Chapter 8.12
Situated Evaluation of Socio–Technical Systems[1]

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ABSTRACT

This chapter introduces situated evaluation as an approach for evaluating socio-technical innovation and change. Many current evaluations simply identify the impacts of technology and deprecate alternate uses in their analysis. Situated evaluation instead calls for understanding how innovations emerge through use; this entails consideration of diverse uses, the contexts of use, and the reasons for the development of multiple realizations. The chapter presents a comparative study of different classroom uses of electronic Quill in order to demonstrate how this alternative evaluation can be conducted and to address the value of understanding and fostering diverse cultural appropriations of a socio-technical innovation.

What about the lay public as producers of technology and science? From the vernacular engineering of Latino car design to environmental analysis among rural women, groups outside the centers of scientific power persistently defy the notion that they are merely passive recipients of technological products and scientific knowledge. Rather, there are many instances in which they reinvent these products and rethink these knowledge systems, often in ways that embody critique, resistance, or outright revolt.

—Eglash, 2004, p.vii

INTRODUCTION

Implementing an innovation entails making changes to an existing system of social practices. People involved with that system naturally want to know what those changes mean and are, therefore, drawn to calling for some sort of an evaluation. Based on the results of the evaluation, practitioners, policy makers, and administrators make their practical decisions about the fate of the innovation. They often focus on evaluation outcomes alone, but the setting of evaluation questions and methods is as important

as the outcomes. Evaluation processes embed evaluators' assumptions about the innovation and its relation to the relevant social contexts.

In this chapter, we raise questions about the basic assumptions and limitations that standard approaches to evaluations have, and introduce *situated evaluation* as an alternative approach that aims to uncover, not the way that an innovation interacts with practice, but rather the very emergence of innovations through practice. Through a study of Quill, an electronic composition system that was developed for teaching writing in the early 1980's, we demonstrate how this alternative evaluation can be conducted. We also discuss the values, challenges, and methodological issues related to using situated evaluation in supporting further understanding of socio-technical innovations. As new digital technologies increasingly pervade aspects of our daily lives, the innovations-in-use issues that arose in Quill implementations are even more relevant today.

QUESTIONING THE NATURE OF STANDARD EVALUATION

Standard evaluation practice tends to emphasize either formative or summative approaches. Formative evaluation is typically done during the development or improvement of a program and is conducted iteratively. Results are often informal and lead to recommendations for change. Summative evaluation provides information on the program's efficacy, such as improvement of student learning. In this chapter, we propose an alternative, which questions the basic assumption of "what" it is that is being evaluated.

In evaluating a new technology, researchers typically consider the innovation as a fixed object created by professional developers. They further assume that its benefits are somewhat fixed and known in advance with respect to social practice. For example, a program might be developed to help students learn a concept in science or to

help a community engage in community building through better communication. Evaluation then becomes a way to improve that program or to assess its effectiveness. This is a reasonable approach, one that is fully in line with calls for reflective practice. But in its extreme form, the assumption that what the program actually is known prior to its integration into social practice becomes what Papert (1987) defines as *technocentrism*:

Egocentrism for Piaget does not, of course, mean "selfishness"—it means that the child has difficulty understanding anything independently of the self. Technocentrism refers to the tendency to give a similar centrality to a technical object—for example computers or Logo. This tendency shows up in questions like "What is THE effect of THE computer on cognitive development?" or "Does Logo work?" (p. 23)

The problem here is that a technocentric perspective limits the scope of the evaluation, often making it difficult to see unexpected uses of an innovation. But, as any developer knows, technical innovations often result in unplanned uses and diverse readings of the innovation. Often, the variation in use is greater than the variation in programs, so that the claim to be evaluating a particular program becomes convoluted with discussions about faithfulness of implementation or effectiveness of the program per se versus effectiveness of its introduction.

One good example occurs in the discourse on online collaboration and learning systems. The early visions of new communication and information technologies asserted that their fundamental attributes could support innovative learning environments that promoted students' active participation, reflective thinking, attainment of self-discipline, and connections with the real world. However, this visionary perspective of educational computer-mediated communication has altered due to the unexpected effects of diverse teaching and learning practices.

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