Chapter V

Building Educational Technology Partnerships Through Participatory Design

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Over more than five years, we worked with a group of public school teachers to define, develop, and assess network-based support for collaborative learning in middle school physical science and high school physics. From the outset, we committed to a participatory design approach, in part to explore what issues and possibilities arise when participatory design is pursued more extensively. The nature of our interactions, and in particular the nature of the roles played by the teachers, did change significantly through the course of the project. We suggest that there may be a long-term developmental unfolding of roles and relationships in participatory design.
Technology development is often seen as a waterfall process, a cascade of activities each feeding the next: new technologies are invented, then elaborated and refined in demonstration applications, then transferred to real developers and deployed in real applications, and finally adopted by users. This conception derives from the belief that technology innovation is inherently good for people and organizations, and that the key engineering challenge for technology development is efficiency. However, linear waterfall processes maximize the risk that inappropriate technology will be deployed, that the technology will solve the wrong problem or conflict with commitments and practices of the people who are to use the technology.

Educational technology provides many examples of how “efficient” development and deployment is not enough. Teachers work in a complex and dynamic context in which measurable objectives and underlying values collide on a daily basis. Traditionally, teachers work in isolation from their peers; individual teachers have well-established personal practices and philosophies of education. Teachers have enormous discretion with respect to what goes on in their classrooms, yet are also routinely interrogated by supervisors, by parents and other community members, and by educational bureaucracies. This has led to an abiding tension in the culture of schools: teachers’ innovative practices are often not adequately acknowledged or valued, and at the same time, teachers often passively resist school reforms that are imposed top-down.

Technology is a particularly problematic element in the culture of schools. The isolation and discretion of the teacher’s work environment requires that technology for classroom use be highly appropriate and reliable. Yet it is generally assumed that teachers are to be trained on new technologies, not asked to define what those technologies should be. From the teacher’s standpoint classroom technology often is itself the problem, not the solution. This culture of technology development in the schools has been singularly ineffective; film and radio in the 1920s, television in the 1950s, computer-assisted instruction in the 1980s, among others, have been notable failures (Cuban, 1986; Hodas, 1993; Tyack & Cuban, 1995).

An alternative to merely efficient technology development is participatory design, the inclusion of users within a development team, such that they actively help in setting design goals and planning prototypes. This approach was pioneered, and has been widely employed, in Europe since the 1970s, and now consists of a well-articulated and differentiated set of engineering methods in use worldwide (Greenbaum & Kyng, 1991; Muller, Haslwanter & Dayton, 1997; Schuler & Namioka, 1993).
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