Chapter 18

Linking Mathematical Literacy to ICT:
A Good Mix for Community Development in South Africa

Tshele Moloi
University of the Free State, South Africa

ABSTRACT

This chapter addresses the relationship between mathematical literacy and ICT and how this understanding can help improve the application of these two phenomena. Often times we ask ourselves what literacy means and who is illiterate, and answers to these questions differ according to our understanding of what is means to be literate and for what purpose such literacy plays. The same questions when directed to mathematics are likely to yield the same response specifically when relating to mathematically literacy as a tool for community development. The relationship between information communication technology and mathematical literacy is addressed in this chapter. Actually, mathematical literacy is equated to ICTs.

The first debate is that of the difference between mathematical literacy and mathematics. Mathematics and mathematical literacy differ in purpose and kind. Mathematical literacy has been made to be accessible to all South African learners who usually stopped studying Mathematics after completing primary education. In most cases, learners who dropped Mathematics after primary education are in majority. The inclusion of Mathematical Literacy in high schools will ensure that learners are highly numerate consumers of mathematics. Furthermore, learners will develop the ability to understand mathematical terminology. If a learner does not perceive Mathematics to be necessary for the career path or study direction chosen, the learner will be required to take Mathematical Literacy. Mathematical Literacy

should not be taken by those learners who intend to study disciplines which are mathematically based, such as the natural sciences or engineering. On the other hand, Mathematics is based on observing patterns; with rigorous logical thinking, this leads to theories of abstract relations. Competence in mathematical process skills such investigating, generalizing, and proving is more important than the acquisition of content knowledge for its own sake. To shed light on the argument of this paper, you will realize that people still perceive mathematical literacy as inferior subject to mathematics. The market-place still requires students to have higher pass level in Mathematical Literacy than mathematics. The challenge is how we resolve the matter that Mathematics and mathematical literacy differ in purpose and kind. For example, Mavagara-Shara (2005) has observed that Mathematics permeates the whole of our world, society, and human activities.

Mathematics is actually that which enables creativity and logical reasoning about problems in the physical and social world (Doe, 2003). It is a distinctly human activity practiced by all cultures. It thus can be used to enhance social change and cultural diversity especially when linking it with the use of information communication technology (ICT). This chapter thus presents a case of rural communities in South Africa and how they can use mathematical literacy coupled with relevant ICTs to development themselves. These communities are in provinces where there is a huge scarcity in the Science, Mathematics and Technology (MST) fields as a result of its past apartheid educational systems in which the majority of blacks, because of inferiority status imposed by the old regime, were not allowed to study these subjects. The new curriculum, namely, the Outcomes-Based Education approach which targets to redress imbalances of the past has opened opportunities for all communities to be mathematical literacy and use ICTS. Outcomes-Based Education aims at bringing about the skills, knowledge, attitudes, and values responsive to the developmental needs of people in South Africa.

Finally, there is need to indicate the relationship between mathematics/mathematical literacy and ICTs. In this chapter, the two are seen as inseparable. In everyday life, a person is continually faced with challenges that call for mathematical skills, such as financial issues (hire-purchase, mortgage bonds, and investments), understand house plans, read a map, follow time table, et cetera; with the usage of ICT these can be done very fast and accurately. It is of utmost importance that a person must have a sense and knowledge of Mathematics, so as to detect mistakes committed by the usage of ICT.

BACKGROUND

In 1994, the South African democratic government introduced the new curriculum in all South African schools. The new curriculum, Outcomes-Based Education approach, targeted to redress imbalances of the past, which were created in different social groupings. One such imbalance was the teaching of mathematics to all South Africans. During the apartheid regime, the majority of the blacks were not allowed to study mathematics and science related courses as they were considered to be superior to other courses. This means that many still lag behind with this knowledge which is so much needed in today's world of technology. Mathematics, mathematical literacy and ICTs have a relationship that cannot be ignored.

To offset inadequacies of the past educational systems, the Outcomes-Based Education is aimed at bringing about the skills, knowledge, attitudes and values which can be used to develop South Africa. Du Toit (2008:42) stated that instead of a gradually phasing–in the new curriculum, the National Department of Education decided to implement the more radical transformational OBE in South Africa. Moreover, the decision was taken

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