



REPORT OF THE

COMMITTEE ON EDUCATION, SCIENCE AND TECHNOLOGY

FOR THE

FOURTH SESSION OF THE TWELFTH NATIONAL ASSEMBLY

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REPORT

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REPORT OF THE COMMITTEE ON EDUCATION, SCIENCE AND TECHNOLOGY FOR THE FOURTH SESSION OF THE TWELFTH NATIONAL ASSEMBLY

1.0 Membership of the Committee

The Committee consisted of Mr G K Mwamba, MP (Chairperson); Ms P C Mwashingwele, MP (Vice Chairperson); Prof G Lungwangwa, MP; Mr S Tembo, MP; Mr K H S Kamboni, MP; Mr E Machila, MP; Mr K Sampa, MP; Mr P C Mecha, MP; Mr H S Chansa, MP; and Mr M Mutelo, MP.

Following the demise of Ms P C Mwashingwele, MP, Ms A M Chinsangano, MP was appointed to the Committee on Tuesday, 22nd October, 2019.

The Honourable Mr Speaker
National Assembly
Parliament Buildings
LUSAKA

Sir

The Committee has the honour to present its Report for the Fourth Session of the Twelfth National Assembly.

2.0 Functions of the Committee

The functions of the Committee as set out in Standing Order Number 157 (2) are to:

- (a) study, report and make appropriate recommendations to the Government through the House on the mandate, management and operations of the Ministry of General Education, the Ministry of Higher Education, departments and agencies under these portfolios;
- (b) carry out detailed scrutiny of certain activities being undertaken by the Ministry of General Education, the Ministry of Higher Education, departments and agencies under these portfolio and make appropriate recommendations to the House for ultimate consideration by the Government;
- (c) make, if considered necessary, recommendations to the Government on the need to review certain policies and certain existing legislation;
- (d) examine annual reports of the Ministry of General Education and the Ministry of Higher Education, departments and agencies under these portfolio in the context of the autonomy and efficiency of Government ministries and departments, and determine whether the affairs of the said bodies are being managed according to relevant Acts of Parliament, established regulations, rules and general orders;
- (e) consider any Bills that may be referred to the Committee by the House;
- (f) consider international agreements and treaties in accordance with Article 63 of the Constitution;
- (g) consider special audit reports referred to the Committee by the Speaker or an Order of the House;

- (h) where appropriate, hold public hearings on a matter under its consideration; and
- (i) consider any matter referred to the Committee by the Speaker or an Order of the House.

3.0 Meetings of the Committee

The Committee held fifteen meetings to consider the topical issue and execute its programme of work for the Fourth Session of the Twelfth National Assembly.

4.0 Programme of Work

At the Committee's first meeting that was held on Tuesday, 1st October, 2019, the Committee considered and adopted the Programme of Work set out below.

- (i) Consideration of the Action-Taken Report on the Committee's Report for the Third Session of the Twelfth National Assembly.
- (ii) Study on the Teaching of Science, Technology, Engineering and Mathematics in Zambian Schools.
- (iii) Consideration and adoption of the draft report.

5.0 Procedure Adopted by the Committee

The Committee requested detailed written memoranda on the topic under consideration from concerned stakeholders and invited them to appear before it in order to render oral submissions and clarify issues arising from their submissions.

6.0 Arrangement of the Report

The Report of the Committee is in two parts. Part I deals with the topical issue while Part II deals with the Action - Taken Report and the conclusion of the Report.

PART I

CONSIDERATION OF THE TOPICAL ISSUE

The findings of the Committee on the topical issue are presented hereunder.

7.0 TOPIC: THE TEACHING OF SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS IN ZAMBIAN SCHOOLS

7.1 Background

The quality of education in Zambia was said to have improved tremendously over the years, but not so with science, technology, engineering and mathematics subjects. Educational outcomes of these subjects were generally poor in many schools, compelling think tanks to link the below par performance of learners to, among other factors, the capacity of teaching science, technology, engineering and mathematics. One question that begged an answer was, "were the teachers and tutors well-equipped to teach these subjects?" This was one reason why the Zambian Government and its partners in the education sector had over the years been trying to find lasting

solutions to the teaching of science, technology, engineering and mathematics subjects in schools.

The 1996 National Policy on Education - the educating our future policy - states that, “because of the centrality of knowledge, skills and technology in shaping the organisation and productivity of the economy, education is a productive investment”. The Policy further states that, “the establishment of a liberal market economy, in which internal and external competition are central values, accentuates dependence on the knowledge and skills of the people and their ongoing access to education, therefore, is of crucial concern in the strongly competitive climate of the modern world”. The teaching of science, technology, engineering and mathematics in schools is therefore critical to the future of Zambia’s economy in which external and internal economic competition takes centre stage.

In an effort to achieve quality education through the effective teaching of science, technology, engineering and mathematics in schools, Zambia had been partnering with the Japanese Government through the Japanese International Co-operation Agency (JICA). Since 1981, JICA supported Zambia in a number of educational projects which were aimed at improving the quality of education and outcomes in science, technology, engineering and mathematics in the country.

Prior to the intervention by the Zambian and Japanese Governments, the British Government had supported Zambia through the Action to Improve English, Mathematics and Science (AIEMS) Project. The AIEMS had embarked on building capacity among students in science, mathematics and english subjects. AIEMS also strengthened teacher capacity through innovative pedagogical approaches and the use of technology.

During the period under review, the Zambian Government was implementing a curriculum which was based on educating students in four specific disciplines - Science, Technology, Engineering and Mathematics (STEM). The programme was aimed at applying an interdisciplinary and applied approach, rather than teaching the four disciplines as separate and discrete subjects. All these interventions, among others, were aimed at improving the teaching of science, technology, engineering and mathematics which were critical for enhanced national development.

It was noted that despite the interventions and programmes undertaken by the Government and its cooperating partners, the teaching of science, technology, engineering and mathematics had continued to be below expectation. It was against this background that the Committee resolved to undertake a study on the Teaching of Science, Technology, Engineering and Mathematics in Zambian Schools.

7.1.1 Objectives

The objectives of the study were to:

- (i) ascertain the adequacy of the policy and legal framework regarding teacher training and the teaching of science, technology, engineering and mathematics in Zambian Schools;
- (ii) appreciate the measures that the Government has put in place to enhance quality of teacher training for teachers of science, technology, engineering and mathematics in teacher training institutions;
- (iii) appreciate the role played by teacher training institutions in enhancing quality teacher training for teachers of science, technology, engineering and mathematics;
- (iv) establish the challenges faced in the training of teachers of science, technology, engineering and mathematics in the teacher training institutions;
- (v) establish the challenges faced in teaching science, technology, engineering and mathematics in schools; and
- (vi) make recommendations to the Executive on the way forward with regard to quality teacher training for teachers in science, technology, engineering and mathematics and the teaching of these subjects in Zambian Schools.

7.1.2 Stakeholders

The following institutions made written and oral submissions to the Committee on the topical issue:

- (i) Ministry of Higher Education;
- (ii) Ministry of General Education;
- (iii) National Science Centre – Ministry of General Education;
- (iv) Smart Zambia Institute;
- (v) Zambia Research and Education Network (ZAMREN);
- (vi) Zambia Information and Communications Technology Authority (ZICTA);
- (vii) Higher Education Authority;
- (viii) Zambia Qualifications Authority;
- (ix) Teaching Council of Zambia (TCZ);
- (x) Examination Council of Zambia (ECZ);
- (xi) Zambia National Education Coalition (ZANEC);
- (xii) Zambia Open Community Schools (ZOCS);
- (xiii) National Science and Technology Council (NSTC);
- (xiv) Zambia National Union of Teachers (ZNUT);
- (xv) Basic Education Teachers' Union of Zambia (BETUZ);
- (xvi) Plan International Zambia;
- (xvii) iSchool;
- (xviii) Copperbelt University;
- (xix) University of Zambia;
- (xx) Mukuba University;
- (xxi) Kapasa Makasa University;
- (xxii) Natural Resources Development College (NRDC);

- (xxiii) Solwezi Teachers' Training College; and
- (xxiv) Chipata Teachers Training College

SUMMARY OF SUBMISSIONS FROM STAKEHOLDERS

7.2 POLICY AND LEGAL FRAMEWORK GOVERNING THE TEACHING OF SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS IN ZAMBIAN SCHOOLS

(a) Policy framework

The Committee was informed that the Government had formulated an adequate policy framework to govern the teaching of science, technology, engineering and mathematics in schools and training institutions in the country. Key among them was the Vision 2030 for Zambia, the National Education Policy of 1996, the National Science and Technology Policy of 1996, the Education and Skills Sector Plan (2017 – 2021), the National Higher Education Policy of 2018 and the Zambia Education Curriculum of 2013. Some detail on these key policy instruments vis-à-vis the teaching of science, technology, engineering and mathematics in schools in Zambia, is provided below.

(i) The Vision 2030 for Zambia

The Committee heard that the Vision 2030 for Zambia focused on industrialisation and diversification as the way of achieving the middle-income status as a country. The industrialisation and diversification priorities depended on improving science, technology, engineering and mathematics knowledge, which was also critical for responding to the challenges caused by climate change.

(ii) The National Education Policy of 1996: Educating Our Future

The Committee learnt that the National Education Policy of 1996 provided for curriculum development, implementation and monitoring of programmes. The Policy provided for construction of standard laboratories in schools and universities for the purpose of science and information and communication technology (ICT). The Policy also provided for the regulation of the conduct of the teaching of science, technology, engineering and mathematics (STEM) subjects, through establishment of STEM focussed associations such as the Zambia Association of Science Educators (ZASE) as a way of improving the delivery of science, technology, engineering and mathematics as well as sharing experiences in the teaching profession

(iii) The National Science and Technology Policy of 1996

The Committee was informed that the National Science and Technology Policy of 1996 provided for the promotion of science and technology subjects in schools by making the subjects compulsory for all learners. It also provided for the provision of incentives to female teachers in science and technology in order to encourage more female teachers to engage in teaching science, technology, engineering and mathematics.

(iv) The Zambia Education Curriculum Framework of 2013

The Committee was informed that the Zambia Education Curriculum Framework of 2013 provided for inclusion of science, technology, engineering and mathematics (STEM) in

curriculum development. The Framework was designed with a main focus of incorporating a new dimension in the education curriculum. The areas of focus were identified as social, economic and technological dimensions. The Framework provided for the introduction of a two-career pathway education system and made science, technology, engineering and mathematics subjects compulsory subjects in both primary and secondary schools and the Framework also provided for vocational subjects.

(v) The Education and Skills Sector Plan, ESSP (2017-2021)

It was learnt that the Education and Skills Sector Plan (2017 - 2021) provided for capacity-building of teachers, especially for teachers of science, technology, engineering and mathematics.

(vi) The National Higher Education Policy of 2018

The Committee was informed that the Higher Education Policy of 2018 contained aspirations that sought to leverage science and technological advancement in the provision of higher education in Zambia. The aspiration aimed to see graduates that were not only knowledgeable but skilled, innovative and creative in their endeavours.

(b) Legal framework

As regards the legal framework, the Committee was informed that it was also adequate and it comprised the *Science and Technology Act, No. 26 of 1997* and the *Education Act, No.23 of 2011*.

(i) The Science and Technology Act, No. 26 of 1997

The *Science and Technology Act* provided a legal framework for the promotion of science and technology subjects in schools by making the subjects compulsory for all learners.

(ii) The Education Act, No 23 of 2011

The *Education Act, No, 23 of 2011* provided a legal framework that led to changes in the education system and the curricula used by various learning institutions in the country. The Act provided a legal framework for teaching Science, Technology, Engineering and Mathematics as well as the teaching of other subjects.

7.3 MEASURES INSTITUTED BY THE GOVERNMENT TO ENHANCE THE TEACHING OF SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS IN SCHOOLS

The Committee heard that to enhance the teaching of science, technology, engineering and mathematics (STEM) subjects in schools, the Government put in place a number of measures which included the following:

(i) Creation of Technical Schools for both Boys and Girls

The Committee was informed that the Government, through the Ministry of General Education, had created technical schools for both girls and boys such as the David Kaunda Technical Secondary School in Lusaka and Hillcrest Technical Secondary School in Livingstone. The Government had, in the same vein, established a girls' technical schools in each province, such

as Ndola Girls Technical Secondary School in Copperbelt Province, Kapiri Mposhi Girls Technical Secondary School in Central Province, Lufunsa Girls Technical Secondary School in Lusaka Province, and Mushindamo Girls Technical Secondary School in North Western Province. These Girls technical schools provided a platform for addressing the challenge of low numbers of girls taking up STEM subjects and ultimately STEM careers. These technical schools had a focus on science, technology, engineering and mathematics delivery as they were equipped with laboratory facilities to support the teaching and learning of STEM subjects.

(ii) In-Service Training of Teachers in Science, Technology, Engineering and Mathematics

The Committee heard that the Ministry of General Education had adopted a framework to support in-service teachers with knowledge acquisition and skills improvement to enable them apply conceptual methods in the teaching of STEM subjects for improved learner performance.

(iii) Junior Engineers, Technicians and Scientists Clubs

The Committee was informed that the Ministry of General Education had strengthened the Junior Engineers, Technicians and Scientists (JETS) clubs in schools as a way of motivating and promoting interest in STEM among learners and educators through innovation. In this regard and in an effort to promote JETS activities, JETS Fairs were conducted every year in order to provide a platform for identifying outstanding projects by pupils and the outstanding projects in the areas of science, technology, engineering and mathematics were awarded during the annual World Science Day Commemoration.

(iv) Establishment of the National Science and Technology Council

The Committee heard that the National Science and Technology Council (NSTC) was an institution established to support and implement initiatives that promoted science, technology, engineering and mathematics innovations and creativity. In this vein, the National Science and Technology Council had created education centres of excellence (ECE) which were aimed at improving the teaching and learning of science, technology, engineering and mathematics subjects. These education centres of excellence endeavoured to build a strong background in science, technology, engineering and mathematics spheres among learners as a way of creating capacities and enable them to pursue future prospects in STEM careers. These centres were envisaged as model schools for the demonstration of best practice in science, technology, engineering and mathematics education, especially in rural schools.

In this regard, the National Science and Technology Council established its first Centre of Excellence in 2012 at Nkandabwe Primary and Secondary Schools in Sinazongwe District, in Southern Province. The second Centre of Excellence was being finalised at Kasempa Day Secondary School in Kasempa District, in Northwestern Province. The Committee heard that the initiative to establish the centres was a continuous exercise which the NSTC had planned to roll out across the country in an effort to enhance and strengthen the teaching of science, technology, engineering and mathematics in schools.

(v) Creation of the National Science Centre

The Committee heard that in 1988, the Ministry of Education with support from the United Nations Development Programme (UNDP) and the United Nations Educational, Scientific and

Cultural Organisation (UNESCO) created the National Science Centre. The Centre was created for the purpose of producing science apparatus for basic schools and to offer in-service training for science teachers.

The Committee was also informed that to provide effective laboratory processes and equip school laboratories with competent support personnel, the Centre had also conducted training workshops for laboratory assistants. The Committee heard that the National Science Centre was being funded by the Government and it had continued to improve on the production of equipment for science teaching. The Committee was further informed that the Centre was a fully-fledged Directorate in the Ministry of General Education with the expanded mandate of providing training to science teachers and supporting research programmes.

(vi) Construction of a Science, Technology, Engineering and Mathematics training Centre

The Committee heard that the Ministry of General Education, with support from cooperating partners, had constructed a Science, Technology, Engineering and Mathematics Training Centre at the National Science Centre in order to expand and expedite specialised in-service training and capacity building of teachers and lecturers of Science, Technology, Engineering and Mathematics. The construction of the training centre was completed by the end of the year 2019 and the centre was expected to be operational by the first quarter of the year 2020.

The Committee was informed of other interventions which the Government had in the past undertaken in an effort to enhance science and innovation and the teaching of science, technology, engineering and mathematics in schools as set out below.

(i) Zambia Education Materials Project

The Committee heard that the Government, through support from the Finnish International Development Agency (FINNIDA), had created the Zambia Education Materials Project (ZEMP) in 1985 whose purpose was to support and develop capacities in the local institutions and persons to venture into writing science books. As a result of this project, the Committee heard that several science books had been produced. These included grades 1 to 9 environmental science textbooks. Also produced were Biology, Chemistry and Physics textbooks for Grades 10 to 12 and most of these textbooks were still being used to support the teaching of science, technology, engineering and mathematics in schools.

(ii) Zambia Mathematics and Science Teacher Education Project

The Committee was informed that the Zambia Mathematics and Science Teacher Education Project (ZAMSTEP) was introduced in the education system in 1988 with support from the European Economic Commission (EEC). The aim of the project was to upgrade Diploma Holding Science teachers by training them for the purpose of teaching at senior secondary school level from grades 10-12. The project offered a one-year college based programme and at the end successful teachers were awarded an advanced Diploma in education. The Committee was further informed that, in addition to college based course, ZAMSTEP also provided in-service teacher courses of short duration for both primary and secondary school science teachers.

(iii) African Development Bank (ADB) Education Project

The Committee heard that the African Development Bank (AfDB) Education Project was implemented in 1999. The Project aimed to improve mastery of the subject and teaching skills of teachers of biology, chemistry and physics at David Kaunda and Hillcrest Technical Secondary Schools. The Committee further heard that the Project embarked on the renovation and construction of laboratories, teachers' houses and supplied computers to the two schools. The Committee was informed that in-service teacher training for teachers of these schools was provided by the University of Zambia.

(iv) Strengthening of Mathematics, Science and Technological Education

The Committee was informed that the Strengthening of Mathematics, Science and Technological Education (SMASTE) was implemented between 2001 and 2005. The Committee was further informed that the programme was aimed at identifying areas where pupils and teachers were experiencing difficulties in science, technology and mathematics with the purpose of strengthening the teaching and learning outcomes in schools.

(v) Fast Track Teacher Education Programme

The Committee was informed that the Ministry of Education established the Fast Track Teacher Education Programme (FTTEP) in 2007. The University of Zambia was contracted as the implementing institution of the fast track method of upgrading high school teachers with diploma qualifications to first degree level. This was in order to address the critical shortage of qualified teachers in most subjects at senior secondary school level. In this regard, the University of Zambia was engaged to train mathematics and science teachers.

The Committee heard that the main aim of the programme was to strengthen teachers' content knowledge to enable them teach effectively at senior secondary school level and the mode of training was through distance learning while interspaced with residential school where the training teachers were required to be at the University for a period of time as part of the training. As a result of this programme, the Committee heard that a total number of 787 teacher-students enrolled out of which 223 graduated in 2016 and another 231 graduated in 2017. The Committee further heard that the programme was still on-going as there were still some students who had not yet graduated.

(vi) Zambia Education Enhancement Project

The Committee was informed that the Zambia Education Enhancement Project (ZEEP) was started in 2019 and was operating on Disbursement Link Indicators. The Committee heard that the project was working with low performing schools in mathematics and science. The Committee further heard that the aim of the ZEEP project was to provide a platform for improving performance in mathematics and science subjects in schools through teacher development, creation of structures, provision of text books and development of pupil data base in Mathematics and Science subjects.

7.4 PROGRESS MADE IN THE TEACHING OF SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS IN SCHOOLS

The Committee heard that progress made in the teaching of science, technology, engineering and mathematics subjects in schools included the following:

(i) Designing and Development of Teaching and Learning Materials for Science, Technology, Engineering and Mathematics Subjects

The Committee heard that the National Science Centre under the Ministry of General Education had embarked on programmes that promoted the teaching of science, technology, engineering and mathematics in Schools. The Centre had designed and produced education materials for teaching science, technology, engineering and mathematics subjects.

(ii) Construction of Laboratories at the National Science Centre to Support Courses for Science Teachers.

The Committee heard that the Government had constructed laboratories at the National Science Centre which were being used to provide additional training to the teachers of science, technology, engineering and mathematics as a way of enhancing of these subjects in schools.

(iii) Creation of Technical Schools for both Girls and Boys

The Committee was informed that the Ministry of General Education had created technical schools for both girls and boys for the purpose of teaching science, technology, engineering and mathematics subject. Among the Technical Schools that the Government had created included David Kaunda Technical School in Lusaka and Hillcrest Technical School in Livingstone. Additionally, certain schools in each province were converted into Technical Schools. Among these schools were Chizongwe Technical Secondary School in Eastern Province, Isoka Technical Secondary School in Muchinga Province and Kambule technical secondary School in Western Province.

(iv) Creation of Provincial Science, Technology, Engineering and Mathematics (STEM) Schools

The Committee heard that the Ministry of General Education had created Provincial Science, Technology, Engineering and Mathematics (STEM) schools in all the ten Provincial Headquarters of the country. It was envisaged that the Provincial STEM Schools would promote the teaching of these subjects by drawing pupils that had performed exceptionally well at grade nine levels from all the districts. This was aimed at enhancing the teaching of science, technology, engineering and mathematics in schools.

(v) Creation of Junior Engineers, Technicians and Scientists (JETS) Clubs

The Committee heard that the Ministry of General Education, had implemented Junior Engineering, Technicians and Scientists (JETS) Clubs in schools. The creation of JETS Clubs was aimed at promoting interest in science, technology, engineering and mathematics subjects among learners, thereby promoting the teaching of science, technology, engineering and mathematics in schools.

(vi) Placement of Science, Technology, Engineering and Mathematics Specialist at the National Science Centre

The Committee was informed that the Ministry of General Education had appointed twenty experienced members of staff as specialists in research, production, maintenance and training at the National Science Centre. The placement of these specialists at the National Science Centre's staff establishment would ensure achievement of set targets in all the areas and ultimately improve learner outcomes in the teaching of science, technology, engineering and mathematics in schools.

(vii) Construction, Rehabilitation and Maintenance of Laboratories in Schools

The Committee heard that the Ministry of General Education through the National Science Centre had embarked on the construction, rehabilitation and maintenance of science laboratories in schools and colleges of education in order to support practical learning in the subjects. The Committee further heard that over twenty learning institutions had science laboratories refurbished and installed with work benches in 2019.

7.5 CHALLENGES FACED IN THE TEACHING OF SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS IN SCHOOLS

The Committee heard that the country had experienced a lot of challenges in the implementation of Science, Technology, Engineering and Mathematics (STEM) training and teaching processes. Some of these are set out below.

- (i) The absence of a stand-alone policy to support the teaching of science, technology, engineering and mathematics in schools. This had hindered aggressive focus on the teaching of the subjects, thereby resulting in poor performance in the teaching of science, technology, engineering and mathematics.
- (ii) There was no curriculum that provided guidance on how science, technology, engineering and mathematics should be taught in schools.
- (iii) The teaching of science, technology, engineering and mathematics was only seriously considered at secondary school level where selected schools were established as STEM schools. Meanwhile, primary schools, which ought to lay a firm foundation for learners of science, technology, engineering and mathematics, had been left out.
- (iv) There was an inadequate number of qualified teachers and lecturers at primary, secondary and tertiary levels, especially in the fields of science, technology, engineering and mathematics.
- (v) The lack of equipped laboratories in schools had negatively impacted on the teaching of science, technology, engineering and mathematics.
- (vii) The lack of emphasis on research in learning and training institutions in the areas of science, technology, engineering and mathematics had created a disjoint in the application of the subjects in various socio-economic fields.

- (viii) Most of the research activities being conducted in institutions of higher learning were not solution-based research activities but mere academic processes.
- (ix) There was inadequate funding allocated towards the teaching of science, technology, engineering and mathematics in Zambian schools, which was slowing down the efforts towards achieving set targets in teaching the subjects.
- (x) There was a wrong perception among communities and learners that taking science, technology, engineering and mathematics was difficult and boring. This wrong perception was leading to loss of interest in taking science, technology, engineering and mathematics subjects by most learners.

7.6 COMMITTEE'S OBSERVATIONS AND RECOMMENDATIONS

The Committee notes that the Government has over the years generally made positive strides in implementing the teaching of science, technology, engineering and mathematics in schools in the country. This has included the construction of necessary infrastructure such as schools and laboratories and training of teachers in those subjects. However, a number of concerns still exist that require the Executive's urgent attention if more sustainable results are to be attained. The Committee is of the view that if the teaching of science, technology, engineering and mathematics in schools is to yield the desired results, the Government should take concrete steps to address identified challenges and, in this regard, makes the observations and recommendations set out below.

- (i) The Committee is greatly concerned that the policy framework is fragmented in that there is no stand-alone policy to support the teaching of science, technology, engineering and mathematics in schools which has resulted in the lack of aggressive focus in the teaching of these subjects. In the view of the Committee, this has led to the poor results in science, technology, engineering and mathematics.

The Committee, therefore, strongly recommends that the Government should immediately formulate a stand-alone policy which will specifically guide the teaching of science, technology, engineering and mathematics in schools. Alternatively, the Government should consider redrafting the National Science and Technology Policy so as to clearly provide for the teaching of these subjects.

- (ii) The Committee expresses great concern at the lack of a curriculum to provide guidance on how science, technology, engineering and mathematics should be taught in schools. The Committee observes that, as a result, learning in schools is more centred on memorising and parroting learning materials rather than embracing scientific processes.

The Committee, therefore, urges the Government to immediately develop science, technology, engineering and mathematics (STEM) based curriculum with activities that provide hands-on experience. In the view of the Committee, this will enable institutions of learning to produce learners and graduates that are investigative, innovative and creative for the socio-economic transformation of the country.

- (iii) The Committee observes with great concern that the teaching of science, technology, engineering and mathematics is only seriously considered at secondary school level where selected schools are established as STEM schools. The Committee finds this highly unacceptable as it is depriving primary school learners of the needed foundation through learning science, technology, engineering and mathematics at an early stage.

The Committee, therefore, strongly recommends that the Government takes measures to ensure that science, technology, engineering and mathematics subjects are taught in all schools starting from primary, secondary and finally into tertiary education.

- (iv) The Committee is greatly concerned about the inadequacy of qualified teachers to teach science, technology, engineering and mathematics in schools which has led to poor performance of learners in those subjects.

The Committee, therefore, urges the Government to take concrete steps to train teachers in science, technology, engineering and mathematics for the purpose of teaching these subjects in schools. The Government should also consider putting in place an incentive mechanism for the teachers of science, technology, engineering and mathematics subjects as a way of motivating and attracting the would be teachers in these fields.

- (v) The Committee expresses concern that most of the teachers and lecturers at primary, secondary school and tertiary levels are under-qualified to teach science, technology, engineering and mathematics.

The Committee strongly recommends that measures must be put in place to upgrade and capacity build under-qualified in-service teachers and lecturers at primary, secondary school and tertiary levels. This will equip the teachers with the necessary skills to teach these subjects effectively.

- (vi) The Committee is greatly concerned over the lack of equipped laboratories in schools in most parts of the country. The Committee finds this unacceptable as it is negatively impacting on the teaching of science, technology, engineering and mathematics which ultimately impacts negatively on the overall development of the country

The Committee, therefore, strongly urges the Government to come up with a robust programme to ensure that all schools in the country are equipped with science and computer laboratories for effective teaching of these subjects. The Committee further recommends that the Government should also ensure that laboratory assistants are recruited and deployed to support laboratory activities in all schools.

- (vii) The Committee is concerned over the lack of emphasis on research in learning and training institutions in the areas of science, technology, engineering and mathematics. This has created a disjoint in the application of science, technology, engineering and mathematics in various socio-economic fields and is hindering advancement.

The Committee, therefore, recommends that the Government should take concrete steps to ensure that the teaching and learning of science, technology, engineering and mathematics is strictly research based. This will equip the learners with the necessary capabilities for application in the various fields. All education and training institutions should therefore be supported with resources to undertake research in the areas of science, technology, engineering and mathematics.

- (viii) The Committee observes with great concern that most of the research activities being conducted in institutions of higher learning are not solution-based research activities but mere academic processes.

The Committee, therefore, implores the Government to consider directing higher learning institutions to engage in research activities that offer solutions to the country's social and economic challenges.

- (ix) The Committee is seriously concerned over the under-funding experienced in the teaching of science, technology, engineering and mathematics in Zambian schools. The Committee observes that the inadequacy of resources is slowing down the efforts towards achieving set targets in the teaching of science, technology, engineering and mathematics.

The Committee urges the Government to allocate more funds towards the teaching of science, technology, engineering and mathematics. The Committee further recommends the establishment of a sustainable science, technology, engineering and mathematics education Fund as a way of promoting, strengthening and improving the teaching and learning outcomes. The Committee further urges the Government to come up with a mechanism of costing the implementation of STEM from primary level to tertiary level for the purpose of guiding future implementation of STEM programmes.

- (x) The Committee observes with great concern that there still exists a wrong perception among communities and learners that science, technology, engineering and mathematics are difficult and boring. The Committee notes that this perception has led to the lack of appreciation and interest in taking science, technology, engineering and mathematics subjects by most learners.

The Committee, therefore, urges the Government to come up with a sustained and systematic nationwide awareness campaign on the relevance and importance of learning science, technology, engineering and mathematics.

PART II

8.0 CONSIDERATION OF THE ACTION TAKEN REPORT ON THE REPORT OF THE COMMITTEE ON EDUCATION, SCIENCE AND TECHNOLOGY FOR THE THIRD SESSION OF THE TWELFTH NATIONAL ASSEMBLY

8.1 THE TEACHING OF COMPUTER STUDIES IN ZAMBIAN SCHOOLS

(i) Policy Framework to support the teaching of Computer Studies

The Committee in the previous session was concerned that there was no policy framework to support the teaching of computer studies in schools, which had resulted in fragmentation and non-coordination in the teaching of computer studies in the country.

The Committee had recommended that the Government should immediately finalise the draft 2007 ICT Policy in Education so that it could provide guidance on how ICT programmes and the teaching of computer studies could be implemented.

Executive's Response

It was reported in the Action-Taken Report that the Government took note of the Committee's recommendation and reported that the Ministry of General Education had been working on the Education ICT Integration Master Plan, which would replace the Draft 2007 ICT Policy in Education. The Education ICT Integration Master Plan was expected to supersede the Draft 2007 ICT Policy owing to the fact that the passage of time since the Draft 2007 ICT Policy was produced had seen a lot of developments and changes in ICT that the Draft Policy may not have considered at the time. In this regard, the primary goal of the Master Plan was to prepare all students for the 21st century skills and ICT integration in order to help actualise Zambia's Vision 2030, aimed at moving Zambia to be a leader in research, technology, innovation and become a knowledge-based society. It was further reported that the Education Master Plan addressed in broad terms the underlying goals as outlined below:

- (i) improving the quality of education and training; and
- (ii) strengthening the relevance of education and training to the labour market by the insertion of 21st century skills.

The objectives of the Education Master Plan included:

- (i) to accelerate the adoption of ICT tools in teaching and learning;
- (ii) to transition to education e-resources (videos, interactive lessons, e-books, e-assessment, self-pace learning;
- (iii) to integrate adaptive learning; and
- (iv) to create a self-sustainable model with parents, community, development partners, private sector players, and NGO participation.

In this vein, the Ministry had been working with the Smart Zambia Institute and the Ministry of Transport and Communications in order to operationalise the Education Master Plan which was expected to be finalised by 2020.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await an ICT Policy which is expected to give guidance to the mentioned Education ICT Integrated Master Plan, realising that there cannot be this Master Plan in the absence of the ICT Policy.

(ii) Lack of Qualified Teachers in Information and Communication Technology (ICT) or Computer Studies

The Committee in the previous session had observed with great concern that most schools at both primary and secondary school levels lacked qualified teachers in Information and Communication Technology (ICT) or computer studies. This had impacted negatively on the teaching of computer studies in the country.

The Committee had therefore, urged the Government to take concrete steps to train teachers in ICT and computer studies. The Committee had further stated that urgent measures be taken to provide in-service training in ICT and Computer Studies for serving teachers.

Executive's Response

It was reported in the Action-Taken Report that following the launch of the revised school curriculum in January, 2014, the Ministry of General Education, through the Directorate of Teacher Education and Specialised Services (TESS), commenced an ambitious programme of capacity building of in-service teachers at both primary and secondary school levels. This included training in-service teachers in Computer Studies and Design and Technology which constituted Carpentry and Joinery, Electrical Engineering, Bricklaying and Metal Fabrication. In this regard, 167 in-service secondary school teachers and 106 in-service primary school teachers across the country had been trained at Kabwe Institute of Technology during school holidays, for a total of three holiday periods per cohort.

The trained teachers in Design and Technology were to be trade-tested in order to be awarded the necessary Trade Test qualifications by TEVETA. The extension of the training programme to other teachers at all levels had been hampered by the lack of funds. It was reported that once funding modalities were put in place and funds made available, the programme would resume so that the training programme could be extended to other teachers.

Additionally, the Ministry had also established partnerships with partners from the private sector with a keen interest in computer studies. The partnerships had enabled the private sector to be involved in building capacity among teachers by conducting short term capacity development programmes in provinces of their choice. The Ministry had also ensured that all the materials used in conducting the programmes were approved by the Ministry of General Education - Curriculum Development Centre.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and requests that more details be provided with regard to what concrete steps the Ministry of General Education has taken to provide qualified teachers in computer studies. Also, the Committee requests that specific figures be provided to show how many teachers were capacity built in computer studies as opposed to a general statement that teachers were trained in design and technology, which constituted

carpentry and joinery. There is also need to state clearly in what programmes the Ministry was partnering with the private sector in building capacity for the teachers.

(iii) Lack of Technical Experts in Schools to repair faulty computers

The Committee in the previous session had observed with great concern that there were no technical experts in schools to repair computers whenever they developed faults.

The Committee had, therefore, recommended that the Government should consider employing computer technicians in each district to support the teaching of computer studies.

Executive's Response

It was reported in the Action-Taken Report that the Government had approved a new staff establishment structure which would be implemented in a phased manner. The computer technicians would be deployed once Treasury authority was granted.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await an update regarding the deployment of computer technicians after Treasury authority is granted.

(iv) Lack of sufficient Computers in schools for teaching Computer Studies

The Committee in the previous session had observed with great concern that most primary and secondary schools in the country did not have sufficient computers to be used for the teaching of computer studies. The Committee had stated that this had a negative impact on the quality of training offered. The Committee had, therefore, recommended that the Government should take measures to supply all primary and secondary schools in the country with computers for the purpose of teaching computer studies as a matter of urgency.

Executive's Response

It was reported in the Action-Taken Report that the Ministry of General Education had from 2013 when the first ICT lessons were conducted based on the revised curriculum, made tremendous achievements in the supply and distribution of computers to most Government schools for the purpose of teaching and learning. For example, in 2016, the Government distributed 4000 computers to schools and in 2017, 3000 computers were distributed to schools. Furthermore, Zambia Information and Communications Technology (ZICTA) while working with the Ministry also had distributed 4,342 computers to school under Phases 1 and 2 of the Connecting Learning Institutions in Zambia Project.

It was further reported that in 2020, the Ministry of General Education through ZICTA planned to distribute 5,000 computers under Phase 3 of the Connecting Learning Institutions in Zambia project. The Ministry and ZICTA had finalised the assessment readiness report for 500 schools to benefit from the lot. The 5000 computers were planned to be distributed in all the ten provinces of Zambia where forty primary schools and ten secondary schools would be selected per province. Those schools in each province had already been identified. In order to ensure sufficient computers to be used for the teaching of computer studies, the Ministry would continue to procure and distribute computers for teaching and learning in schools. It was reported that more partners such as ZAMTEL, First Quantum Mining Company, CAMARA

Zambia and Lafarge had come on board to assist schools by donating computers through their Corporate Social Responsibility (CSR) engagements.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await an update on the distribution of 5,000 computers under Phase 3 of the Connecting Learning Institutions in Zambia Project to schools in 2020 by the Ministry of General Education through Zambia Information and Communications Technology Authority.

(v) Lack of Computer Laboratories for use by the teachers and learners for Computer Studies

The Committee in the previous session had expressed concern that most of the schools in the country did not have computer laboratories for use by the teachers and learners for computer studies.

The Committee had recommended that the Government should take deliberate measures to construct computer laboratories in all schools in the country in order to enhance the teaching of computer studies.

Executive's Response

It was reported in the Action-Taken Report that the Government took note of the Committee's recommendation and stated that the Ministry of General Education was making efforts to ensure that all the new schools under construction had computer laboratories. Further, the Ministry was encouraging partnerships with Parent Teacher Associations to prioritise the construction of computer laboratories in their respective schools.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await an update regarding the concrete steps that the Ministry of General Education will take to ensure that all schools in the country have computer laboratories put in place.

(vi) Non-electrification of most Schools in the Country

The Committee in the previous session had observed that most of the schools in the country were not electrified. The Committee had stated that this posed a huge challenge to the teaching of computer studies in schools since electricity was critical to the teaching of computer studies.

The Committee had, therefore, recommended that the Government should urgently electrify all schools by either connecting them to the national grid or by providing them with solar facilities.

Executive's Response

It was reported in the Action-Taken Report that the Government took note of the Committee's recommendation and stated that the Ministry of General Education realised that the task of electrifying all schools was extremely huge and acknowledged the efforts which were made by the Rural Electrification Authority (REA) to electrify some of the schools. However, once funds were made available, the Ministry would embark on electrifying a number of schools each year depending on the financial resource envelope.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await a progress report on the number of schools to be electrified henceforth for the purpose of teaching computer studies.

(vii) Non-integration of ICT and Computer Studies at all levels of primary and secondary education

The Committee in the previous session had observed with concern that the teaching of ICT and computer studies was not compulsory at all levels from grade one to grade twelve. The Committee had strongly felt that the integration of ICT in the education system was critical if Zambia was to effectively compete on the world stage.

The Committee had, therefore, recommended that the Government should make the teaching of ICT and computer studies compulsory at all levels from grade one to grade twelve. The Committee had stated that this should be done in a phased manner to ensure that all necessary facilities and materials were available to all public education institutions.

Executive's Response

It was reported in the Action-Taken Report that the Government took note of the Committee's observation that Information and Communication Technology (ICT) and Computer Studies were not compulsory from Grades one to twelve. It was reported that this was because ICT was integrated in Creative and Technology Studies and was however compulsory at primary level. Computer Studies were also compulsory at junior secondary school level and optional at senior secondary level. It was stated that the Ministry of General Education had noted the Committee's recommendation and would, after appropriate consultations, gradually introduce computer studies to other students at senior secondary school level to ensure that the subject became compulsory from Grades one to twelve as guided by the Committee.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and reiterates that the teaching of computer studies should be made compulsory from grade one to twelve. In this regard, the Committee resolves to await a progress report on the introduction of computer studies to all the learners at senior secondary school level for the purpose of continuation towards the world of work.

(viii) Non-integration of Computer Software part in the learning of Computer Studies

The Committee in the previous session had observed that the current computer studies syllabus focused on teaching the learners the theory part which would not equip them to develop their abilities in the field of computer science.

The Committee had, therefore, recommended that the Ministry of General Education should develop a new computer syllabus that would provide clear instructional methods that would stimulate the learners' possible development into computer scientists.

Executive's Response

It was reported in the Action-Taken Report that the Government had noted the observation by the Committee regarding the introduction of computer science syllabus that would produce computer scientists for the country. It was stated that the Ministry of General Education had two syllabi for computers; the Standard Computer Studies for all students which was being implemented in the current curriculum and a syllabus for computer science which was in a draft form. The computer science syllabus was meant for computer scientists and it was specifically designed for students who were taking pure sciences. It was further stated that computer science syllabus had not yet been implemented as it was still undergoing the relevant consultative processes at the time of the Committee's study. As soon as the appropriate processes were completed, the Committee would be informed of its implementation plan.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await a progress report on the implementation of the computer science syllabus which is designed specifically for students who are taking pure sciences.

(ix) Lack of Internet Connectivity to enhance and support the teaching of Computer Studies

The Committee in the previous session had expressed great concern that most of the schools in the country did not have internet connectivity to enhance ICT and the teaching of computer studies.

The Committee had urged the Government to urgently put measures in place to ensure that all schools were connected to the internet so as to enhance and support the teaching of computer studies countrywide.

Executive's Response

It was reported in the Action-Taken Report that the Ministry of General Education in conjunction with Smart Zambia and the Ministry of Transport and Communications was installing communication towers in all the 118 districts of Zambia. The installation of the facilities would help in improving connectivity in the rural parts of the country. It was stated that most of the schools in Zambia were in the rural areas where connectivity was a huge challenge. As such, the installation of the towers would ensure that more schools benefitted, especially that at the time of the Committee's study the number of schools with internet facilities was very low at 1,104 schools against over 10,000 schools in the country. Of the 1,104 schools 778 were primary schools while 326 were secondary schools, which translated to about 10 per cent of schools with internet connectivity.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await a progress report on the improvements made in terms of internet connectivity in schools.

8.2 A STUDY ON THE PROVISION OF QUALITY HIGHER EDUCATION IN ZAMBIA

(i) Lack of Tax Exemptions for education and building materials procured by higher learning institutions

The Committee in the previous session had observed with great concern that there were no tax exemptions made to higher learning institutions on the education and building materials procured for the purpose of delivering quality higher education in the country.

The Committee had urged the Government to consider tax exemptions on education and building materials procured by learning institutions.

Executive's Response

It was reported in the Action-Taken Report that the Government through the Ministry of Finance - Public Private Partnership (PPP) Department was desirous to engage the private sector in the delivery of infrastructure and social services in all key sectors of the economy, including higher education.

It was reported that the PPP Department had successfully implemented the East Park Mall project whose general objective was to create an asset base and improve cash flow to the University of Zambia, thereby supplementing the resource base for the University as 40 per cent of its funding came from the grant while 60 per cent was from internally generated resources. Specifically, funds from East Park Mall were meant to be dedicated towards infrastructure maintenance and renovations at the University of Zambia.

The University of Zambia had further engaged the PPP Department for the development of student hostels through PPP arrangements. The feasibility study report for the project was awaiting approval by the PPP Council, after consideration by the PPP Technical Committee.

The PPP Department had been engaging with the institutions providing higher education such as Mulungushi University, Copperbelt University, Malcom Moffatt College of Education, among others, and the private sector through sensitisation workshops, expositions and it was therefore expected that more proposals would be received and processed for the provision of facilities at institutions of higher education through PPPs so as to address the inadequate financing to the higher learning institutions.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to request for a fresh response since the response given is does not address the observations and recommendations of the Committee.

(ii) Uncoordinated Regulators in the Higher Education Subsector

The Committee in the previous session was greatly concerned that there were too many uncoordinated regulators in the higher education subsector in the country. It had noted that this had led to confusion and conflicts in the subsector.

The Committee had, therefore, recommended that the Government should consider having only one institution to be mandated to register and accredit learning programmes in all higher education institutions. The Committee had stated that this would provide for uniformity in accreditation and create harmony in the manner higher education institutions operated.

Executive's Response

It was reported in the Action-Taken Report that the Government agreed with the observation of the Committee and reported that the higher education system in Zambia was fragmented and lacked coordination mechanisms. The situation had been brought about by the fact that prior to the establishment of the Higher Education Authority, most of the professional bodies had included as part of their functions the requirement for accreditation of learning programmes related to their profession.

While on one hand the the Ministry of Higher Education provided policy direction, different line Ministries (General Education, Justice, Agriculture; Finance; Tourism; and Health) and Cabinet Office on the other hand provided policy and legal oversight to institutions of learning in specialised areas such as education, law, agriculture, accounts, tourism, health and public administration. The laws governing higher education were covered under the following pieces of Legislation: *Higher Education Act No. 4 of 2013; Zambia Qualifications Authority Act No. 13 of 2011; Technical Education, Vocational and Entrepreneurship Training Act No. 13 of 1998; National Institute for Public Administrators (NIPA) Act No. 15 of 1998; Teaching Professional Act No. 5 of 2013; Zambia Institute of Advanced Legal Education (ZIALE) Act No 9 of 2011; the Education Act No. 23 of 2011; and, Tourism and Hospitality Act No 13 of 2015, among others.*

This had created segmentation and lack of synergies in the provision of higher education. It had also affected the standardisation of quality assurance due to varying regulatory bodies. The *Higher Education Act, No. 4 of 2013* which established the Higher Education Authority had the supreme legal mandate to regulate higher education. In view of the fragmented legal mandates, it had been difficult for the Higher Education Authority to execute its mandate according to the Act. In this regard, the National Higher Education Policy of 2019 had provided for the repeal, replacement and review of other related pieces of legislation in order to effectively regulate the sector. This would provide for uniformity in accreditation and create harmony in the manner higher education institutions operated.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await the operationalisation of the National Higher Education Policy of 2019 which is intended to provide for the repeal, replacement and review of other related pieces of legislation in order to effectively regulate the Higher Education subsector.

(iii) Clinical Fees Charged to Students in the Private Medical Learning Institutions

The Committee in the previous session was concerned that there were clinical fees charged to students in the private medical learning institutions during their practical attachments in the public health institutions.

The Committee had urged the Government to abolish the clinical charges slapped on students of private universities as they undertook clinical attachments in the public health institutions. The Committee had stated that clinical fees needed to be abolished because while those students undertook practical attachments, they contributed to the much needed staff on the wards in the public health institutions.

Executive's Response

It was reported in the Action-Taken Report that the Government took note of the Committee's recommendation and reported that the Ministry of Higher Education in collaboration with the Ministry of Health were still working on the amendments to the current clinical fees which were slapped on students in private universities.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await an update report on the outcome of the amendments to the clinical fees being slapped on students in private universities during clinical attachments in public health institutions.

(iv) Lack of Mechanisms of Graduating Higher Education Institutions

The Committee in the previous session had observed that there was no mechanism of graduating higher education institutions from colleges to university colleges and finally into fully-fledged universities.

The Committee had recommended that the Government should institute mechanisms to have a graduated system of higher learning institutions from colleges, university colleges and finally into fully-fledged universities. The Committee had emphasised that clear parameters for graduation be set out, such as infrastructure and resources that the institution should have.

Executive's Response

It was reported in the Action-Taken Report that the Government took note of the Committee's recommendation and reported that the Ministry of Higher Education had come up with amendments to the *Higher Education Act, No 4 of 2013* and those had since been submitted to the Ministry of Justice.

One of the proposed amendments was to have higher education institutions segregated into Colleges, Technical University Colleges, University Colleges, Technical Universities and Universities. Once the amendments were completed, the existing higher education institutions would be placed in these categories after carrying out forensic audits.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive regarding the segregation of higher education institutions into Colleges, Technical University Colleges, University Colleges, Technical Universities and Universities. However, the Committee requests the Executive to consider the Committee's recommendation of graduating newly established higher learning institutions by starting them as colleges, later graduating them into university colleges and finally into fully-fledged universities.

(v) Non-extension of Public Higher Education Loans and Scholarship Scheme to Private Universities

The Committee in the previous session had observed that the Government Higher Education Loans and Scholarship Scheme being provided in public higher learning institutions had not been extended to students in private universities.

The Committee had recommended that the Government should urgently consider extending the Higher Education Loans and Scholarship Scheme to students of private universities in the country.

Executive's Response

It was reported in the Action-Taken Report that the Government took note of the Committee's recommendation and reported that the current policy by the Loans and Scholarships Board was to extend the provision of loans and scholarships to students other than those at the University of Zambia and Copperbelt University. It was worth noting that the Loans and Scholarships Board had commenced loan recoveries from beneficiaries and the resources were expected to help extend the facility to other public universities. Due to limited resources, this would be implemented gradually. As of 2019, loans and scholarships would be extended to other public universities such as Mulungushi University, Mukuba University, Kwame Nkrumah University, Kapasa Makasa University, Chalimbana University and Palabana University. It was envisaged that loans and scholarships would be extended to students in private universities in 2020, should funds be available.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await an update regarding the possible extension of public loans and scholarship scheme to private universities.

(vi) Lack of Standardised Curriculum in Universities and the Absence of Vice Chancellors' Advisory Committee

The Committee in the previous session had observed with great concern that there was no standardised curriculum in the universities. The Committee had further observed that there was no Vice Chancellors' advisory committee in the country to advise the Minister of Higher Education on issues of quality higher education.

The Committee had recommended that a standardised curriculum for all universities should be put in place by the Government. The Committee had further recommended that a Vice Chancellors' Advisory Committee should be constituted in the country.

Executive's Response

It was reported in the Action-Taken Report that the Government took note of the Committee's recommendation and reported that the Higher Education Authority through the Standards, Research and Institutional Audits would start developing standards for various learning programmes in order to define the minimum requirements of the curricula. This would be developed in conjunction with content experts who had been participating in the accreditation of learning programmes by second quarter of 2020. The Higher Education Authority conducted

scheduled meetings with Vice Chancellors for all higher education institutions which were registered by the Higher Education Authority in order to discuss higher education issues, and these meetings provided a platform to solicit their advice on issues of higher education. The deliberations of these meetings were then reported to the Minister of Higher Education for consideration.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await an update on the developing of standards for various learning programmes which will define the minimum requirements of the curricula as scheduled to take place in the second quarter of 2020.

9.0 CONSIDERATION OF THE ACTION TAKEN REPORT ON THE REPORT OF THE COMMITTEE ON EDUCATION, SCIENCE AND TECHNOLOGY FOR THE SECOND SESSION OF THE TWELFTH NATIONAL ASSEMBLY

9.1 THE ROLE OF COMMUNITY SCHOOLS IN ENHANCING ACCESS TO EDUCATION IN ZAMBIA

(i) Policies for Community Teacher Remuneration and Career Opportunities

The Committee in the previous session had observed that there were inadequate policies for teacher remuneration and career opportunities for community school teachers.

The Committee had urged the Government to formulate policies that would provide guidance on teacher remuneration and career opportunities for community school teachers who were not deployed by the Government.

The Committee had, therefore, resolved to request the Executive to give a corresponding response as the one given was not responding to the observation and recommendation of the Committee.

Executive's Response

It was reported in the Action-Taken Report that the Government through the Ministry of General Education reported that the wearing of uniforms was not compulsory and as such, learners were not supposed to be sent away from attending school on account of not having a uniform. Further, the Ministry through the District Education Boards Secretaries was working to ensure that Government Teachers were oriented on their roles when deployed to Community Schools.

Committee's Observations and Recommendations

The Committee expresses disappointment that the response in the Action Taken Report does not address its concerns regarding policies for community teacher remuneration and career opportunities, but in fact addresses a totally different matter, which is not the subject of the Committee's observations and recommendations in this case. The Committee, therefore, reiterates its recommendation and awaits an appropriate response on the matter.

(ii) Non-Inspection of most Community Schools by the District Education Board Secretaries' Offices

The Committee in the previous session had observed that most community schools in the rural parts of the country were not inspected due to lack of transport by the districts education authorities.

The Committee had recommended that the Government should provide transport and other logistics to district education authorities to enable them conduct inspections of community schools. It was reported that the Government had taken note of the recommendation and stated that the provision of transport would be undertaken in a phased manner.

The Committee had, therefore, resolved to await a progress report regarding the provision of transport to the district education authorities in a phased manner.

Executive's Response

It was reported in the Action-Taken Report that the Government took note of the recommendation made by the Committee and stated that the various transport logistics had been lined up for distribution including motor vehicles to districts to enable them conduct inspections of community schools. Further, the Ministry had distributed motor vehicles to thirty districts so far and this activity was ongoing.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await a progress report on the provision and distribution of motor vehicles to all the District Education Board Secretaries offices for the purpose of inspecting schools, which includes community schools. The Committee further requests details on which thirty districts benefited from the motor vehicles distributed.

9.2 ACCESS TO EDUCATION FOR CIRCUMSTANTIAL CHILDREN IN ZAMBIAN CORRECTIONAL FACILITIES

9.2.1 LOCAL TOUR - LUSAKA AND EASTERN PROVINCES

(i) Non-deployment of Enough Government Teachers in Community Schools

The Committee in the previous session had observed that most of the community schools did not have enough Government teachers. The Committee had recommended that the Government should institute a deliberate policy to provide qualified Government teachers at all community schools.

In response, the Government had noted the Committee's recommendation and confirmed that a deliberate effort was being made to deploy qualified Government teachers at all community schools.

The Committee had, therefore, noted the response given by the Executive and resolved to await a progress report on what deliberate efforts had been put in place to deploy enough qualified Government teachers to community schools which had been absorbed by the Government. The

Committee had also sought an update on the number of qualified teachers who had been deployed to these schools in the year under review.

Executive's Response

It was reported in the Action-Taken Report that the Ministry of General Education only deployed teachers to schools that had staff establishments. Once teachers were deployed, the provincial office may decide to redirect some teachers to community schools that did not have staff establishments but had a shortage of teachers.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await a progress report on the deployment of enough Government teachers to community schools.

(ii) Lack of Desks and Learning Materials in most Community Schools

The Committee in the previous session had observed that most community schools did not have enough desks, writing boards and other teaching materials.

The Committee had recommended that the Government should ensure that school materials like desks, writing boards and other teaching materials were supplied to all community schools in the country.

It was reported in the previous Action-Taken Report that the Government had noted the Committee's recommendation and stated that the Ministry of General Education would work at escalating support to community schools in the form of teaching and learning materials, writing boards and desks. The Committee had therefore requested for a progress report on the intent of escalating support in form of teaching and learning materials, writing boards and desks to community schools.

Executive's Response

It was reported in the Action-Taken Report that the Ministry of General Education had distributed 3,788 of assorted furniture to community school in four provinces, namely Central Province, North Western Province, Southern Province and Western Province. Further, the Ministry indicated that efforts to distribute more furniture to the community schools in the other provinces were underway.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await a progress report on the escalation of the provision of desks and other learning materials to other community schools in the provinces.

10.0 CONSIDERATION OF THE ACTION TAKEN REPORT ON THE REPORT OF THE COMMITTEE ON EDUCATION, SCIENCE AND TECHNOLOGY FOR THE FIRST SESSION OF THE TWELFTH NATIONAL ASSEMBLY

10.1 THE IMPLEMENTATION OF THE SCIENCE AND TECHNOLOGY POLICY IN ZAMBIA

(i) Review of the National Science and Technology Policy

The Committee in the previous session had noted the response given by the Executive and resolved to await a progress report on the review of the policy.

Executive's Response

It was reported in the Action-Taken Report that the review of the National Science and Technology Policy had been validated by key stakeholders and it was submitted to the Minister of Higher Education for onward submission to Cabinet for approval before operationalisation. The committee would be updated on the progress made.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await an update report on the matter.

(ii) Inadequate Funding in the Education Sector

The Committee in the previous session had awaited an update on when the allocation to the education sector would be increased.

Executive's Response

It was reported in the Action-Taken Report that at the time of reporting, the budget allocation for Education was 15.3 per cent of the national budget. A request had been submitted to the Ministry of Finance to increase the allocation to 20 per cent of the national budget in order to be at par with the international standard. The Ministry awaited a response from the Ministry of Finance.

It was stated that the Treasury remained committed to promoting and strengthening the education sector, particularly for the higher learning institutions, through sound tax and non-tax incentives to the sector. It was further stated that the booklets, journals and education series to higher learning institutions were exempted under the Value Added Tax exemption. All public higher learning institutions did not pay duty on education materials and building materials as the Government, through the Ministry of Finance, paid government voucher and local purchase order.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await a progress report on the increase of budgetary allocation to the education sector to at least 20 per cent of the national budget.

10.2 LOCAL TOUR TO LUSAKA, COPPERBELT AND NORTH-WESTERN PROVINCES

(i) Ndola Primary School

The Committee in the previous session had awaited a progress report on the provision of funds for the construction of the laboratory and the procurement of the requisite materials and apparatus at Ndola Primary School.

It was reported that the Government had taken note of the Committee's request and reported that a laboratory at Ndola Primary School was yet to be constructed when funds were available. Once funds were released, the Committee would be updated.

The Committee had resolved to await a progress report on the construction of the laboratory.

Executive's Response

It was reported in the Action-Taken Report that the status quo had remained the same due to non availability of funds.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await a progress report on the construction of the laboratory and the procurement of the requisite materials and apparatus at Ndola Primary School.

(ii) Equipment in the Metal and Woodwork Workshops at Solwezi Skill Training Centre

The Committee in the previous session had requested for a progress report on the matter and requested that a timeframe be provided as to when the workshops would be adequately equipped.

It was reported in the previous Action-Taken Report that the workshops at Solwezi Trades Training Institute (SOTTI) were unsuitable for the kind of art equipment required for training learners under the two career pathway. In that regard, the Ministry had decided to construct a new carpentry and joinery workshop using funds from the Skills Development Fund (SDF) before equipment could be procured. It was envisaged that tender processes would be completed in 2018 and construction works could be undertaken in 2019. The equipment for the workshops would, therefore, be procured before the end of the second quarter of the year 2020.

The Committee had resolved to seek for a progress report regarding the construction of carpentry and joinery workshop that will be built in 2019 with funds from the Skills Development Fund.

Executive's Response

It was reported in the Action-Taken Report that with current improvement in the flow of funds through the Skills Development Fund (SDF), Solwezi Trades Training Institute was one of the Institutions the Ministry had earmarked for construction of new workshop.

Committee's Observation and Recommendation

The Committee takes note of the response given by the Executive and resolves to await a progress report regarding the construction of carpentry and joinery workshop at Solwezi Trades with funds from the Skills Development Fund.

(iii) Construction of Additional Workshop at Solwezi Trades Training Institute

The Committee in the previous session had awaited a progress report on the construction of an additional workshop at Solwezi Trades Training Institute.

It was reported that the Government had taken note of the recommendation of the Committee and report that in line with the laid down procedures and processes for supporting institutions under the Skills Development Fund (SDF), a call for proposals on infrastructure and equipment was made and a number of institutions applied. One such institution was the Technical and Vocational Teachers' College (TVTC) in Luanshya which had been awarded K2 million for state of the art equipment for its metal and woodwork workshops. The Ministry of General Education was assessing proposals from various other institutions, including Solwezi Trades Training Institute. As soon as that process was completed, the Ministry of General Education would commence the construction of an additional workshop for electrical engineering at SOTTI.

The Committee had awaited a progress report on the construction of an additional workshop at SOTTI.

Executive's Response

It was reported in the Action-Taken Report that the Government took note of the Committee's observations and reported that Solwezi Trades Training Institute was earmarked to receive equipment in metal fabrication, carpentry and joinery. It was stated that 10 per cent of the cost of procuring the said materials had already been paid to the supplier. The Committee would be updated as soon as the programme was undertaken.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await a progress report regarding the procurement of the equipment for Solwezi Trades Training Institute.

(iv) Obsolete Equipment

The Committee in the previous session had noted the response given by the Executive and requested for a progress report on the matter. It was reported that the Government was in the process of providing Solwezi Technical School with new equipment, such as computers, when funds were released.

The Committee had noted the response given by the Executive and awaited a progress report on the actual delivery of equipment to Solwezi Technical School.

Executive's Response

It was reported in the Action-Taken Report that no equipment was delivered to Solwezi Technical School due to limited resources.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await a progress report on the provision of Solwezi technical School with new equipment, which includes computers.

(v) Plant Quarantine Section

The Committee in the previous session had noted the response given by the Executive and requested for a progress report on the matter.

It was reported in the previous Action-Taken Report that on 10th August, 2015, the Ministry of Agriculture had written to the Ministry of Finance requesting that the Plant Quarantine and Phytosanitary Section (PQPS) at the Zambia Agricultural Research Institute be allowed to appropriate part of the revenue generated from the fees it collected. The Ministry of Finance was to grant the PQPS authority to retain a proportion of the revenue generated. Several interactions with the Ministry of Finance had taken place on that issue and the Ministry of Agriculture had continued to engage the Ministry of Finance on the issue and awaited a response.

The Committee had noted the response given by the Executive over the inordinately long time it had taken to resolve the matter. The Committee had implored the Secretary to the Treasury to attend to the matter expeditiously and resolved to await a progress report.

Executive's Response

It was reported in the Action-Taken Report that Section 28 (1) of the *Public Finance Management Act, No. 1 of 2018* required that all funds collected by Government institutions be transferred to the Consolidated Fund. However, the Committee may also wish to note that a mechanism called "Appropriation in Aid" (AIA) was used by the Treasury to prioritise funding for all revenue collecting institutions to support their revenue collections. This was to enable them do their collections efficiently and on time. Further, the Treasury would endeavour to put the Plant Quarantine and Phytosanitary Section on AIA in the 2020 Budget

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await a detailed update on the implementation of the Appropriation In Aid mechanism at the Plant Quarantine and Phytosanitary Section at the Zambia Agricultural Research Institute as undertaken by the Treasury.

10.3 FOREIGN TOUR TO RWANDA

(i) Need for Increased Budget Allocation to the Education Sector

The Committee in the previous session had reiterated its recommendation that 20 per cent of the national budget should be allocated to the education sector. Further, the Committee requested for a progress report on the matter.

It was reported in the previous Action-Taken Report that the Government had been making practical steps towards the progressive realisation of 20 per cent allocation to the education sector. Over the years, the Government had increased the education sector budget allocation

from 17.5 per cent of the national budget in 2012, reaching 20.2 per cent in 2015. However, the percentage reduced in subsequent years to an average of 17 per cent. In 2018, the allocation stood at 16.1 per cent of the national budget. Notwithstanding the above, the Government remained committed to increasing the budget allocation to the education sector as and when resources were available.

The Committee had noted the response given by the Executive and awaited a progress report as to when the Executive would increase and stabilise the allocation to the Education Sector to at least 20 per cent of the national budget.

Executive's Response

It was reported in the Action-Taken Report that the Government remained committed to increasing the budgetary allocation to the education sector to at least 20 per cent of the national budget from the current 15.3 per cent in the 2019 National Budget.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await a progress report on the increase of budgetary allocation to the education sector to at least 20 per cent of the national budget.

11.0 CONSIDERATION OF THE ACTION-TAKEN REPORT OF THE REPORT OF THE COMMITTEE ON EDUCATION, SCIENCE AND TECHNOLOGY FOR THE FIFTH SESSION OF THE ELEVENTH NATIONAL ASSEMBLY

11.1 THE ROLE OF BOOK PUBLISHING AND DISTRIBUTION IN EDUCATION

(i) Book Policy

The Committee in the previous session had requested for a progress report on the matter with a specific timeframe in which the policy would be finalised.

It was reported in the previous Action-Taken Report that the Book Policy document was still in draft form as the original committee that drafted the document was dissolved due to manpower movements. A new committee was to be instituted. The Ministry's plan was that the final copy of the Policy would be ready by December, 2019. The Ministry would continue to update the Committee on the matter.

The Committee had noted the response given by the Executive and awaited a progress report on the finalisation of the Book Policy.

Executive's Response

It was reported in the Action-Taken Report that the Ministry of General Education's plan to finalise the draft Book Policy by December, 2019 was not feasible due to lack of resources. However, the process was ongoing and as soon as resources were available the process would be completed and the Committee would be informed accordingly.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await a progress report on the finalisation of the Book Policy for the purpose of book publishing and distribution in education.

12.0 CONSIDERATION OF THE ACTION-TAKEN REPORT ON THE REPORT OF THE COMMITTEE ON EDUCATION, SCIENCE AND TECHNOLOGY FOR THE FOURTH SESSION OF THE ELEVENTH NATIONAL ASSEMBLY

12.1 THE STRUCTURE OF THE ZAMBIAN EDUCATION SYSTEM: FROM BASIC-HIGH SCHOOL TO PRIMARY-SECONDARY SCHOOL: CHALLENGES AND OPPORTUNITIES.

(i) Revision of the National Education Policy, “*Educating Our Future*” and the *Education Act, No.23 of 2011*

The Committee in the previous session had requested for a progress report on the revision of the TEVET Policy, the Educating Our Future Policy and the development of the Higher Education Policy.

It was reported in the previous Action-Taken Report that the status on the two documents in respect of “National Education Policy and the Education Act” was that they were tabled for validation at a national gathering held on Friday 3rd August, 2018. Observations, comments and recommendations were received and the consultant was finalising the said documents. It was expected that once the consultative process was completed, further processes would be followed to lead to them being operationalised. The Committee would be updated on the progress made.

The Committee had noted the response given by the Executive and awaited a progress report on the steps towards revising the National Education Policy, “Educating Our Future”.

Executive's Response

It was reported in the Action-Taken Report that the Government took note of the Committee's observation and reported that the first ever Policy to specifically superintend over the higher education was developed and launched on 18th June 2019.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await a progress report on the formulation of an Education Policy by the Ministry of General Education to follow suit what the Ministry of Higher Education has put in place. This will ensure the effective implementation of programmes in the Ministry of General Education.

(ii) Procurement and Distribution of Desks to Schools

The Committee in the previous session had sought a progress report on the matter. It was reported that funds for procurement of desks in 2017/18 budgets were to be released by the Treasury. That had impeded the Ministry's quest to procure and distribute desks to schools countrywide.

The Committee had noted the response given by the Executive and awaited a progress report on the actual procurement of desks.

Executive's Response

It was reported in the Action-Taken Report that there was no Treasury Authority granted for the provision of desks in the years 2017 and 2018.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await a progress report on the procurement and distribution of desks to schools countrywide.

12.2 LOCAL TOURS

(i) Upgrading of Dipalata Secondary School

The Committee in the previous session had resolved to await a progress report on the matter. It was reported that while Dipalata Secondary School was upgraded, Phase II of constructing additional infrastructure had not commenced due to lack of funds. The Committee would be updated in due course.

The Committee had noted the response given by the Executive and awaited a progress report on the construction of the additional infrastructure at the school.

Executive's Response

It was reported in the Action-Taken Report that the status quo of Dipalata Secondary School remained the same due to lack of funding.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await a progress report on the full upgrading of Dipalata Secondary School by ensuring construction of additional infrastructure which was intended to be undertaken under Phase II.

13.0 CONSIDERATION OF OUTSTANDING ISSUES FROM THE ACTION-TAKEN REPORT ON THE COMMITTEE'S REPORT FOR THE THIRD SESSION OF THE ELEVENTH NATIONAL ASSEMBLY

(i) Paul Mushindo University

The Committee in the previous session had resolved to await an update on the placing of Paul Mushindo University upon completion.

It was reported in the previous Action-Taken Report that due to untimely and inadequate disbursement of funds from the Treasury, and other consequential challenges encountered in the execution of the project, Paul Mushindo University had not reached completion. The project was below 50 per cent complete and a decision on the placement of the University would be made when the University neared completion.

The Committee had noted the response given by the Executive and awaited a progress report on the completion and the placement of Paul Mushindo University.

Executive's Response

It was reported in the Action-Taken Report that considerable progress had been recorded. While Paul Mushindo University was yet to be completed, it stood at 85 per cent compared to the 50 per cent previously reported. The delay in completing the project on time was due to erratic release of funds by the Treasury.

Committee's Observations and Recommendations

The Committee takes note of the response given by the Executive and resolves to await a progress report on the completion of Paul Mushindo University and its subsequent placement after completion.

14.0 CONCLUSION

Given the prominent and critical role played by science, technology, engineering and mathematics in development globally, it is imperative that the Zambian education system must be transformed in order to be able to produce graduates that are critical thinkers, innovative and creative in their learning interactions.

The key findings of the Committee regarding the teaching of science, technology, engineering and mathematics are that most of the schools in Zambia lack qualified teachers in science, technology, engineering and mathematics from primary schools up to tertiary level of education. This, therefore, affects the manner which these subjects are taught, thereby producing graduates who were not ready to face the challenges of the modern world of work in those areas.

Other hindrances in the teaching of these subjects include lack of equipped science and computer laboratories to aid in the teaching and learning of these subjects; the lack of teaching and learning materials; and the lack of Policy and legal frameworks to support the teaching and learning of the subjects.

The Committee on Education, Science and Technology has made some far reaching recommendations on the topical issue for consideration. Therefore, the Committee is confident that the Executive will act upon the findings and the recommendations contained in its Report as the country strives to achieve better outcomes from the education system vis-a-vis science, technology, engineering and mathematics.

Finally, the Committee expresses its gratitude to the Honourable Mr Speaker and the Clerk of the National Assembly for the guidance and services rendered to it throughout its deliberations. Gratitude also goes to the stakeholders for their oral and written submissions.

G K Mwamba, MP
CHAIRPERSON

June, 2020
LUSAKA

APPENDIX I

List of National Assembly Officials

Ms C Musonda, Principal Clerk of Committees
Mr F Nabulyato, Deputy Principal Clerk of Committees (SC)
Mr S Chiwota, Senior Committee Clerk (SC)
Mr E Chilongu, Committee Clerk
Mrs D Manjoni, Personal Secretary II
Mrs M Kilembe, Personal Secretary II
Mr D Lupiya, Committee Assistant
Mr M Chikome, Committee Assistant
Mr M Kantumoya, Parliamentary Messenger