Editorial

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Biographical notes: Paul Brna is Professor of Computing at the School of Informatics, Northumbria University. Previously, he was Director of the Computer Based Learning Unit and Reader in Interactive Learning Systems at Leeds University. After obtaining his PhD at Edinburgh University in 1987, he lectured at the Universities of Edinburgh, Napier and Lancaster before moving to Leeds. His interests lie in researching issues in interpretation, external representations, collaboration and narrative through designing and evaluating computer-based systems. He is the Editor-in-Chief of the *International Artificial Intelligence in Education Society*.

Rosemary Luckin is Director of the Human Centred Technology Research Group at Sussex and also of the IDEAs (Interactive Digital Educational Applications) Lab. She is a Reader in Computer Science and Artificial Intelligence and is currently the principal investigator or co-investigator on various EPSRC/ESRC grants. She has held a range of EU/EPSRC and ESRC grants that have brought approximately £1 million into the HCT research group. She is on the editorial boards of the *International Journal of Artificial Intelligence in Education* and the *Journal of Computer Assisted Learning* and has served on many conference programme committees in the area of ICT and interactive learning environments. She has numerous peer reviewed journal and conference publications and has acted as a consultant to various organisations including Becta, Pearson Broadband, BBC and the DFES.

1   Introduction

The papers for this special issue had their genesis in a workshop on the theme held originally in 2000 and repeated in 2002 and 2004. The series of events, called NILE for Narrative and Interactive Learning Environments, continues with NILE 2006 already planned.

Themes that were selected for the special issues included, but were not restricted to, the following:

How are narrative aspects of the learning environment incorporated into the learning experience?

We know that the development of a narrative by a learner and the learning that takes place have an important relationship. We need to continue to ask questions about our progress at understanding this connection, and it is heartening to see general interest in this issue. Allied to this is the question about how we might utilise this understanding in interactive learning environments. For example, deriving a better connection between the 'designed in' storylines and the levels of engagement and learning attained by different learners. Marshall, Rogers and Scaife examine the ways in which children interact with an environment with an 'endless' narrative cycle – and generate their own personal responses while Louchart and Aylett are concerned with how narrative emerges from the interaction of learners with the environment.

How are the narrative aspects of the learning environment adapted to the learner?

There is a serious problem deciding how to take into account the previous experiences, personal preferences, skills and abilities that learners have. We have quite limited achievements within the area of interactive learning environments so what are the effective ways of manipulating the narrative experience itself? What kinds of explicit (and implicit) models of the learner are useful? What kinds of adaptation would be appropriate?.

In this special issue, only Louchart and Aylett really approach the issue about adapting the environment to the learner through their concept of emergent narrative. They motivate their work in relation to VICTEC, a project aimed at helping children develop their understanding and skills at managing bullying.

In another, less direct way of addressing this issue, Waraich and Sharman outline their approach to the use of ideas about narrative in the design of learning environments. In their case, there is no explicit model of the learner. A 'model' of the learner is implicit in their notion of informant design since the design is always subject to questioning what the 'reader' would make of the experience. Such an implicit model can be inconsistent or even just plain wrong in that the designer has somehow failed to understand the issues faced by learners. However, the way to deal with this may well be to develop this narrative-based informant design approach.

How do we take the affective aspects of narrative into account?

With an interest in affective computing, and awareness of the ways in which people react in relation to interactions with agents, interfaces and stories, what can be done to support high quality emotional responses within a pedagogical context? How is the experience of supporting children's emotional development being utilised and what else can be learned from e.g. regular storytelling interactions between educators, carers and children? What ethical issues do we need to examine further?

These questions are broad and difficult ones. Ananny, Strohecker and Biddick provide a context in which we might be able to pursue such issues. Their work in a social arena encourages the development of personal narrative and the related development of personal identity within a communal context. Marshall, Rogers and Scaife provide a

window into the ways in which children react to situations in terms of affect, and by giving children highly simplified controls over the situation, allow some insight into the possibilities for children to understand emotional constructs.

Robertson and Cross examine, amongst other concerns, how an environment called StoryStation, influences the sense of trust in the advice offered by the environment as well as how the system affects the development of writing skills. Their results illustrate the importance of taking the children's prior experiences into account as well as the social context of learning.

How do we ensure that the experience supports social learning?

How can we maintain good quality relationships between people directly and indirectly engaged in the narrative? How do interactive learning environments help designers, teachers and learners to support each other? How are different kinds of communication and reflection supported?

Following the approach taken by Waraich and Sharman, we might argue that informant design needs to be used together with a view of narrative that emphasises the relationships between people. Unfortunately, there is relatively little work in this area. Ananny *et al*. do provide an interesting context in which such learning might take place in an arena in which social pressure has a strong influence over the activities that are participated in.

How do we analyse the effectiveness of both the 'designed-in' and emergent narrative aspects of an interaction for the learner?

How do we evaluate the quality and outcomes of the narrative experience including learning gains, personal development such as motivation, self esteem and creativity? What is the best practice available/possible? What techniques need to be developed further to combine quantitative and qualitative data to produce a more meaningful analysis? What prospect is there for automating the process?

There are many unanswered questions here – even within the huge range of literature written about the many of the issues. Yet we do not find enough work has been done in the general area of narrative and interactive learning environments – a good reason to expect fruitful research to come from the work of those researchers whose papers feature in this special issue.