The Teaching of Computer Studies and a Review of the Quality of Higher Education in Zambia

Submitted by

The Zambia Institute for Policy Analysis and Research

To

The Committee on Education, Science and Technology

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Contents

Introduction

This memorandum has been prepared in response to the request by the Committee on Education, Science and Technology to the Zambia Institute for Policy Analysis and Research (ZIPAR). The Committee has requested ZIPAR to comment on the following;

1. The teaching of Computer Studies in Zambian Schools
2. A review of the Quality of Higher Education in Zambia

The memorandum is prepared as follows; Section 1 discusses the teaching of computer studies in Zambian schools while section 2 reviews the quality of higher education in Zambia.

1. THE TEACHING OF COMPUTER STUDIES IN ZAMBIA

Zambia has long identified the importance of Information and Communication Technology (ICT) in the economic and social development of the country. Development of ICT has since been firmly set in the country's short and long-term development plans. The embedding of ICT development in national plans follows the realisation that ICT infrastructure, both public and private, was inadequate and fragmented, resulting in poor connectivity and communication. In 2007 Zambia launched its first ICT policy to ensure the integration of ICT in all development activities. Despite these efforts, ICT integration and usage has remained low in Zambia with the country scoring a low of 153 out of 167 countries on the ICT Development Index of 2015. In the same year the World Economic Forum ranked Zambia at 116 out of 139 countries on the Technology Readiness Index. These rankings show that Zambia's ICT is not developed, and neither is the country technologically ready to champion ICT development.

Computer studies were first introduced in Zambian secondary schools in 1998. During this period the subject was optional and only schools with the ICT infrastructure were encouraged to offer computer studies. The provision of computer lessons was led by private schools that could afford ICT infrastructure compared to public schools. After a curriculum review in 2013 and 2015 computer studies were introduced as a compulsory subject at junior secondary school while new topics were introduced into the Grade 12 curriculum.

1.1 Adequacy and effectiveness of the policy and legal framework governing the teaching of computer studies in schools

The education system in Zambia is governed by a number of policies and legislation. Since independence Zambia has continued to reform the education system in keeping with social and economic trends. These reforms have resulted in changes in the education system and the curricular used in various institutions. The earliest piece of legislation was the Education Act of 1966 which was the first post-independence legislation on education in Zambia. The Act was later repealed in 2011 to keep up with the social and economic trends at the time.

The earliest comprehensive educational reforms took place in 1977. The main features of this reform were the introduction of basic and high school education system and the focus on skills orientation. Other reforms that have taken place include the periodic curriculum reviews. The most significant with regards to ICT was the 2013 curriculum framework which was designed with a main focus of incorporating a new focus in the education curriculum. These areas were identified as social, economic and technological. This reform led to the introduction of computer studies as a compulsory subject and part of the new vocational subjects. Computer studies were introduced at junior secondary school level in order to equip learners with essential skills necessary for them to have basic knowledge of ICTs.

The 2006 National ICT Policy was key in the introduction of ICT in schools. The policy targeted to integrate ICTs in the education system, this was in line with the Fifth National Development Plan that had identified the ICT as a key sector. The ICT Policy targeted to enhance the ICT literacy levels among learners in public schools who were lagging behind their counterparts in private schools.

The Seventh National Development Plan (7NDP) also recognised the importance of ICT which is placed under the Economic Diversification and Job Creation Pillar. ICT is identified as a catalyst for socio-economic development. The 7NDP seeks to improve the usage of ICT in schools and targets have been set as illustrated in Table 1.

Table1: ICT Mainstreaming in Zambian Schools

Programme	Output	Indicator	Baseline	2017	2018	2019	2020	2021
ICT in Zambian schools mainstreaming	Usage of ICTs in Zambian schools increased	Proportion of schools with computers for pedagogical use	39%	39%	45%	60%	65%	75%

Finally, the ICT goal of Zambia's Vision 2030 is to achieve an information and knowledge-based society by 2030 through the promotion of increased ICT usage among citizens.

Several of Zambia's plans and strategies therefore recognize the importance of ICT and its integration at school level. The 7NDP sets targets to improve the proportion of schools with ICT mainstreamed from a baseline of 39% to 75% by 2021. ICT is included in the national plans and strategies. However, these plans do not include details on how the implementation of ICTs in schools will conducted. The current framework is supported by periodic curriculum reviews led

by the Curriculum Development Centre (CDC) to ensure that the curriculum is up to date. The current framework provides a platform to initiate the teaching of computers studies in schools but a strategy is required to sustain this initiative. This strategy should be cognisant of stark differences between urban and rural schools and limited capacity of the human resource expected to teach computer studies.

1.2 Measures the Government has put in place to enhance the teaching of computer studies in schools

The Government has put in place reforms to support the teaching of computer studies in schools as follows:

- A revision of the curriculum in 2013 which has led to the introduction of compulsory computer studies at all junior secondary schools in the country: although this is such an important measure the Government has not provided the requisite learning material in most of the schools. A 2016 study conducted in Ndola district to assess the implementation of the computer studies curriculum in selected public primary schools revealed that although the Government was quick to change the curriculum it has not made efforts to recruit teachers specialised in teaching computers nor has it organized computer studies. 88% also reported that no efforts had been made by Government to organise or sponsored in-service training for teachers of computer studies. Similarly, no effort has been made to supply or provide additional funds for the procurement of computers and other teaching material. This is an indication that while the Government is moving quite fast in terms of ICT policies and curriculum development there is no corresponding action in providing the requisites for teaching of computers.

- The Government has also converted the former Zamtel College in Ndola to the Zambia Information Communication and Technology College (ZICT College) as a centre of excellence for ICTs. To date the college has enrolled about 1000 teachers from government schools doing training on ICT. When they finish all these will be sent to different schools in the country to teach ICTs. This move is an effort to respond to concerns on the capacity of teachers and a move towards achieving a Smart Zambia by 2030.

Government has converted the former Zamtel College in Ndola to the Zambia Information Communication and Technology College (ZICT College) as a centre of excellence. According to its Executive Director, the college has enrolled 1000 teachers from Government schools. This is an effort from the Government to respond to concerns on the capacity of teachers and a move towards achieving a Smart Zambia by 2030.

1.3 Progress made in the teaching of computer studies in schools

Since the introduction of computer studies some progress has been made which if built upon further can help the Government and the country at large accelerate the development of ICT in the

country. Computers are now taught as a vocational subject and is compulsory at junior secondary level. In 2015 when the subject was just introduced a total of 350,656 candidates sat for exam with each pupil scoring 30% on average. Being the first time, it can be understood, and it was hoped that scores will improve with time and as teaching becomes mainstreamed in the school curriculum.

Nonetheless the 2015 examinations for computers was faced with a number of challenges. Most of the schools that participated in examining computer studies did not have adequate infrastructure, as a result some students were made to do their practical's late into the night. This resulted in uproar from parents and subsequently led to changes in the administration of the subject.

Since then schools without adequate infrastructure have not been allowed to let students sit for the computer studies exams. This has led to the fall in the number of candidates writing computer exams from 350, 656 earlier to 224, 271 learners in 2016 and 229,067 in 2017. The performance in the subject has also gone down slightly from an average score of 30% in the 2015 examination to 28% in 2017. The Examination Council of Zambia (ECZ) attributes the poor performance in computer studies to limited capacity of teachers and inadequate learning and teaching materials.

1.4 The role the private sector is playing to enhance the teaching of computers in schools

Current private participation in ICT is limited. Innovations in ICT are currently led by iSchool Zambia, a private company that has developed Personal Digital Assistants (PDA) known as the Mwabu tablet. The PDA's are loaded with the Zambian curriculum including local languages to allow users to enhance their learning experience using ICT..

Asikana Network is another private entity working in ICT and seeks to increase the meaningful participation of women and girls in technology. Asikana Network provides free training in marketable ICT skills, exposure to emerging technologies, mentorship, networking and career progression opportunities. They work primarily with three target groups – girls in high school, in college and young professionals.

It should be noted that the private organisations that are enhancing the teaching of computers are without the support of Government. To enhance the effectiveness of private sector support, the Government must enter into partnerships with the private sector to ensure that efforts to teach computer studies are enhanced.

### 1.5 Challenges being faced in the teaching of computer studies in schools

Since its introduction, the teaching of computer studies has faced many challenges. The ECZ examiner's report reveals the following challenges in the teaching of the computer studies in schools;

- Limited capacity of the teachers who handle these learners: Teachers of computer studies have not been retrained to handle the subject, recruitment of specialised teachers has also not been done as the subject was previously optional.
- Inadequate learning materials prescribed by the syllabus: learning material and books are inadequate in schools and in some cases none existent, efforts have not been made to make these materials available to learners since the introduction of the subject
- Limited ICT infrastructure such as computers and computer laboratory: ICT infrastructure is limited in schools, learners must share computers with many other students reducing the quality of teaching, in some cases these computers are non-exist.

These challenges are augmented by the poor results that have been recorded especially at junior secondary school where the subject has been compulsory since 2015. A 2016 study conducted on the implementation of ICT education in selected Secondary schools Chipata District, found that among the challenges faced in the implementation were the lack of training materials, lack of ICT specialised teachers, over enrolment, lack of ICT infrastructure and unreliable electricity supply. The study further revealed that 90% of schools in Chipata did not have computers, ICT teachers, ICT books and computer infrastructure in general.

At both secondary and primary level there are less than 30,000 computers available for use by learners. In 2016, there were 4,025,380 learners enrolled at both primary and secondary level against 26,575 computers. This gives a ratio of 1:150 implying that on average one computer is shared among 150 learners. The situation is much worse at primary level which had 3,203,220 learners against 14,590 computers resulting is a ratio of one computer for every 219 learners. These numbers reveal the severity of the challenges being faced in teaching of computer studies.

Figure 1: Total Number of Computers in Schools

Educational Statistical Bulletin 2016
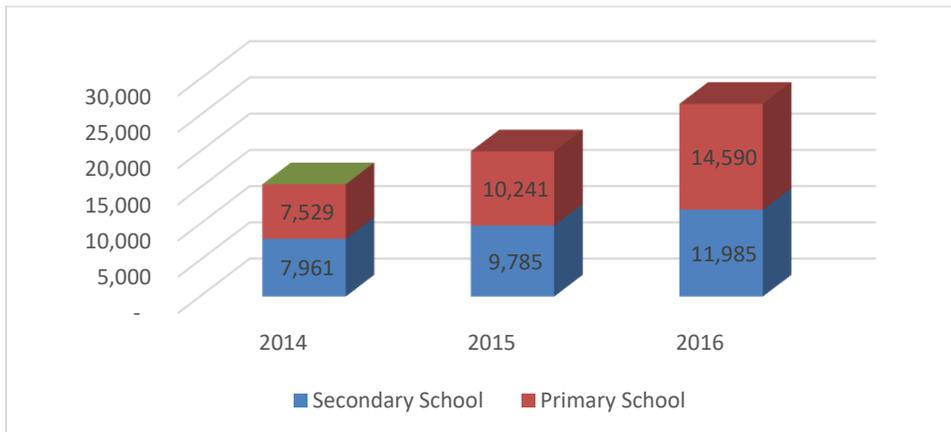
1.6   Suggested way forward

- Zambia's current legislative and policy framework provides a platform for teaching of computer studies in schools. However, the 7NDP and Vision 2030 place emphasis on ICT usage at higher levels such as tertiary education and in workplace activities. Further, there seems to be no consideration on the rural urban divide in schools in challenges they face in teaching computer studies. Future national policies and strategies must place emphasis on the promotion of ICTs from the earliest level of education and must consider the rural urban divide in promoting the integration of ICT in a bid to improve the general ICT literacy levels.

- While the policy and legal framework is adequate, ICT infrastructure support is lacking. The limited number of computers available to learners in schools makes it impossible to effectively teach computer studies to learners as the subject is as practical as it is theoretical. The case studies reviewed reveal that there has been minimal effort to support schools with ICT infrastructure. Government must enhance efforts to equip schools with the necessary infrastructure to enhance the effectiveness with which computer studies is taught.

- Poor delivery by teachers was noted as a challenge by both in the empirical studies and ECZ. It was reported that deliberate efforts had not been made to prepare teachers to teach computer studies. Government through Smart Zambia Institute and the Zambia ICT college has enrolled 1000 teachers at a 50% scholarship to acquire ICT skills to enhance delivery. This move is commendable but must be coupled with other in-service training at no cost to teachers to encourage uptake of these skills.

- The participation of Private sector in teaching computer studies in schools is limited. The cited examples of Private Sector involvement are being done in isolation and are independent of Government. To enhance the teaching of computers studies the Government must partner with the private sector through Private Public Partnerships (PPPs). The private sector can play a key role in ensuring that public schools are equipped with the appropriate ICT infrastructure.

- The teaching of computer studies must be complimented with essential services such as reliable electricity. Public schools in rural area that are off the electricity grid are immediately disadvantaged in the teaching of computer studies. Government must enhance efforts to connect off grid rural schools to increase coverage. The Rural Electrification Authority's (REA) efforts can be complimented with off grid solutions such as solar power generation.

2. A REVIEW OF THE QUALITY OF HIGHER EDUCATION IN ZAMBIA

2.1 Introduction

There has been a tremendous increase in the number of Higher Education Institutions[1] in Zambia over the years. According to the 2011 Zambia Development Agency education sector profile, there were a total of three public universities and over ten private universities registered in Zambia. Today, the Higher Education Authority data base shows that there are six public universities and 60 private universities. This represents over 400% increase in the number of universities over the last 7 years. There are however other institutions that fall under higher education institutions including colleges and vocational trade centres.

While the increase in the number of higher education institutions is needed to meet the identified deficit in higher education provision, it has come with a number of questions bordering on the quality of the mushrooming institutions. It is for this reason that Government in 2013 enacted the Higher Education Act which established the Higher Education Authority. Despite being operational for only 3 years, the HEA has made headlines in the local newspapers and has raised some questions about its role and mandate and overlaps that may exist with other regulators. In this section, we discuss the policy and legal framework governing the regulation of higher education in Zambia, the role of HEA and the progress that has been made in ensuring quality assurance in higher education, the challenges faced in the promotion of quality higher education and we will suggest way forward.

2.2 Policy and legal framework governing the regulation of higher education in Zambia

Zambia's first university the University of Zambia was established in 1966 with an estimated population of 300 students at the time. The University of Zambia was enacted by Parliament under the University of Zambia Act. Later, a second public university, the Copperbelt University was also enacted under the Copperbelt University Act 1987. There was however no act existing at the time that allowed for private sector participation in the provision of higher education. To provide for the registration and regulation of private universities as well as address the fragmentation of public university regulation, the University Act No 26 of 1992 was enacted. The act also provided for the establishment, regulation, control and functions of public universities.

The establishment of public universities was left to the Minister in charge of Education and has remained so to date. The University Act also allowed for the appointment of a Chancellor by the President for each public university as opposed to the Republican President as the Chancellor in the previous public Universities Act No 19 and 20 of 1987. The Chancellor needed to be a person with high academic or constitutional office or attained recognition in the profession or office. The

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[1] A Higher Education Institution is defined as an institution that provides higher education on a full-time, part-time or distance learning basis.

Chancellor could only hold office for a period of five years. There is a high risk that the position of Chancellor can be politicized due to the appointment by the President. Subsequent Acts should address this anomaly. There was however a provision for Vice-Chancellor who was to be appointed by the Chancellor on the advice of the Council to be the academic, financial and administrative head of the public universities for a maximum of two terms of five years each. The Act also provided for other officers including the Deputy Vice-Chancellor, Registrar, Librarian and Bursar.

The public universities could also be awarded grants by Government and the local Government Authority under the Act. This meant, Government was not really obligated to finance public universities. Other interesting clauses in the act included the provision for a student's union in each public university.

The Act did not include any specific clauses on quality assurance but instead stipulated the functions of public universities to include providing higher education, promoting research and advancement of leaning and disseminating knowledge. It further required that public universities provide appropriate facilities only as far as their resources could permit.

The University Act included a section on private universities. This section covered the application and registration of private universities through the Minister of Education. The Minister was in charge of certifying that the university aspirant met the educational requirements, the infrastructure including hostels were suitable for a university, the university had adequate financial provision to maintain the university, it had the sufficiently qualified teaching staff and were compliant to the provisions of the Act. These functions would later be moved to a higher education regulator. The regulation on private universities was much less than the public universities.

The Higher Education Act No 4 of 2013 repealed the University Act of 1999. The Higher Education Act is the current act on higher education which provides for the establishment of the Higher Education Authority (HEA), provides for quality assurance and quality promotion in higher education, the registration and regulation of private higher education institutions, the establishment, governance and regulation of public higher education institutions.

The Higher Education Act covers all higher education institution other than those registered under the Technical Education, Vocational and Entrepreneurship Act of 1998, colleges of education accredited under the Teaching Profession Act of 2013 and any other institutions established under any written law.

Other policies on higher education include the draft higher education policy, the Higher Education Loans and Scholarship Act No 13 of 2016, the Skills Development Levy Act No 46 of 2016 and No 13 of 2017. The draft Higher Education policy was drafted in April 2018 and is an effort to have a dedicated policy on higher education and skills development. The key intervention areas in the policy include increasing access and participation in higher education, attaining quality

education, equity and inclusiveness among others. There are calls for the repeal of the Higher Education Act of 2013 if this policy is to effectively implemented.

The Loans and Scholarship Act of 2016 establishes the Higher Education loans and scholarship board and the higher education loans and scholarship fund. Some of the functions of the board include administering loans and scholarships for students, establishing systems to secure the repayment of loans and scholarships and to formulate policies and guidelines for the control and management of the money for loans and scholarships. This board ensures the effective implementation of the loan scheme that was introduced at the University of Zambia and Copperbelt University from the previous grant scheme that Government used to operate.

The Skills development levy act provides for the imposition, payment and collection of a skills development levy at the rate of 0.5% of gross emoluments payable to an employee. It excludes public service, local authority employers, employers with turnover below K800, 000 and public benefit organisations.

The Technical Education and Vocational Training Act established the Technical Education, Vocational and Entrepreneurship Training Authority. The current TEVET Act chapter 138 of the laws of Zambia provides for the registration and renewal of private institutions, inspection of institutions relating to technical education or vocational training.

The Zambia Qualification Authority Act No 13 of 2011 provides the national qualifications framework and establishes the Zambia Qualifications Authority (ZAQA). ZAQA's mandate includes developing, managing and operating the Zambia Qualifications framework. ZAQA emphasises that it is not a quality assurance body but coordinates output of the relevant quality assurance bodies. It is merely a custodian of qualifications and only registers qualification whose programmes are accredited to HEA for the institutions under HEA. HEA applies to ZAQA on behalf of the higher education institutions for the registration of qualifications. There seems therefore to be no conflict between HEA and ZAQA.

2.3   Adequacy of the policy and legal framework

There has been some very good effort around developing policies and legal framework dedicated to higher education. It is our considered view therefore that the policy and legal framework for higher education is adequate. However, most of the policies and legal frameworks are very new and remain unassessed on their effectiveness. The policies are responsive to the various challenges faced by higher education and include various higher education institutions. However, most of the recent developments such as the skills development Act have not been received very well by stakeholders due to limited consultation by the Government.

Additionally, recently the Higher Education Authority differed in opinion with the Health Professions Council (HPCZ) of Zambia over the recognition and approval of Bachelor of Medicine, Bachelor of Surgery and Bachelor of Dental Surgery. HPCZ ordered the Copperbelt University to discontinue two programmes at the school of medicine citing failure to meet set

standards such as inadequate number of lecturers, gross over-enrolment of students and engaging unregistered and unlicensed lectures among others. These standards are also regulated by HEA which has raised a number of questions about the duplication and coordination of the regulators. The HEA decision to overturn the decision by HPCZ was met with further opposition from the Pharmaceutical Society of Zambia and the case was referred to the Attorney General for adjudication. Both the HPCZ and HEA seemed to be operating within the legal framework that established them. However, a joint statement by HPCZ and HEA was issued on the supposed impasse after consultation with the Attorney General and other stakeholders. While it was decided that HPCZ's decision was in line with the Health Professions Act No. 24 of 2009 and that the Copperbelt University would put up measures to re-instate the programmes, it raises debates about the separation of mandates between the two regulators.

There is need to ensure that the legislation on higher education does not result in overlaps. There is also need for Government to be more consultative in its policy formulation so that stakeholders are adequately prepared for the changes in the higher education environment.

2.4 The role of the Higher Education Authority

The establishment of the Higher Education Authority took away some functions that were previously under the Minister of Education. The functions of the Authority as stipulated in the Higher Education Act include:

a) advise the Minister on any aspect of higher education;
b) develop and recommend policy on higher education, including the establishment of public higher education institutions and the registration of private higher education institutions;
c) regulate higher education institutions and coordinate the development of higher education;
d) promote quality assurance in higher education;
e) audit the quality assurance mechanisms of higher education;
f) promote the access of students to higher education institutions;
g) design and recommend an institutional quality assurance system for higher education institutions, and recommend to the Minister institutional quality assurance standards for—
    i. the establishment, standardisation and registration of higher education institutions, including standards of plant and equipment;
    ii. the preparation and amendment of statutes;
    iii. the development of curricula;
    iv. libraries, laboratories, workshops and other facilities; and
    v. student transfers between academic programmes among higher education institutions;
h) promote equity in access to higher education through the provision of student assistance programmes;

We note that the function (b) on developing policy should be left to Ministry of Higher Education and HEA should be left to regulation only. The Authority has a board which should constitute

representatives from the Ministry of Education, Vocational and Entrepreneurship training and labour; representatives of the Zambia Institute of Advanced Legal Education, a representative of the Attorney General, Zambia Association of Chambers of Commerce and Industry, Examination Council of Zambia, Civil Society Organisations in the education sector, Zambia Institute of Human Resource Management and two persons with expertise in matters relating to higher education.

The Higher Education Authority began its operations in 2015 and is currently a grant aided institution. Its board consists of the 11 members stipulated in the Act which appointed in 2014. The Authority has a Director General responsible for the day to day administration of the Authority. The Authority also has an inspectorate charged with the responsibility of undertaking registration, surveillance, inspections and audits of higher education institutions. The staff include Quality assurance, registration and accreditation officers and support staff. The role of the authority includes:

Registration of Private Higher Education Institutions based on set criteria based on the governance and management of the institution, academic programmes, student admission and learner support, physical infrastructure, financial resources, research, technological infrastructure, health and safety among others.

The other role of HEA is the *accreditation of programmes*. Learning programmes are benchmarked with other commonwealth countries and considers the aims and objectives of the programme, the curriculum which are assessed by experts. The HEA also provides *advisory services* to Government on higher education matters.

2.5   Progress made in ensuring quality assurance in higher education

There is a lot of progress that has been made in ensuring quality in higher education. Up until 2013, the legal framework did not provide for quality assurance and did not allow for private sector participation. The establishment of HEA and ZAQA has at least provided a framework for quality assurance. Furthermore, HEA has developed the quality assurance system for higher education in Zambia which stipulates the requirements needed for an institution to meet its quality standards and also stipulates the procedures that need to be taken.

We have seen the active engagement of higher education institutions by HEA and have witnessed a number of suspension of licences by even established institutions such as Cavendish and Apex University that have recently been found wanting by the Authority for not meeting certain standards. This is helping in restoring confidence in private higher education institutions from the general public. However, we are cautious of the fact that there is a high deficit in the provision of higher education in Zambia and high regulatory requirements will act as a barrier to entry for the private sector.

We note that while the University Act of 1999 was repealed by the Higher Education Act of 2013 and the scope of the institution widened, the requirements for higher education has mainly remained to the standard of universities and does not give opportunity for smaller institutions to exist.

We also note that while the enforcement of quality assurance system has been good, there is more that needs to be done on sensitization and education of higher education proprietors. There is some evidence that HEA is undertaking sensitization on quality assurance system in both public and private institutions but more needs to be done.

Further, the HEA publishes lists of registered institutions, accredited learning programmes as well as institutions not registered and accredited programmes in the local newspaper which helps to raise the confidence of the public in private institutions.

2.6   Challenges faced in the promotion of quality higher education
There are a number of challenges that we identify in the promotion of higher education.

- One of the challenges is the apparent confusion on the mandates of the various regulators in higher education such as the one we cited between HPCZ and HEA.
- The other challenge is that focus seems to be on universities and not other forms of higher institutions smaller than universities and that there is very little deviation from the University Act of 1999. We therefore see that this has potential to create a missing middle and crowd out mid-range institutions that may not be at the level of University in terms of size and standards. The question that remains then, is where should such institutions fall if they do not fall under TEVETA or Teaching Council. The higher education Act should widen its scope for regulation of higher education institutions outside only Universities. This focus on universities could be the reason most institutions are not able to meet the requirements. The recent publication of institutions by HEA in the local newspaper on 25th December, 2018 shows that 19 institutions have not been registered with HEA, 11 institutions have invalid certificates of registration and 29 learning programmes not accredited by HEA.
- The Poor funding of public universities remains a key challenge in the promotion of quality higher education. Bursaries have previously only been offered to two public universities out of the current 6 public universities. However, the introduction of the loans board will hopefully allow for the extension of the scheme to other colleges and universities.
- Poor funding and financing of both public and private institutions has resulted in poor infrastructure. Majority of the private institutions are owned by Zambians who perhaps need access to cheaper sources of finance to invest in the institutions.

2.7   Way forward

The country is on the right track with regards to the policy and legal framework on higher education. However, Government needs to address the challenges faced by higher education and devise better strategies in promoting the participation of the private sector in the provision of higher education. Specifically, we make the following submission.

1. The role of HEA should focus on all higher education institutions and not just Universities. This means, quality assurance systems should be sensitive to the heterogeneity in higher education institutions.
2. The legal framework on higher education should be reviewed to ensure that there are overlaps and duplication in the functions of the regulators
3. Government should explore Private Public Partnerships in the provision of higher education to address the inadequate financing in the institutions.
4. Access to cheaper sources of finance should be availed to investors in higher education