Chapter VI

Coming off the Rails: Evaluation and the Design Process

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ABSTRACT

This chapter addresses methodological issues concerned with the design and creation of computer-supported collaborative learning environments. It draws on the work of a group of sociologists and computing scientists who together, and independently, have been researching the use of museum environments and artefacts as educational resources for primary-school-age children (six to 11 years old). This work has in part focussed on requirements elicitation for interactive, computer-based collaborative virtual environments (CVEs) and has included a range of techniques including interaction analysis, ethnography, conversation analysis and participative design strategies. Evaluation work carried out with children using and developing Web-based CVEs suggests that no single requirements elicitation technique is adequate in this context and participative design techniques might benefit from insights afforded by a
grounded ethnographic approach. We argue that knowledge of context, awareness of educational goals and practice, and an understanding of the nuances of interactive activity are vital for the design and development of useful and useable online educational resources and that evaluation should be integrated with the design and development strategies.

INTRODUCTION

The recent enthusiasm for production of online learning environments for school-aged children raises some important issues associated with the design and development of such systems, their usefulness and usability, as well as the means by which all these processes and characteristics are evaluated. For primary-school children (K-6), in particular, the resources must not only be accessible and attractive but must offer more than a means of entertaining or keeping children occupied—they must also have “educational value.” Such a feature may be identifiable through evaluation techniques, for example, by measuring learning outcomes or monitoring children’s development, but approaches like this presume much about usefulness and usability and are, furthermore, grounded in the idea that online interaction is simply a re-creation or extension of human interaction.

A defining characteristic of any educational resource must be the process by which it comes into existence. Traditionally, educators have goals in mind and draw on contemporary knowledge and ideas to find ways of achieving these goals. Theories about the way in which children learn are a necessary component of this part of the process. Thus situated learning approaches (Lave & Wenger, 1991) which suggest that knowledge needs to be presented in authentic contexts and that learning requires social interaction and collaboration may prompt the development of systems which replicate the real world or components of it and allow virtual interactions to take place. Constructivist approaches (Bruner, 1986, 1990) that stress experience, context and design may, for example, result in models which allow students to build their own learning environments. However, the resources which are adopted are created within the material and physical constraints in which they are to be used. Thus, anything which cannot be easily and cheaply replicated and made readily available to those at whom it is aimed will not gain currency, and this holds true as much for online resources as for paper-based or other physical materials.

The intention in this chapter is to focus on the evaluation of production processes through an exploration of two approaches to requirements elicitation, one ethnographic and the other involving user participation. In this way we will be addressing methodological issues concerned with the design and creation of computer-supported collaborative learning environments, referring specifically to the development of interactive, computer-based collaborative virtual environments (CVEs). We draw here on work which has been carried out by a group of sociologists and computer scientists who together, and independently, have been researching the use of
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