

## Chapter 2

# Botswana ICT Policy and Curriculum Concerns: Does School Connectivity Guarantee Technology Integration into Mathematics Classrooms?

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### ABSTRACT

*This chapter discusses the National ICT Policy (Maitlamo) in Botswana with respect to its ability to facilitate ICT integration in mathematics education. One of the seven components of the policy, the Thuto Net otherwise known as the School Connectivity Programme, facilitates provision of internet services in schools. The chapter therefore attempts to explore potential limitations of the Thuto Net in meeting the needs of ICT integration in the mathematics instruction. The importance of ICT in the teaching and learning of mathematics is outlined. The chapter recommends, among others, training of personnel, formulation of ICT policy in education and research-based subject integration guidelines to facilitate ICT applications in Botswana schools.*

### INTRODUCTION

The argument for the integration of the Information communication technology (ICT) into the education systems is based on at least four reasons: educational administration, digital literacy, basic and out-of-school education, and pedagogical tools (UNESCO Bangkok, 2004). Firstly, the advent of

ICT has enhanced effectiveness and efficiency in the work of school administrators and managers (Finger, Russell, Jamieson-Proctor & Russell, 2007). For instance, it now takes a shorter period of time to produce a school timetable. The tedious conventional methods of record keeping were no longer coping with demands from increased student enrollments where stationery and space were needed to create and store heaps of files. Furthermore, teachers have found ICT handy in keeping

DOI: 10.4018/978-1-61520-847-0.ch002

track of students' attendance, performance, and disciplinary records. Secondly, the educational sector can use ICT to impart digital literacy. It is common knowledge that ICTs nowadays permeate every aspect of an individual's socio-cultural activities. Hence, digital literacy is fast becoming a necessity for all. Digital literate individuals can be self-employed as providers of, among others, secretarial and internet services. Thirdly, the integration of ICT makes a cost effective inclusive education achievable, as it can eradicate boundaries caused by limitation of resources. A case in point is where governments have insufficient funds to construct more educational facilities, or to hire more teachers. In such cases ICT, can then be used to reach communities experiencing such shortages through Open, Distance and electronic learning (e-learning). Lastly, ICT can be used as a pedagogical tool. The optimism of the proponents of ICT integration into the curriculum is based on assumptions that ICTs will improve instructional practices and students' performance (Finger et al, 2007; Guven, 2008; Herbert & Pierce, 2008; Nababout & Basha, 2000). This is based on the belief that the ills of education such as the irrelevance of curriculum to the world of work, students' negative attitudes towards education, etc, can be rectified by the use of ICT in the teaching and learning process. In fact, the incorporation of ICT in the education sector is about preparing the future workforce for the job market environment 'infested' with new technologies.

Botswana like other countries the world over, saw a need to have an ICT policy to guide and monitor developments on ICT in the country. A major expectation of the National ICT Policy (*Maitlamo*) in Botswana is the application of ICT in private and government sectors including education through the *Thuto Net* Programme. The *Thuto Net*, also known as the School Connectivity Programme, is a component of the National ICT Policy. This chapter therefore explores the extent to which the *Thuto Net* facilitates ICT integration in mathematics curriculum in Botswana. The specific

objectives of the chapter are to describe ICT policy and mathematics education in Botswana as well as discuss benefits of ICT integration and recommend possible benefits of integrating ICT into the mathematics curriculum. Mathematics education in Botswana is experiencing underachievement problems. For instance, the subject records the lowest performance at all levels of schooling amongst core subjects in the school curricula. One of the difficulties that students experience in mathematics learning is due to the abstract nature of mathematics teaching. However, ICT is capable of representing mathematical ideas and concepts in a visual form which is quicker and easier to understand. The chapter summarises the Thuto Net Programme, describes the contribution of ICT in the mathematics instruction, discusses the capability of the School Connectivity Programme to ensure ICT integration into the teaching and learning, and outlines strategies to reconcile ICT policy and the school curriculum.

## **BACKGROUND**

The Second National Commission on Education (Republic of Botswana, 1993) suggested the schooling structure in Botswana be in the ratio 7:3:2. Pupils are to spend seven years in primary, three in junior secondary, followed by two years in senior secondary education. It was realized that the previous structure of 7:2:3 compromised the quality of education offered in Botswana schools. For instance, after two years of junior secondary education, graduates were found not adequately prepared for the world of work (Republic of Botswana, 1993). Therefore, the new structure sought to avail knowledge and skills relevant for further education and training as well as providing competencies and attitudes required in adult life and the global job market (Republic of Botswana, 1993). In order to achieve the above, the NCE further recommended Information and Communication Technology (ICT) to be a driv-

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