Hardware Maintenance and Network installation;
- Web-site Design;
- Computer programming;

In view of the development potential for the Zambian Vocational Education system inherent in ICT integration, there still a huge room for improvement. Some of the prevailing constraints and challenges for lack of progress include the following factors:

- Absence of a general national policy on ICT, coupled with an equal absence of one at Vocational Education sector level;
- A weak stakeholder base to champion the cause of, and advocate for enhanced ICT capabilities in all sectors of the national economy; inclusive of Vocational Education. Privatisation of the ZIMCO conglomerate has had a telling effect with regard to an ICT stakeholder base.
- Inadequate numbers of trainers qualified and experienced to different levels of the ICT occupational spectrum;
- Presence of Copper cable connections between digital telephone exchanges and the computer terminals;
- Lack of exposure to ICT applications and/or operations by managers and supervisory staff in Vocational Education;
- Ownership of critical ICT equipment like computers and related accessories very limited among Vocational Education institutions.

The introduction of TEVETA has provided an opportunity to standardize non-formal skills training programmes. The directorate through skills training Centres will offer various courses based on their syllabi developed within the Directorate. In order to harmonize standards and quality of skills and entrepreneurship training the directorate will revise syllabi in line with the TEVETA system; diversify courses according to local demands.

3.3. Challenges in ICT in education

In this paragraph we shall discuss the different opportunities of ICT in education. The first sub-paragraph discusses the general opportunities, whereas in the second sub-paragraph the opportunities in the Zambian context will be discussed.

3.3.1 General opportunities

3.3.1.1. 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.

3.3.1.2. ICT in 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.

3.3.1.3. 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 e – education offers and who should provide the leadership in instituting it.
3.3.1.4. **ICT and Special Education.**
Many differently abled 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.

3.3.1.5. **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. Key is how these tools are being applied in the Zambian system of education and training.

3.3.2. Opportunities/challenges in the educational sector in Zambia

3.3.2.1. **Policy**
Although the ministry of education’s ‘*Strategic Plan 2003-2007*’ states and affirms the importance of ICT in improving the quality and accessibility of education. The plan also stresses the importance of and need for improvement of the management and information system. It is regretted that there is no policy articulated to guide ICT development and use within the education sector. It is therefore critically vital that a Policy be developed to guide use of ICT in the education sector.

Such a policy on ICT will help give direction and parameter within which both the private sector and government institutions ought to operate. Equally regrettable is the luck of ICT policy at a national level; this is also a serious drawback on the possible development of ICT in the country.

A project proposal recently prepared on “Development of ICT policy at the Ministry of Education” (MoE, 2003) states that the focus of the ICT policy as:

- Framework for procurement and utilization of Information and Communication Technology
- Training and capacity building within the Ministry of Education (human resource development for instance teachers training);
- Use of ICT as a management tool (workflow management);
- Use of ICT in support of the teaching and learning progress;
- Use of ICT to improve the delivery of the educational services;
- ICT maintenance and security;
- Creation of smart partnerships with third parties, such as the UNZA, commercial firms.

All these are clearly important areas to address, failure to have this policy has resulted in un-coordinated and incompatible systems being purchased and used. Harmonization later may prove very expensive and a waste of meagre resources in the first place. It is essential therefore that in all we do, policy must be articulated that will in turn guide strategies and methodologies to be adopted in delivery of services in the education sector.
3.3.2.2. 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:
- Communication tools such as e-mail, bulletin boards and chart rooms,
- Collaboration tools such as on-line forums, internets, electronic diaries and calendars,
- Tools to create on-line content and courses to create learning modules,
- On-line assessment and marking tools that track student activity and achievement,
- Integration with school management information systems,
- Controlled access to curriculum resources,
- Student access to content and communications beyond the school.

3.3.2.3. 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’.

The policy statement clearly spells out the need for adapting and use of technology thus:
“...The scientific outlook is becoming the hallmark of the approach to problem-solving. National progress depends critically on the ability to adapt and use scientific and technological developments and to generate new developments. The curriculum for basic education must take this into account.” (MoE, p35)

The policy document further recognizes and acknowledges the value of electronic media in education delivery.
“...In 1990, the World Conference on Education for All, in which Zambia participated, recommended that all available channels of information, communication, and social action be used to help convey essential knowledge and inform and educate people on social issues. Education media comprise print media - books, journals, magazines and newspapers - and none print materials much of, which is produced or transmitted electronically - radio and television programmes, and audio and video materials. The computer and communications revolution has enlarged the scope of instructional media, through computer-aided instruction and computer networking.” (Ibid. p81)

3.3.2.4. ICT in Curriculum Development
Curriculum reform and development pre-supposes that better syllabuses that would translate into learners acquiring skills that would enable them lead a meaningful life. Any thing short of this expectation would render curriculum reform not only useless but a waste of meagre and scarce resources. Zambia cannot clearly afford such wasteful use of resources, this makes it imperative that available technologies be used to the fullest advantage.
Use of ICT in curriculum development can be achieved at a level where curriculum developers are encouraged to use the available technology to study the historical development(s) of various types of curricula and assess their adaptability to local needs and situations.

Fellow curriculum developers in other countries can offer valuable advice on what works and what makes certain aspects of curriculum innovations not work so well and so on. The availability of possibilities for consultations across the Internet on various questions on curriculum innovation remains an attractive avenue for venturing into. The availability of research findings that would inform decision-making as curriculum reform is undertaken is invaluable to a modern curriculum developer. These findings are indeed available on various web sites and other forms of ICT.

The design and eventual introduction of ICT in the basic and secondary school syllabuses requires careful planning especially in a Zambian situation where technical expertise to man and service the equipment is still relatively low.

3.3.2.5. ICT in Special Education.
There are many students with a variety of special needs. These needs must be met if the students are to have full access to the National Curriculum to which they are entitled. Some of these needs can be met with the support of Information Technology but for certain students the provision of I.T. equipment is not the answer. For some it is sufficient for staff to be offered help and ideas for the choice of appropriate software or simple peripheral devices. For others the learning is incomplete if they do not experiment, modify, appreciate and even do their own designs, themselves.

3.3.2.6. 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.
Globalisation and the availability of mostly ‘unrestricted’ flow of information, cultural ideas and global networked economies have affected education somewhat in a positive way, – there is greater flexibility to access to education. The only limiting factor to this availability is poverty or lack of financial ability to have access to new technologies that have emerged over the years.
PART TWO
SWOT ANALYSIS ON AGENTS OF CHANGE

4.1 Introduction
The SWOT analysis brings out overwhelming evidence that ICT usage is increasing daily in the Zambian education sector. This development may be attributed to the fact that presently, many institutions perceive ICT as a necessary tool in the day-to-day running of their institutions.

In Zambia, there are very few areas that still remain unaffected by ICT. ‘In offices, factories and homes, banks, supermarkets, garages and in many other places, ICT is used to carry out transactions, provide information, record data, make decisions and perform an ever increasing range of tasks’ (Wainyae).

4.2 Policy
All the institutions visited acknowledged the absence of an ICT national policy to guide the introduction and use of ICT in the country. However, none of the institutions with the means have been deterred: another development that could be credited to the wholesome liberalisation not only of the education sector, but also of the country’s economy. Seemingly, this has given the much needed leverage for ‘whosoever will’ to explore the existing opportunities (apart from it being a necessity) in order to better performance and the quality of services offered.

To make the assertion therefore, that ‘private organisations, individuals, religious bodies and local communities now have the right to establish and control their own schools and educational institutions’ is fundamentally accurate (Round Table - 2003: Prospectus). However, the following questions pose the greatest challenge for consideration:

- How much of ICT are being used in the expanded education opportunities and for what?
- Are they being institutionalised for effective and efficient use in the education system operations for better benefits?

The answers to the questions raised lie in understanding some of the policy directions of the current education policy ‘Educating our future – May 1996’, which highlight the following:

1. The fundamental units around which Zambia’s school system will be organised are basic schools and high schools.
2. Every child should have access to good quality education.
3. Education will provide each pupil with a solid intellectual, practical and moral foundation that will serve as a basis for a fulfilling life and
4. In order to enhance the effectiveness and quality of education, the Ministry will:
• Promote the development of a curriculum that is comprehensive, balanced, integrated, diversified and relevant to the needs of both the pupil and the society
• Take steps to ensure that it is well understood and taught and
• Seek evidence that it has been well learned.

4.3 Key Players – Education Sector
As outlined in the Prospectus (ICT in Education 2003), the development of a sector naturally depends on the performance of people and organisations. What, this analysis attempts to do is to highlight major problems and challenges various organisations encounter in the process of implementing and using ICT. The situation in institutions visited clearly underscores the question of the extent of ICT usage in the education sector.

Although reference is made to the Ministry of Education in terms of policy and other fundamental aspects of education, the study does not restrict itself to the Ministry of Education, but also embraces the entire education sector though not exhaustively. The following list broadly represents institutions identified within the education sector:
• Government
• Private sector
• NGO systems
• Civil society and
• Quasi-government institutions involved in the provision of various educational services.

4.4 Findings
a. Government (schools)
• The number of ICT equipment i.e. computers ranged between zero (0) and one (1) in basic schools and twelve (12) and twenty (20) in high schools – mostly used for word processing.
• Government basic schools have not yet been supplied with computers and ICT has not yet been introduced officially and is not offered as a subject. It is worth mentioning that the Basic Education Curriculum Framework (BECF) has not yet been implemented and that lapses were observed in effecting the same.
• In high schools, both teachers and pupils have access to computers and that computer literacy is a must.
• There is donor goodwill at high school level since most of the equipment is donated.
• Basic schools have neither clear direction nor plan showing how members of staff would be brought on board to appreciate and use ICT.
• Although some schools are linked to the Internet and have email addresses, they lack the financial muscle to expand and sustain the services.
• There is general apathy and lack of interest in members of staff to venture into the latest technology. This was quite evident in basic schools.
• There also exists an awesome amount of knowledge about the benefits of computer services, but that these cannot presently be maximised due to limiting available resources and the general lack of capacity.
• Heads demonstrated clear understanding of the potentialities of ICT in enhancing communication, which they hoped if implemented would tremendously ease the difficulties they face communicating with authorities at various levels in the system.
• The potential for Internet connection and exploiting it to users advantage exists even with one computer as evidenced in one school.
• The introduction of free education has affected basic schools negatively because parents are now unsupportive of school programmes/projects.

b. Private Schools
On the contrary, privately run schools have made tremendous progress in the provision of quality education in their schools through the introduction of ICT. The following were observed:
• They own between ten (10) to twenty-five (25) computers, which are housed in computer laboratories.
• That there exists a teaching syllabus though there is no examination syllabus and therefore, the subject is not examinable. It is given a minimum of one period per week per class with some exceptions.
• There is an IT teacher dedicated to the teaching of the subject.
• In some schools, there is a clear display of vision in ICT with chances for expansion through the opening of Internet Café so as to give learners the opportunity to search the Net for educational information in order to benefit their studies.
• There is a clear understanding of the actual benefits for learners in their studies and hence they are equipped with the necessary competencies in ICT to work out solutions and to communicate with others globally.
• Linkages between Ministry of Education and private schools are not very strong and the importance of this can never be over emphasised due to the need for building a continuing consultative process.
• Like government schools, private schools also lack the financial muscle to sustain and expand the ICT services/facilities.
• For any programme to succeed in the schools parental involvement and support is key and this can be said to be the case in the schools visited.
c. Tertiary Institutions (University and Colleges)

- The University and Colleges visited too are no exception and have not been exempted from the problems of implementing, using and managing ICT. Although there are hitches encountered in order to provide this service, the experiences so far indicate that this facility will help solve student problems in sourcing learning materials when libraries are connected to the Internet. It is hoped that ICT will help in the management of student and staff records, thus helping maintain databases.

- The University is more advantaged in that it has an internet facility with well over one thousand (1000) computers and ten (10) servers that provide a variety of packages and this facility operates 24 hours a day.

- There also exists potential for website design that may assist Colleges to market and advertise their activities within the sub-region and globally.

- The potential found in ICT to deliver distance-learning programmes are innumerable even with the existing facilities. All colleges offer some form of distance learning or other and this service if maximally utilised would significantly improve the learning process, but that there should be corresponding development in sister institutions e.g. Teachers’ Resource Centres.

- Although one College has a computer room housing about ten plus computers, students do not have access to them since lecturers use the same for lesson preparation. In the remaining Colleges, the students have some access to computers in spite of the numbers and limited space available in the computer rooms.

- Just like schools, the University and Colleges experience financial constraints save for Colleges that seem to enjoy much donor support. Maintenance or running costs alone for servicing existing equipment are very high.

- In all the Colleges visited, there is an ICT focal point person perhaps denoting the importance of the subject area and interestingly, the ICT persons displayed great command of the subject matter. Hence it can conclusively be said that the initial steps towards capacity building in these institutions have already been taken, but that deliberate plans be made for continuing to build it within.

- At College level, the success of ICT is dependent on collaboration with the local communities especially in protecting infrastructure from vandals and in terms of support of implemented programmes.

- Limited resources and facilities given the magnitude of the institutions results into a situation where very few benefit from the facilities. This
results into some students graduating without any literacy in computers.

d. **NGOs**
- The biggest advantage is the established linkages with government, development agencies and community service organisations.
- The organisation depends a lot on donor support.
- They promote activities like ‘learning camps’ and the ‘reading circle’ for the vulnerable girls.

e. **Quasi-government/ government**
- The major problem imminent is the linkage between customer and service provider as is the case with Longman and institutions of learning. Where as the service provider is well advanced in ICT, the customer at school level, especially government schools, is lagging far behind.
- This imbalance creates problems in conducting business directly with the client. Arguably, if Teachers’ Resource Centres were networked, then access to requirements through Internet and email would be eased.
- The Communication Authority Zambia (CAZ) encourages ICT projects and participates in policy formulation and it is of the view that ICT in all areas especially in education is an engine for socio-economic development.
- Institutions are charged high tariffs and CAZ aims at reducing them. The major problem among institutions is the lack of awareness about issues of ICT.

This picture clearly shows how much of ICT are being used in the education sector, and in some way indicating to what degree this is being done. It also shows the education sectors links with service providers and to what extent these services and facilities are being utilised.

The opportunities for institutionalisation are however, insuperable, but the challenge this poses hinges on the limitations institutions experience because of limiting financial resources to venture into the world of ICT in providing quality education.

There is no doubt that the benefits are known; that ZAMTEL and ZESCO and other key service providers that can impact greatly in the education sector have their presence in the whole country and that CAZ would work to reduce the high tariffs is in itself an advantage for the education sector to explore the existing potential in ICT. This scenario provides ‘ammunition’ to providers of education everywhere in the country to take advantage of the situation through building around ICT in order to promote quality education.
4.5 Areas of intervention

The key areas that emerge in this study, as requiring urgent intervention among others are the following (see also the section on ‘Education in ICT’):

i. Distance learning
ii. Curriculum development
iii. Actual classroom practice i.e. lesson delivery
iv. Information management
v. Vocational training and
vi. Special education

There is no doubt that interventions in these areas will help raise the quality of education both formal and informal. It is around these identified key areas that projects can be formulated to accelerate ICT in education and vice versa for the benefit not only of the education sector but the nation as a whole.

It can be stated therefore; in more general terms that ICT education should be institutionalised to give it a focus and direction. This entails the development of a curriculum and syllabi to guide implementation and the teaching of the subject. It is envisaged that such developments will lead to greater appreciation of the facility/service since computer literacy is becoming a necessity to many institutions in the country.

ICT affects almost all aspects of our existence nowadays and the analysis highlights the ever-increasing importance of ICT in almost all the institutions visited. It is necessary in management especially in the following areas that stand out in the study, which include enhanced communication; promotion of proper record management; allowance for interactive learning and above all its potential for breaking the walls of isolation. It should be encouraged and supported through institutionalisation.
PART THREE
WAY FORWARD

Chapters in Part one discussed the Zambian experience with ICT in the
different sub-sectors of education. The chapter in part two presents the
SWOT analysis that brings out overwhelming evidence that ICT usage is
increasing daily in the Zambian education sector. In this section, focus is put
on the opportunities that can provide leverages for development.

5.1 Opportunities and Possibilities for 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.

5.2 Proposed Policy in Special Needs Education and ICT

The purpose of the ICT policy is to provide a school with a structure that
explains why the school considers the use of ICT to be important, and how
the school addresses the issues raised by the use of ICT. The schools ICT
policy framework document therefore, could address all schools, teachers
and students, and could make emphasis on special needs education. This
means that every school where special needs are being catered for should
have ICT policy. An ICT policy, that is, which sets out how one uses ICT in
teaching, learning and the wider context of the school. It should reflect the
aims and values of the school, articulate the contribution, which ICT makes to
pupils' learning, and describe how ICT is used on a day-to-day basis.
Special needs permeate the lower basic, middle basic, upper basic and tertiary education. In Teacher Education, Ministry of Education, Zambia Institute for Special Education or the University of Zambia, a national co-ordinator working on part-time on special needs and a full-time project officer could assist in providing support where necessary. There could be established a Technology Integration/Inclusive. Initiatives whose main activity would be to distribute grant aid to schools. In addition to the funding allocation, the national co-ordinator would disseminate information to teachers and students on appropriate technology and make available the appropriate network established to all parties benefiting from the enterprise.

In the area of teacher training, emphasis would be placed on providing basic introductory courses for all teachers, including those working in special needs. It should be agreed that special needs should be a component of all basic courses and examples and information relating to special needs in all specialist courses where relevant (e.g., career guidance and ICT, Building a School website etc).

Regarding training for teachers involved in special needs education, special needs teachers should be encouraged to complete basic training (introductory courses phases 1 and 2) as this would provide the necessary foundation for attending the specialised training courses on ICT and special needs. Design of these courses could take precedence in this policy. Liaison with tertiary institutions would be advantageous so that post-graduate or in-service special education teacher training courses could include similar or equivalent ICT training.

Special needs and ICT courses would consist of:

- introductory courses covering a wide variety of special needs
- courses covering ICT and specific special needs target areas such as mild learning disability or autistic spectrum disorders, and
- courses for learning support teachers (remedial education).

Support is a big issue for teachers and parents of special needs children, who often feel isolated, helpless and frustrated. Some well selected websites which deal with special needs sections such as “ScoilNet” and “talk” facilities could offer opportunities to overcome these difficulties for parents, teachers and other supporting professionals, as well as for the students themselves. The website is a valuable tool in that it offers possibilities for communication and support from colleagues and other professionals. It is becoming a valuable resource as more and more people contribute to the pool of information, advice and reference material available both within the special needs sections and throughout the site as a whole.

The policy would, therefore, be to appoint some teachers to work as website facilitators. Their work would be focussed on facilitating contributions to the web’s special needs sections, including discussion groups, notice boards, and curriculum resources. A key component would be the special needs technology section, which would provide information on the assistive technologies available to meet the educational requirements of special needs
students in Zambia. This section could be developed to include information and advice sheets on the use of technology with students with special abilities and disabilities.

The other important activity for the website facilitators would be to identify interactive software in the curriculum, which include identification of relevant software for Zambian schools. This could be done via a software evaluation process, which could begin with a pilot phase and see how it could be concluded.

Another facet of policy on ICT in special needs education would be to establish a support service for special needs. The lack of support is the biggest single issue facing special needs teachers in Zambia. It would be even more difficult to get support in the area of ICT but if the policy was clear right from the beginning, a lot of good would come out of the enterprise for both teachers and special needs children destined to use ICT.

The policy so established to support ICT in special needs should be closely monitored and observed by all stakeholders if good results are to be yielded. Future Developments: Some Ideas.

The main ICT-led services and support which would contribute to improved integration/inclusion of ICT in special needs education in Zambia may include: As recognised centres of expertise for different types of disabilities are being established, these should have ICT expertise as an integral part of their operation and be available for consultation or referral in certain cases. The appointment of special needs ICT advisors and/or the training of existing ICT advisors in special needs.

The availability of local/regional assistive technology support services for individual students with special needs, to include technology expertise, access to technology, technical support, and maintenance.

5.3 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.
The printing costs themselves become a hindrance to speedy acquisition of new syllabuses and teachers guides on the curriculum.

Schools that can access these materials electronically clearly stand a chance of beginning to use these early and responding to the new challenges the new curricula pose.

Use of ICT in curriculum development can be achieved at a level where curriculum developers are encouraged to use the available technology to study the historical development(s) of various types of curricula and assess their adaptability to local needs and situations.

Fellow curriculum developers in other countries can offer valuable advice on what works and what makes certain aspects of curriculum innovations not work so well and so on. The availability of possibilities for consultations across the internet on various questions on curriculum innovation remains an attractive avenue for venturing into. The availability of research findings that would inform decision-making as curriculum reform is undertaken is invaluable to a modern curriculum developer. These findings are indeed available on various web sites and other forms of ICT.

The design and eventual introduction of ICT in the basic and secondary school syllabuses requires careful planning especially in a Zambian situation where technical expertise to man and service the equipment is still relatively low.

Multi-grade teaching in the developing world cannot be totally avoided; the use of ICT would certainly reduce the teachers’ work-load. A lot of programmed work on CD would help bring quality information and methodology to a class that may only afford an untrained teacher. The case of a newly experimented Interactive Radio Instruction (I.R.I) in the Zambian communities where access to ‘formal’ education is not available has indicated that effective learning can in fact occur. Children enjoy listening to these programmes, the cost is relatively low but properly utilized maximum results are possible.

Most Teachers’ Resource Centers especially the provincial and district ones have a possibility of connectivity since they have access to phone lines and basic equipment – computers and basic reprographic equipment. Curriculum changes and innovations can be accessed through these centers. Curriculum developers thought these interactions can have immediate feedback from practicing teachers on the ground, through carefully designed questionnaires on new changes they wish to make to syllabuses.

In all this work minimal training would be required, to acquaint teachers with the basic skills they need in order to use the equipment.
5.4 Possible Leverage Areas/ What needs to be done

In order to change the present situation of inadequate educational provision to children with special educational needs, it is important to:

- Enact a Law on special/inclusive education
- Establish early intervention services
- Review educational provision modalities
- Carry out research on specific needs of individual children to enable policy-makers and administrators to make decisions based on researched facts
- Advocate for quality educational delivery

While many initiatives to revive Zambia in an all-round development quest are current, the following recommendations are proposed to be consideration by the Ministry of Education and co-operating partners:

- Establish a National Centre for Technology in Education based in Lusaka.
- Formulate policy to integrate special needs education ITC
- Enforce the ideals of the formulated policy of ITC in special needs
- Establish support services for special needs education
- Train core co-ordinators of ITC in special needs education
- Equip the NCTE adequately, and
- Don’t be shy to spend now because it will pay lifelong dividends in the future.

If government through the Ministry of Education does not utilise resources now resourcefully, it will regret having reserved the right when confronted with multitudes of special needs children perpetually queuing for the “Dole” in the future.

Given the previous planning for ICT in the Ministry that has taken place it is essential that implementation starts with what has already been thought planned.

It is not necessary to start with a large number of such projects but concentrate on a few, but make them work and be successful

The top managers must be convinced of the efficacy of the use of ICT by demonstrating to them how it works, the range and variety of application to secure high-level support for the projects.

The private sector should be an active partner in introducing and sustaining ICT use in the education sector. This is feasible through meaningful and realistic ‘business’ partnerships.
Opportunities and possibilities of partnerships between the education sector and the private sector should be explored to the full. For example reduced or shared costs would go along way in encouraging the use of ICT in the education sector.

ANNEX I

SWOT ANALYSIS OF EDUCATIONAL INSTITUTIONS AND OTHER EDUCATION AND SERVICE PROVIDERS

1. FORUM FOR AFRICAN WOMEN EDUCATIONALISTS OF ZAMBIA (FAWEZA)

The Forum for African Women Educationalists of Zambia (FAWEZA) at the secretariat level have 5 computers 2 telephone lines, and one fax machine. They have Internet access at their offices. The users of these facilities are the secretariat staff.

FAWEZA regard ICT in education as a very important tool. They say it is a tool that would expand access to education for the excluded. They could not determine the cost of investment in ICT. The equipment they have is both from donations and purchases.

FAWEZA organises learning camps for vulnerable girls during school holidays and provide free tuition. The girls are encouraged to be assertive and to not to shy away from science, maths and technology.

The organisation has also set up reading circles and has provided books for this particular activity. Girls are encouraged to read under the guidance of a mentor.

Strengths
• The major strength that they have is basic literacy.

Weaknesses
• They lack a website where they can post their mandate and various projects and programs

Opportunities
• They have opportunities in that they network with the government, development agencies and community service organizations.

Threats
• For FAWEZA their major threat is donor dependency.
2. **DAVID KAUNDA HIGH SCHOOL (DK)**

(Government School)
DK has 20 computers, 1 telephone line, and 1 fax machine. They also have 1 radio and 6 television sets. They have a policy that both pupils and staff benefit from these facilities. They say the use of ICT in education is a must. The cost of investment is estimated to be around 47 800 000 Kwacha.

**Strengths**
- They have a computer lab, computers and accessories and the Human Resource.

**Weaknesses**
- They want to launch the Internet café but have no equity capital to do so.

**Opportunities**
- The opportunities that they see are the users and a ready segment to market facilities

**Threats**
- There is a high labour index turnover for senior users of facilities.

3. **ZAMBIA ELECTRICITY SUPPLY COOPERATION (ZESCO)**

ZESCO has the monopoly over supply of electricity in the country. They have invested high in the areas of ICT. ZESCO say that they have put in place a policy where schools, religious institutions and other non-profit making organizations pay lower tariffs.

4. **ZAMBIA COMMUNITY SCHOOLS SECRETARIAT**

ZCSS has 9 computers at the secretariat and an additional some in all the provincial centres. They have over 1000 schools that are registered under them. Other than the PCs they have 4 telephone lines which 3 are connected to the Internet. They also have one fax machine. They do not have an ICT policy in place. The only users of the facilities are the administrators themselves.

They however feel ICT is important in education and in their data collection systems as well as their endeavour to design databases. The equipment they have is from donors.
Strengths
- All members of staff have a computer and all provincial coordinators have computers and fax machines.

Weaknesses
- The fact that computers are not networked is a major weakness for them. The other weakness is that provincial coordinators have little ICT skills.

Opportunities
- They have donors to support them readily available.

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5. KABULONGA SCHOOL FOR BOYS
(Government High School)
The school has 12 computers 2 phone lines and a no fax machine. They say they have an ICT policy and the main users of these facilities are both the staff and the pupils. The computers they have are a donation from Matero boys’ school.

Strengths
The school has computers though these are not enough. These could be used to generate funds for the school.

Weaknesses
They lack manpower to repair equipment.

Opportunities
The University of Zambia supports their efforts in areas of staff development and training.

Threats
The environment for the computers is not conducive. The room is dusty and there is need to put in an air conditioner. The equipment is also not secure from theft and vandalism.
There is also a threat of producing half-baked computer pupils.

The staff that are trained in computers always leave for greener pastures.
6. COMMUNICATIONS AUTHORITY

CAZ encourage ICT projects and participate in ICT policy formulation. The Authority is of the view that ICT in all areas especially in education is an engine for socio economic development.

The authority realizes that tariffs charged by many institutions are rather high and they aim to bring down these tariffs.

The major problem that they have is that there is lack of awareness by many people in issues of ICT. People need to be made more aware about issues of ICT.

7. UNIVERSITY OF ZAMBIA (UNZA)

The University of Zambia has 1020 registered computers those bought for specific schools projects are not included in this number. There are over 32 telephones and over 10 fax lines. The record for the TVs and the radios was not given as most of them are in the student residents.

The institution has a policy on ICT that enables both the students and staff to use these ICT facilities. They have a private policy that determines whether and to what extent one can have access to ICT resources.

They view ICT as an important tool in education. According to them ICT opens tremendous potential benefits to both students and workers. With ICT one can get very easy access to rich sources of information. In areas of investment they say initially investment costs are high but in the long run they are minimal.

Strengths

- The major strength is that they have an Internet facility with well over 1000 computers and 10 servers providing a variety of packages. The Internet is on 24hrs a day.

Weaknesses

- They have very few radios, TV sets and phones. This is due to poor funding.

Opportunities

- With well-networked intranet/internet, there is a rich source of information that students tap from that enable them to do well in various areas of research and others.

Threats
Limited resources and facilities given the magnitude of the institution results into a situation where not everyone benefits from ICT facilities. This results in some students graduating without any literacy in computers.

10. CATHOLIC SECRETARIAT

The Secretariat has a number of school/educational institutions across the country. They consider ICT as an essential variable in education. The head of the education department at the secretariat suggested that someone from Matero boys attends the round table. The person from Matero boys will give some information from the SWOT analysis by Monday 28th April.

13. MATELO BASIC SCHOOL - CHINGOLA
(Government)

Current ICT Status:
- The school has only one computer, which is used by both the Head and the Secretary.
- The school is linked to a school in Denmark and information meant for children in the school is downloaded and is produced for them.

ICT policy and its relevance
- This is important because there should be no monopoly of knowledge. Everyone will have the opportunity to be exposed to the facilities and will be able to increase their knowledge base in ICT.

Weaknesses
- The head is the only person that is computer literate
- Training of staff hasn’t been easy as there is only one computer for this purpose
- One open line is limiting
- The community is negative towards schools because of the introduction of free education. They won’t support new initiatives in the school.
- The Basic Education Curriculum Framework does not give enough guidelines as to how ICT should be introduced.
- The interest of administrators in neighbouring schools towards ICT is lukewarm because of lack of understanding. The Head is of the view
that the apathetic attitudes of fellow Heads would change if district office organised meetings to sensitise them.

**Opportunities**
- The school has been able to get twinned to a school in Denmark through a programme called ‘Youth meeting Youth’ and through this programme interaction with colleagues in this country has been possible using the Internet.
- The school in Denmark has also donated computers that are awaiting collection from Lusaka. With donor support, it is possible to expand ICT capacities within.
- The Internet is a rich source of information and materials that are of benefit not only to the teachers in the school, but also the learners.
- Improved linkages will reduce the loss of hours visiting administrative offices both at district and provincial levels.
- Linkages will improve information flow and staff returns would be given in the shortest possible time as and when required.

**Threats**
- Internet services are very costly and require urgent government intervention.
- Some teachers view ICT with suspicion because of lack of knowledge. Most do not even use the Cafes in town. As such, there is a need to train them in the use of ICT.
- Over-billing sometimes by service provider.

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<tr>
<th>SWOT Analysis</th>
<th>8.14 RHODES PARK SCHOOL (PRIVATE SCHOOL)</th>
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| **STRENGTHS**     |  - Children at this school have been able to engage themselves in meaningful ICT activities because of the approach used in teaching it.  
                   - The school has designed an IT syllabus and has adopted a wholesome approach to the teaching of the subject. Learners are given research and advanced level materials for example learning computer hardware. This is because the school has a very committed IT teacher.  
                   - IT has been taught in the school for the past five years and is introduced to children in Grade 3 and taught up to Grade 12.  
                   - The school is linked to the Internet and the email address is rps@coppernet.zm. It is also linked to ‘Global Teenager’.  
                   - There are 21 working computers and all the 1000 children have access computers.  
                   - The school owns a DVD outfit, which is IT friendly. |
14. MUZI HIGH SCHOOL – NDOLA  
(Private School)

ICT Status in the School:
- The school has a computer laboratory equipped with approximately 13 computers.
- All pupils from Grade one to Grade 12 have access to a computer. (Periods are allocated as follows: Grades 1 – 4 one period, Grades 5 – 6, 8, 10 and 11 2 periods, Grade 7, 9 and 12 1 period)

Strengths
- Good examination results with a pass percentage usually above 80%.
- Quite a good number of teachers have computer skills and additionally, there is an IT teacher.

Weaknesses
• ICT subject though taught is not examinable.
• The cost of maintenance of IT equipment and replacing the existing ones is very high.

Opportunities
• Most job adverts now include an ICT skill as a requirement and as such learners from this institution are bound to benefit because of the education they get in this area.
• Exposure to the Internet and the use of ICT facilities would help learners acquire survival skills, which will promote their independence.
• The contributions/output of individuals would improve with much exposure to ICT.
• ICT is very good and beneficial in research and in business.
• Possibility of getting the school library connected to the Internet.

16. THE ZAMBIA COLLEGE OF OPEN AND DISTANCE LEARNING (ZACODL) (FORMERLY - LUANSHYA CORRESPONDENCE COLLEGE) (Government)

ICT Status
• The College is on Internet
• It has about ten (10) working computers – the students use six (6), while two (2) are used for administrative purposes.
• The College will develop website towards the end of the year
• The College has been motivated to develop programmes of study due to positive response from colleagues. A programme of study runs monthly after which a certificate of attendance is issued, while at the completion of the whole course, the student is certified for the whole course.
• Almost everyone in the department is computer literate.

Weaknesses
• Limitation of funds for expansion
• The College is operating on a skeleton staff due to the sale of government houses that has negatively impacted the College.
• Lecturers are overloaded with work in order to keep departments that have no lecturers running.

Opportunities
• The College is working towards computerisation of system of education delivery/provision.
• Targeting teacher education and preparing materials of study to be delivered using the Internet connection.
• Use of Internet for research and obtaining other study/educational materials
• Possibility of decongesting schools using this mode of education delivery.
• Computers may help in the improvement of educational attainments through accessing self-study instructional material out-sourced from the Internet.
• The College is targeting all children at various levels of the education system.
• Developing materials for students, which would be delivered through the media of radio and plans also are under way for the integration of other media like cassettes.

17. NKRUMAH TEACHERS’ COLLEGE, KABWE
(Government)

ICT Status
• The College has ten (10) computers used mainly for word processing
• Within this month, March 2003, the College will be connected to the Internet
• The College will soon purchase 40 computers, which they hope will be accessed by the students
• Since the telephone line was disconnected, the College is planning for the control of bills once the Internet facility is installed.

ICT Policy
• The College has no ICT policy.

Weaknesses
• The modalities of financing communication line with ZAMTEL since bills tend to be high.

Opportunities
• ICT will help in the management of the College database.
• ICT will help advertise/market themselves throughout the sub-region and globally.
• There is potential for website design with installation of Internet.
• Planning in-house courses for all lecturers to acquaint them with ICT and its operation.
• There is donor goodwill from VVOB.
• There is a possibility of setting up College programme for computer lessons for students.
• There are plans to link library to the Internet once the forty computers arrive and Internet is installed.
• ICT will help ease the delivery process of materials and services to the many learners studying by distance.

18. COPPERBELT SECONDARY TEACHERS’ COLLEGE - KITWE
(Government)

ICT Status
• The College has a computer room, which houses eight computers
• Every member of staff has access to the room and the computers
• Students have limited access due to size of the room and the limited number of computers
• The College is on Internet and its email address is cosetcoict@zamtel.zm
• The College arranges in-house courses on computer appreciation and usage.
• Students have computer lessons twice in a week i.e. 100 students by 4 lecturers.

Local ICT Policy
• There is a policy at local level, but this is driven by donors and in the main what the University of Zambia has to say since it is the controlling body.
• There is an ICT focal point person.

Weaknesses
• The University of Zambia determines and approves implementation of programmes/projects as a controlling body.
• There are no qualified personnel to carry out the implementation of ICT programmes in the College.
• Some lecturers lack adequate knowledge of ICT, while others think ICT has no relevance to them.
• Students are only able to access computers at 1600 hours while lecturers too should complete their work schedules.
• Some lecturers have fear of losing their sight if they work for long periods using computers. Because of this, the College has bought anti-glare filters (screen protectors) for all computers. This was done to encourage the fearful and uninterested to take up the challenge.
• There is no proper supervision. Some users want to carry out experiments on computers by trying out things they are not familiar with and the end results often times are fatal and irreversible.

Opportunities
• There is donor support for purchasing computers.
• Connectivity of College library to the Internet will help students access materials to help learning.
Internet will assist students who desire to study by distance education to obtain resources and study materials through Internet.

IT paraphernalia would help lecturers prepare adequately for their presentations.

Teaching/training becomes simpler because of eased access to teaching/learning resources on the Internet.

The possibility of extending facilities to the community exists although this has to go with a lot of sensitisation of the community to avoid vandalism and theft of resources. The modalities of how this will work are still being carefully worked out.

In terms of sustainability, the college may levy students a small fee with a view to keeping the equipment running.

How will capacitating students improve quality of life and programme implementation?

- Students are being trained to fit into the societies they will work in and to interact with both pupils and society. The interaction and use of ICT facilities will give them the ability to solve their problems through experiences obtained from the Internet.
- The use of the Internet will develop in them the power of inquiry and research all adding up to their benefit.

Breakdown of expenditure
Connectivity – ZAMTEL – fixed rate = $100 for 100 hours
Rentals for the radiophone – K100,000
Running costs (cartridges – ZMK 8 – 10,000,000)

19. MINISTRY OF EDUCATION - DIRECTORATE OF STANDARDS AND CURRICULUM

ICT Status
- There is not much research on computer usage in schools, but approximately less than 2% have access.
- Where computers are found, they are used mainly for word processing and have not been exploited further to improve communication, manage information and improve record keeping
- Only a few private schools have been able to exploit computers to include aspects above

Weaknesses
- Lack of resources because schools cannot afford to buy let alone maintain the facilities and services.
- Providers of services are few and schools feel the service provided is unaffordable and is a luxury.
- There is fear and lack of appreciation of what a computer can do.
- Poor infrastructure for services
• The effect of poverty limits progress in ICT.
• The technology is not yet appreciated.
• There is no training of staff to run and service computers.
• There is no connectivity.

Opportunities
• Availability of ICT will remove barriers and break the walls of isolation.
• Possibility of using ICT for record keeping and management at school level and management level.
• Growing awareness of potential of ICT.
• International community’s willingness to donate computers

ICT in the school curriculum
• Should be taught as a subject in order that it is appreciated more.
• Curriculum Developers should appreciate ICT in order to understand what they are doing better i.e. they should read widely around the new areas to convince themselves they are on track. In other words, Developers should use the ICT facility to research around new ideas and innovations in education.

20. ZAMTEL – INTERNET SERVICES
(Quasi-government)

ICT Status
• It is a service provider for the whole country.
• There are three types of services offered namely:
  1. Dial up service, which uses telephone line.
     a. Internet and
     b. Email on ZAMTEL account
  2. 3DSL – uses special modem, which improves speed (high band width with a speed range of 64kb to 1024 kb).
  3. Wireless – Cisco Aironet equipment. This has two types of units:
     a. Home office and
     b. Small office computers.
     One can contain up to eight computers while the other can contain up to more than eight
     - Speed on this type of connection is the same as in DSL.
     - Equipment for the wireless connection can be rented from ZAMTEL
     Monthly rentals with vat are as follows:
     CUU – K1, 351, 250
     SOHO – K1, 270, 175

ZAMTEL provides services to other service providers (what can be likened to wholesaling).

Challenges
The major challenge facing the company is debt collection described as a difficult thing to do because people will not just pay for services. In some cases, the subscribers dump the company in preference for other service providers rendering the activity very difficult to do.

**Opportunities**
- Introduction of pre-paid services.
- Most clients are on dial-up connection because it is cheaper and more convenient. In a month the company gives its clients 100 free hours and are charged at local call rate.

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**21. LONGMAN ZAMBIA LIMITED**
*(Quasi-government)*

**Current Status**
- Globally, Longman is very advanced as it owns TV stations, Newspapers and has a website (Maskew Miller) and it is possible to order books on line.
- The local office has no website, but can access existing Maskew Miller website
- Local office has an email address

**Challenges that Longman faces**
- How to be accessible to the customer who happens to be the child in the classroom.
- There are no booksellers in the country.
- Decentralisation in the Ministry of Education has not fully been implemented.
- No networking between publishers and schools.

**Opportunities**
- Connectivity of Teachers’ Resource Centres would mean eased access to requirements (resources/ materials) through email and Internet.
- In the decentralised ministry, publishers would deal directly with consumers (schools).

**Necessity of ICT**
- ICT is the core thing. At school level, it will help the school head plan and implement programmes properly. The question, therefore is, ‘can school heads implement what they do not know?’

**On ICT Policy**
- A national policy is important as this will help formulate guiding principles on the use of ICT.
22. ZAMBIA OPEN COMMUNITY SCHOOLS (ZOCS) (NGO)

ICT Status
- They have about seven (7) desktop computers and three (3) laptops. There are five more computers, which they want to distribute to schools with electricity supply so that children are introduced to computers in the early grades.
- ZOCS is on Internet – zocs@zamnet.zm.
- 17 teachers trained in computer basics i.e. general computer operations, word processing and the Internet.

ICT Policy
- The institution is not guided by any policy, but has taken advantage of the computer era. ZOCS however, is in favour of a national policy on ICT to curb abuses.

Weaknesses
- Congestion of lines by service providers creates competition for space.

Opportunities
- Teachers and pupils would be able to research using Internet.
- Opening a training/Business centre for the purpose of generating funds so that the facility could sustain itself. There are pledges of twelve (12) computers for this purpose.
- Opening a children’s Internet club for exchange of information with children in sister schools in France, Belgium, England and Brazil by July 2003 (15 children to be identified).

23. MINISTRY OF EDUCATION - DIRECTORATE OF OPEN AND DISTANCE LEARNING

ICT Status
- The Department has just acquired a new name from ‘Department for Correspondence Studies’ to ‘Directorate for Open and Distance Learning’. One of the reasons being that ‘correspondence’ is dated and DE is current and is multi-media.
- Department is lobbying to establish four ICT centres as pilot scheme beginning with ZACODL in Luanshya and three others. The three institutions could belong to the Directorate or Teacher’s Resource Centres.
- Director’s office has computers, which mainly are used for administrative purposes.
ICT Policy

- By December 2003, the Directorate will have a clearer policy to cover all aspects of distance learning.

Weaknesses

- Financial constraints.
- Initial costs are very high considering the vastness of the country and the resources required to purchase and install equipment.
- Computers are old equipment and must be replaced.

Opportunities

- Distance Education is the future of learning because it takes education to where the people are.
- DE materials can be downloaded for the intended target.
- The coverage is better
- ZAMTEL as a service provider is already in place and their services are already spread out in the whole country.
- Collaboration with Educational Broadcasting Services
- Establishment of relevant networks with other DE providers within and outside the country.

Additionally, the following institutions were visited:

1. Sathya Sai School – Ndola (Private School)
2. Lotus Basic School – Lusaka (Government)
3. Technical Education and Vocational Training – Lusaka (Government)
4. Lusaka Girls Basic School – Lusaka (Government)
5. King George College – Kabwe (Youth and Sport)