

Foreword

Over the last few decades the use of computer technology within education for the support of learning, teaching and training (and their management) has become a major growth area within virtually all areas of human endeavour. Computers are now used extensively in schools, colleges and universities; they are also used in people's homes and work environments in order to support a wide range of learning, skill development and knowledge acquisition processes. As well as their use in formal compulsory and post-compulsory education, various forms of computer technology are also used as agents to facilitate the lifelong learning activities that are now necessitated by ongoing change within a world-wide arena. Nowadays, change is so rapid, I believe that it would be extremely difficult for people and organisations to survive without effective and efficient computer systems to help them learn and develop the skills and knowledge that is needed to face and solve the new problems with which they are continually being confronted.

Bearing in mind what I have said above, it is important to remember that there is now a plethora of hardware, software and supporting technologies available for use in the various learning environments that we create. Of course, it is vital that all of the different hardware, software and interface components work together in a seamless and transparent way. Within this book, the term '*interoperability*' is used to describe this important requirement. Of course, '*transferability*' is also an important goal to achieve. Ideally, a piece of software written to run on one computer should be executable on any other computer that meets that software's resource requirements. A similar argument applies to the various hardware components that are used to build computer systems - for example, a USB memory stick should be usable on any computer that provides an appropriate host port and a suitable software driver.

Naturally, within an educational system there are other important issues to consider in addition to the basic hardware and software standards. Because education is a people-orientated activity, it is also necessary to consider the many human, pedagogic and curricula factors that are likely to influence the interoperability of a computer-based learning environment. For example, the psychological factors that govern the different ways in which people learn and solve problems are also vitally important areas which warrant attention in relation to interoperability. Furthermore, the ability to tailor an educational system to the needs of particular users is also an imperative pre-requisite in order to accommodate differences in each individual's capability and capacity to learn. In my view, the days of 'one size fits all' have long gone.

In order to achieve the goals of interoperability and transferability, a range of different *standards* and *specifications* are needed. A standard is essentially an 'agreed way of doing something' - to which everyone agrees and subscribes. For example, in a keyboard interface, the backspace key is used to delete the character that lies immediately to the left of the current cursor position. This is an example of a very simple standard to which all 'standard keyboards' conform. It is through the use of standards

that we can achieve ease of use and the transferability of skills (from one situation to another similar situation) when people use technology (in general) and computer systems (in particular). Of course, as has been suggested above, standards are important because they under-pin the approaches that are used to realise the interoperability of learning system components and the transferability of human skills. Of course, standards themselves need to be defined in terms of clear and precise specifications. Special linguistic tools, such as metanotation (and metadata), are therefore often needed in order to state, in a unique and un-ambiguous way, the nature of the standards that are to be used in order to achieve the goals of interoperability and transferability.

I believe the contributions to this book address many of the important issues that we need to consider in order to achieve, in a successful way, the goals that I have outlined above - within the context of electronic learning (e-learning) systems for use in different educational contexts. Indeed, the twenty-five chapters that make up this volume describe, discuss and debate a broad range of important interoperability issues relating to the creation and sharing of e-learning resources and the assessment of the learning outcomes that are derived from their use. In my opinion, this book offers much useful advice and it documents valuable experience which will be of benefit to all those who are involved in the design, production and use of e-learning applications - be these to support an individual learner or a learning community. Indeed, I am sure that the content of many of the chapters in this book will form sound 'stepping stones' that will 'lead the way' forward for future developments in this vital area of human endeavour.

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