Section 1

EDUCATION IN THE INFORMATION SOCIETY
For several decades, information society and knowledge society concepts have been discussed in the context of teaching and learning. Many official projects and policy documents from the school level up to the cross-national level have addressed the implications of these concepts for education. The principle implications relate to the changes wrought by harnessing information technology (IT) to improve and advance learning.

Information society concerns for education are discussed in other frameworks. For example, the many “twenty-first century skills” initiatives for the past 10 years have really been driven by what educators understand to be the implication of the information economy for curriculum, teaching and learning.

The field and practice of IT in education are moving very rapidly around the globe. Plomp et al. (2003) offer summaries of policies and practices of IT in education in well over 30 countries. And while each country has unique features, it is striking how similar the pattern of development of the field continues around the world. Globalized communication in the age of the information and knowledge economies works to bring common elements into otherwise diverse educational systems.

Information and knowledge processes are largely social (Brown and Duguid, 2000), which implies that education must consider this in effective harnessing IT in teaching. In fact, recent trends in K-12 education reveal a heavy emphasis upon collaborative problem solving and computer-supported cooperative learning (CSCL) more generally. Stahl (2006) has been exemplary in describing the theory and research in this direction.

Information (and knowledge) society notions are most importantly a set of perspectives for rethinking education in general. That potential is illustrated in this section, in which chapters are represented on theory as well as research and practice.

Chapter 1.1 defines key concepts and other background material, particularly as it relates to the role of information and knowledge in IT. The emphasis is on the relevance of these concepts to IT or ICT in education. The concepts include information, knowledge, knowledge societies, tacit knowledge, knowledge management,
constructivism, twenty-first century skills, literacies, informatics, mindtools, collaborative learning, and communities of practice.

Mioduser and associates in Chapter 1.2 ask what it means to be literate in the age of knowledge and technology. They answer the question with a description and discussion of seven “literacies for the knowledge society.” The reader cannot help but come away with a more thorough appreciation of the many different ways that effective literacy demands effective technology.

Dede in Chapter 1.3 focuses on theory, but provides a unique perspective on how not only does IT shape education, but also forms of pedagogy shape technologies. He categorizes relevant theories as behaviorism, cognitivism, and constructivism, and then shows how these conceptual starting points both constrict and elucidate opportunities in teaching and learning.

Chapter 1.4 presents data from PISA 2003 and other sources to show how the typical, contemporary student already uses the Internet regularly to conduct research as well as engage in learning. For instance, students may be more likely to do technology-based information searches and knowledge building at home rather than at school because of limited access at school and because their teachers may lack the IT skills to help them in these endeavors. In addition to giving us data some 19 countries around the globe, the chapter makes a case for emphasizing advanced instructional methods such as simulations.

Chapter 1.5 contrasts traditional applications in IT and education such as computer-managed instruction (CMI) with emerging applications, such as inquiry learning, project-based learning, and modeling. Tool-oriented software such as word processors, spreadsheets, and databases can be used in a traditional sense in the spirit of computer-literacy instruction or in a more emergent way in that the emphasis is not upon teaching students how to use the tools but how to apply them to educational tasks, such as writing, modeling, and database design. The chapter describes many different computer applications from the standpoint of various dimensions of instructional philosophy, the type of application, and the instructional contexts.

Chapter 1.6 starts with a model of the instructional learning process and then shows how the key elements (goals, infrastructure, organization, environment, teacher, and learner) can fit together and yield effective outcomes in teaching and learning. Within this structure, alternative approaches are contrasted and discussed.

References