

# BOTSWANA

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*Botswana Examinations Council*

## Introduction

### *Overview of Education System*

The administration of the education system at the primary level in Botswana is the joint responsibility of the Ministry of Education and Skills Development (MoESD) and the Ministry of Local Government and Rural Development (MLGRD). The MLGRD is responsible for the infrastructure of primary schools as well as food service and supplies. The MoESD oversees staffing, curriculum and instruction, and monitoring and evaluation at all levels of schooling and solely administers secondary and tertiary education. This joint system is meant to decentralize services and provide effective learning materials. The Ministry of Labour and Home Affairs also offers post-secondary training.

Formal education in Botswana begins at the preprimary level and continues to the tertiary level. Tertiary education is provided by institutions that award degrees up to the doctoral level.<sup>1</sup> The first two years of formal education (ages 4 to 6) comprise the preprimary level.<sup>2</sup> Preprimary education in Botswana is provided mainly by private individuals and organizations registered with the MoESD. They follow an established minimum curriculum framework developed by the MoESD. Most providers offer both social and academic elements. The MoESD and MLGRD share responsibility for the management and supervision of early childhood care and education (ECC&E).

The official entry age for primary school is 6. Some children may start school late due to various factors, such as the type of settlement in which they reside. Botswana provides a 10-year basic education, which is not compulsory.<sup>3</sup> Primary education consists of lower primary<sup>4</sup> (Grades 1 to 4) and upper primary<sup>5</sup> (Grades 5 to 7) with attainment and diagnostic examinations in Grades 4 and 7, respectively. Running parallel to formal primary schooling are the National Literacy Programme and Adult Basic Education, targeting those who are not able to enroll in the formal education system.

Junior secondary education lasts three years and is followed by two years of senior secondary education. Terminal examinations are taken at the end of each level and serve as a basis for selection and placement as students progress to the next level. Tertiary education ranges from two to four years, depending on the program of study and the institution.<sup>6</sup> The Distance Education Programme offers opportunities to individuals who want to pursue studies while working. At all levels of formal education, special education programs are available to students with special education needs.

Most schools in Botswana are government owned and run. The government is the main source of educational funding. The Ministry's budget allocation has been increasing steadily in recent years.<sup>7</sup> As of 2005, parents contribute only 5 percent of the total expenditure for the secondary education of their children, while primary education remains free for citizens.

Private schools are registered with the MoESD. Most private primary schools design their own curricula, which are more advanced than the curricula offered in government schools. Students in private schools take the Primary School Leaving Examination (PSLE). Most private secondary schools offer an International General Certificate of Secondary Education (IGCSE).

### *Languages of Instruction*

Setswana is the national language and English is the official language of Botswana, although other languages are spoken. English is the medium of instruction in government schools from the second grade<sup>8</sup> to the tertiary level. Instruction in English begins in preschool in private English-medium schools. Students are taught exclusively in Setswana in first grade, and Setswana is taught as a compulsory subject for citizens of Botswana throughout the primary and secondary school system.

## The Mathematics Curriculum in Primary and Lower Secondary Grades

The mathematics syllabus in the primary grades is divided into a lower primary syllabus<sup>9</sup> (Grades 1 to 4) and an upper primary syllabus<sup>10</sup> (Grades 5 to 7). In Grade 4, students take national achievement tests in three subjects, including mathematics.

The lower primary school mathematics syllabus (Grades 1 to 4) is organized around modules, which are divided into topics and then subdivided into general and specific objectives. The specific objectives outline the breadth and depth of teaching required in a particular topic. Five modules are covered in the lower primary syllabus:

- **Numbers and Operations**—This module helps students understand the concept and use of numbers. Students practice counting, sorting, and classifying numbers, as well as matching objects and numbers. These concepts lay a foundation for addition and subtraction. By the end of Grade 4, students should be able to add and subtract three-digit numbers vertically and horizontally. They should be able to multiply using one-digit to three-digit numbers and do simple division. Students also should understand money, local currency denominations, and monetary units and be able to add, subtract, multiply, and divide with money.
- **Geometry**—Students are introduced to geometry with the study of shapes and solids. Students identify shapes such as rectangles and triangles, and solids such as cubes and cylinders. By the end of Grade 4, students should be able to describe shapes by the number of sides and number of angles and be able to name solids.
- **Measures**—The intention of this module is to develop measuring skills. Students start by comparing lengths and weights in Grade 1, and gradually begin using standard measuring instruments. By the end of Grade 4, students should be able to use formulas to calculate area and perimeter. They should be able to use instruments to measure volume and mass, and to convert

units of length, time, and mass.

- **Problem Solving**—This module introduces students to practical problem solving skills. Skills are developed through mathematical games, simple puzzles, and simple investigations involving numbers and shapes. By the end of Grade 4, students should be able to conduct simple research projects.
- **Statistics**—This module introduces simple methods of data collection and simple statistical presentations, such as pictographs. By the end of Grade 4, students should be able to interpret information and draw simple statistical conclusions, such as finding the mode.

The upper primary mathematics syllabus (Grades 5 to 7) is designed to help students develop further numeracy and computational skills as well as problem solving skills. The upper primary syllabus covers the same five modules covered in the lower primary grades:

- **Numbers and Operations**—The aim of this module is to teach students to read whole numbers up to 10,000 and write these numbers in words. By the end of upper primary school, students should be able to apply the basic arithmetic operations (addition, subtraction, multiplication, and division) in the correct order when working with whole numbers, fractions, and decimals and be able to use percentages to increase, decrease, and compare quantities.
- **Geometry**—In this module, students learn to name two- and three-dimensional geometric shapes and recognize their properties. Students differentiate straight lines from curves and use rulers, compasses, and squares to draw perpendicular and parallel lines, angles, and shapes. They work with Cartesian coordinates in the first quadrant and carry out simple transformations (translations, reflections, and enlargements).
- **Measures**—The curriculum is designed to help students appreciate measurement, use measuring devices, and estimate quantities. Students use instruments to measure length and determine the perimeter of regular and irregular shapes. Students calculate the area of shapes and the volume of objects, and they measure the volume of various objects using displacement methods.
- **Algebra**—Students are introduced to algebra as a method of communicating mathematics through symbols. Students generate number patterns and complete arithmetic sequences, replace missing numbers in boxes that later are represented by letters, simplify linear expressions, and translate simple statements into algebraic expressions and equations. By the end of Grade 7, students should be able to solve equations of the form  $ax + by = c$  through systematic trial and error using whole numbers. They also should be able to use substitution to evaluate simple expressions.
- **Statistics**—This module helps students develop skills in collecting, organizing, and analyzing data, as well as understanding the basic concepts of probability. Students should be able to read and interpret data; collect and organize data by tabulation; draw pictographs, charts, and other graphs; and find the mode, median, and mean. Students are expected to know the meaning of probability and be able to describe probability in terms such as “likely,” “unlikely,” “never,” and “certain.” Students should be able to explore the likelihood that an event may occur through simple games and experiments.

When students complete Grade 7, they proceed to Grade 8 and begin studying toward the Junior

Certificate Examinations (JCE). At the end of the JCE curriculum, students should be able to apply computational skills in everyday life for commercial and social purposes.

The JCE, or lower secondary school mathematics syllabus<sup>11</sup> (Grades 8 to 10), has the same organizational structure as the primary school syllabus. Generally, lower secondary school extends primary school learning and students are expected to begin applying concepts to solving practical problems. The following topics are covered in the lower secondary school mathematics syllabus:

- Numbers—Students apply arithmetic operations (addition, subtraction, multiplication, and division) to whole numbers, decimals, fractions, and integers; solve problems involving percentages, money, ratio, and proportion; approximate and estimate using significant figures and round numbers to specified accuracies; square, cube, and find square and cube roots of real numbers, including fractions; derive laws of exponents by investigation and apply laws of integer exponents in problem solving; solve problems using numbers in scientific notation; understand simple money and non-money bank transactions; calculate labor costs, material costs, and overhead costs of basic projects; understand and solve problems involving insurance policies, simple interest, contracts, income tax, and duty charges; and add and subtract matrices and multiply matrices by scalars
- Measures—Students investigate the relationship between the circumference of a circle, the related diameter, and  $\pi$  (pi); calculate the length of arcs and the perimeter and area of composite shapes, as well as the volume of cubes, cuboids, and cylinders, including composite cross sections; solve problems that involve time, distance, and speed, and use and interpret distance-time graphs; and calculate speed in kilometers per hour, meters per second, and other metric units
- Algebra—Students simplify linear expressions and use substitution to solve equations for one variable; expand and factor binomial expressions of the form  $(a \pm b)^2$  and factor expressions of the form  $ax^3 \pm bx^2 \pm cx \pm d$ ; use graphical methods to solve simultaneous equations; and solve linear simultaneous equations in two unknowns by Gaussian elimination and by substitution
- Geometry—Students construct geometrical elements, such as line segments, parallel lines, perpendicular lines, and angle and perpendicular bisectors; construct triangles and quadrilaterals; understand and use properties of angles to solve problems and calculate unknown angles using angle properties, such as corresponding angles, alternate angles, interior angles, and complementary and supplementary angles; describe line and rotational symmetries, and solve problems involving angle properties of triangles and quadrilaterals; plot points in all four quadrants of the Cartesian plane and join them to form shapes; and draw graphs of functions of the form  $y = mx + c$  and  $y = ax^2 + bx + c$
- Statistics and Probability—Students collect, process, and tabulate grouped and ungrouped data; use grouped and ungrouped data to draw and interpret bar graphs, pie charts, and line graphs; calculate and interpret the mean, median, and mode of ungrouped data; interpret scatterplots for given data or situations using the line of best fit; interpret basic concepts of probability; distinguish theoretical probability from experimental probability; and calculate probabilities of single events for up to 12 outcomes

## The Science Curriculum in Primary and Lower Secondary Grades

According to the National Environmental Science curriculum,<sup>12</sup> which covers Grades 1 to 4 (lower primary), students should develop science process skills and reasoning skills through exploring and explaining environmental events and phenomena. The following topics and skill objectives are covered in Grades 1 to 4:

- Our Surroundings—Students learn to observe their surroundings, compare living and nonliving things, and take care of their surroundings (i.e., demonstrate care of surroundings and methods of managing waste)
- The Nonliving Environment—Students observe the bodies in the sky; observe and record weather conditions; and study natural resources (i.e., identify sources and uses of water, demonstrate methods of conserving water and soil, and investigate properties of rocks and soil)
- The Living Environment—Students observe plants and study their features; study the uses of plants; practice growing plants; and learn about themselves and other animals (i.e., acquire knowledge of body parts and their functions, and investigate the importance of animals and their habitats)
- Health and Safety—Students learn about personal hygiene, safety, and food and nutrition (i.e., proper methods of preparing, preserving, and storing food, and healthy eating habits). Science is taught as a subject in Grades 5 to 7 (upper primary) in which the following topics and skills are covered:
  - Science and Society—Students learn about the nature of science (i.e., how scientific knowledge is developed and organized, and how to apply scientific principles to solving problems), the history of science, and technology in science
  - Nature and the Universe—Students learn about the environment, plants (i.e., the importance of photosynthesis, the cycle of flowering plants, and germination and seed dispersal), animals (i.e., classification and adaptation), air, water, weather, and the solar system
  - Matter and Energy—Students learn about matter, energy (i.e., different forms of energy, properties of heat and light, and the nature and uses of sound), and acids and bases
  - Force and Motion—Students learn about force (including its effects and applications) and levers and other simple machines
  - Electricity and Magnetism—Students learn about static electricity, current, magnets, and electromagnetism
  - Health and Safety—Students learn about food and nutrition, diseases (contagious and noncontagious), safety (including safety symbols), and alcohol and drug abuse
  - Body Systems—Students learn about human body systems (i.e., functions of the digestive, circulatory, reproductive, skeletal, and nervous systems and functions of major organs of the digestive system)
  - Reproductive Health—Students learn about physical development, the human reproductive

system (i.e., reproduction in humans, stages of pregnancy, and problems of teenage pregnancy), sexually transmitted diseases, and HIV and AIDS

The lower secondary science syllabus<sup>13</sup> is divided into units, which emphasize different skills. In Botswana, Grade 9 students participated in TIMSS 2015 at the eighth grade. The syllabus covers the following science skills and processes in Grade 9:

- Science, Technology, and Society—Students learn about the nature of science, measurements (i.e., mass, temperature, density, scalars, vectors, time, volume, and length), and gene technology
- Plants, Animals, and the Environment—Students learn about living matter, energy flow in living things, managing natural resources, ecosystems, and sexual reproduction in flowering plants
- Materials and Their Properties—Students learn about the nature of matter, acids and bases, components of air, and construction materials
- Reproductive Health—Students learn about human growth and development, family planning, problems of sexual behavior, and human development and care
- Force, Motion, and Energy—Students learn about energy forms and energy changes, sound energy, and investigating forces, motion, properties of light, and heat energy
- Health and Safety—Students learn about personal hygiene, communicable diseases, nutrition, drugs, and hygienic surroundings
- The Human Body—Students learn about transporting substances in the human body, excretion, and communication in humans
- Electricity and Magnetism—Students learn about electrical energy
- The Solar System—Students learn about Earth systems

## Teachers, Teacher Education, and Professional Development

### *Teacher Education Specific to Mathematics and Science*

Since 2000, teachers in Botswana are required to complete a three year diploma course at a primary college of education in order to teach in a primary school, or at a secondary college of education in order to teach in a junior secondary school. Formerly, the minimum qualification for primary school teachers was a two year Primary Teachers Certificate. The last cohort of these teachers graduated in 1999. During their study at colleges of education, mathematics student-teachers spend approximately 58 percent of their time on subject content and 42 percent on pedagogy, while science student-teachers spend approximately 75 percent of their time on subject content and 25 percent on pedagogy. In primary colleges of education, 50 percent of course time is spent on subject content and 50 percent on pedagogy. Universities also offer further studies for qualified teachers. Recently, many teachers in Botswana have been sent for further studies and replaced temporarily by inexperienced teachers.

In addition to academic and pedagogical studies, both primary and secondary school student-teachers complete a six month course, during which they practice teaching in schools for three to four months under the supervision of experienced teachers. College lecturers visit them to assess

their performance in schools, and their assessment score contributes to their final grade.

### *Requirements for Ongoing Professional Development*

The Department of Training and Development (T&D), within the Ministry of Education and Skills Development, is mandated to provide professional development to teachers in school subjects across the curriculum, including mathematics and science. There is a T&D officer in each of the 10 regions of the country. Currently, the T&D department is experiencing a shortage of officers, hindering the successful execution of its mandate. TIMSS 2003,<sup>14</sup> TIMSS 2007,<sup>15</sup> and TIMSS 2011<sup>16</sup> findings indicate that the majority of teachers do not participate in professional development activities.

## Instruction for Mathematics and Science in Primary and Lower Secondary Grades

### *Grade at Which Specialist Teachers for Mathematics and Science are Introduced*

Subject specialization currently applies to teachers at the secondary level only. Primary teachers teach all the subjects, although some are educated as specialist teachers.

### *Instructional Materials, Equipment, and Laboratories*

The national curriculum is developed and administered by the Department of Curriculum Development and Evaluation (CDE)<sup>17</sup> within the MoESD. The goals of the curriculum are derived from national education policy. Instructional materials, including prescribed student textbooks, teacher's guides, and supplementary materials for each grade, are used to enrich and explain the curriculum. Textbooks developed by independent publishing companies are examined by a Book Review Committee and then presented to the CDE for evaluation. The CDE recommends textbooks and provides primary schools with teachers' guides. Schools have the latitude to choose textbooks from a list of approved textbooks. Additionally, the CDE has produced a booklet providing guidance for junior secondary school teachers on the development of instructional materials, teaching and learning methodologies, gender-sensitive content issues, and language use.

Some private schools are well-resourced with equipment and laboratories. Although there are laboratories in government secondary schools, they often are dilapidated, prohibiting classes from conducting experiments and resulting in their use as ordinary classrooms. There are no laboratories in primary schools.

### *Use of Technology*

The availability of computers is very limited in primary schools. Most junior secondary schools (Grades 8 to 10) have computers or computer laboratories, but not all schools are equipped with these resources. Nevertheless, all students at the junior secondary level are required to take a basic computer course. Internet connectivity is very minimal, and limited connectivity is compounded by a lack of electricity in some schools. Calculators are introduced in eighth grade.

The mathematics and the science syllabi<sup>18</sup> encourage the use of technology. Two of the aims of the three year integrated science and mathematics programs are as follows:

- Develop an awareness of computer applications in mathematics activities

- Acquire basic computer skills and an understanding of the significance of computers in the study of science and in science-related careers

### *Accommodation Policies for Instruction and Testing*

Botswana's Inclusive Education Policy<sup>19</sup> alludes to accommodation for instruction, but accommodation is not implemented effectively due to large class sizes, failure to conduct timely learning difficulty assessment of students, and other hindrances. There is no policy on accommodation for testing, but the national testing body, Botswana Examinations Council, uses guidelines for accommodating students at the national examination level. Schools rarely offer accommodation for testing.

## Monitoring Student Progress in Mathematics and Science

In addition to international assessments of student achievement, methods of monitoring student progress include classroom-based assessment, school-level assessment, and external national examinations. Classroom assessments are more formative and related to the ongoing process of learning in the classroom, while higher-level assessments like national examinations are summative.

Teachers and schools monitor the progress of individual students through quizzes, topic tests, end-of-term tests, and mock examinations. Teachers use these classroom-based assessments to make decisions about instruction, and to assist student learning. At the end of each term, schools administer end-of-term tests, and prepare reports on subjects and share them with parents. Occasionally, parents are invited to schools to review the reports and discuss their child's progress with teachers. Remedial programs are offered under school supervision.

Schools also are assessed to monitor the progress of students indirectly through school heads and teachers. Occasionally, personnel from the Ministry of Education and Skills Development will visit schools to assess teachers on their delivery of the curriculum. Ministry personnel assess teachers on content, methodologies of content delivery, evaluation, and resources utilized in delivering content to students. Teachers often attend workshops focused on empowering them to deliver the curriculum effectively. This is meant to ensure that the responsibility for student success rests not only with students but with schools as well.

Throughout their formal schooling, students take several national examinations, which provide a basis for selection to higher levels of education. For example, the Standard Four Attainment Test is administered at the end of Grade 4, covering mathematics and the Setswana and English languages, to assess learning progress so that appropriate action (e.g., retaining or promoting a child to the next grade) may be taken after consultation with parents. The Primary School Leaving Examination (PSLE) taken at the end of Grade 7 by students at both private and government schools provides a diagnostic assessment of students' strengths and weaknesses. At the end of Grade 10, students take the Junior Certificate Examination (JCE), and are selected for senior secondary school based on their results. Those who do not qualify for senior secondary school may take a vocational education path, or enter into the employment sector. Similarly, the Botswana General Certificate of Secondary Education (BGCSE), taken at the end of Grade 12, is used to select students for entrance to



universities, colleges of education, and other tertiary institutions.

Student progression is based on assessment at all levels, and up to 12.5 percent of students in a class who do not meet the baseline standard are allowed to repeat the grade.<sup>20</sup>

## Special Initiatives in Mathematics and Science Education

A program known as SMASSE (Strengthening of Mathematics and Science in Secondary Education)<sup>21</sup> was introduced in 2006, aiming to strengthen and enhance the quality of performance, teaching, and learning of mathematics and science in secondary schools. Originally adopted from Japan and benchmarked with Kenya, the model implemented in Botswana—the Activity-Focused Teaching/Learning, Student-Centered Teaching/Learning, Experiments, and Improvisation (ASEI) movement—encompasses four basic principles that guide SMASSE in-service teacher training activities: Plan, Do, See, and Improve (PDSI).

## Use and Impact of TIMSS

Botswana participated in TIMSS in 2003, 2007, 2011, and 2015. Achievement by Botswana's eighth grade students in the first two TIMSS cycles was not satisfactory, with a mean performance of approximately 364 in mathematics and 354 in science, and with approximately 68 percent of eighth grade students failing to reach the Low International Benchmark. The unsatisfactory performance led to Botswana switching to a ninth grade student cohort in subsequent cycles, which resulted in improved performance. The TIMSS results were disseminated to stakeholders throughout the country, including the Ministry of Education and Skills Development, heads of departments, school heads, regional education directors, parents, teachers, and representatives from other educational institutions. Dissemination teams held regional workshops in an effort to reach as many stakeholders as possible.

TIMSS studies identified certain background variables as negative indicators of achievement in mathematics and science. These variables include but are not limited to the following:

- Pedagogical issues, such as availability of resources, teacher effectiveness, and student motivation and aspirations
- Curriculum issues, such as proficiency in English, an imbalance in cognitive areas in the curriculum, and urban-rural disparities
- Social and environmental context, such as lack of parental involvement in children's learning, teacher absenteeism, lack of access to preschool, and imbalances in performance by gender (i.e., girls performing significantly higher than boys)
- Teaching and learning resources, such as urban-rural disparities in the provision of resources and lack of well-resourced libraries

The recommendations from the TIMSS reports have not been consolidated into interventions by the Ministry. However, a few sporadic interventions have resulted from the TIMSS findings. There has been some restructuring within the MoESD, leaving the Department of Teacher In-Service

almost nonexistent. TIMSS released items are sent to schools without any follow-up on their use.

- **Curriculum Review**—In 2006–2007, the Department of Curriculum Development and Evaluation conducted a review of the upper primary (Grades 5 to 7) and junior secondary (Grades 8 to 10) school curricula. In addition to benchmarking with other countries and using the TIMSS mathematics and science frameworks, the poor achievement of Botswana students on TIMSS 2007 and resulting recommendations informed the review. The review emphasized the acquisition of key skills across all subject areas.
- **Higher Order Thinking Skills (HOTS)**—Findings from TIMSS showed that students were not able to apply HOTS, such as critical thinking and problem solving in mathematics or science. The Botswana Examinations Council engaged a consultant from Australian Council for Educational Research (ACER) in 2008, to train its staff and teachers on implementing HOTS items that would allow students to develop critical and creative thinking, problem solving, and performance skills.
- **ETSSP Project<sup>22</sup>**—The Education and Training Strategic Sector Plan (ETSSP) was initiated in 2015 and is yet to be implemented. It aims to promote equitable, effective, efficient, and quality education and a rationalized education sector by restructuring the MOESD functions. ETSSP came about as a result of declining performance on national examinations and TIMSS and PIRLS studies.
- **National Assessment Programme<sup>23</sup>**—The country is in the process of establishing a national assessment program that will define levels of achievement throughout the education system according to national standards. This initiative was introduced after numerous studies (e.g., TIMSS 2003, TIMSS 2007, and TIMSS 2011, PIRLS 2011, SACMEQ 2007 and 2011, Monitoring of Learning Achievement 2001) revealed that the quality of the education system was low despite a high gross enrollment rate. As such, the National Assessment Programme was customized to yield accurate information about the bottlenecks of the education system.
- **Preprimary Programme<sup>24</sup>**—Although preprimary education is provided by the private sector, the government has stepped up efforts to meet the challenges it presents. A pilot one year reception program was introduced in 115 out of 756 public schools in Botswana in January 2014, and currently serves more than 4,000 children. This initiative was necessitated by the fact that TIMSS and PIRLS results showed that students in Botswana are outperformed by their counterparts in other countries not because they are cognitively inferior, but because they have been exposed to formal learning for fewer years.

## References

- <sup>1</sup> Republic of Botswana. (1993). *Report of the national commission on education*. Gaborone: Government Printer.
- <sup>2</sup> Ministry of Education & Skills Development. (2001). *Early childhood care and education policy*. Gaborone: Government Printer.
- <sup>3</sup> Ministry of Education & Skills Development. (2007). *Curriculum blueprint: The ten-year basic education programme*. Gaborone: Government Printer.
- <sup>4</sup> Ministry of Education & Skills Development. (2002). *Lower primary school syllabus: Standard one to four*.

Gaborone: Government Printer.

<sup>5</sup>Ministry of Education & Skills Development. (2005). *Upper primary school syllabus: Standard five to seven*. Gaborone: Government Printer.

<sup>6</sup>Ministry of Education & Skills Development. (2005). *Upper primary school syllabus: Standard five to seven*. Gaborone: Government Printer.

<sup>7</sup>Republic of Botswana. *2016 Budget speech*. Gaborone: Government Printer.

<sup>8</sup>Republic of Botswana. (1994). *Revised national policy on education*. Gaborone: Government Printer.

<sup>9</sup>Republic of Botswana. (1994). *Revised national policy on education*. Gaborone: Government Printer.

<sup>10</sup>Republic of Botswana. (1994). *Revised national policy on education*. Gaborone: Government Printer.

<sup>11</sup>Ministry of Education & Skills Development. (2000). *Botswana junior certificate mathematics teaching syllabus*. Gaborone: Government Printer.

<sup>12</sup>Ministry of Education & Skills Development. (2002). *Lower primary school syllabus: Standard one to four*. Gaborone: Government Printer.

<sup>13</sup>Ministry of Education & Skills Development. (2000). *Botswana junior certificate science teaching syllabus*. Gaborone: Government Printer.

<sup>14</sup>Ministry of Education & Skills Development. (2006). *Trends in international mathematics and science study 2003*. Gaborone: Government Printer.

<sup>15</sup>Ministry of Education & Skills Development. (2009). *Trends in international mathematics and science study 2007*. Gaborone: Government Printer.

<sup>16</sup>Ministry of Education & Skills Development. (2015). *Trends in international mathematics and science study 2011*. Gaborone: Government Printer.

<sup>17</sup>Ministry of Education & Skills Development. (2007). *Curriculum blueprint: The ten-year basic education programme*. Gaborone: Government Printer.

<sup>18</sup>Ministry of Education & Skills Development. (2007). *Curriculum blueprint: The ten-year basic education programme*. Gaborone: Government Printer.

<sup>19</sup>Ministry of Education & Skills Development. (2009). *Inclusive education policy*. Gaborone: Government Printer.

<sup>20</sup>Ministry of Education & Skills Development. (2009). *Inclusive education policy*. Gaborone: Government Printer.

<sup>21</sup>Republic of Botswana. (2011). *SMASSE evaluation report*. Gaborone: Government Printer.

<sup>22</sup>Republic of Botswana. (2015). *Education & training sector strategic plan (ETSSP 2015–2020)*. Gaborone: Government Printer.

<sup>23</sup>Botswana Examinations Council. (2015). *Business case for national assessment programme*. Gaborone: Author.

<sup>24</sup>Republic of Botswana. (2015). *Education & training sector strategic plan (ETSSP 2015–2020)*. Gaborone: Government Printer.