Chapter 17
Implementing Technology-Enhanced Learning

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Abstract In this chapter, we look at the implementation perspective from the starting point of the fundamental educational aims that unite the academic community. We argue that interactive and cooperative digital media have an inherent educational value as a new means of intellectual expression. Our primary concern is not the optimisation of knowledge transmission but the use of digital technologies to enhance intellectual expressiveness and creativity: helping the students in their appropriation of the world with a special emphasis on their intellectual development, it is essential for the education system to incorporate new digital media as tools for intellectual expression and production. We outline the main issues relevant to the implementation of technology-enhanced learning (TEL) – the link to overall educational aims, the relationship between innovation and practice, the importance of user engagement, the nature of TEL research, and the characteristics of the local context, and the nature of TEL as a catalyst for change. The chapter concludes with some of the key lessons learned in recent research and development projects that will help to develop more successful ways of ensuring that the technology achieves its potential to enhance learning.

Keywords Technology-enhanced learning (TEL) · Implementation · Higher education · User engagement · Pedagogy

17.1 Introduction

This chapter will discuss and summarise strategies and successful approaches to delivering innovative technology to different learning settings and fostering innovation through technology. Our perspective, however, is not focused on "efficiency" in terms of using technology to accelerate learning processes by faster delivery and distribution of learning materials. It is rather oriented towards the role of technology

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to enable new types of learning experiences and to enrich existing learning scenarios. To do this successfully, we have to understand not just teaching and learning, but also the context in which the implementation of technology-enhanced learning (TEL) has to take place.

One of the strongest arguments for bringing new digital technologies into schools and other educational institutions is that, by doing so, we would trigger pedagogical innovation. This argument can be explained in a system-theoretic perspective on education. One analysis has identified a basic "technology deficit" in pedagogy and education (Luhmann & Schorr, 1982).

Although Luhmann & Schorr argue for more "technological" approaches in education, they emphasise that the constraints inherent in the system have to be understood and considered in any attempt to foster serious change. Essentially, we cannot re-engineer or adapt the system from outside, it has to adapt itself. On the surface level, this is happening: computers and Internet connections are now widely distributed and available in many schools in Europe and even in supposedly less developed parts of the world. However, the consequences in terms of curriculum revision, in terms redefinition of the basic professional skills of teachers or in terms of classroom orchestration remain largely unsolved.

In this chapter we look at the implementation perspective from the starting point of the fundamental educational aims that unite the academic community. We argue that interactive and cooperative digital media have an inherent educational value as a new means of intellectual expression. Our primary concern is not the optimisation of knowledge transmission but the use of digital technologies to enhance intellectual expressiveness and creativity: helping the students in their appropriation of the world with a special emphasis on their intellectual development, it is essential for the education system to incorporate new digital media as tools for intellectual expression and production.

We outline the main issues relevant to the implementation of TEL – the link to overall educational aims, the relationship between innovation and practice, the importance of user engagement, the nature of TEL research, and the characteristics of the local context, and the nature of TEL as a catalyst for change.

17.2 The Relationship Between General Educational Aims and TEL Research

The European Union is united in the aspirations recorded in the Lisbon Agreement 2000, to make the EU the world's most competitive and dynamic knowledge-based economy by 2010. The focus must now be on training people for the knowledge economy, not just to acquire ICT skills, but also to be able to cope with the higher level skills of knowledge management and technical analysis required from the majority of professionals in an ICT-literate workplace.

The same point arises within individual partner states. For example, a major study of skills for the workforce set a similar agenda, and this is now influencing UK