LEARNING ENVIRONMENTS: BEHIND THE METAPHOR

In computer education, the term 'learning environment' is often used to describe an ideal worth pursuing. It has been around for some time, perhaps with a genesis in Papert's microworlds. But what is behind the metaphor? And is its liberal use justified?

Biological environments include living things, their non-living surroundings and the complex set of relationships between them. By labelling and describing environments, biologists are using systems theory to bring order to an otherwise complex and sometimes chaotic area of study. In terms of the metaphor, it is important to recognise that agency is distributed amongst the living components of the system. In other words, there is not a central controller directing each living thing to act in particular ways. Rather, each living thing acts autonomously, governed by the demands of individual and species survival. Thus, there are two aspects of the biological use of the term environment that I wish to highlight: it is a product of a systems approach and it implies a distribution of agency.

It is not difficult to see why the term computer learning environment is so attractive to computer educators. The distributed agency implied by the term resonates well with current educational ideals such as self-directed and autonomous learning. In addition, the systems approach has obvious application in the management of a complex mix of computer and students.

Is there then any danger in using the term? I would argue that there is, and it is because the term is so seductive. It is easy to believe that computer learning environments do not need to be carefully designed. Further, it is implied that the agents within the system (ie. the learners) can be left to their own devices within a 'habitat' that we as teachers provide for them. It is also presumed that the learners are motivated by a desire to learn rather than survive! These are dangerous assumptions.

The term is also attractive because it implies that groups of learners using computers can be modelled as a system. Furthermore, it is a system where agency is clearly defined and interactions are easily measured. I would argue that such an approach is highly contestable.

IN THIS ISSUE
This issue includes a number of contributions that deal with products of a pedagogy of learning with computers: computer learning environments, and particularly the design of such environments. The authors suggest that we need to go beyond the assumptions inherent in the term and seriously consider how we may design and use such 'environments'.

Toni Downes and Cheryl Fatouros in 'Young children learning in their preschool and primary years' review some of the principles that should lie behind the planning of computing environments for preschool and primary children. They identify principles from theoretical, social, educational and technological perspectives that should assist designers of such environments.

In 'Adaptive learning environments: The future for tutorial software?' John Eklund revisits one much maligned category of learning environments: tutorial software. He describes recent advances under the umbrella of intelligent tutoring systems which incorporate models of student's understandings. He suggests that these systems are set to prove to be very effective in achieving learning goals.

That we can't simply let students loose in a computer environment is the central thesis in 'Selecting and organising worthwhile computer based learning experiences' by Jenny Galligan. In a paper drawn from a Queensland Department of Education policy document she provides some guidelines for selecting and organising computer based experiences.

Helga Rowe also visits the theme of the design of computer learning environments in 'Computer-assisted knowledge acquisition: let's have theory-based instruction'. She argues that it is time for computer educators to go beyond principles based solely on practical experience. Instead we need to seriously consider theoretical approaches.

Also in this issue we have our regular From the Classroom, Internet Information, Book Review and Conference Calendar sections. And to provide a recursive twist, we have a software review by Dave Tulip who takes a look at a computer learning environment for investigating a biological environment!

NEXT ISSUE
In the next issue of the journal, we hope to explore pre- and in-service teacher education. In the field of computer education there is a such rapid development that old models of teacher education may be quite inappropriate. But what are the alternatives? Can new forms of technology, such as wider and faster communications links, provide different ways of supplying such education? And do the traditional providers, universities, need to provide a wider range of tailored services?