INTRODUCTION

When asked to write this chapter, we were faced with two large and seemingly distinct tasks. The first was to review the emergence of information technology and its impact on curriculum and teaching in educational institutions, and in particular, on teaching and learning in science education. The second was to examine the roles played by evaluation in the development and assessment of sound principles which underlie the effective use of information technology.

In order to do justice to both we decided on an approach along the following lines. First, we examine how evaluation has impinged on curriculum and teaching at the school level up to now. The term school level is used advisedly because our view is that the use of information technology in science classes is strongly affected by the decisions taken by the school as a whole. Having set the school level scene, we then examine the roles
and impact of evaluation on school science education. These examinations are retrospective, with an emphasis on developments over the past decade. With these background conditions in place, we are then in a position to move to a proactive stance. The conclusion sets out an agenda for evaluation of information technology in science education for the future.

While this chapter has a global focus, it has a distinctly Australian perspective. This is due to the fact that the authors are Australian, that some of the studies which we draw on were conducted “down under”, and that we have actually undertaken evaluative studies of information technology in Australian schools. In addition, we have developed some innovative approaches to evaluation practice which we would like to share with an international audience. It is worth adding that a brief review of developments around the world suggests that educational technology issues facing Australian schools are very similar to those facing schools in the United States of America and many countries (Meredyth et al., 1999). Thus while this chapter has a distinctly Australian flavour, there is clear evidence that the findings will be relevant to educators worldwide.

EMPHASIS ON INFORMATION TECHNOLOGY IN THE CURRICULUM

Many developed and developing countries are placing an increased emphasis on information technology as a means of supporting the transition to a knowledge-based economy. Policy directions for schools is a manifestation of this trend; for example, Getting America’s Students Ready for the 21st Century is a document designed to encourage the use of information technology in schools and to increase student achievement (USDE, 1996). Singapore has set out strategies for integrating information technology into education in four areas through its Masterplan for Information Technology in Education (SME, 1997). These areas are: curriculum and assessment, content and learning resources, physical and technical infrastructure, and human resource development. Other countries as far apart as Finland, Thailand and New Zealand have placed information technology on the national educational agenda.

An assessment of these policy developments shows their recency. Most if not all countries are only beginning to think through the implications for implementing the widespread use of computers and other related technologies in schools. Even in the richest country in the world, it has been found that few schools have adequate numbers of modern computers or access to the Internet, and relatively few teachers are prepared to use technology effectively. Further, access to computers and other technologies is not enough; integration of technology is also needed (USDE, 1997).