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A TALE OF TWO COMPUTER CLASSROOMS

The ecology of project-based language learning

1. INTRODUCTION

The research into the use of educational technology to date shows widely varying, inconclusive and often contradictory results. For example, Dillon and Gabbard (1998) conducted a survey of quantitative studies, searching under the keywords “hypermedia” and “hypertext” (thus missing any research that did not have these words in the title). They netted 97 articles and were able to select 25 for detailed review. Their general verdict was that “the value of hypermedia in pedagogy is limited” (p. 345). They further noted that the variables involved are enormously complex, and that identifying relevant variables and controlling them is especially difficult in this area. In another survey of the research literature, Kirkpatrick and Cuban (1998) divided studies into “positive”, “mixed”, and “negative”, and came up with roughly equal numbers in each category. Thus, research on the benefits of computers is rather equivocal. The reasons for this are not very difficult to find. The role of technology in education is changing so fast that, as Mandinach and Cline report, “new and flexible methodologies are needed to capture the effects of [technology-based] learning environments on teaching, learning, and classroom dynamics” (1997).

Whether or not computers will be used in schools and classrooms, including language classrooms, is no longer the question. They are being used now, and will be used in the future in some shape or form. All other questions remain on the table, and it is our task as researchers and practitioners of language education to address them in all their complexity. It is worth noting that most of the effort in educational technology seems to be going into the development of infrastructure (often obsolete by the time it is in place) and instructional software, with an emphasis more on technical than on pedagogical challenges. It is thus quite possible that Cuban is right when he says that educational technology is “oversold and underused” (2001). I would add that when used, its full potential is often not exploited.

In this chapter I will explore the use of technology in context, focusing on the language classroom in which computers are used during language lessons. The reader will note, perhaps with some surprise, that the discussion is more about project-based teaching in general than about the use of technology *per se*. This is intentional. The message is that technology, if it is to be a positive force in

education, should not be cast as an alternative to classroom teaching, or as replacing the teacher, but as a tool that facilitates meaningful and challenging classroom work. The project work illustrated below could have been conducted without computers, but it would not have provided the same opportunities for peer scaffolding. I suggest, then, that computer use can enhance classroom work. Such integration of technology into project-based teaching is not problem-free, of course, but it brings certain rewards in terms of creativity and the development of autonomy and collaborative skills. I will give two examples from practice.

In the first example, children in a fourth-grade dual-immersion classroom are working on a collection of poetry, and use computers to construct a website to store and display the poetry. Here the computer (the website, more precisely) is an alternative to publishing the poetry in printed form. But using the computer involves much more than just changing from one medium to another: it brings about potentially huge changes in classroom processes.

In the second example, a group of young adults in an intensive ESL program use the technology to construct websites on a variety of cultural topics. What connects the two examples is the use of technology as a tool, and a project-based curriculum designed to take advantage of the possibilities for collaborative, challenging and motivating work that technology can offer. Thus, technology is here not treated as an alternative to classroom work (in the sense of lab versus classroom, or computer-mediated work versus face-to-face interaction); rather, the settings examined suggest that technology can be used to simply enhance good language teaching practices (if we assume that such practices include autonomy, meaningful interaction, challenge, and variety in linguistic expression and engagement). In a sense then, the issue is not to 'prove' that computers and other technologies are beneficial or detrimental but, to paraphrase Humpty Dumpty, the question is: who is to be master.

The two examples are similar in that they both illustrate project-based learning: students collaborate on long-term projects that are in some ways structured by the teachers, and to some extent allow students to choose their own topics, procedures, and goals. Beyond that commonality, the two settings also have huge differences. The first setting, a public elementary school in which both mainstream and language minority children are enrolled, faces a number of challenges that the second one does not. These challenges require that we examine wide-reaching features of the context, at the level of school, family, society and politics. The second setting, an intensive ESL program in a private university, can be described without such a mandatory scrutiny of the context, since it does not face the same challenges. In sum, then, how wide the net of contextual research is cast, within an ecological approach, depends very much on features of the setting and the participants.

A major question is whether findings in settings of type 1 have anything of relevance to say to setting 2, and vice versa. In many respects there may be severe limits on generalizability. However, at the level of classroom pedagogy and the practical procedures of project-based teaching and learning, there are many things that can be shared, and many more that may be transformed. I will return to some of these implications in the conclusion.

2. BEYOND INPUT/OUTPUT: A NOTE ON RESEARCH

I mentioned above that traditional types of research have not been able to show clear patterns in the effects of technology on learning contexts or on learning outcomes. How are we to conceptualize, frame, and carry out the “new and flexible methodologies” advocated by Mandinach and Cline (1997)? What are the principles for designing the types of studies that are needed?

One of the reasons that traditional research models do not work is that technology is a moving target: as soon as the description of a particular software or hardware appears in print, it is rendered obsolete by a new version or a totally different way of doing things. Research needs to reflect this ‘moving target’ aspect of technology. Therefore it cannot proceed by the traditional methods of measuring inputs and outputs, and isolating dependent and independent variables.

A more appropriate way of approaching the issues at hand is by looking at various kinds of contextualized research, action research, and recent advances in systems theory (such as the “soft systems” methodology of Peter Checkland, 1981) and chaos/complexity theory (Cutright, 2001; Godfrey-Smith, 1998). All these types of research (contextualized, action-including intervention, systems, and chaos/complexity) share elements that are compatible with an ecological approach to technology-mediated learning. But there are other elements that stand out in an ecological perspective: the fact that we are looking for relationships and processes rather than products and outcomes; our focus is on the ways in which new patterns of organization and knowledge emerge in a situation of change; we are concerned with the quality of the educational environment and the learning opportunities it affords—and explicitly with the values and ideals we wish to promote in our educational work. The view taken here is that research is never neutral, though it often pretends to be. Educational research cannot afford to be neutral: too much is at stake.

The characteristics of ecological research mentioned above together constitute a scientific outlook and a human world view which is quite different from the traditional researcher’s cause-effect, product-oriented, context-reduced, value-free and detached stance. In the following brief account of two different project-based classrooms, these principles of ecological research provide the backdrop to our discussion.

3. COMPUTER CLASSROOM RESEARCH

That teaching and learning in action are difficult to research, even without the new element of technology, is not new or surprising. The same was the case in the early days of classroom research (Chaudron, 1988; Van Lier, 1988; for a recent overview, see Allwright, 1997). Since then a number of ways of studying pedagogical activity in context have been proposed and implemented, following models from the social sciences (e.g. Engeström’s activity theory, 1996), and from contextualized research in general education, such as situated learning (Lave & Wenger, 1991), communities

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