

1. INTRODUCTION

No teacher of mathematics can afford to ignore the changes that are taking place in mathematical education in the schools. These changes concern method and content and are calculated to improve the mathematical education of all children, having regard to their varying abilities. Mathematics is a basic tool in the development of science, technology, commerce and industry and hence in the economic development of a modern society. Mathematics is also a way of thinking and reasoning which enhances the education of a man, no matter what his place in society. All children therefore need to be equipped with this essential tool of productiveness and thought, to varying extents according to their abilities, so that in time they may make their contribution to the economy and the government of their societies and also improve their own qualities as human beings. In furthering this cause, the role of a teacher is to assist the children in learning mathematics. It is the purpose of the following pages to show how to perform that role efficiently.

The first step is a clear statement of the aims of mathematical education which is relevant to the needs of the society and the individuals. The aims resolve into the two strands of usefulness and personal development. It should be the aim of mathematical education to enhance the usefulness of an individual in his contribution to the economic development of society and the economic stability of himself. It is also a desirable aim of mathematical education to assist the individual to think straight, solve his problems and function effectively as a citizen of a civilised state. At the beginning of a new topic or lesson, the teacher should ask himself how far the topic or lesson promotes one or another of the aims of mathematical education. These aims and the fundamental ideas of mathematical education are elaborated in Chapter 2.

Primary education is the foundation on which any superstructure is laid. Considerable space is therefore devoted in Chapter 3 to the method and content of mathematical education in the primary school. The change in method is less of direct teaching and more of providing experience and opportunities for children to discover facts and relations in mathematics. The children should be allowed to experiment, investigate and draw conclusions based on their own findings and expressed in their own words.

In this approach, the environment and the culture are vitally important. The children should be assisted to see mathematics in their environment and as an inherent factor of their culture. It is from the familiar surroundings and base that mathematical abstractions are made and purified. A teacher should select the experience and topics which assist children best in learning mathematics in that exploratory manner.

In the secondary school, the mathematics teacher is a specialist in mathematics. He must know his subject and be able to interpret the syllabus with a view to promoting mathematics learning at that level. He should keep in view the needs of the future mathematicians who would create more mathematics, the future engineers, biologists, chemists, physicists, agriculturists and many other scientists and technologists who need mathematics for their work, the intermediate level workers and technicians and a large number whose mathematical education ends in the secondary school. Chapter 4 contains statements and suggestions which should help a teacher to pursue these objectives of mathematical education more efficiently.

The last three chapters deal respectively with the assessment of children's progress and evaluation of programmes, the training and re-training of teachers and the resources for learning mathematics. The importance of a competent teacher cannot be over-stressed. A competent teacher, trained and re-trained, armed with suitable resources for learning mathematics and equipped with the latest methods of assessment and evaluation, is a valuable asset in the promotion of mathematical education in schools. It is suggested that it should be the aim of every teacher to become a competent teacher and that this book should help in achieving that aim.