Introduction

On the eve of the twenty-first century we are facing a dramatic change in the world that might be called removing the walls—both in a political and technological sense. The power of the new information and communication technologies (ICTs) is influencing human life and the economy so profoundly we are all becoming learners again, both as individuals and members of (real or virtual) learning communities and learning organizations in a learning society.

Learners need information. They need knowledge to make decisions and act. And they need wisdom to decide, act and take responsibility for the consequences of their actions. We should target our education and training towards building an ‘information society’ where minds and technology work and learn together in a global knowledge space. A global knowledge space provides the ground where global wisdom can grow. Today, one of the most important tasks of UNESCO, the European Union (EU), the International Federation for Information Processing (IFIP) and other international organizations is to
foster global wisdom, to cultivate it and to ensure an appropriate political, social and technological climate for its growth.

An information society built upon global information networks offers new challenges for policy makers, researchers, educators and learners. The European Commission White Paper *Teaching and learning: towards the learning society*, approved by the EU on 29 November 1995, states that tomorrow's society will be a society which invests in knowledge, a society of teaching and learning. The fact that *Learning: the treasure within* (Delors et al., 1996) was published in 1996, at the same time as UNESCO's second International Congress on Education and Informatics and the IFIP World Conference Teleteaching '96 *Practising what we preach* (held during the European Year of Lifelong Learning announced on 2 February 1996 by Commissioner Edith Cresson), shows the concern of UNESCO, the EU and IFIP in bringing about conditions for a worldwide diffusion of a technology-driven educational reform. This reform would enable learners all over the globe to have access to the world's cultural heritage, locally unavailable educational services, expertise and resources.

**Information, knowledge and wisdom**

The main branches of ICT deal with storing, processing, transmitting and presenting information. The notion of information is as fundamental as the notions of matter and energy. There are purely theoretical and philosophical problems associated with the enormous acceleration of computing power and the capacity of telecommunications.

Information itself always uses some material medium, but it is not identical with its carrier. One of the pillars in the progress of information processing is ensuring a high ratio between the unit of information and the amount of matter needed to carry this information. There has been a tremendous advance in these technologies, based on our knowledge of the structure of matter obtained through the physical sciences. Efforts to develop high-performance computers are connected with attempts to reach the ultimate capacity of the human mind. Today, computers, parallel computing systems and telecommunications are the basic instruments for processing and providing information. They provide the conditions for technology and minds to work together, and the ultimate capacity of this synergetic system could be much greater than the capacity of a single mind. To have a clearer view of how to reach this goal, we need to know more about the different categories and structures of information and how they are represented in the human mind.

Information can have different degrees of structure. Information with the lowest level of structure is called data. Knowledge is usually defined as structured information. At the present moment, we are making tremendous progress in developing instruments for storing, processing and transmitting different forms of information, but the advance in defining and understanding different levels of informational structures is not so rapid. If we compare the development of information sciences and the material sciences, it is obvious that we are only at the beginning of differentiating levels of information structures and the related information sciences.

When trying to understand how a human mind works we might successfully employ the informational metaphor. For instance, information processing theory (Miller, Galanter...